PRS_ID	NAME	LONG_DESCRIPTION
00-001	In Progress	SWMU 00-001 is the area of the historic and current sediment traps in Mortandad Canyon. The traps are excavated areas below the prevailing grade of the ephemeral stream channel that serves as surface water containment basins to slow the flow of water as it moves down the canyon. The water consists of stormwater runoff and industrial effluent. Water flows into the first trap and is retained temporarily, allowing heavier sediments to settle out. When the first trap fills, water flows into two successive traps, allowing more sediment to settle out. The site is approximately 900 ft long x 200 ft wide along the Mortandad Canyon stream channel downstream from the confluence of Mortandad and Ten Site Canyons. The two original traps were built in 1976 with a capacity of approximately 20,000 gal. In 1980, a third trap was built with a capacity of approximately 225,000 gal. The current trap configuration was built in 1986 and was expanded in 1988 as excavated basins surrounded by U-shaped berms built from the excavated alluvium. Trap 1, the upstream basin, has a capacity of approximately 286,000 gal. Trap 2, the next trap downstream, has a capacity of 628,000 gal. Trap 3, the downstream trap, has a capacity of 287,000 gal. The berms were planted with vegetation to prevent erosion. The three basins were re-excavated in 1992 after they were filled following several storms. Sediment from the traps was stockpiled next to the traps. The primary contributor of effluent discharge to Mortandad Canyon is the TA-50 radioactive liquid waste treatment facility, which currently is permitted under NPDES as EPA No. 051051. Other releases into the canyon include effluent from an NPDES-permitted outfalls at TA-03 and TA-35 and various historical releases from TA-35 into Ten Site Canyon. The wastewater effluent contains some low-level radionuclides and may potentially contain hazardous constituents. As effluent moves downstream, most residual radionuclides are bound or adsorbed onto bed sediments. The contaminated sediments are subject to transport by additional releases of effluent or by stormwater runoff. The sediment traps are approximately 1.5 mi downstream from the TA-50 radioactive liquid waste treatment facility outfall and about 1.4 mi upstream from the LANL boundary. Suspect contaminants at this site could include: organic chemicals, inorganic chemicals, and radionuclides. Environmental surveillance studies in 1987, 1988, and 1991 indicated low-level radionuclide contamination of the sediments in and around SWMU 00-001. In addition, radionuclides have been found in the small shallow aquifer located in the canyon alluvium. Sediments from the first two traps were analyzed in 1987 using the TCLP to characterize any potential hazardous wastes; no hazardous wastes were detected. In 1995, the ER Project conducted proposed sampling at SWMU 00-001 to confirm the presence or absence of hazardous constituent contamination. Characterization samples (21 total) were collected from 10 locations and submitted for inorganic and organic chemical, and radionuclide analysis. Results of this sampling indicated that inorganic, organic, and radionuclide chemicals were present at concentrations greater than background. One SVOC (benzo(a)pyrene) was present at levels exceeding SALs. Maintenance of the sediment traps was performed by Facilities Waste Operations-Waste Facilities. The work was performed as part of the post Cerro Grande fire recovery work. The objective of the maintenance was to increase the available volume in sediment traps #1 and #3 and to remove radiologically contaminated sediments from a prior maintenance event. In July 2002, LANL requested and obtained NMED concurrence that environmental media generated during this routine maintenance does not warrant management as F-listed hazardous wastes. Excavation of sediment trap #1 was conducted in July 2000. Approximately 384 cubic yards of soil from sediment trap #1 was excavated transported, and disposed of at TA-54, Area G. Excavation of the soil piles north and adjacent to sediment trap #1 was completed in August 2000. Approximately 1308 cubic yards of soil from the piles were excavated, transported, and disposed of at TA-54, Area G. Excavation of sediment trap #3 was conducted in August 2000. Approximately 5040 cubic yards of soil from sediment trap #3 was excavated, transported, and disposed of at TA-54, Area G.
00-003-99	Administratively	Consolidated SWMU 00-003-99 consists of former SWMUs 00-003 and 00-012, a

	Complete	container storage area and a former underground blow-off tank located at the inactive Western Steam Plant on Finch Street, which began operating in 1949. After the TA-03 power plant (Building 03-22) came on line in approximately 1952, the Western Steam Plant was put on standby status until it was removed from service in 1990. The Zia Company's wastewater laboratory operated as part of the Western Steam Plant between 1976 and 1983. Former SWMU 00-003 is a 100-sq-ft product container storage area located at the east end of the Western Steam Plant. Historical information indicates that the area was always paved and was used to store 55-gal. steel drums on wooden pallets. The drums contained chemicals used for boiler water treatment. The area was decommissioned in 1987, but while it operated, releases from corroded drums resulted in spillage below the pallets. The frequency, content, volume, and cleanup of the releases were not documented. Former SWMU 00-012 was an underground blow-off tank that received blow-down steam and water from the boilers at the Western Steam Plant. The tank was made of cylindrical steel and was 4 ft in diameter and 10 ft long. A 2.5-in.-diameter blow-off line exited the back of each boiler and connected to a 3-in.-diameter line leading to the blow-off tank. Effluent from the tank discharged through a 4-in.-diameter drainline to the sanitary sewer. The ER Project conducted an RFI at former SWMUs 00-003 and 00-012 in 1997 to determine if contaminants were present and, if so, to evaluate the sites' suitability for residential use. Ten subsurface soil samples were collected from four locations beneath the asphalt paving at former SWMU 00-003. Samples were field-screened for radioactivity and organic chemicals. No detectable activity was found in the radioactivity screening, and no organic chemicals were detected. Samples were submitted for laboratory analysis of organic and inorganic chemicals. Calcium, lead, and sodium were detected at levels that exceeded BVs and were carried forward to the screening assessment. Sixteen organic chemicals were detected, 15 of which were PAHs and were not included in the screening assessment because they were not believed to be associated with a release from former SWMU 00-003. Dibenzofuran was carried forward to the screening assessment. Dibenzofuran and lead were detected at concentrations less than their SALs. Calcium and sodium, which have no SALs, were eliminated from consideration as COPCs on the basis of best professional judgment because they are essential nutrients. At former SWMU 00-012, a site survey was conducted to determine the location of the blow-off tank and any outfall points along the rim of Los Alamos Canyon that may have received runoff from the area. The outfall that was believed to have received discharge from the blow-off tank was located, and its channel was examined for sediment catchments, as part of the geomorphic mapping task. Subsequent investigations revealed that former SWMU 00-012 did not discharge into any outfall but was plumbed directly to the sanitary sewer system. The original outfall was determined to serve roof drains associated with the building. A second drainage channel was located that receives runoff from the asphalt street and parking area south of the Western Steam Plant, and possibly from a portion of the container storage area, former SWMU 00-003. This channel also was examined for sediment catchments. Six sediment samples were collected from six locations, three within each of the drainage channels. It was subsequently determined, after reviewing engineering drawings, that only one of the drainage channels received effluent from the blow-off tank; therefore, samples from only three locations are representative of former SWMU 00-012. One water sample was collected from inside the blow-off tank, but sediment in the tank was insufficient to allow sediment sample collection. Samples were screened for radioactivity and organic chemicals, and the results indicated no detectable radioactivity or organic chemicals. The seven samples were submitted for laboratory analysis of inorganic and organic chemicals. Sisteen inorganic chemicals were detected above BVs in the soil samples or were detected in the water sample and were carried forward to the screening

		assessment. Sixteen organic chemicals were detected in the soil samples, 13 of which were PAHs and not believed to be associated with a release from former SWMU 00-012. Although not associated with a release from former SWMU 00-012, the PAHs were taken through a screening risk estimate to determine the need for cleanup, either within or outside of RCRA corrective action, and to provide an estimate of potential human health risks. The screening process used EPA Region 9 PRGs. The estimated carcinogenic risk was determined to be at the low end of the acceptable range and was considered as borderline acceptable or unacceptable risk for a residential exposure scenario. The estimated noncarcinogenic hazard index is approximately 0.04, which is less than the acceptable hazard index of 1, indicating that noncarcinogenic health effects would not be expected from exposure to these noncarcinogens at these average concentrations. Dibenzofuran, dieldrin, and endrin ketone are the three non-PAH organic chemicals that were detected; those were carried forward to the screening assessment. No organic chemicals were detected in the water sample. No chemicals detected in soil samples were detected at concentrations greater than SAL. A SAL was developed for endrin ketone, and its concentration was determined to be less than that SAL. No chemicals detected in the water samples were detected at concentrations expected to pose a risk to human health, and all were eliminated from further consideration. The RFI report recommended NFA at former SWMUs 00-003 and 00-012 because chemicals present at the site are at levels that pose no unacceptable potential risk to human health. The ER Project submitted a VCA plan for consolidated SWMU 00-003-99 that proposed an investigation to determine the horizontal extent of lead at former SWMU 00-003, which was detected in the RFI. As part of the VCA, the tank and piping at former SWMU 00-012 was to be excavated and removed, inspected for leaks, and disposed of. Confirmation samples were to be collected and analyzed. A VCA was completed in July 2000 during which the tank and a portion of the associated piping were excavated and removed from former SWMU 00-012. The equipment removed from the former SWMU was inspected for leaks and recycled. A total of eight confirmation samples and one duplicate sample were collected from four locations beneath the tank and the associated piping. The confirmation samples were analyzed for inorganic chemicals and pH. Vertical extent was defined for all potential contaminants; however barium, cobalt, lead, and manganese were detected in one duplicate sample at depth from one location. After conducting analyses for both human health and ecological risk, the consolidated SWMU 00-003-99 was recommended for NFA.
00-005	Administratively Complete	SWMU 00-005 (Mortandad Canyon "landfill") is a small fenced area that was formerly used in an experimental study that examined the transport of particulates from the ground surface to plants as a result of rain splash. The study was conducted from 1976 to the early 1980s. Short-lived radionuclides were used as tracers. Soil from within the fenced area was put in 55-gal. drums and transported to TA-50, where four radionuclides, all with half-lives less than 115 days, were mixed into the soil by rotating the drums. The drums were taken back to the study plot, and the soil was returned to the site. According to LANL documentation, several of the empty drums were stacked inside and one outside the fence. These drums were still located at the fence line in 1986 but were removed from the site sometime prior to November 1988. The transport experiments were discontinued in the early 1980s. Since that time, the radionuclides used as tracers in the study have decayed to negligible levels. The drums, present at the site, were empty drums used to transport the soil used in the experiment. The radionuclides used in the experiment were employed solely to act as tracers and they have subsequently decayed to negligible levels. SWMU 0-005 is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous waste and/or constituents.
00-008	Administratively Complete	
00-010(a)	Administratively Complete	PRS 00-010(a) is a surface disposal site located on a small mesa southwest of MDA B, along DP Road near TA-21. It was first identified as a SWMU based on preliminary

		review of aerial photographs taken in the mid 1940s which seemed to indicate a drum storage area and several trenches. Photometric analysis of the evidence indicated that the items thought to be drums were in fact rows of stockpiled supplies, not waste awaiting disposal. In addition, an interview with a former Zia Co. employee who had worked in the area identified the stored material as canisters of roofing asphalt and roofing coal tar pitch. It is believed that the site was used for stockpiling and storage only.
00-010(b)	Administratively Complete	PRS 00-010(b) was described in the Work Plan as an excavation east of Sixth Street Warehouses 1 through 4 that was based on aerial photographs taken in 1946. It was assumed that if an excavation existed adjacent to a warehouse building, it might have been used for some sort of waste disposal activity. However, upon re-examination of the 1946 photographs, no evidence of a waste disposal pit was apparent. Additionally, no records or data exist suggesting that such an excavation existed or was used for waste disposal purposes. A visual survey of the area also revealed no clues as to the existence of a former excavation. It is likely that this excavation did not exist; therefore, no RFI sampling activities were conducted.
00-011(a)	Pending	SWMU 00-011(a) is a 28.5-acre former mortar impact area about 0.4 mi. east of the Sportsmen's Club firing range in Rendija Canyon. The impact area operated between 1944 and 1948. The area was fenced to keep individuals out of the site; surveys during the RFI (described below) found that the impact area was larger than previously thought, and the RFI covered more than the fenced area. The ER Project conducted an RFI at SWMU 00-011(a) in 1993 to search for and remove unexploded ordnance and ordnance explosive waste, to map the geomorphology, and to collect shallow surface soil samples. Two live mortar rounds were found and destroyed. Other materials recovered during the ordnance sweep included almost 2400 pieces of ordnance fragments and three times as much scrap material. Geomorphic mapping included mapping all drainage channels that drained the area enclosed within the boundaries of the site and the areas with high concentrations of ordnance fragments. Sampling locations were selected from sediment storage locations within the drainage channels that drained the areas of high fragment concentration. Nineteen soil samples were field-screened for radioactivity and were submitted for laboratory analysis of inorganic chemicals and HE. Radiation screening results were below detection limits. Inorganic chemicals were detected above SALs, but the SALs are below BVs. HE analytes were below detection limits. The RFI report recommended NFA at SWMU 00-011(a) and approval of the site for future residential use.
00-011(c)	In Progress	SWMU 00-011(c) is a possible mortar impact area located on DOE and US Forest Service property north of the Sportsmen's Club in Cabra Canyon, a tributary of Rendija Canyon. The possibility of its existence was discovered because of signs that were posted in the area in the 1940s. The ER Project conducted an RFI at SWMU 00-011(c) in 1993 to search for and remove unexploded ordnance and OEW. Ordnance surveys at the site resulted in no findings except for scrap metal such as bailing wire. The complete absence of OEW shows that the site was never used as an ordnance impact area. The RFI report recommended NFA at SWMU 00-011(c).
00-011(d)	In Progress	SWMU 00-011(d) is a firing range on predominantly Los Alamos County land and a small section of private property in a small north-trending tributary of Bayo Canyon. The site, which operated between 1944 and 1948, is located northeast of the intersection of San Ildefonso Road and Diamond Drive. The area is marked and fenced. The ER Project conducted an RFI at SWMU 00-011(d) in 1992 to search for and remove unexploded ordnance and OEW. OEW that was recovered from the site was found in the subsurface and was composed of about 0.5 cubic yard of tail fin assemblies, motors, bullets, and other fragments from bazookas. Geomorphic mapping of the impact area included mapping the surficial, unconsolidated sediment at the site and mapping the drainage channels that would be likely pathways for the surficial transport of contaminants. Twenty samples were collected from nine locations on the

		surface and from selected sediment trap locations. Samples were field-screened for radioactivity and were submitted for laboratory analysis of HE and inorganic chemicals. Field screening showed levels below detection limits. No HE or byproducts were detected in any samples. Inorganic chemicals exceeded their SALs, but the SALs are below BVs. Detected concentrations of arsenic and beryllium were within their respective BVs. Lead was detected at concentrations above BVs but below SAL. The RFI report recommended NFA at SWMU 00-011(d) and approval of the site for residential use. The RFI report also recommended that Los Alamos County remove the fence from the site boundary and open the area to the public.
00-011(e)	Pending	SWMU 00-011(e) is a former mortar impact area located on DOE and US Forest Service land north-northeast of the Sportsmen's Club in Thirty-Seven Millimeter Canyon, a tributary of Rendija Canyon. The area extends north along the tributary to the top of the cliff face. The area is approximately rectangular and, according to the map in the RFI phase report, measures approximately 1080 ft x 945 ft. US Army personnel operating tanks firing 37-mm rounds used the canyon for training in the mid- to late 1940s. In the early 1960s, the site was fenced and posted with warning signs. The ER Project conducted an RFI at SWMU 00-011(e) in 1993 to search for and remove unexploded ordnance and OEW, to map the geomorphology, and to collect shallow surface soil samples. During the ordnance sweep, the materials recovered were 37-mm rounds and fragments. Because of the uncertainty of whether each of these rounds were HE or armor-piercing, they were placed in shallow pits and explosives then packed over them and detonated. Nine soil samples were collected from eight sediment storage locations within the drainage channels that drained the areas of high fragment concentration and along the major channel that drained the site into Rendija Canyon. Field screening the samples for radioactivity indicated that radiation levels were below detection limits. The samples were submitted for analysis of inorganic chemicals and HE. Inorganic chemicals were detected at concentrations above SALs but within BVs. All HE analytes were below detection limits. The RFI phase report recommended NFA at SWMU 00-011(e) and approval for residential use.
00-015	In Progress	AOC 00-015 is the Sportsmen's Club firing range, an active firing range located on General Services Administration land in Rendija Canyon. The firing range consists of several small-arms ranges and has operated since 1966. Lead is expected to be present in earthen berms and on the surface of the ranges. Shattered clay projectiles are present on the skeet and trap ranges. The extent of contamination in the soil and surface water is unknown. There are no documented releases from the site. AOC 00-015 was recommended for NFA in the March 1995 permit modification request. NFA was recommended because contamination at the site is directly related to use of the firing range and there are no plans to change the land use in the future. Because the site will continue to be used as a firing range and additional contamination will occur as a result of that use, the March 1995 permit modification request stated that the site should not be cleaned up until the range is decommissioned.
00-016	Administratively Complete	SWMU 00-016 is a former small arms firing range located on US Forest Service property and used by Laboratory security forces for small-arms target practice from 1947 until the early 1960s. In addition, the general public unofficially used the site for recreational target practice from the early 1960s until 1992. As a result of these practices, the soil of the firing range was contaminated with lead, copper, and zinc (the components of small-arms ammunition). The Laboratory ER Project implemented a voluntary corrective action (VCA) at this SWMU. VCA activities included removing lead bullets and bullet fragments from the soil and washing soil to remove fine lead particles. VCA characterization and remediation of the site were conducted in accordance with applicable state and federal regulations. Confirmation sampling verified that nature and extent of contamination was defined. Screening assessment results indicate that residual contamination is at concentrations that pose an acceptable level of risk under current and project future land use. SWMU 00-016 is appropriate for NFA under Criterion 5 because the site was characterized and remediated in accordance with state

		and federal regulations.
00-017	In Progress	SWMU 00-017 is an inactive underground industrial waste line system that was installed in 1943. It transported process chemical and radiochemical wastes that were generated at the Health Research Laboratory (Building 43-1) and TA-48 to the former wastewater treatment plant at TA-45 (SWMU 45-001-00, which was demolished in 1966). Most of the waste line was removed beginning in 1964, but some isolated sections remain in place. Former line 167 was cast-iron and extended from the south edge of Los Alamos Canyon, just west of Omega Bridge, to a manhole (structure ULR-33) at the bottom of the canyon, then up the north side of the canyon wall. Line 170 is a 200-ft section of VCP that runs east of the HRL to a manhole, structure ULR-61. Asphalt parking lots and narrow landscaped areas in the medians between the parking lots cover it. Line 171 is a 365-ft section of VCP that runs east from structure ULR-61 under the north wing of the LAMC and under the east parking lot to the location of a former manhole, structure ULR-60. The line is entirely covered by the asphalt parking lot, the north wing of LAMC, and the new wing of the LAMC. Initially, the waste lines transported process chemicals and radiochemical wastes to Pueblo Canyon. Starting in 1952, the wastes were transported to the treatment plant at TA-45. Between 1953 and 1963, wastes from the HRL were piped into the system through lines 170 and 171. After 1963, TA-43 wastes were rerouted to the sanitary sewer system. Between 1953 and 1963, wastes from TA-03 flowed into the system through lines 167 and 168. In 1958, wastes from TA-48, a newly constructed radiochemistry site south of Los Alamos Canyon, entered the system. Wastes from TA-03 and TA-48 flowed first to a waste neutralization/storage station designated as structure 03-700 [consolidated SWMU 03-038(a)-00]. After 1963, waste from TA-03 and TA-48 was sent to the new radioactive liquid waste treatment facility at TA-50 [SWMU 50-001(a)]. Plutonium was the primary contaminant from TA-03 and TA-48 that flowed through line 167. The waste was monitored for gross alpha activity and was routed either to Pueblo Canyon or to the TA-45 treatment plant, based on its activity level compared with the then-permissible levels for release to the environment. At the HRL, small quantities of carbon-14, tritium, plutonium-238 and -239, polonium-210, uranium-238 and -239, promethium, and thorium were used. Other chemical wastes included alcohols, fluorescent dyes, and ethidium bromide and propidium iodide. Removal of the inactive industrial waste line connecting TA-03 and TA-43 to TA-45 began in 1964. By 1967, most of the line on private land between TA-03 and TA-45 had been removed. The line and excavated soil were monitored for alpha radiation. In the spring of 1977, 1300 ft of the industrial waste line near the intersection of Diamond Drive and Trinity Drive were removed. Decontamination levels during the project were based on the DOE policy of “as low as practicable.” Economic and practical considerations were weighted, along with health and safety issues, to determine cleanup levels on a case-by-case basis. About 300 soil samples were collected during the removal project to augment field-screening data. Only one soil sample had gross alpha activity exceeding the industrial waste line guideline of 25 pCi/g. Between 1981 and 1986, the waste line through Los Alamos Canyon (line 167) and a manhole (structure ULR-33) and sections of the waste line that had been left under four road crossings in TA-00 were removed. Line 167 was secured to the walls of Los Alamos Canyon with ten concrete anchors. Nine of the ten anchors were left in place, and the 3-ft pipe sections between the anchors were removed. Sections of pipe about 3 ft long were left encased in each of the anchors. These sections of pipe were decontaminated, the ends were sealed with concrete, and the anchors were covered with soil. Soil samples were collected between the anchors and were analyzed for gross alpha activity. All levels were below the established industrial waste line guidelines of 25 pCi/g. Beta and gamma activities were at BV. After the removal activities described above, lines 170 and 171 were the only sections of the industrial waste line known to remain in the town site. These lines and an associated manhole, structure ULR-61, were left in place in the 1980s because they would have been difficult to remove and were believed to be uncontaminated. The ER Project conducted an RFI at lines 170, 171, former line 167, and a manhole

		(structure ULR-33) in 1998 and 1999 to accurately determine the design, construction, location, and depth of the remaining sections of industrial waste lines and manholes and to define the nature and extent of contamination, if present. The RFI consisted of a site survey, exploratory trenching, and subsurface and surface sampling. Subsurface samples were collected from Lines 170 and 171 from depth between 19.5 ft and 26.5 ft. Because of differences in land uses, potential receptors, contaminant sources, and the depth at which a particular waste line was buried, results for the canyon portion (line 167) and the mesa-top portion (lines 170 and 171) were evaluated separately. Inorganic chemicals were detected at levels above BVs on the mesa-top portion of the SWMU. The RFI report stated that it is probable that the elevated concentrations represent naturally elevated BVs for those inorganic chemicals, rather than evidence of a release. Radionuclides were detected in the mesa top at levels above FVs. At each location except one, the radionuclides were not detected in deeper samples. At one location, plutonium-239 was detected in a deeper sample, but at an order of magnitude less than at the shallower sample location. The extent of potential radionuclide contamination was determined to have been adequately defined. The only organic chemical detected was Aroclor-1254; it was detected in the mesa-top fill material, but not in the mesa-top tuff or in the canyon portion of the SWMU. It was assumed that the Aroclor-1254 was present in the fill material before backfilling the pipeline trench. A human health screening assessment was not performed for the contaminants found on the mesa top because potential contaminants on the mesa top are present at depths that have no pathways to potential receptors. Inorganic chemicals that were retained as potential contaminants in the canyon portion were antimony, cadmium, cyanide, lead, mercury, selenium, silver, and thallium. Plutonium-239 and tritium were detected at levels above FVs. Only lead was detected at levels above SAL. An additional 41 samples were field-screened for lead to verify the source of the surficial lead detected during initial sampling. The source was determined to be historical maintenance of the Omega Bridge. Lead was eliminated as a potential contaminant at SWMU 00-017 because there is evidence that the source of the lead is 1991 sandblasting of lead-based paint on the Omega Bridge. The other inorganic chemicals, which are noncarcinogenic, were compared with 1/10 SAL. The maximum detection limits for cyanide, mercury, selenium, and silver are less than 1/10 SAL and they were eliminated as potential contaminants. Plutonium-239 and tritium were below their SALs and were eliminated as potential contaminants. Detection limits for antimony and thallium are greater than 1/10 their respective SALs, and the chemicals were retained as potential contaminants. There were no detections of antimony or thallium in the soil or sediment, but their analytical detection limits are greater than their respective BVs, indicating a possibility that the potential contaminants could be present at concentrations less than the detection limit but greater than the BV. However, the only potential source of the inorganic chemicals from SWMU 00-017 would be from line 167, which carried radioactive liquid waste. If a release had occurred from line 167, high levels of radiation greater than the natural or fallout background radiation levels, along with levels of inorganic chemicals above BVs, would characterize it. Plutonium-239 and tritium were the only radionuclides detected at concentrations greater than their FVs; however, the detected concentrations of those radionuclides are not high enough to be indicative of a release of radioactive wastewater. Therefore, the low levels of radioactivity indicated no release from line 167, and the possibility of antimony or thallium being present above BVs but at concentrations less than their respective detection limits because of a release from the SWMU is negated. Antimony and thallium were eliminated as potential contaminants. Results of the human health screening assessment indicated that no potential contaminants should be retained in the canyon portion of SWMU 00-017. An ecological screening assessment was done for SWMU 00-017 as part of the 1998-1999 RFI. The purpose of the assessment was to identify potential ecological contaminants. Because each area is unique with respect to receptors, habitat, and potential impacts, the mesa-top and canyon areas were addressed separately. The

		mesa-top portion of SWMU 00-017 was not subjected to an ecological screening evaluation because there are no receptors or pathways, due to the depth at which the waste lines are buried. For the canyon portion of the SWMU, eight inorganic potential ecological contaminants were identified. Lead was removed as a potential ecological contaminants because its presence was determined not to be related to the waste line. Seven other inorganic potential ecological contaminants were retained because detection limits were greater than BVs: antimony, cadmium, cyanide, mercury, selenium, silver, and thallium. A closer examination of data and available process knowledge indicated that there had been no release of contaminants from the waste line and, therefore, the potential ecological contaminants with detection limits greater than BVs were not present because of SWMU activities. The RFI determined that there are no potential adverse ecological impacts resulting from the removed waste line in the canyon and that no additional investigations are warranted for this site. The RFI report for SWMU 00-017 requested NFA because the site was characterized in accordance with current applicable state and federal regulations, and the available data indicate that potential contaminants are either not present or are present in concentrations that pose no unacceptable level of risk under the projected future land use. After receiving NMED input on the characterization at SWMU 00-017, LANL withdrew the NFA proposal until the specific locations(s) and components of the historic acid waste system are identified and documented.
00-018(a)	In Progress	SWMU 00-018(a) is the decommissioned Pueblo Canyon wastewater treatment plant, located at the end of Olive Street in Pueblo Canyon on Los Alamos County property. The plant, which was built between 1946 and 1948, began operating in 1951 and received waste from the HRL at TA-43 until 1983 and from Los Alamos business and residential customers until 1991. From 1983 to 1991, the plant received only sanitary waste from Los Alamos businesses and residences. It was the primary supplier of irrigation for the Los Alamos golf course and recreational ball fields [SWMU 00-028(a)-00]. Originally, the Zia Company operated the plant for the Atomic Energy Commission. In the early 1960s, Los Alamos County assumed control. The plant held NPDES permit number NM0020125. Los Alamos County decommissioned the wastewater treatment plant in 1992. The HRL generated chemical and radioactive wastes, but LANL policy required that radioactive wastes generated at the HRL be managed as such and not be discharged to the drains. Before 1990, liquid wastes containing phosphorus-32 were permitted in the HRL's sanitary waste streams; however, the half-life of phosphorus-32 is 14.3 days and it would have decayed shortly after being deposited. Most HRL chemical wastes were salt buffers and cell culture media and laboratory quantities of organic chemicals. After the plant was decommissioned, sludge in the plant's digester was transferred to sludge drying beds. The sludge was sampled in 1996 and was removed by Los Alamos County in accordance with regulations applicable to publicly owned treatment works. Suspect contaminants at SWMU 00-018(a) are organic chemicals, inorganic chemicals, and radionuclides. Sanitary effluent samples were collected in 1972 and 1991 to address the requirements of the plant's NPDES permit. The 1972 samples were analyzed for radionuclides and inorganic chemicals. Uranium was detected, and concentrations were within BVs. Cadmium, lead, and mercury were detected in the effluent water. The 1991 samples were analyzed for only inorganic chemicals. Lead was detected at levels above BVs for surface water but met the NPDES permit requirements. The ER Project conducted an RFI at SWMU 00-018(a) in 1996. The RFI consisted of a site survey, geodetic survey, augering and drilling, field screening, and subsurface sampling. In all, 29 samples were collected; 26 samples from 8 locations were analyzed for radionuclides, inorganic chemicals, and organic chemicals, and 3 samples from the sludge were analyzed for waste characterization and to ensure that no radionuclide

		contamination was present. Inorganic chemicals and radionuclides were detected above BVs/FVs but not above SALs. Organic chemicals were also detected with Aroclor-1254, Aroclor-1260, and benzo(a)pyrene detected at levels above their respective SALs. A preliminary risk assessment was conducted to determine whether the risk levels associated with the potential contaminants remaining at the site pose no unacceptable risk to human health. In addition to the chemicals above SALs, benzo(b)fluoranthene, chromium, dieldrin, and indeno(1,2,3-cd)pyrene were included in the assessment because they contributed 0.1 or greater to a normalized sum exceeding one in the multiple chemical evaluation. Results of the preliminary risk assessment indicate that the risks posed by the potential contaminants are within EPA's accepted risk range when considered in a residential exposure scenario. The RFI report recommended NFA at SWMU 00-018(a) because the site was characterized in accordance with then current applicable state or federal regulations, and the available data indicate that contaminants of concern are either not present or are present in concentrations that pose no unacceptable human health risk under the projected future land use.
00-018(b)	In Progress	AOC 00-018(b) is the active Bayo Canyon wastewater treatment plant, located at the intersection of Pueblo and Bayo Canyons. It began operating in 1963 and was upgraded in 1966. The plant treated the sanitary waste stream that previously was routed to the central wastewater treatment plant (SWMU 00-019) and sanitary waste from residences on Barranca Mesa. Most wastes treated at the plant were from businesses, eastern Los Alamos residences, and Barranca Mesa residences. After the Pueblo Canyon wastewater treatment plant was decommissioned in 1992, the remaining northern and western Los Alamos residential sanitary waste streams were routed to the Bayo Canyon wastewater treatment plant. This plant has been the primary supplier of effluent for irrigation at the Los Alamos golf course and recreational ball fields since 1992. The plant holds NPDES permit number NM0020141. Suspect contaminants at AOC 00-018(b) were inorganic chemicals, organic chemicals, PCBs/pesticides, and radionuclides. Sanitary effluent and sludge samples were collected from the plant in 1972 and 1991 to address requirements of the NPDES permit. Samples collected in 1972 were analyzed for inorganic chemicals and radionuclides. Cadmium, lead, and mercury were detected in the samples. Plutonium-238 and plutonium-239 were detected at levels at or near the detection limit, and uranium concentrations were within the acceptable range for area background concentrations. Sanitary effluent samples collected in 1991 were analyzed for inorganic chemicals only, and lead was the only chemical detected. Sludge samples also were collected in 1991 and were analyzed for inorganic chemicals; arsenic and barium were detected. Analytes detected in 1972 and 1991 were above BVs for surface water but were acceptable for the conditions of the NPDES permit. The ER Project conducted an RFI at AOC 00-018(b) in 1996 to determine the nature and extent of contamination, if any. Activities consisted of a site survey, geodetic survey, borehole drilling, field screening, and subsurface sampling. A total of seven samples were collected: six were collected from depths up to 52.5 ft in two boreholes, and one was collected from media inside a pipe. Samples were analyzed for inorganic chemicals, organic chemicals, tritium, and gross alpha/beta/gamma radioactivity. No inorganic chemicals were detected above the "all-soil-data" BV in any sample. Tritium and acetone were detected and were carried forward to the screening assessment; however, their concentrations did not exceed their respective SALs. The RFI report recommended NFA at AOC 00-018(b) because it was characterized in accordance with current applicable state and federal regulations, and the available data indicate that contaminants pose no unacceptable human health risk under the projected future land use.
00-019	Pending	SWMU 00-019 is the former central wastewater treatment plant. It operated from 1947 to 1961, when it was taken out of service and kept on standby until the property was

		transferred to Los Alamos County in 1967. The SWMU is composed of a primary settling tank, sludge digestion tank, final settling tank, trickling filter, chlorine contact tank, clarifier, pump house, two sludge drying beds, two outfall areas, former manholes, and associated underground piping. The treatment plant, which was used to treat sanitary sewage from LANL's buildings and Los Alamos residential areas and businesses, used conventional wastewater treatment processes, including primary settling, activated sludge digestion, sludge drying beds, trickling filtration, final clarification, and chlorinating. Operations were confined to the mesa top and the two outfalls that discharged into Graduation Canyon. The western outfall pipe is an 8-in.-diameter VCP with a concrete discharge apron. The western outfall accommodated overflow from the inlet manhole, and potentially discharged untreated sewage in case of over-capacity flow events at the plant. The eastern outfall is located 170 ft east of the western outfall and has a 12-in.-diameter VCP with an exposed section of galvanized steel pipe at the discharge point. The eastern outfall initially discharged treated waste from the final settling tank and later received overflow from the chlorine contact tank after the treatment plant was renovated to provide supplemental irrigation water for the Los Alamos golf course. A second 6-in.-diameter VCP also discharged to the eastern outfall; this pipe led from floor drains in the pump house. The eastern outfall potentially discharged untreated and/or partially treated waste and/or sludge from the pump house in case of leaks or pipe breaks in the pump house. In 1951, most of the effluent was used as make-up water for the cooling towers at TA-03. SWMU 00-019 is located in the eastern part of the Los Alamos town site between the Sombrillo Nursing Facility and East Park, along the north edge of the mesa above Graduation Canyon, which is a hanging tributary of Pueblo Canyon. This SWMU is made up of two areas: the mesa-top portion, which includes the former aboveground structures and subsurface piping, and the canyon-side of hill-slope outfall drainage areas north of the former plant. The outfall area terminates at the drainage contour of Graduation Canyon. The plant initially was decommissioned in 1961. Los Alamos County continued subsequent structure removal from 1965 to 1991. The ER Project conducted an RFI at SWMU 00-019 in 1996 and 1997, but an RFI report was never prepared. Two boreholes were drilled at the site of the former sludge drying beds, and subsurface samples were collected from the boreholes. Four surface soil samples were collected from four locations beneath the outfall areas. In all, eight samples from six locations were collected and analyzed for inorganic chemicals, organic chemicals, pesticides/PCBs, and radionuclides. According to the VCA plan described below (in which the sample analysis results were reported), no inorganic chemicals were detected above BVs, no organic chemicals were positively detected at values greater than method EQLs, and five radionuclides were reported at trace activities compared with BVs/FVs. The ER Project prepared a VCA plan for SWMU 00-019 in 1999. The VCA was designed to identify data gaps from the RFI and to remove remaining mesa-top structures associated with the former central wastewater treatment plant. The VCA plan included a sampling plan to define the nature and extent of contaminants at the outfalls and mesa slope as well as the remedial actions to be taken to restore the SWMU for development. During the VCA, the pump house, remaining piping, and asbestos in the pump house were removed. During removal of the remnant piping in the pump house, it was discovered that some of the process structures might remain on site. Exploratory excavation determined that all process structures (primary settling tank, sludge digestion tank, trickling filter, final settling tank, and chlorine contact tank) remained in place. Preliminary investigation indicates that each of the tanks was emptied, then completely or partially collapsed in on itself and filled and buried with soil of unknown origin. Samples were taken from the fill inside each tank. Soil depths range from 4 ft to 8 ft above the tanks. The mesa top at SWMU 00-019 is an open area that contains some asphalt and debris on the surface. The subsurface contains some remaining concrete walls and bottoms of tanks that were part of the treatment plant. The mesa top is used by Los Alamos County to store equipment and dispose of debris. The planned use for the site is to build a residential facility for senior citizens.

00-024	Administratively Complete	
00-025	Administratively Complete	
00-026	Administratively Complete	
00-027	In Progress	AOC 00-027, the DP Road storage area, is located at the intersection of Trinity Drive and DP Road at the current location of the Knights of Columbus hall. This site was used as a fuel tank farm beginning in 1946 and was converted to a product container storage area in mid-1948. The storage capacity of the site was approximately 600 to 700 55-gal. containers. The storage area consisted of six compartments, each about 38 ft wide. The compartments were separated by 2-ft-high earthen dikes around the northern perimeter and a concrete berm at the southern perimeter. The floor of each compartment was sloped to the north and covered by 2 in. of gravel. The containers were held there until they were redistributed to various LANL job sites and craft shops. The storage area may have remained active until it was decommissioned in the late 1950s. Archival information originally indicated that an iron drainline was present beneath each compartment; however, an interview with the former site supervisor suggested that the drainlines never were installed. In 1996, the ER Project conducted geodetic, geophysical, and soil vapor surveys as part of an RFI at this site. Surface and subsurface borehole samples were collected. In 1997, air samples were collected from inside the Knights of Columbus hall. The ER Project submitted a VCA Plan for this site in 2002 in order to further reduce the potential risk to human health and the environment.
00-028(a)-00	Administratively Complete	Consolidated SWMU 00-028(a)-00 consists of former SWMUs 00-028(a) and 00-028(b). The SWMUs in this consolidated unit are Los Alamos County recreation areas that are irrigated with effluent from former and current wastewater treatment plants. Former SWMU 00-028(a) is the Los Alamos County golf course. Former SWMU 00-028(b) consists of the North Mesa athletic fields. Both sites were first irrigated by the former central wastewater treatment plant (SWMU 00-019) from 1948 to 1964 and by the Pueblo Canyon wastewater treatment plant [SWMU 00-018(b)] from 1951 to 1993. Both treatment plants were intended to manage only sanitary wastewater; however, small but detectable levels of radiation and chemical wastes have been observed in their effluents. Suspect contaminants at these former SWMUs were uranium, plutonium, americium, organic chemicals, inorganic chemicals, and pesticides/PCBs. The ER Project conducted an RFI at former SWMUs 00-028(a) and 00-028(b) in 1996 to determine if any contaminant releases had occurred. In all, 37 samples were collected from 15 locations. Samples were analyzed for inorganic chemicals, organic chemicals, radionuclides, and pesticides/PCBs. Seven inorganic chemicals were detected above their respective BVs. Based on BV comparisons and further statistical tests performed to compare site and background data, five of these chemicals were carried forward to the screening assessment. Organic cheimcals and pesticides/PCBs were detected and carried forward to the screening assessment. One radionuclide, neptunium-237, does not have an established FV and was carried forward to the screening assessment. One organic chemical and one inorganic do not have SALs. Phenanthrene, the organic chemical, was detected in a single sample at a value significantly lower than SALs for structurally similar compounds. Sodium, the inorganic chemical, occurs naturally in the environment, and exposure at environmental levels is not associated with adverse health effects. Therefore, phenanthrene and sodium were eliminated from further consideration. No other chemicals that were carried forward to the screening assessment were detected at levels greater than their respective SALs. The RFI report recommended NFA at former SWMUs 00-028(a) and 00-028(b) because the sites were characterized in accordance with current applicable state and federal regulations, and contaminants pose no unacceptable risk under current and projected future land use.
00-029(a)	Administratively Complete	AOC 00-029(a) (part of SWMU aggregate 0-G) is potentially contaminated soil from releases from three transformers located on a power pole at well 5, a groundwater

		production well in Los Alamos Canyon. Two 43-gal. transformers on the power pole contained oil with 162 ppm and 292 ppm PCBs. The transformers were removed in 1987. The well is located in the bottom of the canyon adjacent to the stream channel, about 0.5 mi upstream from Totavi. The power pole is about 20 ft from the site boundary closest to the stream channel. The well was not part of the DOE or Los Alamos County water-supply system as of April 1993, and the site was to be turned over to San Ildefonso Pueblo. Sampling was conducted by another Laboratory group at AOC 00-029(a) in 1992 to establish the level of contamination in the surface soils within the fenced area of the AOC and to evaluate the potential for off-site contaminant migration, if appropriate. A total of 20 surface-soil samples were collected. Samples were screened for radioactivity and were submitted to EM-9 for PCB analysis. Two samples showed PCB levels above the detection limit. Although the levels were an order of magnitude below the 10 ppm cleanup level, it was decided that the nature and extent of contamination should be defined because the AOC was located on leased land. Six additional soil samples were collected; sampling sites were selected to more closely delineate the boundary of the contaminated area. Two of these six additional samples showed elevated PCB levels. A seventh sample was taken from an area of stained soil not noticed during the original sampling exercise and analyzed for organic chemicals and PCBs. This seventh sample contained no organic chemicals or PCBs but showed mineral oil in the range of 140,000 ppm to 216,000 ppm. After reviewing the data, the decision was made that no additional sampling would be done because all samples showed PCB levels far below the 10 ppm cleanup level for nonrestricted sites. Three additional samples were taken from the well house (structure 00-1105) to determine the nature of contamination found in oil stains. Samples were analyzed for PCBs and hydrocarbons. All were below cleanup levels. Because San Ildefonso Pueblo requested that the well house and the well be left intact rather than decommissioned, the well house was decontaminated. In addition to the decontamination, about 20 cubic yd of soil were removed from the cleanup area. A RFI report was prepared documenting the results of the sampling. The RFI report recommended NFA at AOC 00-029(a). The September 1996 permit modification request recommended NFA at AOC 00-029(a) because the site was remediated in accordance with current applicable state and federal regulations and available data indicate that the site poses no unacceptable risk under projected future land use. The ER Project submitted a VCA Plan in 2002 to resample the site.
00-029(b)	Administratively Complete	AOC 00-029(b) consists of potential soil contamination resulting from releases from three transformers that were located on a power pole that was used to supply electric power to a groundwater production well (well 4) in Los Alamos Canyon. The well was located in the bottom of the canyon and adjacent to the stream channel, about 1 mi upstream from Totavi. The power pole was about 20 ft from the site boundary closest to the stream channel. The site boundary is about 50 ft from the stream channel. The transformers, which were removed in 1987, were found to contain 231 ppm, 206 ppm, and 362 ppm PCBs. The site was decommissioned and the well was removed in 1989. A RFI report was prepared documenting the results of the sampling that was conducted by another Laboratory group at AOC 00-029(b). The RFI recommended NFA at AOC 00-029(b). The September 1996 permit modification request recommended NFA at AOC 00-029(b) because the site was characterized in accordance with current applicable state and federal regulations and available data indicate that the site poses no unacceptable risk under projected future land use. The ER Project submitted a VCA plan in 2002 to resample the site.

00-029(c)	Administratively Complete	AOC 00-029(c) is potentially contaminated soil from a transformer on a power pole that was used to supply electricity to a groundwater production well (well 1) in Guaje Canyon. The well is located about 100 ft from the stream channel, about 2 mi upstream from the confluence with Los Alamos Canyon. The power pole was located about 20 ft from the site boundary closest to the stream channel. The transformer was removed in 1986. An RFI report was prepared documenting the results of the sampling that was conducted by another Laboratory group at AOC 00-029(c). The RFI report recommended NFA at AOC 00-029(c). The September 1996 permit modification request recommended NFA at AOC 00-029(c) because the site was characterized in accordance with current applicable state and federal regulations and available data indicate that the site poses no unacceptable risk under projected future land use. The ER Project submitted a VCA Plan in 2002 to resample the site.
00-030(a)	Pending	SWMU 00-030(a) is a single septic system and its associated inlet and outlet piping. The septic tank measured 6.6 ft long x 3.6 ft wide x 5.5 ft deep. The system was installed in the early 1940s to manage sanitary wastes discharged at the former DP Road storage area (SWMU 00-027) dispatch office. The system is believed to have discharged to DP Canyon. SWMU 00-027 was a fuel tank farm used to store metal 55-gal. containers (which held lubricants) until they were redistributed to various LANL job sites and craft shops. SWMU 00-027 may have remained active until it was decommissioned in the late 1950s. SWMU 00-030(a) lies entirely on private property owned by the Columbian Club, which operates the Knights of Columbus Hall that occupies the site. Suspect contaminants were inorganic chemicals, organic chemicals, pesticides/PCBs, and radionuclides. The ER Project conducted a VCA at SWMU 00-030(a) in 1996 to determine if contamination existed and if so, whether the contamination presented a human or environmental health risk. A site geodetic survey was conducted to locate the positions of former structures that were in use when the DP storage area operated. A geophysical survey located subsurface structures. Because the geophysical survey was inconclusive, seven exploratory trenches (labeled A through G) were excavated to locate the septic tank or the tank inlet pipe. During excavation, soils were monitored for radioactivity and organic chemicals. No radioactivity was detected at levels above instrument background. Organic chemicals were detected in trench-fill material and in pipe material. Soils excavated in Trench B from below the pipeline had a noticeable petroleum odor. A soil sample was collected and submitted to the mobile chemical laboratory for analysis of TPH and VOCs. Elevated levels of petroleum-product contamination were found in this sample, and the extent of contamination at that location will be addressed during the SWMU 00-027 RFI. Four samples (three from soil and one from the septic tank) were collected from four locations and were submitted for laboratory analysis of inorganic chemicals, organic chemicals, pesticides/PCBs, TPH, and radionuclides. Inorganic chemicals were detected at concentrations that exceeded their BVs. Radionuclides, including tritium, were detected at the site. All radionuclides but tritium exceeded their FVs; tritium has no FV. No inorganic chemicals or radionuclides were detected at concentrations greater than their SALs. Twenty-three organic chemicals were detected at concentrations greater than their EQLs. Two of these organic chemicals were detected at concentrations that exceeded their respective SALs. Six of the detected organic and inorganic chemicals have no SALs, and all but one inorganic chemical were eliminated from further consideration. A human health risk assessment was conducted as part of the VCA. The risk assessment concluded that estimated cancer risk from the potential contaminants fell within EPA’s acceptable risk range, and that unacceptable cancer risks would not be expected as a result of exposure (by ingestion) to contaminants at SWMU 00-030(a). Because the contaminated material posed no significant human health risk, cleanup was determined not to be necessary. The tank was crushed and left in place with New

		Mexico State Drinking Water Bureau concurrence. Its walls were broken into small fragments and mixed with surrounding debris and fill material. The trench was backfilled with overlying fill material and compacted and leveled. Site restoration activities included disposing of concrete debris that accumulated during the initial trenching exercise. The debris was disposed of at the Los Alamos County landfill. Clean fill and gravel were brought in to level the disturbed areas, the site was graded, and base course was added to restore the original gravel roadbed. The area was reseeded. No confirmatory samples were collected because the risk assessment concluded that no significant human health risk would be present at SWMU 00-030(a) after crushing and leaving the tank in place. The VCA report requested NFA at SWMU 00-030(a). The ER Project submitted a VCA Plan in 2002 that included summary information of this SWMU because of its close proximity to a land transfer parcel. No VCA activities were proposed for this SWMU in that document.
00-030(b)-00	Pending	Consolidated SWMU 00-030(b)-00 consists of former SWMUs 00-030(b), 00-030(l), and 00-030(m), and former AOCs 00-004 and 00-033(b). The former SWMUs and AOCs in this consolidated unit were associated with the former Sixth Street warehouses (also known as Zia warehouses 1, 2, 3, and 4) that are located south of the intersection of DP Road and Trinity Drive. The three septic systems have been removed. In 1961, warehouses 3 and 4 were leased for commercial use by private businesses. Former SWMU 00-030(b) was septic system #1, located east of the Sixth Street warehouses. It had two tanks (one with six cells and one with two cells), two diversion boxes, drainlines, a leach field, and an outfall that discharged to Los Alamos Canyon. The septic system served Zia warehouses 1, 2, 3, and 4; an office building; the cold storage plant; and the eastern part of TA-01. Several 6-in. drainlines routed sanitary waste from the buildings and warehouses to a main 8-in. drainline that discharged to the septic tanks. The septic tanks discharged to a leach field located east of the Sixth Street warehouses and to the outfall. Because the septic system also served TA-01, nonsanitary wastes were suspected to have entered the system. Former SWMU 00-030(l) was a septic system, including drainlines and an outfall, that served Zia warehouses 3 and 4. The 10 ft long x 6 ft wide x 5 ft deep reinforced-concrete septic tank had a 1000-gal. capacity with 6-in. VCP drainlines. The septic system reportedly handled sanitary wastes and discharge from a 4-cubic-ft blowdown tank used to release pressure from a boiler. The outlet line from the septic tank discharged to Los Alamos Canyon. Chemicals that were used to descale the boiler may have been released to the septic tank through the blowdown tank. No information exists about the nature or use of those chemicals. Former SWMU 00-030(m) was a septic system, including drainlines, that served a residential trash incinerator. It consisted of a 10-ft-long x 6-ft-wide x 6-ft-deep wooden septic tank and 6-in. VCP drainlines. Before the trash was incinerated, excess liquids of unknown chemical content were drained off and reportedly were piped into the septic tank. The system also handled sanitary wastes from the incinerator building. The drainline from this septic system connected to the outfall line from SWMU 00-030(b), which discharges to Los Alamos Canyon. Former AOC 00-004 was a chemical container storage area located inside 6th Street warehouses 3 and 4. Two spills of unknown quantities of chemicals occurred in the warehouses. In 1984, MEKP spilled in one of the warehouses. The potential interaction of the MEKP with other chemicals posed an HE risk and several containers were removed temporarily from the warehouse to the parking lot. The entire area was hosed down. A second incident involved the release of crystallized solvent; the solvent also was washed down with water. The wash water from both incidents was discharged to

		the unlined stormwater drainage ditch, whose outfall discharged into Los Alamos Canyon. Former AOC 00-033(b) is potentially contaminated soil from drainlines associated with the materials testing laboratory at the 6th Street warehouses. The materials testing laboratory was built south of warehouses 3 and 4 in 1948. Operations involved the use of solvents, asphalt leaching, destructive testing of concrete cylinders, and sieve tests of aggregates for road work. Three floor drains from the materials testing laboratory discharged to two outfalls in Los Alamos Canyon. The ER Project conducted an RFI at former SWMU 00-030(b) in 1995 to determine the nature and extent of any releases of potential contaminants to the environment and to provide sufficient information for a baseline risk assessment for any potential contaminants determined to be present at the site. Some septic system components were located; others are believed to have been removed in the 1950s during construction of other structures. The outfall location was identified. Four rebar-reinforced concrete septic tanks and two diversion boxes were found. The south septic tank (tank 1) was composed of two cells divided by a concrete wall. The west cell (cell 1) was 25-ft long x 10-ft wide; the east cell (cell 2) was 10-ft long and 10-ft wide. The tank covers were no longer in place when the tanks were located, and cells were estimated to be 8 ft deep and 3 ft deep, respectively. The north tank (tank 2) was composed of three tanks, each constructed with the same two-cell design as tank 1. The south diversion box, 2-ft x 3-ft, was made of brick with a concrete base; it had been partially demolished. The north diversion box, 3-ft x 3.5-ft, was made of concrete. The tanks and diversion boxes had been backfilled with fill material. A total of 67 samples were collected from within and below each component of the septic system. Samples were field-screened for organic chemicals and radioactivity. No organic chemicals were detected and radiation levels were within or below LANL background, or there was no detectable activity. Samples were submitted for laboratory analysis of inorganic chemicals, radionuclides, pesticides, PCBs, and organic chemicals. Twelve inorganic chemicals were detected above their respective BVs. Based on BV comparisons and further statistical tests performed to compare site and data BVs, seven of these inorganic chemicals were carried forward through the screening assessment. Three radionuclides were detected above FVs. Radium-226 was also detected, but it is a naturally occurring radionuclide in the uranium decay chain, and radium-226 was not carried forward in the screening assessment because its levels were consistent with natural background and were below DOE cleanup levels. Several organic chemicals were detected and were carried forward to the screening assessment. Only one organic chemical was detected at a concentration above its SAL. The tanks were closed in place. The inlet line to the concrete diversion box and all four outlet lines from the septic tanks were broken and sealed with concrete. The excavations were backfilled, compacted, and finished with four to six inches of compacted material and about three inches of asphalt. The RFI report stated that the habitats on the mesa are man-made urban plant and animal communities and do not need to be further addressed from an ecotoxicological screening perspective. The RFI report recommended a VCA for former SWMU 00-030(b) because adverse health effects were possible in that area. The ER Project conducted a VCA at former SWMU 00-030(b) in 1996 to remediate contamination in the concrete diversion box, where the organic chemical concentration was above SAL. The VCA included excavating and removing contaminated soil associated with the concrete diversion box. The box also was demolished. The concrete pieces were piled on-site until they could be profiled for disposal. The brick diversion box had been partially demolished. Remaining portions of the box and the brick and concrete debris were removed. In all, three confirmatory samples were collected from locations below the removed diversion boxes. Samples were analyzed for pesticides and PCBs and were field-screened for radiation. Sample analysis showed that Aroclor-1260 was below the cleanup level. The excavations were backfilled and compacted with clean soil, and the affected areas were relandscaped or repaved to the extent necessary. Contaminated soil and brick were disposed of at TA-54, Area G and at the Los Alamos County landfill.

		The ER project conducted an RFI at former SWMU 00-030(l) in 1995. The RFI results were documented in the VCA report. A separate RFI report was not written. For the RFI, samples were collected from within and below each component of the septic system. In all, 12 samples were submitted for laboratory analysis for organic chemicals, pesticides, PCBs, inorganic chemicals, and radioactivity (because two other samples were not collected from the proper depth, some analyses were cancelled and samples were recollected from the proper depth). Inorganic chemical analysis was done by the mobile analytical laboratory for XRF spectroscopy and to an off-site analytical laboratory for inorganic chemicals. Inorganic chemicals were detected at levels greater than BVs in one or both analytical scenarios. Radionuclides were detected above their respective FVs. Organic chemicals were detected at concentrations greater than EQLs. Only two of these organic chemicals were detected at levels that were greater than their SALs. Six of the detected organic and inorganic chemicals have no SALs and were carried forward to the MCE. Based on RFI sample analysis results, the ER Project conducted a VCA at former SWMU 00-030(l) in 1995 to remove the tank and about 40 ft of inlet drainline, collect confirmation samples, and backfill and restore the site. Four confirmatory samples were collected and submitted for laboratory analysis of organic chemicals, pesticides, PCBs, inorganic chemicals, and radionuclides. An inorganic chemical was detected above BV and carried forward to the screening assessment process. Organic chemicals also were detected and were carried forward to the screening assessment process. Radionuclides were detected and carried forward to the screening assessment because the FV data that are adequate and appropriate for further statistical evaluation were unavailable for them. Based on the results of the human health screening assessment and the ecological assessment, the VCA report recommended NFA at former SWMU 00-030(l) because no potential contaminants remained at levels considered to be hazardous to human health and there was no immediate ecological risk at the site. The ER Project conducted an RFI at former SWMU 00-030(m) in 1995. In all, 19 samples (one of which was a duplicate of another) were collected from within and below each component of the septic system. Samples were analyzed for organic chemicals, pesticides, PCBs, TPH, inorganic chemicals, and radionuclides. Inorganic chemical analysis was done by the mobile analytical laboratory for XRF spectroscopy and by an off-site analytical laboratory for inorganic chemicals. Inorganic chemicals were detected at levels greater than BVs in one or both analytical scenarios. Radionuclides were detected above their respective FVs. Organic chemical analysis also was divided between the mobile analytical laboratory and an off-site analytical laboratory. Organic chemicals were detected at concentrations greater than their respective EQLs under one or both analytical scenarios. Several organic chemicals, inorganic chemicals, and radionuclides were detected at concentrations above their respective SALs. Five of the detected chemicals that have no SALs and were carried forward to the screening assessment. Based on the results of the RFI, a VCA was conducted in 1995 to remove the tank, inlet drainline, and surrounding soil and tuff; collect confirmation samples; and backfill and restore the site. Chemicals retained as potential contaminants before the VCA were reinvestigated following the VCA. Two confirmatory samples were collected from beneath the location of the removed tank. The samples were analyzed for organic chemicals, pesticides, PCBs, inorganic chemicals, and radionuclides. The samples were analyzed for metals by XRF. Four inorganic chemicals were detected above their respective BVs. Because BV data were inadequate to perform further statistical tests, those chemicals were carried forward through a screening assessment. Radionuclides were also detected at concentrations above their respective FVs. Because adequate and appropriate FV data were unavailable for those radionuclides, they were carried forward through the screening process. Only radium-226 was detected at concentrations greater than its SAL, but because it is a naturally occurring radionuclide in the uranium decay chain, radium-226 was not carried forward in the screening assessment because its levels were consistent

		with BVs and were below DOE cleanup levels. No organic chemicals were carried through the screening assessment. The VCA report recommended NFA at former SWMU 00-030(m) because no potential contaminants remain at levels considered to be hazardous to human health and there is no immediate ecological risk at the site. The VCA report recommended NFA for ecological concerns at former SWMU 00-030(m) because the area is surrounded by disturbed areas, provides limited habitat for biota, does not contain sensitive habitats, and threatened or endangered species are not present. The ER Project conducted an RFI at former AOC 00-004 in 1995 to determine the presence or absence of chemical contaminants and if present, to determine if the contaminant concentrations required further action. A total of five samples was collected. Two surface samples were collected from locations upgradient of the outfall in sediment catchments of the drainage channel. A third surface sample was collected near the head of the drainage ditch, about 25 ft south of the culvert. Two more surface samples were collected from a sediment catchment below the mesa rim in a natural drainage area. Samples were field-screened for organic chemicals and alpha/beta radioactivity. No organic chemicals were detected and radiation levels were below instrument background. With the exception of the inorganic chemical analyses, samples were submitted for laboratory analysis of organic chemicals, PCBs, pesticides, and radioactivity. Samples were analyzed for metals by XRF. Five inorganic chemicals were detected above their respective BVs. One radionuclide was detected above its FV. Twenty-three organic chemicals were detected in concentrations greater than their EQLs. Three of the organic chemicals and one of the inorganic chemicals were detected at concentrations above their respective SALs. Two of the organic chemicals were eliminated from further consideration after excess carcinogenic risk was estimated to be within EPA's acceptable range. The presence of the third organic chemical was attributed to parking lot runoff and was eliminated from further consideration. The inorganic chemical (uranium) was eliminated from further consideration after preliminary dose calculations indicated no significant radiological problem at former AOC 00-004. One sample was to be rerun for isotopic uranium analysis and inorganic chemicals analysis because no radionuclide analysis initially was performed for the sample. The RFI report stated that if the radionuclide data suggest that there is a problem at former AOC 00-004, a plan would be developed to address the issue. The RFI report recommended NFA at former AOC 00-004. NMED rejected the RFI report and requested that LANL revise and resubmit the document in light of NMED's written basis for rejecting the report. Because data gaps were identified for this AOC, the RFI report was not revised and resubmitted. The report has not been resubmitted. The ER Project conducted an RFI at former AOC 00-033(b) in 1995 to determine the nature and extent of any releases of potential contaminants to the environment and to provide sufficient information for a baseline risk assessment for any potential contaminants determined to be present at the site. The field investigation concentrated on potential soil contamination surrounding the drainlines that served the materials testing lab. Trenches were excavated to locate the pipelines and alleged septic tank, but the tank, if it ever existed, was not located. Three samples were collected from within and below the waste lines. The excavations were backfilled immediately and the area was restored to its original contour after the samples were collected. The samples were analyzed for organic chemicals, pesticides, PCBs, BTEX, TPH, inorganic chemicals, and radionuclides. The samples were analyzed for metals by XRF in the mobile analytical laboratory. Inorganic chemicals were detected above BVs. No radionuclides were detected above their FVs. Organic chemicals were detected in concentrations greater than their EQLs. One inorganic chemical and two organic chemicals were detected at concentrations greater than their respective SALs and were retained as potential contaminants. In addition, the MCE for carcinogens was greater than one. As a result, five organic chemicals also were retained as potential contaminants. Finally, three PAHs that have no SAL were retained as potential contaminants because they were detected in conjunction with the other PAHs. Phase I sampling did not determine the cause of contamination, and the RFI report

		recommended former SWMU 00-033(b) for a VCA. The RFI report stated that there was no immediate ecological risk because the area provides limited habitat for biota, and does not contain sensitive habitat or threatened or endangered species. The ER Project conducted a VCA at the site in 1996. The drainlines were excavated, put into containers for disposal, and relocated first to a temporary storage area pending receipt of analytical results, and then to TA-54 to be shipped off-site for disposal. A total of 10 confirmatory samples and 1 duplicate sample were collected from 10 locations in and around the excavated drainline, former materials testing lab, downgradient from the VCP and cast iron drainlines, and upgradient of the outfalls. The samples were analyzed for organic chemicals, inorganic chemicals, lead, pesticides, and PCBs. They were field-screened for radioactivity. One organic chemical exceeded its SAL, and one PCB chemical was estimated to exceed its SAL. The potential cancer risk from those chemicals was determined to fall within EPA's acceptable risk level. In 2002, the ER Project submitted a VCA Plan to address data gaps that were identified during evaluation of existing site data.
00-030(c)	Administratively Complete	AOC 00-030(c) was a septic tank (structure 1a). It was a 25.75-ft-long x 10.25-ft-wide x 9-ft-deep reinforced concrete septic tank that handled sanitary waste from residences in the original townsite. Structure 1a, installed in the early 1940s, was located on private property north of the intersection of Canyon Road and Manhattan Loop. Tank effluent discharged to the north slope of East Mesa, then along a shallow channel that descends into the drainage channel of Graduation Canyon, which is a tributary of Pueblo Canyon. The tank operated until the central wastewater treatment plant came on-line in 1947. Suspect contaminants were organic chemicals, inorganic chemicals, PCBs, pesticides, total uranium, isotopic plutonium, cesium, and americium. Suspect contaminants include all chemicals associated with the laboratories that operated in the townsite before 1966. The ER Project conducted an RFI at AOC 00-030(c) in 1994 to determine if residual soil contamination was associated with structure 1a and associated outfall area and to remove any remaining structures from the site. The investigation consisted of borehole drilling and subsurface sample collection to precharacterize the septic tank materials, followed by septic tank removal, and then characterization sampling from beneath the tank, drainline, and drainage channel. A total of 12 samples were collected from locations beneath and adjacent to structure 1a and in sediment traps in the outfall drainage channel. During excavation, materials were field-screened for organic vapors and radioactivity. Soils also were periodically screened for mercury vapor and explosive atmospheres. Elevated organic vapors were detected in the soil beneath the pipe, but analytical results did not indicate the presence of chemical or radiological contamination above BVs or SALs at the pipe location. At the drainage channel, samples were field-screened only for radioactivity. Samples were submitted for analysis for inorganic chemicals, radionuclides, organic chemicals, PCBs, and pesticides. Inorganic chemicals and radionuclides were detected at concentrations greater than BVs/FVs. Organic chemicals and PCB chemicals were detected. None of the analytes exceeded its respective SAL. Results of a human health screening assessment performed on the sampling data indicate there are no potential contaminants present at this site. The RFI report recommended a human health NFA at AOC 00-030(c). The ecotoxicological assessment at AOC 00-030(c) identified seven potential ecological contaminants that had the potential to migrate down the outfall channel. Potential ecological contaminant concentrations in the channel were not high enough to be considered a source to sensitive habitats in the canyons because further migration would be diluted by surface runoff. Additionally, removing structure 1a eliminated a potential source of increased potential ecological contaminants at the outfall. The RFI report recommended NFA at AOC 00-030(c) based on potential ecological impacts. The September 1996 permit modification request proposed NFA for AOC 00-030(c) because the AOC was remediated in accordance with applicable regulations and

		available data indicate that contaminants pose no unacceptable level of risk under current and projected future land use.
00-030(d)	In Progress	AOC 00-030(d) was a septic tank (structure 2). The tank's dimensions were estimated during the RFI to be 30-ft long x 20-ft wide x 8-ft deep. The size was estimated because the western part of the tank was not investigated or sampled during the RFI due to underground utility lines, landscaping, and the foundation of a private home, which made that portion of the tank inaccessible. It was located on Los Alamos County property at the Pine Street cul-de-sac. It was installed in 1943 or 1944 and served the McKee houses, apartments, and dormitories west of Canyon Road. Those locations are now known as Piñon Loop and Opal, Nugget, and Myrtle Streets. Structure 2 is believed to have served only residences. The outfall for the tank discharged to a tributary of Graduation Canyon, which is a tributary of Pueblo Canyon. It remained in use until the central wastewater treatment plant was completed in 1947. The ER Project conducted RFI characterization activities at AOC 00-030(d) in 1996 to determine if contamination was present. The RFI was conducted in accordance with the VCA plan. RFI activities included site surveys, geodetic surveys, geophysical surveys, trenching in the Pine Street cul-de-sac, outfall area sampling, trenching and sampling in the playground area, and field-screening. The RFI is described in the site VCA report. Eleven samples were collected inside the tank and from the outfall area. Samples were field-screened for organic vapors and radioactivity and then were submitted for laboratory analysis for inorganic chemicals, organic chemicals, pesticides, PCBs, and radionuclides. No organic vapors were detected and no radioactivity was detected above instrument background. Nine inorganic chemicals were detected that exceeded BVs. Four radionuclides were detected at concentrations greater than FVs. Twelve organic chemicals were detected. Fifteen other organic chemicals, all PAHs, also were detected at the site. The PAHs were not carried forward to the screening assessment because they were believed not to be associated with a release from AOC 00-030(d). Nevertheless, potential health risks associated with exposure to the PAHs was calculated using EPA Region 9 PRGs for residential soil. The estimated hazard index was below the acceptable hazard index of 1, and the estimated excess lifetime cancer risk fell within the EPA-specified acceptable risk range. Two organic chemicals were detected at concentrations greater than their SALs. No SALs have been developed for two of the detected organic chemicals and one of the inorganic chemicals. A surrogate SAL was used for one of the organic chemicals and a SAL for the other organic chemical was developed from available toxicity data. Within that framework, those chemicals did not exceed their SALs. Two of the detected inorganic chemicals, calcium and iron, are essential nutrients and have no SALs. The detected calcium and iron concentrations were compared to the calcium and iron RDA and they fell well below the their respective RDA. A VCA was conducted after the RFI characterization. In the VCA, 170 ft of 8-in.-diameter steel outfall pipe associated with the septic system was excavated and removed. The pipe was screened for organic vapors and gross radiological activity. No organic vapor readings were detected and no radioactivity was detected above instrument background. Smears were collected from the steel pipe and analyzed by LANL's Health Physics Operations Group. Radiological counts for the smears were all below background levels, and the pipe was transported off-site for recycling at a commercial facility. Structure 2 was left in place because it met the criteria for inaccessibility. Confirmation samples were not collected because the septic tank was not removed. The VCA report recommended NFA at AOC 00-030(d) because chemicals of concern were present at concentrations that pose no unacceptable level of risk under the expected land-use scenario.
00-030(eN)	In Progress	AOC 00-030(eN) was septic tank No. 4, which actually was two parallel septic tanks 5 ft apart. Each septic tank was 25-ft long x 10-ft wide. They were located on private property north of Canyon Road at the former Boy Scout Lodge and handled waste from the original townsite. They serviced apartments, dormitories, and some original Ranch

		School buildings that now are located on private property, and may have served TA-01. The outfall for the tanks discharged to Acid Canyon. The tanks ceased operating when the central wastewater treatment plant came on-line in 1947. A comparison of 1943 engineering drawings with present-day topography suggests that the tanks had been at least partially removed from the site before construction of the Boy Scout Lodge. The ER Project conducted an RFI at AOC 00-030(eN) in 1994 to confirm the presence of the septic tanks and to determine the presence or absence of potential contamination. RFI field activities consisted of a geodetic survey, geophysical survey, and borehole augering for subsurface sample collection and characterization. Results of the hand-augering confirmed that the tanks had been removed. Eight samples were collected and submitted for laboratory analysis for inorganic chemicals, organic chemicals, pesticides, PCBs, and radionuclides. The samples were field-screened for radiation and organic vapors. Mercury vapor monitoring was conducted in sample headspace. Field-screening results indicated that no chemical or radiological contamination was present. Surface-soil samples were not collected beneath the outlet pipe for this AOC because the outlet pipe could not be located. Inorganic chemicals and radionuclides were detected at concentrations above BVs/FVs. Organic chemicals were also detected. None of the chemicals exceeded its respective SAL. The RFI report recommended NFA at AOC 00-030(eN) for ecological and human health concerns because the site was characterized in accordance with applicable state and federal regulations and potential contaminants are present in concentrations that would pose no unacceptable level of risk.
00-030(eS)	In Progress	AOC 00-030(eS) was a septic tank (structure 4A), located on private property south of Canyon Road at the Chapel Apartments. Structure 4A served residences and may have been connected to TA-01. It discharged to an outfall in Acid Canyon. The tank ceased operating when the central wastewater treatment plant came on-line in 1947, and was removed when the Chapel Apartments were built in 1949. The ER Project conducted an RFI at AOC 00-030(eS) in 1994 to confirm the presence or absence of the septic tank and potential contamination. RFI field activities consisted of a geodetic survey, geophysical survey, and borehole augering for subsurface sample collection and characterization. Tank removal was confirmed, and the outfall was located. Four surface-soil samples from four locations in the outfall area were submitted for laboratory analysis for inorganic chemicals, organic chemicals, pesticides, PCBs, and radionuclides. The samples were field-screened for radiation and organic vapors and results indicated that no chemical or radiological contamination was present. Inorganic chemicals were detected at concentrations above BVs but only one chemical was present at concentrations exceeding its SAL. Following receipt of analytical results for the sample in which the inorganic chemical exceeded its SAL, two more samples were collected from locations 6 in. upstream and downstream from the originally sampled location. The inorganic chemical concentrations in those samples were above BVs but below SAL. Because the SAL is based on long-term residential exposure to the contaminant, the extent of lead in soil that exceeded the SAL was in older fill material and was very limited, and the area is located on a slope where potential exposure is expected to be limited, lead was not retained as a potential contaminant. The RFI report recommended NFA at AOC 00-030(eS) for ecological and human health concerns because the site was characterized in accordance with applicable state and federal regulations and potential contaminants are present in concentrations that would pose no unacceptable level of risk.
00-030(f)	In Progress	AOC 00-030(f) is a septic tank (structure 5), which consists of two septic tanks located on private property south of Canyon Road and north of Rose Street, slightly northeast of the United Church school building. On a 1943 engineering drawing, the tanks are labeled "Septic Tank No. 2." The tanks connected with sewer lines in the “Apartment Area,” and handled sanitary waste from a school, a post exchange, and some of the original Ranch School buildings, but did not handle waste from TA-01 operations. The tank ceased operating when the central wastewater treatment plant came on-line in 1947.

		The ER Project conducted an RFI at AOC 00-030(f) in 1994 to determine the location and geometry of the two septic tanks, and to determine the presence or absence of contaminants within and surrounding the septic systems. Site investigation activities included historical data searches and reviews, personal interviews, site surveys, and geodetic surveys of suspected tank locations. The tanks were located, and a total of 14 samples were collected from within the tanks. Samples were field-screened for organic chemicals, mercury vapor, and gross radiological contamination. They were submitted for analysis for inorganic chemicals, organic chemicals, pesticides, PCBs, isotopic plutonium, total uranium, and americium-241. Lead, mercury, plutonium-238, and plutonium-239/-240 were detected at concentrations above BVs/FVs. Organic chemicals detected were acetone, DDD(p,p'), DDE(p,p'), DDT(p,p'), dieldrin, endosulfan II, and 1,1,2-trichloro-1,2,2-trifluoroethane. None of the chemicals exceeded its SAL. The RFI report recommended NFA for AOC 00-030(f) for ecological and human health concerns because the AOC was characterized in accordance with current state and federal regulations, and potential contaminants are present in concentrations that pose no unacceptable level of risk.
00-030(g)	In Progress	SWMU 00-030(g) was a septic tank (structure 6), the septic system and outfall at the old Catholic Church (3200 Canyon Road), an area now covered by a paved parking lot for newly constructed apartments. The septic tank was installed in the 1940s and received waste from TA-01. It was made of reinforced concrete and measured 32-ft long x 22-ft wide x 6.5-ft deep. A center baffle separated the tank into east and west chambers. Drainage from the septic system discharged through an outfall to Acid Canyon in an area owned by Los Alamos County. The location is north of Canyon Road and west of the intersection of Canyon Road and Central Avenue. The top had been removed when the tank was abandoned to permit backfilling or when the gas main was installed across the southwest corner of the tank. Some of the outlet line nearest the tank had been removed previously but the remainder of the line was intact at the time of the initial RFI in 1993. The location of the inlet line was determined based on the discovery of several broken pieces of VCP and remnants of a trench that had been excavated about 6 to 8 in. into the tuff. An intact inlet line was not discovered, however, and it was assumed that the line had been removed previously, possibly during installation of the gas pipeline that crosses the site. The ER Project conducted RFI activities at SWMU 00-030(g) for about six years, beginning in 1993. The initial field investigations consisted of geophysical and geodetic surveys designed to locate the septic tank and drainlines. Once located, the tank's contents, which consisted of fill, rebar, and concrete debris, were sampled for waste characterization purposes. The contents were removed, concrete samples of the tank were collected, and samples were collected beneath the septic tank to determine if there had been releases from the tank. Subsequently, the septic tank, drainlines, and 12 in. to 18 in. of tuff were excavated and disposed of at TA-54 in 1993. A total of 17 confirmatory samples were collected from beneath the former location of the septic tank and drainlines. The confirmatory samples are considered RFI samples and the precharacterization samples are considered waste characterization samples. The confirmatory RFI samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, pesticides, PCBs, and radionuclides. The septic system outfall and drainage channel in Acid Canyon were investigated between June 1994 and September 1999 to evaluate the impact of septic tank effluent on the sediments in the drainage channel. A total of 11 samples were collected in June 1994 from the base of the hill slope where the tank outfall drained into the small drainage channel, the drainage channel above the entry point of the outfall drainage, and several catchment areas in the drainage channel below the entry point of the outfall drainage. From 1996 to 1999, the ER Project sampled the mesa top and the drainage channel to better define the nature and extent of contamination and provide data necessary to assess potential risk to human health and the environment. In 1996, in response to an NOD from NMED about the 1995 RFI report detailing the 1993 activities, the drainage

		channel was sampled for PCB contamination. The mesa top was sampled in 1998 to augment the 1993/1994 RFI confirmation data associated with structure 6 and its drainline. The data demonstrated that the extent of contamination from those former structures had been defined. The drainage channel was sampled in 1999 to geomorphically characterize the channel sediment. The characterization included mapping, physical descriptions of the sediment, and particle-size analysis. The purpose of the characterization was to bound the lateral and vertical extents of post-1942 sediments and to determine contaminant distribution in the sediments. For this effort, the ER Project collected 16 samples and the NMED/DOE Oversight Bureau collected 8. The samples were analyzed for inorganic chemicals, PCBs, isotopic plutonium, isotopic uranium, and americium-241. Review of all available RFI data identified 11 contaminants on the mesa top and 33 contaminants in the drainage channel. Mesa-top contaminants were americium-241; antimony; chromium; copper; 4,4'-DDT; lead; mercury; nickel; plutonium-239; selenium; and silver. Drainage-channel potential contaminants were acetone; americium-241; antimony; Aroclor-1254; Aroclor-1260; arsenic; barium; cadmium; alpha-chlordane; gamma-chlordane; chromium; cobalt; copper; 4,4'-DDD; 4,4'-DDE; 4,4'-DDT; dieldrin; endosulfan I; endosulfan II; endrin aldehyde; endrin ketone; lead; mercury; plutonium-238; plutonium-239; selenium; silver; thallium; toxaphene; uranium-234; uranium-235; uranium-238; and zinc. Most contaminants were consistent with the contents of the former septic tank. Each was evaluated for its risk to human and ecological receptors. Chromium and antimony exceeded their SALs or 0.1 SALs on the mesa top, but posed no unacceptable human health risk. Aroclor-1254, arsenic, dieldrin, lead, plutonium-239, thallium, toxaphene, and uranium-234 exceeded their SALs or 0.1 SALs in the drainage channel and were evaluated under a recreational-use scenario to determine if they posed a potential risk to receptors. The assessment found that the contaminants in the drainage channel do not pose an unacceptable hazard, risk, or dose to an adult or child recreational user. The human health screening assessment of the potential contaminants at SWMU 00-030(g) found no potential for unacceptable risk to human receptors either on the mesa top or in the drainage channel. The ecological screening assessment identified ecological contaminants by comparison with ESLs. The ecological contaminants were antimony; Aroclor-1254; Aroclor-1260; arsenic; barium; cadmium; chromium; cobalt; copper; 4,4'-DDE; 4,4'-DDT; dieldrin; endrin aldehyde; endrin ketone; lead; mercury; plutonium-239; selenium; silver; thallium; uranium-234; and zinc. The ecological contaminants were determined to pose no adverse impacts to ecological receptors due to the following six reasons: relatively low HIs/HQs for each receptor and potential ecological contaminant; the infrequent detection of potential ecological contaminants along the drainage channel; the broad distribution of receptor populations in Acid Canyon in relation to the area of contamination; the conservative nature of the ESLs; the similarity of exposure concentrations to BVs for the inorganic chemicals; and the abundant species and healthy habitat found in Acid Canyon. Samples collected from the bottom of Acid Canyon showed no increase in potential contaminant concentrations downstream from SWMU 00-030(g) that indicated any contaminant contributions from this SWMU. The surface-water assessment resulted in a score of 47.2, which included 23.5 for site setting, a runoff score of 16.7, and a run-on score of 7.0. Assessment results indicate a moderate potential for erosion and indicate contaminant transport from the SWMU through surface water or sediment is likely. However, surface runoff from SWMU 00-030(g) into the drainage channel terminates at the bottom of Acid Canyon in the deposition area south of the unmaintained service road before it reaches the Acid Canyon stream channel. Infrequent heavy runoff events may occasionally cause overflow to move over the service road and into the stream channel. The 2000 RFI report recommended NFA at SWMU 00-030(g) because the site has been characterized or remediated in accordance with current applicable state or federal

		regulations, and available data indicate that potential contaminants either are not present or are present in concentrations that would pose no unacceptable level of risk under projected future land use.
00-030(h)	In Progress	AOC 00-030(h) was a septic tank (structure 7), located on private property north of Canyon Road beneath the asphalt-paved west parking lot at the new Catholic Church, 3700 Canyon Road. Made of reinforced concrete, structure 7 was 30-ft long x 20-ft wide x 12ft bgs. It had two chambers, a concrete baffle between the chambers, and a 6-ft x 2-ft splash box at the inlet line. Structure 7 probably served the areas between Canyon Road and Trinity Drive, and was bounded on the west by what is now Diamond Drive. Buildings within this area were associated with the special engineering detachment, which included the Fort Leonard Wood housing units, dormitories, military barracks, west mess hall, supply room, gymnasium, post office, and recreational buildings. The outfall drained to upper Acid Canyon. The tank was used from 1945 to 1947, when the central wastewater treatment plant came on-line. The ER Project conducted RFI characterization activities at AOC 00-030(h) in 1996 to determine if contamination was present. Conducted in accordance with the VCA plan, RFI activities included a site survey, a geodetic survey, a geophysical survey, and sampling. The RFI is described in the site VCA report, but the report does not provide RFI analytical results. Twenty-three RFI samples were collected from inside and around the tank, and at the outfall drainage area. Samples were field-screened for organic vapor and radiological activity. Organic vapor readings ranged from 0.0 ppmv to 3.0 ppmv and there was no detectable radiological activity. Samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, pesticides, PCBs, plutonium-238, plutonium-239/-240, americium-241, and total uranium. Based on the results of the RFI, the ER Project conducted a VCA at AOC 00-030(h) in 1996 to remove structure 7. According to the VCA report, soils in the west chamber of the septic tank contained plutonium-239 in concentrations above SAL. Soils from the east and west chambers of the septic tank were removed. Soils from the west chamber were disposed of at TA-54. East-chamber soils were stockpiled on the site. Then most of the tank was demolished, excavated, and disposed of at the Los Alamos County landfill. The footing of the tank's west wall was left in place to minimize damage to the access road for Los Alamos High School. The excavation was backfilled with soil stockpiled from the tank's east chamber, supplemented with other clean backfill, and compacted. Straw bales and a fence were put in place as BMPs until the area could be repaved. Eighteen confirmatory samples were collected from areas in and around the former structure 7 location. The samples were field-screened for radioactivity, moisture content, and tritium. They were sent for laboratory analysis for inorganic chemicals, organic chemicals, pesticides, PCBs, and radionuclides. Fifteen inorganic chemicals were detected at concentrations greater than their BVs. Based on BV comparisons and further statistical tests to compare site and background data, twelve of the detected inorganic chemicals were carried forward to the screening assessment. After eliminating some detected radionuclides based on FVs and those not expected to be associated with AOC 00-030(h), three radionuclides were retained as potential contaminants because they were present in concentrations greater than FVs. Thirty-three organic chemicals were detected. Five PAHs and 4 pesticides were detected at concentrations above SALs. Six of the detected organic and inorganic chemicals have no SALs. Two of the inorganic chemicals, calcium and iron, were compared to their RDAs and exposure levels were estimated to fall within the allowable RDA for those chemicals. Another inorganic chemical, manganese, was compared with the National Research Council's recommended range of manganese intake for adults. Manganese concentrations detected at AOC 00-030(h) were less than the recommended intake range for adults. Of the detected chemicals with no SALs, three organic chemicals were retained as chemicals of potential concern. A qualitative human health risk assessment was conducted for the eight PAHs and four

		pesticides detected at concentrations that exceeded their SALs. The PAHs were eliminated as potential contaminants because their presence at the site was attributed to runoff and infiltration from the parking lot and road. Pesticide levels exceeded SALs in the outfall area. The outfall area also receives runoff from the adjacent sports practice field at Los Alamos High School; the field is treated with pesticides and herbicides and is heavily watered. In addition, the outfall area received runoff from the townsite and aerial spraying in the 1960s and 1970s to control forest pests. Both sources may have contributed to the elevated pesticide levels. Because the pesticide concentrations in the area were determined to likely be runoff accumulation rather than septic tank usage, pesticides were eliminated as potential contaminants. The VCA report recommended NFA at AOC 00-030(h) because adverse human health effects were not expected from exposure to the concentrations of chemicals that remain at the location of the former septic tank system, and the source of PAHs and pesticides at concentrations above SAL likely is not related to septic tank use.
00-030(i)	In Progress	AOC 00-030(i) was a septic tank (structure 8) located on DOE property south of Trinity Drive and east of Thirty-fifth Street. It was 16.5-ft long x 8-ft wide x 7.5-ft deep, with three concrete manhole covers. The inlet drainline was a 6-in.-diameter VCP that entered the center of the north end of the tank. The outlet drainline was a 6-in.-diameter VCP that exited the center of the south end of the tank. The outlet drainline discharged to a drainage channel about 100 ft southwest of structure 8. Effluent discharged to Los Alamos Canyon. The tank probably served the west mess hall, dormitories, the post office, officer's lounge, post exchange, and Sundt Apartments. The tank was used until 1947, when the central wastewater treatment plant came on-line. The ER Project conducted a VCA in 1996 at AOC 00-030(i). The three manhole covers and structure 8 were removed. ER Project personnel collected waste-characterization samples from structure 8 during a VCA in 1996. Also in that sampling effort, two samples were collected beneath the inlet and outlet drainlines near the tank, and two soil samples were obtained from the end of the outfall pipe. One sample was collected beneath a break in the inlet line 100 ft north of the tank. After the tank was removed, two confirmation samples were collected at the north and south ends of the tank footprint. The samples were field-screened for organic vapors and radioactivity. The results of screening for radiation indicated no detectable activity and organic chemicals were detected in one sample collected inside structure 8. The samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, pesticides, PCBs, and radionuclides. Calcium, lead, manganese, sodium, and zinc were detected at concentrations above BVs. Detected organic chemicals were 2-butanone; 2-methylnaphthalene; 4,4'-DDD; 4,4'-DDE; 4,4'-DDT; 1,4-dichlorobenzene; 1,1,1-trichloroethane; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl) phthalate; butyl benzyl phthalate; chrysene; di-n-octyl phthalate; dibenzo(a,h)anthracene; endrin aldehyde; fluoranthene; indeno(1,2,3-cd)pyrene; methoxychlor; methylene chloride; p-isopropyltoluene; phenanthrene; pyrene; and toluene. Benzo(a)pyrene (a PAH) was the only chemical detected at a level that exceeded its SAL. Seven chemicals (calcium, sodium, benzo(g,h,i)perylene, 2-methylnaphthalene, phenanthrene, manganese, and p-isopropyltoluene) have no SALs. Calcium, manganese, and sodium values were determined to be within the range of BV concentrations for the BV data sets. The structural similarity of p-isopropyltoluene to cumene, toluene, and xylene enabled comparison to the most stringent SAL in that group (cumene). On the basis of the comparison, p-isopropyltoluene was eliminated from further consideration. An MCE was performed for the chemicals detected at levels less than SAL. Four PAHs were retained as potential contaminants as a result of the MCE. Further evaluation determined that PAH concentrations were consistent with PAH concentrations detected near parking lots and asphalt-paved industrial sites within the townsite and at LANL. Structure 8 had been located in an area that received runoff; infiltration from a nearby asphalt-paved road eliminated those PAHs as potential contaminants at AOC 00-030(i). The excavation was backfilled with clean fill, the area was recontoured and restored, and stormwater controls were installed. The 1996 VCA report recommended NFA at AOC 00-030(i) because adverse human health effects are

		not expected from exposure to the concentrations of chemicals that remain at the tank's former location. The ER Project submitted a VCA plan in January 2000 that proposed removing the lines associated with AOC 00-030(i) and to collect additional samples to define the extent of contamination at the site. In July 2000, VCA activities included the removal of the inlet and outlet drainlines at this site. Confirmation samples were collected from three locations beneath each drainline; locations were selected to coincide with joints in the VCP or to coincide with visual indicators of possible contamination. A confirmation sample was also collected beneath the outlet drainline where a sheet of lead had been used to cover a small hole in the top of the VCP. At each sampling location, a sample was collected immediately beneath the drainline, and a deeper sample was collected approximately 2 ft below the first. A number of inorganic chemicals were detected above their BVs at one or more locations. Horizontal extent was defined for all potential contaminants, and vertical extent was defined except for aluminum, lead, silver, and zinc. Organic chemicals 4,4'-DDD, 4,4-DDT, benzoic acid, toluene, 2-butanone, and 4-isopropyltoluene were detected at the location of the lead patch, and these detections were below the estimated quantitation limit. The human-health screening assessment of potential contaminants at AOC 00-030(i) indicates that there is not an unacceptable human health hazard from chemicals at this site and the report recommended NFA.
00-030(j)	In Progress	AOC 00-030(j) is a septic tank located about 600 ft north of East Road and east of the eastern segment of Manhattan Loop. The tank is believed to have served Fort Leonard Wood housing units. The tank was used until 1947, when the central wastewater treatment plant came online. No engineering as-built or geophysical evidence was located to substantiate the actual installation of this septic system. Interviews, archival research, and geophysics were unable to locate any sign of the septic system. The ER Project submitted a VCA plan to investigate and determine if contamination is present at AOC 00-030(j).
00-030(k)	Administratively Complete	
00-030(n)	In Progress	AOC 00-030(n) was a 6.5-ft-long x 5.5-ft-wide x 4.7-ft-deep septic tank located on Los Alamos County property west of Fifteenth Street between Canyon Road and Pueblo Canyon. The inlet drainline was a 6-in.-diameter VCP that entered the center of the south end of the tank. The outlet drainline was a 6-in.-diameter steel pipe that exited the center of the north end of the tank. Effluent discharged through an outfall to Pueblo Canyon. Because of its size and location, the septic tank is believed to have served only residences. The tank was used until 1947, when the central wastewater treatment plant came on-line. The ER Project conducted a VCA at AOC 00-030(n) in 1996. The tank and outfall pipe were located during site reconnaissance. The western half of the septic tank was in an active stormwater drainage channel. Eight samples were collected from locations inside and adjacent to the tank and drainlines and in the outfall area. Samples were field-screened for organic vapors, radioactivity, and moisture content. Organic vapors were not detected, and radioactivity levels were within background values. The samples were sent off the site for laboratory analysis for inorganic chemicals, organic chemicals, pesticides, PCBs, and radionuclides. Organic chemicals were detected above EQLs and inorganic chemicals and radionuclides were detected at concentrations above BVs/FVs. Four of the organic chemicals were detected at concentrations above their SALs. Four of the detected chemicals, two organic chemicals and two inorganic chemicals, have no SALs. The two inorganic chemicals, iron and sodium, were eliminated as potential contaminants because they are essential nutrients and their detected concentrations were calculated to be less than the minimum daily intake requirements for human consumption. One of the organic chemicals, Delta-BHC, is a less potent carcinogen than other isomers of the commercial pesticide Lindane. The SAL for Lindane was used as a toxicity surrogate for delta-BHC. The highest detected

		value for delta-BHC was below the SAL for Lindane; therefore, delta-BHC was eliminated as a potential contaminant. Four PAHs were retained as potential contaminants as a result of the MCE. Their presence was found to be consistent with PAH concentrations detected near parking lots and asphalt-paved industrial sites. Because the septic tank is located in a storm drain that serves nearby streets, the PAHs were eliminated as potential contaminants. Eight pesticides were also considered potential contaminants as a result of the MCE. Pesticides were present in the septic tank fill material at concentrations greater than SALs. The fill material was removed from the tank and placed in the bottom of the excavation, and the site was released to Los Alamos County for stormwater control implementation. If the fill material containing the pesticides were on the surface of the ground where exposure would occur, the 6-ft x 4-ft area would comprise 0.004 of a residential exposure unit (500 square meters). The excess cancer risk was calculated and found to be below the acceptable cancer risk guidelines specified by EPA. The septic tank and the outfall pipe were excavated and removed. Two confirmatory samples were collected from the bottom of the excavation and were sent for off-site laboratory analysis for inorganic chemicals, organic chemicals, pesticides, PCBs, and radionuclides. The potential contaminants identified in the screening assessment either were not detected or were detected at very low levels under the former location of the septic tank. The excavation was backfilled with soil removed from the septic tank and soil was cleaned out of the drainage channel. The banks of the drainage channel were recontoured to enhance flow through the channel. The Los Alamos County public works department was scheduled to improve stormwater controls in the drainage channel. The VCA report recommended NFA at AOC 00-030(n) because the site has been characterized in accordance with then current applicable state and federal regulations, and the applicable data indicate that contaminants of concern are either not present or are present in concentrations that pose no unacceptable human health risk.
00-030(o)	In Progress	AOC 00-030(o) is an inactive septic tank located behind a private residence. The tank's dimensions were estimated (from a Zia Company engineering drawing) to be about 30-ft x 12-ft and the bottom of the tank was found during the VCA to be 8 ft bgs. The tank served the Sundt Apartments, McKee Housing, a dormitory, a laundry, and the area east of Fifteenth Street. The tank was used until 1947, when the central wastewater treatment plant came on-line. The ER Project conducted a VCA at AOC 00-030(o) in 1996. Thirteen samples were collected from eight locations inside and outside the tank, adjacent to the drainline, and in the estimated outfall pipe location. Samples were field-screened for organic vapors and radioactivity. Organic vapor readings ranged from 0.0 ppmv and there was no detectable radioactivity. The samples were sent for off-site laboratory analysis for inorganic chemicals, organic chemicals, pesticides, PCBs, and radioactivity. Seven inorganic chemicals were detected at concentrations greater than their BVs. One radionuclide was also detected at concentrations greater than FVs. Eight organic chemicals were detected. None of the chemicals was present at concentrations greater than their respective SALs. One inorganic chemical and one organic chemical have no SALs. The inorganic chemical, calcium, is an essential nutrient and was eliminated as a potential contaminant based on best professional judgment. The structural similarity of the organic chemical, p-isopropyltoluene, to cumene, toluene, and xylene enabled comparison to the most stringent SAL in that group (cumene). Therefore, the most conservative of the three similar compounds (cumene) was used as a surrogate for p-isopropyltoluene. In that scenario, p-isopropyltoluene was eliminated as a potential contaminant. The septic tank was not removed; the southern portion of the tank is beneath the house foundation and is inaccessible, and the homeowner did not want to risk property damage during tank removal. Confirmatory samples were not collected because the tank remains in place.

		The VCA report recommended NFA at AOC 00-030(o) because adverse human health effects are not expected at this AOC.
00-030(p)	In Progress	AOC 00-030(p) was a septic tank located on private property at the eastern end of the Rim Road cul-de-sac, behind a private residence. Although engineering drawings are not available, the septic tank is believed to have served the Rim Road and Quartz Street residential areas. The tank was put into service in 1946 and was used until 1947, when the central wastewater treatment plant came on-line. The ER Project conducted a VCA at AOC 00-030(p) in 1996. The septic tank could not be located, but the outfall pipe was found. Based on discussions with Los Alamos County utility personnel, it was concluded that the septic tank was removed when the gas main was put into use in 1950. Samples were collected from a trench that was dug to locate the septic tank, from beneath the outfall pipe, and from the outfall area. A total of six samples were collected from six locations. The samples were field-screened for radioactivity and organic vapors. All field-screening results were negative. The samples were analyzed for inorganic chemicals, organic chemicals, pesticides, PCBs, and radionuclides. Inorganic chemicals and radionuclides were detected at concentrations above BVs/FVs. Organic chemicals were also detected. Only one chemical was detected at concentrations greater than SAL. One of the detected inorganic chemicals, calcium, and one of the detected organic chemicals, p-isopropyltoluene, have no SALs. Calcium is an essential nutrient and was eliminated as a potential contaminant based on best professional judgment. The structural similarity of p-isopropyltoluene to cumene, toluene, and xylene enabled comparison to the most stringent SAL in that group (cumene). Therefore, the most conservative of the three similar compounds (cumene) was used as a surrogate for p-isopropyltoluene. In that scenario, p-isopropyltoluene was eliminated as a contaminant. A 30-ft-long, 6-in. steel outlet drainline was located, excavated, and removed. The excavation was backfilled. Confirmatory samples were not collected because the steel pipe was inspected and found to be free of visible breaks or holes. The VCA report recommended NFA at AOC 00-030(p) because adverse human health effects are not expected at this AOC.
00-030(q)	Administratively Complete	AOC 00-030(q) was a 12-ft-long x 5-ft-wide concrete septic tank on private property northeast of the Mesa Public Library and east of the intersection of Ponderosa and Spruce Streets. The tank had no concrete bottom; tank walls were set directly on tuff. The septic tank had two chambers. One chamber was 7.5-ft long x 4.5-ft wide x 7.5-ft deep. The second chamber was 3.5-ft long x 4.5-ft wide x 7.5-ft deep. A concrete baffle with a horizontal slot separated the chambers. The baffle extended from the tank floor to the top of the walls. The tank served a residence and discharged to a sanitary waste line connected to AOC 00-030(eS). Before the Manhattan Project, the tank was used by the Ranch School and may not have had an overflow pipe or outfall. Suspect contaminants were organic chemicals, inorganic chemicals, PCBs, pesticides, total uranium, isotopic plutonium, cesium, and americium. The suspect contaminants include all chemicals associated with laboratories that operated in the townsite before 1966. The ER Project conducted an RFI at AOC 00-030(q) in 1994. The RFI activities consisted of borehole drilling and subsurface sample collection to characterize the septic tank materials, followed by septic tank removal, and then characterization sampling from beneath the tank and drainline. Nine samples were collected during the RFI. The excavated material was field-screened for organic vapors and radioactivity. Soils also were screened periodically for mercury vapor and explosive atmospheres. The samples were analyzed for inorganic chemicals, organic chemicals, pesticides, PCBs, and radionuclides. Five inorganic chemicals were detected at concentrations above BVs. Organic chemicals were also detected. No radionuclides were detected. None of the detected analytes exceeded its SAL. The tank and associated soil were removed. An ecotoxicological screening assessment was not performed at AOC 00-030(q) because a drainline connected the septic tank to AOC 00-030(eS). The RFI

		report stated that the ecotoxicological screening assessment for AOC 00-030(eS) would be addressed in a future RFI report. The RFI report recommended NFA at AOC 00-030(q) because potential contaminants were not present. The September 1996 permit modification request proposed NFA for AOC 00-030(q) because the AOC was remediated in accordance with applicable regulations and available data indicate that contaminants pose no unacceptable level of risk under current and projected future land use.
00-031(a)	Administratively Complete	
00-031(b)	In Progress	AOC 00-031(b) is potentially contaminated soil associated with the Zia Company's motorpool facility. The facility had an automotive maintenance hangar and three other buildings. In 1959, one of the other three buildings was converted to a service station. The service station had two vehicle-greasing pits, a waste-oil pit, and two USTs. The maintenance hangar was removed in 1962 and its services were moved to other buildings. The service station was located on Wall Street between Central Avenue and Trinity Drive. The service station operated from about 1959 through the mid-1960s. At the time of the RFI, the building was a vehicle- and machinery-maintenance facility. The ER Project conducted an RFI at AOC 00-031(b) in 1994 to remove the USTs and determine the presence or absence of contamination. The investigation included the former service station comprised of two USTs (UST-1 and UST-2), an auxiliary pipe associated with UST-2 (referred to as the east auxiliary pipe), an area of soil bounded by a concrete curb, and a distribution line associated with UST-2. After completing geodetic and geophysical surveys, the USTs were removed. During removal of the vent lines, distribution lines, and gasoline dispensers, visibly stained soil and detectable levels of organic vapors were present beneath a distribution line and auxiliary fill pipe associated with UST-2. Subsequent excavation of soil in the vicinity of the auxiliary fill pipe resulted in the removal of soil containing detectable levels of organic chemicals and TPH. Excavation in the vicinity of the distribution line suggested that further investigation was required. Samples were field-screened for organic vapors, BTEX, PAH, total lead, and radioactivity. They were sent for laboratory analysis of inorganic chemicals, organic chemicals, BTEX, and TPH. Two 10,000-gal. USTs and an auxiliary fill pipe were excavated and removed in accordance with NMED UST regulations as part of the RFI. A representative from NMED was on the site during the UST removals. Samples collected during removal of UST-1 were analyzed for BTEX and TPH. Off-site laboratory analysis of BTEX and TPH in samples taken at UST-1 indicated those chemicals were below detection limits. UST-1 was excavated and removed. TPH compounds were reported at levels up to 230 ppm in the UST-2 sample analysis, which is above SAL and required telephone notification to NMED of a suspected release. Split samples submitted for off-site laboratory analysis indicated that BTEX was below detection limits and TPH concentrations were 3 ppm and 5 ppm, respectively. These samples defined the vertical extent of contamination. Collecting one sample each from the approximate centers of the four excavation sidewalls assessed the lateral extent of contamination. TPH concentrations reported in the four sidewall samples ranged from below detection limits to 81 ppm. Visibly stained soil and organic vapors were detected during removal of the UST-2 auxiliary fill piping joint and fill port. The area was excavated further to remove contaminated soil; a borehole was drilled to assess the vertical extent of contamination. Confirmatory samples collected to assess the vertical and lateral extent of any remaining petroleum contamination showed elevated TPH concentrations, gasoline components, and 2-butanone and acetone. Samples collected after additional excavation showed that the extent of the release from the auxiliary fill pipe had been assessed. During removal of the UST-2 dispenser pump and distribution line, organic vapors were

		detected in excess of 100 ppmv in soil immediately beneath the distribution line at about 3.5 ft bgs. Concentrations increased to about 1000 ppmv between 6 ft and 7 ft bgs. Additional investigation of the UST-2 distribution line included drilling 12 boreholes to a maximum depth of 118 ft. Organic vapors were measured continuously and a minimum of three samples was collected from each borehole. Soil samples were analyzed for organic chemicals, TPH, and total lead. Soil-gas samples were analyzed only for organic chemicals. Analytical results showed elevated concentrations of benzene, toluene, ethyl benzene, xylenes, trimethylbenzenes, and TPH. Benzene; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; and TPH were detected above SAL. The bulk of the contamination was within a 30-ft radius of the source area. The vertical extent of contamination was limited to less than 115 ft bgs. The RFI work plan identified a waste-oil pit at the northeast corner of the building. A concrete curb that forms a boundary of an 8 ft-wide dirt island is located adjacent to the east side of Building 3 (the service station) and extends about 20 ft north to about 80 ft south of the building. No evidence of a waste-oil pit was found inside the concrete curbing, but surface soil within the curbing was stained black and smelled like motor oil. Samples were collected and analyzed for TPH, organic chemicals, and total lead. Analytical results indicated that the stained soil contained a TPH concentration of 3600 ppm. Lead was detected above BVs but below SAL. The area was partially excavated to remove the contaminated soil. Soil samples were collected from the base of the four sides of the excavation and were submitted for analysis of TPH, organic chemicals, and total lead. Again, TPH concentrations were as much as 940 ppm; 1,1,1-trichloroethane was detected at 0.019 ppm. Additional soil was excavated and samples were collected from the north and south ends of the expanded excavation. Analytical results indicated that VOCs and TPH concentrations were below detection limits. Benzo(a)pyrene was detected at 0.390 ppm, which is above its SAL. The excavated area was backfilled and compacted. Seven additional surface soil samples were collected at 20 ft intervals along the remainder of the dirt island south of the excavated area. The samples were analyzed for organic chemicals, TPH, and total lead. Acetone was detected in the samples but its presence was attributed to laboratory introduction. Total lead concentrations ranged from 15 ppm to 44 ppm, and TPH concentrations ranged from 100 ppm to 1800 ppm. Further sampling showed that TPH contamination was vertically defined at the soil/tuff interface. No soil or tuff was removed from this part of the dirt island. The RFI report recommended NFA at AOC 00-031(b) because the site was characterized in accordance with applicable state and federal regulations, and available data indicate that potential contaminants pose no unacceptable level of risk to human health.
00-032	Administratively Complete	AOC 00-032 consists of the former automotive maintenance hangar (Building 1) and the former heavy equipment maintenance shop (Building 2) associated with the former Zia motor pool. The maintenance hangar had administrative offices, equipment repair bays, blacksmithing equipment, and various automotive repair works including engine, radiator, battery, tire, and paint shops. The maintenance hangar was decommissioned in 1962 and its facilities were transferred to other buildings within the motor-pool complex. Building 2 housed blacksmithing facilities, heavy equipment repair bays, a machine tool and welding shop, and a brake-repair shop. Administrative offices also were located in Building 2, and the upper floor was used for storage. Building 2 still stands and houses several retail stores. The motor pool operated from the mid-1940s through the mid-1960s. The property was transferred to Los Alamos County in 1967 and currently is owned by private corporations that use the area for retail establishments and small industry. It is located east of Fifteenth Street between Central Avenue and Trinity Drive, just west of the Los Alamos credit union. The ER Project conducted an RFI at AOC 00-032 in 1994 to determine if the area was contaminated. The investigation focused on the vehicle-greasing and -washing pits, and drain sumps associated with Building 1 and the inactive utility junction boxes (5N and 5S) associated with the former automotive maintenance hangar. RFI activities

		included geodetic and geophysical surveys, excavation and removal of one UST and the associated piping south of Building 1; excavation, investigation, and/or removal of three additional subsurface structures beneath the former automotive maintenance hangar; drilling and sampling 16 boreholes inside and adjacent to Building 1; and subsurface soil sampling. The UST, the junction boxes, and an abandoned hydraulic lift associated with the former automotive maintenance hangar collectively were designated as UST-4. The UST was identified during the geophysical survey; it was located south of Building 1. The asphalt covering the tank and the concrete pad housing the fill port were removed, and the soil around the tank was excavated to locate identifying features (such as the fill port, vent line connection, drainline connection, and both ends of the tank). Excavated soil was monitored for organic vapors and radioactivity. No evidence of soil staining from hydrocarbon releases was observed in the soils located immediately beneath the tank. Because there was no noticeable soil staining and there were no positive screening responses for organic vapors, no soil samples were collected during the UST excavation. Two samples were collected beneath the east and west ends of the tank in response to a NMED request. The samples were submitted for analysis of organic chemicals, TPH, total lead, and total chromium. The analytical results for two additional waste-characterization samples met acceptable criteria for returning the soil to the excavation. The site was restored and the area was completed with new asphalt. Junction box 5N was located in a subsurface, 5-ft-long x 5-ft-wide x 4-ft-deep concrete box that was completely filled with sand and gravel. The soils surrounding the box were field-screened for organic vapors and were checked for radioactivity. During excavation, fluids leaked from the bottom of the box. The fluids were pumped from the excavation into containers. A sample of the fluids was collected and submitted for analysis for organic chemicals, inorganic chemicals, PCBs, and TPH. The sand and gravel was removed to expose inactive conduits. About 2 in. of oily sludge was found on the floor of junction box 5N. Connecting pipes were cut and the box was removed in pieces from the excavation. Two additional feet of soil and tuff located immediately beneath the junction box were removed before sampling; four soil samples were collected from the base of the excavation. The samples were submitted for analysis of organic chemicals, total lead, TPH, and total chromium. Because TPH levels were elevated in the excavated material, the pit from the junction box was backfilled with clean fill. The excavation was regraded and new asphalt was installed. The excavated soil was disposed of in accordance with regulations. Junction box 5S was located beneath surface asphalt and a 3.5-ft-long x 4-ft-wide metal lid. The junction box was made of concrete and contained about 2.5 ft of oily water. Litter consisting of wrappers, oil containers, oil filters, and other wastes were noted in the junction box. Several sets of inactive conduits were located on the four walls of the box. Samples were collected from the side walls and base of the excavation and analyzed for organic chemicals, total lead, TPH, and total chromium. Upon excavation, soils surrounding the junction box were screened for organic vapors and checked for ionizing and gamma radiation. TPH levels were elevated in the excavated material, so the pit from the junction box was backfilled with clean fill. The excavation was regraded and new asphalt was installed. The excavated soil was disposed of in accordance with regulations. Removing asphalt exposed the inactive hydraulic lift and concrete that surrounded it. Steel pipe, 8 in. in diameter and vertically oriented, was exposed. No sampling was performed and no additional excavation was deemed warranted. The structure was left in place. Site restoration involved regrading the excavated area with clean fill and repairing the asphalt. Five vertical boreholes were drilled to a depth of 15 ft through the base of each of the two vehicle-greasing pits and three of the four vehicle-washing pits at Building 1. Core samples were screened for organic vapors and radioactivity. No signs of staining were

		observed and no elevated organic vapor readings were recorded in any boreholes. Subsurface samples were submitted for analysis for organic chemicals, TPH, total lead, and total chromium. The boreholes were backfilled with soil cuttings that originated from each respective borehole. Concrete caps were poured to seal the structures. During an attempt to advance a sixth borehole, water-saturated gravel was encountered immediately beneath the concrete floor of the pit. The water appeared to be contained within the conduit, part of an old floor heating system. Based on this information, which was provided by the property owner, the borehole was terminated and capped. Additional drilling at the location of the fourth vehicle-washing pit was halted because building drawings were not available to indicate the location or extent of the heating conduit, and the field team did not want to risk puncturing the duct system. Because field-screening results for organic vapors in soils beneath the three sampled vehicle-washing pits did not indicate the presence of organic chemicals, no organic contaminants were expected in the fourth vehicle-washing pit. To investigate the drain sumps on the west side of Building 1 and to avoid interfering with the active stormwater system, five vertical boreholes were drilled adjacent to the sumps to assess the vertical and lateral extent of contamination. Five additional boreholes then were advanced at an approximately 65-degree angle from horizontal to beneath the base of each sump to sample the soils beneath the sumps. The boreholes were advanced to about 12 bgs ft to 15 ft bgs. Continuous core samples were retrieved and screened for organic vapors and radioactivity. The cores were logged and checked for visible signs of contamination. No signs of staining were observed on the vertical cores, and no elevated organic vapor readings were recorded. One sample was collected from the final core interval in each borehole, and samples also were collected from the initial core interval. One sample was collected from each angled borehole at a point beneath the sump. The subsurface samples were submitted to CST-9 for analysis for organic chemicals, TPH, total lead, and total chromium. Two split spoon samples were collected from one of the angled boreholes for analysis of microbiological constituents, for use if remediation at the site was required. No remedial action plan was required at the site. Except for two angled boreholes, the boreholes were backfilled with their respective cuttings and plugged with concrete. Water encountered in one remaining borehole was attributed to snowmelt; the borehole was grouted to ground surface with a cement/bentonite grout. In the remaining borehole, which was installed adjacent to the western edge of the northernmost drain sump, fill materials were recovered in the core sample from the surface to about 10 ft bgs. The borehole was terminated at 11 ft bgs and grouted. Water that collected in the stormwater system at the former Zia motor pool site discharged to the townsite stormwater system at Trinity Drive. It ultimately combined with discharges from other systems along Trinity Drive and discharged to Los Alamos Canyon through an outfall near the Pine Glen Apartments. The Pine Glen outfall was not sampled since no information specific to the Zia motor pool could be gained from sampling at the outfall. Lead was detected above BVs in one soil sample collected from junction box 5S. Detected organic chemicals at AOC 00-032 were acetone, di-n-butyl phthalate, and TPH. No soil samples exceeded their respective SALs. The RFI report recommended NFA at AOC 00-032 because the site was characterized in accordance with current applicable state and federal requirements, and available data indicate that contaminants are not present in quantities that pose an unacceptable risk. The ER Project conducted a VCA at AOC 00-032 in 1995. The VCA was conducted on a stormwater drainline that drained the west side of Building 1. The 15-in.-diameter, 360-ft-long drainline was exposed when Building 1 was demolished sometime after the RFI investigation. The drainline and stormwater drainage sumps were removed and the soil beneath the drainline and each sump was inspected for staining and discoloration that would indicate a leak from the system. No visual evidence of a release was observed, so no verification samples were collected. Soil from within, beneath, and

		surrounding the drainline and sump boxes was field-screened for organic chemicals and radioactivity. Results of field-screening did not indicate the presence of either type of contamination. The trench was backfilled and compacted.
00-033(a)	Pending	SWMU 00-033(a) was potentially contaminated soil associated with an inactive-and-removed 5000-gal. UST that contained diesel fuel. The tank served a generator in warehouse 3 at the Sixth Street warehouses. The UST was located adjacent to the north side of warehouse 3. The Sixth Street warehouses are located south of the intersection of Sixth Street and DP Road, and were investigated as consolidated SWMU 00-030(b)-00. The ER Project conducted a VCA at SWMU 00-033(a) in 1995 to remove the UST. Following excavation and removal of the UST, a visual inspection revealed an approximately 2-in.-diameter hole in the lower west end of the tank. The soil surrounding the tank appeared to be contaminated with fuel oil. The contaminated fill material was removed and the tuff below the tank was excavated to a depth of about 10 ft. Four samples of tuff from below the tank then were collected and submitted to the mobile analytical laboratory for TPH analysis. Five boreholes were drilled to a depth of about 40 ft in the vicinity of the former tank location. A total of 43 samples were collected at 5-ft intervals in the boreholes and from zones of possible contamination and submitted to the mobile analytical laboratory for analysis. TPH concentrations ranged from about 3000 ppm to 10,000 ppm in the borehole samples. The vertical and horizontal extent of contamination was defined by the 43 samples. The NMED UST department determined that SWMU 00-033(a) did not pose an immediate public health or environmental threat because the horizontal and vertical extent of contamination was defined and the extent of vertical contamination is greater than 900 ft above static groundwater; contaminated soils were excavated and properly disposed of; and there was little possibility of ground water contamination from the site. DOE approved the VCA completion report. LANL requested NFA at SWMU 00-033(a) in the June 2000 permit modification request.
00-034(a)	Administratively Complete	
00-034(b)	Administratively Complete	
00-035(a)	Administratively Complete	
00-039	In Progress	SWMU 00-039 is potentially contaminated soil at the site of two former USTs and their connecting pipes. The tanks were used to store dry-cleaning solvent. The site is on private property in the community center (bounded by Fifteenth Street, Nineteenth Street, Myrtle Street, and Central Avenue) in Los Alamos, but was federally owned from 1945 until 1968. Since at least 1958, the site was leased to a dry-cleaning business. Engineering drawings from 1947 show that two 700-gal. USTs were installed to store dry-cleaning solvent. In November 1968, the federal government sold the building and underlying property. Based on an interview with a former employee at the dry-cleaning business, use of the USTs was discontinued in about 1969, and the tanks were emptied and left in place. The property changed hands again in 1993. The new property owner commissioned a private contractor to perform an environmental assessment. The contractor removed five tanks but not the pipelines in 1993 (the other three tanks held petroleum hydrocarbons). Some of the pipelines were filled with concrete and left in place. At the time of removal, some chemical apparently had been released from the tanks. Analysis of soil samples at that time by the contractor indicated the presence of perchloroethylene, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and unidentified organic chemicals, all of which were attributed to the dry-cleaning tanks. Further excavation was stopped because the extent of contamination was greater than anticipated and exceeded the limitations of the contractor's equipment. NMED requested additional investigation to define the extent of contaminant migration. In 1994, DOE requested that EPA add the USTs, designated as SWMU 00-039, to Module VIII of the HWFP. LANL amended the RFI work plan in 1994

		to include an investigation of SWMU 00-039. In 1995, the ER Project conducted a Phase I investigation at SWMU 00-039 to assess the nature and extent of any contaminants that may have been released from the former dry-cleaning solvent USTs or associated pipelines. Suspect contaminants were perchloroethylene, naphthalene, 1-methylnaphthalene, 2- methylnaphthalene, and Stoddard solvent. After conducting a geodetic survey, 9 boreholes were drilled and 19 hand-auger holes were dug to characterize contamination adjacent to and beneath the subsurface piping surrounding the UST system. A total of 180 subsurface soil samples were collected and submitted to a mobile laboratory for analysis of organic chemicals and TPH. Detected organic chemicals were ethyl benzene; p-isopropylbenzene; p-isopropyltoluene; tert-butylbenzene; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; total xylenes; and TPH as Stoddard solvent. All detected organic chemicals are components of Stoddard solvent. Perchloroethylene also was detected; however, it was not considered in the screening process because transport calculations determined its presence was not the result of dry-cleaning operations during federal ownership of the property. The plume's extent indicated that it substantially postdates federal ownership of the site. During the time of federal ownership of the property, the lessee only used perchloroethylene as a minor constituent of an agent used for waterproofing clothing. The USTs were used to store Stoddard solvent. During the time of federal ownership, the dry-cleaner lessee's equipment was not converted or replaced so that the lessee could use perchloroethylene, and the perchloroethylene plume is located away from the solvent storage system used by the dry-cleaner business. The plume trend was towards the laundromat next door, which had coin-operated dryclean machines. Only 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene were detected at concentrations above their respective SALs. Stoddard solvent, measured as TPH, was further evaluated as a potential contaminant because it was detected relatively frequently and occasionally at high concentrations. A risk assessment was conducted to address the three chemicals that were carried forward as potential contaminants. The chemicals were determined by the risk assessment to be present only at levels that were more than an order of magnitude below the lowest observed adverse effect level. The RFI report recommended NFA at SWMU 00-039 because the site was characterized in accordance with current applicable state and federal regulations, and available data indicate that potential contaminants are present in concentrations that pose no unacceptable risk under current and projected future land use.
00-040	Administratively Complete	AOC 00-040 was a former diesel UST. The tank had leaked but was removed and remediated in accordance with NMED UST Bureau requirements. NMED determined the site required no further action in July 1993 and EPA agreed that the site had not been added to the permit.
01-001(a)-99	In Progress	Consolidated SWMU 01-001(a)-99 consists of former SWMU 01-001(a-g,o,s,t,u), 01-002(a)-00, 01-003(a,b,e), 01-004(a,b), 01-005, 01-006(a-e,g,h,n-p), and 01-007(a-f,h-j,l,m,o). Previously, the ER Project grouped these former SWMUs–with the exception of 01-007(j)–into aggregates (aggregates A through P, except for Aggregates I, M, and O which are not associated with consolidated SWMU 01-001(a)-99) based on geographical proximity, a common conceptual exposure model and receptors, or a common drainage area. PRS 01-007(j) was assigned across all aggregates, because it denotes potential soil contamination across TA-01. Today, consolidated SWMU 01-001(a)-99 is classified by the ER Project as one aggregate. Nevertheless, this summary is organized by Aggregates A through N (excepting Aggregates I, M and O), because the ER Project conducted its historic field investigations and remediations by aggregate, and wrote its reports by aggregate. Consolidated SWMU 01-001(a)-99 is associated with former TA-01 operations and D&D activities. TA-01 covered about 80 ac and was the site of Manhattan Project basic chemical operations, including wet chemistry experimentation and wet and dry chemistry processing. TA-01 also housed several mechanical operations, including

		casting, machining, and powder metallurgy. As operations relocated to new TAs between 1945 and 1965, phased D&D activities occurred at TA-01. All building superstructures were demolished and removed. Soils surrounding the buildings, within the former building footprints and adjacent to former plumbing structures, were radiologically surveyed between 1974 and 1976; any identified radioactively contaminated soil was excavated, disposed, and replaced with clean fill. Backfilling and recontouring were completed on the mesa-top where contaminated soils and volcanic tuff were excavated during 1970s D&D activities. Former TA-01 has been the location of substantial residential and commercial development over the years. Aggregate A Aggregate A (the “Loma Vista Drive property”) consists of former SWMUs 01-007(d), 01-007(e), 01-007(j), and 01-007(m). Historical structures associated with this aggregate include Sigma Building, C Building, H Building, Theta Building, and Sigma huts 1 through 4. The aggregate is located on the mesa top south of Trinity Drive and extends from the locations of the former Sigma Building to the former C Building, and from C Building to the former H Building. The area is occupied by residences and commercial establishments. Former SWMU 01-007(d) is suspected subsurface soil radiological contamination between the footprints of Theta and H Buildings. Theta Building was a warehouse. H Building was constructed for radiochemical and radioactive tracer processing. In 1946, contamination was confirmed in surface soils between H and Theta Buildings and west of Theta Building. The contaminated soil was excavated and disposed. Due to the history of contamination, the area was investigated intensively during the 1974–1976 radiological survey. Contaminated soil and two contaminated industrial-waste line lateral connections from H Building to the main industrial-waste line were removed and disposed at MDA G. Former SWMU 01-007(e) is an area of subsurface radiological, organic chemical, and inorganic chemical soil contamination that was detected in the former Sigma Building footprint during the 1974–1976 radiological survey. Sigma Building was used for machining plutonium, uranium, and thorium and for casting and metallurgy. The contaminated soil was excavated from three areas and disposed. The Ridge Park Village now sits atop the site and two multiple-unit condominiums share the footprint of this SWMU. Former SWMU 01-007(j) is six small areas of uranium-238 contaminated soil that were detected during the 1974–1976 radiological survey, north and northwest of the Sigma Building footprint. The areas were excavated and contaminated soil was disposed at MDA G. Former SWMU 01-007(m) is suspected subsurface soil radiological contamination in the C Building footprint. C Building contained a uranium machine shop. Before the building was removed in 1964, it was found to be free of radioactive contamination, except the part of the building associated with the uranium machine shop. The concrete pad was demolished in 1965. The contaminated part of the pad was disposed in an unspecified MDA and the uncontaminated part was disposed in Bailey Bridge Canyon. In 1994, the ER Project conducted an RFI to assess the presence or absence of contamination and to confirm that the remediation performed during the 1974–1976 radiological survey met then-current requirements. The only former SWMU sampled was 01-007(d); 48 samples were collected from 17 boreholes. Samples were screened for radioactivity and organic chemicals. Samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, and radionuclides. No contaminants were identified. An ecological screening assessment was not performed because the site is a disturbed area surrounded by commercial and residential properties with no suitable habitat for T&E species. RFI results confirmed that remediation during the 1974–1976

		radiological survey met standards for RCRA and radiological constituents. The RFI report recommended NFA at former SWMU 01-007(d). Former SWMU 01-007(e) was not sampled as part of the RFI because it was inaccessible, but it was investigated and remediated during the 1974–1976 radiological survey. Because results from the RFI sampling at former SWMU 01-007(d) showed that the 1974–1976 radiological survey met applicable standards, and because former SWMU 01-007(e) was investigated in the 1974–1976 survey using the same protocol, the RFI report recommended NFA for former SWMU 01-007(e). Finally, the report recommended NFA for the portion of former SWMU 01-007(j) associated with Aggregate A because it also had been remediated in the 1974–1976 radiological survey. The March 1995 permit modification request proposed NFA for former SWMU 01-007(m) because the site of the suspected contamination was not the site of hazardous waste management and was incorrectly designated as a SWMU, based solely on the former presence of radioactivity. Aggregate B Aggregate B, the Bailey Bridge Canyon Aggregate, consists of former SWMUs 01-001(a), 01-001(e), 01-001(o), 01-003(a), 01-004(a), 01-006(o), 01-007(f), part of 01-007(j), and 01-007(o). The aggregate extends along the north rim of Los Alamos Canyon on both sides of Bailey Bridge Canyon and northeast toward the former Theta and H Buildings. Aggregate B buildings were vacated during the late 1950s and early 1960s. Each building and its associated land surface were surveyed for radioactive contamination as it was decommissioned. Radioactively contaminated demolition debris was disposed at MDAs C and G; however, concrete with gross alpha activities less than 2500 cpm may have been disposed in Bailey Bridge Canyon. The mesa-top component of Aggregate B is occupied by Ridge Park Village and Los Arboles condominiums. Former SWMU 01-001(a) was a septic tank (structure 01-134) that served warehouse 19 and the sheet metal shop from 1949 to 1964. Warehouse 19 was used to store unknown materials. The concrete floor of the warehouse was found to be contaminated with uranium-238 in 1964; the floor was demolished and disposed in Bailey Bridge Canyon, where it was covered with soil. Two waste lines fed into the septic tank; effluent discharged through an outfall to Bailey Bridge Canyon. In 1975, the tank was removed and disposed at MDA G. Suspect contaminants were radiological and organic constituents. Former SWMU 01-001(e) was a septic tank (structure 01-139), which served the D-5 Sigma vault and I Building and, possibly, Delta Building. This former SWMU is located beneath one of the Los Arboles condominium buildings. The tank's outfall discharged southeast of the buildings at the head of Bailey Bridge Canyon. The tank reportedly became inactive and was left in place in 1965; however, it was not found during the 1974–1976 radiological sampling. The D-5 Sigma vault was used to store plutonium-239 and uranium-235. Radiological soil sampling (1974–1976) near the former D-5 Sigma vault showed minimal radiologic contamination, and no more contaminated soil was removed. I Building was used to store and machine beryllium between 1947 and 1958. Delta Building was used as a meeting place and, as a laboratory in which fission-product tracers were used. Suspect contaminants were organic and inorganic chemicals, and radiological constituents. Former SWMU 01-001(o) was a sanitary waste line that served J and ML Buildings. The line was located east of Bailey's Bridge and discharged into Bailey Bridge Canyon. J Building housed a laboratory of unknown function. ML Building was a medical laboratory. Accidents in 1955 and 1957 resulted in radioactive contamination in the building. D&D activities were not completely successful at ML Building, which was

		demolished in 1958 and disposed in MDAs C and G. However, concrete with gross alpha activities less than 2500 cpm may have been disposed in Bailey Bridge Canyon. Reportedly, the sanitary waste line was removed in 1959; however, a 1974–1976 radiological survey revealed that part of the line still existed. The remainder of the line was excavated and disposed at MDA G. Former SWMU 01-003(a) is the Bailey Bridge landfill. The upper part of Bailey Bridge Canyon was used to dispose of demolition debris from 1964 to about 1978. Construction and D&D debris with less than 2500 cpm surface alpha activity were disposed in the landfill. Suspect contaminants at former SWMU 01-003(a) were inorganic chemicals and radiological constituents. A 1988 site reconnaissance survey showed radiation readings greater than 25 mR/hr in the Bailey's Bridge area. Soil sampling was conducted at this SWMU in 1992; LANL's Environmental Surveillance Group conducted debris and mapping and screening in 1994. Former SWMU 01-004(a) was a gas-fired incinerator (structure 01-146). Installed in 1947, the incinerator was housed in a 6-ft-tall sheet metal structure between G and H Buildings, and was used to incinerate non-radioactive trash. A 1957 inspection showed structure 01-146 was free of radioactive contamination that presented a danger to human health and it was removed that year. Former SWMU 01-006(o) is the storm drainage system that served A, B, C, H, and Sigma-4 Buildings. A and B Buildings contained administrative offices. C Building was used for shops. Before its removal in 1964, C Building's foundation was found to be radiologically contaminated. The foundation was demolished and disposed at an unspecified LANL MDA. H Building was used for polonium-210 preparation. Sigma-4 Building was used for storage. All buildings served by former SWMU 01-006(o) were field-surveyed during the 1974–1976 radiological study. The area around H and Theta Buildings was contaminated with up to 74 pCi/g of radioactivity. No radioactivity was found in the storm drainage system near H Building, whose discharge lies beneath Los Arboles condominiums and several feet of fill material. Suspect contaminants at this former SWMU are radiological constituents. Former SWMU 01-007(f) is suspected subsurface soil contamination at the former Delta Building, a research laboratory that used fission-product tracers. During mid-1970 remediation efforts, a spot of uranium contamination was found in a surface sample near Delta Building. Further sampling, including an exploratory trench, was conducted to determine the nature and extent of contamination. Analytical results indicated slightly elevated uranium levels (up to 8.6 micrograms per gram) and fallout levels (0.09 pCi/g) of plutonium-239. The concrete slab on the west end of Delta Building had become contaminated when debris from the Sigma Building demolition was stored there temporarily. The Delta Building excavation was determined to be decontaminated in 1975 because field surveys indicated no radiological activity in the soil. Former SWMU 01-007(j) consists of two areas of surface contamination. The first area, about 200 ft southwest of the D-5 Sigma vault footprint, was removed during the 1974–1976 radiological survey and was disposed of at MDA G. The second area, 150 ft west of J Building, was disposed of at MDA G. The total amount of excavated soil was not specified. Suspect contaminants were radiological chemicals. Former SWMU 01-007(o) is an area of suspected subsurface soil radiological contamination near the historic D-5 Sigma vault. The D-5 Sigma vault was used to store uranium-235 and plutonium-239. Minor spills in the building resulted in lasting, low-level contamination on concrete floors and shelves. The building was demolished in 1965. During remediation in the mid-1970s, subsurface soil was sampled in the footprint of the D-5 Sigma Building and the area was surveyed for radioactivity. A residual gross alpha concentration of 29 pCi/g was measured from the auger sample and no more soil was removed.

		In 1992 and 1994, the ER Project conducted an RFI to assess the presence or absence of contamination and to determine whether SWMUs associated with Aggregate B posed a human health or ecological risk. The investigations and field-characterization efforts focused on three areas: Bailey Bridge Canyon rim study area, Bailey Bridge Canyon hillside areas (including the entire drainage pathway from the mesa top to the canyon floor), and Bailey's Bridge landfill. Samples were collected from 61 locations along the canyon rim in Bailey Bridge Canyon and within drainages. Eighty-one soil samples were collected from the canyon rim between the footprint of warehouse 19 and X Building. Fifty-eight samples were sent for laboratory analysis for radionuclides and inorganic and organic chemicals. Twenty-three samples were submitted to the TA-59 count trailer for radiological screening. Six samples were collected along the westernmost portion of the Bailey Bridge Canyon rim at the end of Oppenheimer Drive directly south of the former locations of the sheet metal shop and warehouse 19. The samples were submitted for laboratory analysis for radionuclides and inorganic and organic chemicals. Nine additional samples were collected from the western Bailey Bridge Canyon rim area and submitted to the TA-59 count trailer. Nine more soil samples were collected as part of the TA-01 canyon rim study area. One of the nine samples was submitted for laboratory analysis for radionuclides and inorganic and organic chemicals. The remaining eight samples were screened for radioactivity. Forty-nine samples were collected from a depth of 0 in. to 6 in. in the Bailey Bridge Canyon hillside area. Twenty-two of those samples were submitted for laboratory analysis for radionuclides and inorganic and organic chemicals. The others were sent to the TA-59 count trailer. In 1994, LANL completed field characterization at the landfill. Debris radioactivity levels were not greater than BV. Because no inorganic or organic chemical staining was evident, sampling the concrete debris was not necessary. The screening assessment identified 10 chemicals that potentially are present in concentrations greater than SALs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, lead, mercury, uranium-234, and dibenzo(a,h)anthracene. An evaluation of the entire data set suggested that the slight exceedances for those chemicals posed no unacceptable human health threat. The RFI report recommended NFA for the former SWMUs in Aggregate B. Former SWMU 01-004(a) was proposed for NFA in the March 1995 permit modification request because available information indicated contaminants are not present. Former SWMU 01-007(f) was also proposed for NFA because it was not the site of hazardous waste management, it had been incorrectly designated as a SWMU based solely on the presence of radioactivity, and it lacked contamination sources and releases. Former SWMU 01-007(o) was also proposed for NFA because it was not the site of hazardous waste management and it had been incorrectly designated as a SWMU based solely on the presence of radioactivity before remediation in 1977. Aggregate C Aggregate C consists of former SWMUs 01-001(b), 01-001(f), 01-006(p), 01-007(i), and 01-007(j). The former buildings associated with Aggregate C include Warehouses 5, 6, GR, and FP, HT, HT Barrel House, HT Gas Storage, K-1, and M-1 Buildings. The former buildings were vacated between 1954 and 1965. During D&D, contaminated cement floors were excavated, but uncontaminated slabs and building foundations were left in place. D&D was completed at Aggregate C former SWMUs by December 1965. A second D&D phase took place during the 1974–1976 radiological survey. A 121-ft section of the J-2 Building industrial-waste line was removed and an area of radiologically-contaminated soil associated with the waste line was excavated. About 20,000 cu yd of contaminated soil were removed and replaced with clean fill from TA-53 and TA-55. Former SWMU 01-001(b) is a septic tank (structure 01-135), which served FP and M-1

		Buildings through a single sanitary-waste line connection. The tank was removed during the 1974–1976 radiological survey. FP Building was constructed in November 1945 and was a foundry for nonradioactive and nonferrous metals. The building was determined free of radioactive contamination before it was removed. M-1 Building was completed in June 1950 and originally was used to machine lithium and later to machine uranium-238. The building superstructure was determined to be free of contamination in 1964, but the floor drains were suspected to be radioactively contaminated. The drains were removed and disposed in an unspecified area. Former SWMU 01-001(f) was a septic tank (structure 01-140) that served HT and FP Buildings. The outfall discharged into Los Alamos Canyon. HT Building was used to heat-treat and machine natural and enriched uranium. In 1946, low levels of plutonium and polonium were detected at the drain exit of the waste line from the building. Substantial levels of radioactive contamination were found in HT Building during D&D in 1975. HT Building was disposed in an unspecified MDA. Potantial contaminants included radiological and inorganic chemicals. Former SWMU 01-006(p) is a storm drain and outfall that served portions of HT Building. An open drain collected stormwater from the area south and west of HT Building and channeled it to a storm drain inlet that transported the water under a road in a closed drain and discharged it toward Los Alamos Canyon. The drain was rerouted around 1950, after K-1 Building was constructed for graphite machining. The revised drainage discharged to Los Alamos Canyon. Former SWMU 01-007(i) is suspected subsurface soil radiological contamination near former Warehouses 5, 6, and GR. Warehouse 5 was used for materials storage. Warehouse 6 was used for equipment storage and repair, and Warehouse GR was used for equipment storage. The suspected contaminated areas were identified in the 1974–1976 radiological survey. About 503 cu yd of soil and a 34-lb cylinder of natural uranium were removed. The area was determined to be decontaminated in 1976 after a field survey indicted no detectable radiological activity. This area is now overlain by buildings and roads of the Ridge Park Village complex. Former SWMU 01-007(j) is subsurface soil contamination identified during the 1974–1976 radiological survey. Contamination consisted of activity of 5000 cpm and gross alpha activity of 980 pCi/g that was detected west of K-1 Building. Residual uranium from a septic tank (structure 01-140) excavation and cleanup was thought to be the contamination source. Potential contaminants at this former SWMU include radiological and inorganic chemicals. In 1992 and 1993, the ER Project conducted an RFI that focused on two areas: the Aggregate C canyon rim study area and the Aggregate C hillside area. Surface and subsurface soil and stormwater runoff samples were collected and analyzed. Potential contaminants at both areas were radiological and organic and inorganic chemicals. The objective of the RFI canyon rim study was to determine the presence or absence of residual contaminants and to determine if potential hazards exist to mesa-top residents in the vicinity. Soil samples were field-screened for radioactivity and organic chemicals. Two samples were submitted for laboratory analysis for radionuclides and inorganic and organic chemicals. The objective of the RFI hillside area study was to determine lateral and vertical extent of contamination. The hillside area was divided into four areas: septic tank outfall, drainages, bench, and out-of-drainage. The settings were chosen because they were judged the most likely areas of contamination within the Aggregate C canyon area. Sixteen samples (including 1 rinsate) were collected from the primary drainage and bench areas of Hillside 140. Soil samples were analyzed for radionuclides, inorganic, and organic chemicals. The rinsate sample was analyzed for radionuclides. Because

		two samples exceeded SALs for antimony, beryllium, and thallium, and three samples had gross beta activity greater than 30 pCi/g during initial sampling (July 1992), five sample locations at Hillside 140 were resampled in September 1992. Because uranium contamination was detected in the drainage pathway for Hillside 140 during 1992 sampling, 10 samples were collected in 1993 from hillside 140 out-of-drainage areas and analyzed for radionuclides and inorganic chemicals. Nine additional samples were screened for gross radiological activity. Nine samples were collected from a depth of 6 in. to12 in. in locations previously sampled at the 0-in.- to 6-in.-depth in the primary drainage pathway and out-of-drainage areas for Hillside 140 to determine the vertical extent of uranium contamination detected in 1992 samples in those locations. The samples were analyzed for radionuclides and inorganic chemicals. Single-stage stormwater samplers were installed along the primary drainage pathway for Hillside 140: 11 above the cliff at the bottom of the pathway and 2 below the cliff at the canyon floor. When enough surface stormwater runoff was collected after significant precipitation, the sample was submitted for laboratory analysis for radionuclides and inorganic chemicals. Nine chemicals were detected above SALs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, uranium-234, uranium-235, and uranium-238. The RFI report attributed the first six to PAHs and stated that those chemicals probably were not the result of historical laboratory operations but of runoff from adjacent asphalt roadways and parking lots. The stormwater runoff samples had elevated levels of lead and total uranium above water SALs. Lead and uranium were present at concentrations that posed no unacceptable risk to human health. The RFI report recommended NFA for former Aggregate C SWMUs. Former SWMU 01-006(p) was recommended for NFA in the March 1995 permit modification request because the storm drain system was used only to channel stormwater. The permit modification request also recommended NFA for former SWMU 01-007(i) because the areas of suspected contamination were not the sites of hazardous waste management, were incorrectly designated as a SWMU based solely on the former presence of radioactivity, and lacked contamination sources and releases. Although the RFI report recommended NFA for all Aggregate C SWMUs, the ER Project conducted a VCA at SWMU 01-001(f) as a BMP because of the site's proximity to Ridge Park Village condominiums. The VCA consisted of removing soils with elevated concentrations of total uranium identified on upper and lower slopes; verification sampling was not required because cleanup activities were driven by the use of real-time radiological screening data. The VCA report requested DOE concurrence to remove former SWMU 01-001(f) from consideration as a SWMU, based on residual radiological contamination levels. Former SWMU 01-007(j) was not sampled during the Aggregate C RFI because existing structures overlie the former SWMU. In addition, results from the downgradient investigation on hillside 140, the outfall area for 01-007(j), would reveal any potential contamination. Aggregate D Aggregate D ("J-2/TU") consists of former SWMUs 01-005, 01-007(h), and 01-007(j). The area now is occupied primarily by townhouses and condominiums. Aggregate D has both mesa-top and hillside components. The hillside component of Aggregate D is the upper portion of hillside 140. Former SWMU 01-005 is the former bench-scale incinerator in TU-1 Building, which was built in 1948, to recover uranium from combustible materials.

		Former SWMU 01-007(h) is suspected subsurface soil radiological contamination near TU and TU-1 Buildings. It is the current location of the Timber Ridge town homes. TU Building was used to process natural uranium, and was moderately contaminated when it was demolished in 1964. In 1974-1975, 3682 cu yd of soil were removed and confirmation samples were collected. Two 4- in. to 8-in.-thick horizontal veins of uranium contamination remained at depths of 4 ft and 10 ft below the restored ground surface. The veins were not completely removed during excavation, and the remaining uranium was determined to be deep enough that any future excavation would reduce the contamination to acceptable levels. The entire area was backfilled and recontoured. In November 1975 the area (with the exception of the veins) was determined decontaminated because field radiological surveys indicated no detectable activity. Former SWMU 01-007(j) is suspected subsurface radiological contamination from a 1957 leak in the industrial acid-waste disposal line from J-2 Building. The location of this former SWMU is on the edge of a Finch Street apartment playground. An unspecified quantity of plutonium-contaminated soil was removed from the area immediately after the leak and the line was repaired. When J-2 Building was demolished in 1958, the industrial-waste disposal line and some contaminated soil was removed. During the 1974–1976 radiological survey, a 121-ft section of the line located beneath a paved parking lot was removed. Much of the contaminated soil was removed from the trench but some contamination, with an activity level of 168 pCi/g of cesium-137, was left on the floor of one trench because the depth of the trench prevented removal with available equipment. Contamination was confined to a 4-in.-wide, soil-filled fracture that did not extend up the trench walls. Former SWMU 01-007(j) was not sampled directly during the 1992 RFI because the area had been previously remediated, the related drainage and outfall area samples revealed no potential contaminants, and construction makes the site no longer accessible. Sampling during the 1992 RFI focused on the Aggregate D canyon rim study area and the upper portion of hillside 140. Two soil samples were collected on the canyon rim of Aggregate D as part of the TA-01 canyon rim study and submitted to the TA-59 count trailer for gross radiological screening only. The objective of sampling along the Aggregate D hillside was to determine the presence or absence of radiological and/or hazardous contaminants. The ER Project collected 32 soil samples from the outfall area (just below the hillside 140 canyon rim) for former J-2 and TU Buildings. Fourteen of those samples were submitted to the TA-59 count trailer for gross radiological screening. Two of the samples were to be submitted for laboratory analysis; however, the samples were not submitted due to out-of-compliance paperwork. Two additional samples were collected from the eastern portion of the J-2/TU outfall area. One sample was submitted to the TA-59 count trailer for gross radiological screening. The other was to have been submitted for laboratory analysis but was not, due to out-of-compliance paperwork. Ten surface soil samples were collected from an out-of-drainage area immediately west of the hillside 140 primary drainage pathway. Seven of those samples were submitted for gross radiological screening at the TA-59 count trailer, and three were to have been submitted for laboratory analysis but were not, due to out-of-compliance paperwork. Two locations with out-of-compliance paperwork, the outfall area for J-2/TU and the hillside 140 out-of-drainage area, were resampled. Six samples were collected from those locations and submitted for laboratory analysis for radiological, inorganic and organic chemicals. Two locations in an out-of-drainage area immediately west of the hillside 140 primary drainage pathway were resampled also. Two samples were collected and submitted for laboratory analysis for radiological, inorganic and organic chemicals. Total uranium was detected above SAL; however, adjacent samples from Aggregates C and D were similar to or lower than detected values, indicating the area with uranium levels greater than SAL is relatively limited. Further, field-screening results for other nearby samples suggest that radionuclide BVs are present. The Aggregate D RFI report recommended NFA for the portion of former SWMU 01-007(j) that is associated with Aggregate D, based on the results of the human health risk assessment at Aggregate C.

		The March 1995 permit modification request stated that former SWMU 01-005 should not be a SWMU and recommended NFA for former SWMU 01-005.It also recommended NFA for former SWMU 01-007(h) because the area of subsurface soil contamination (1) was not the site of hazardous waste management, (2) was incorrectly designated as a SWMU based solely on the former presence of radioactivity, and (3) lacked hazardous-waste contamination sources and releases. Aggregate E Aggregate E consists of former SWMUs 01-001(g), 01-003(b), 01-006(a), and 01-006(g). These former SWMUs are the septic tank, drainlines and outfalls, and storm drain and outfall that served D, D-4, D-7, ML, Q, and X Buildings and cooling tower 80. The buildings were vacated by the mid-1950s. Private residences now occupy the area. Suspect contaminants were radionuclides and inorganic chemicals. Former SWMU 01-001(g) is the former location of a septic tank (structure 01-141), which was south of X Building near the edge of Los Alamos Canyon. It received sanitary waste from X Building, where radioactive targets were tested. One sanitary-waste line connected the building to structure 01-141, and the outfall discharged over the rim of the canyon. The tank was located and removed during the 1974–1976 radiological survey. At that time, structure 01-141, its surrounding soil, and the sludge in the structure tested free of radioactive contamination. The tank, sludge, outlet line, and about 151 ft of the inlet line were removed in 1975. Suspect contaminants at former SWMU 01-001(g) were radionuclides and inorganic chemicals. Former SWMU 01-003(b) is a former surface disposal site for construction debris below the north rim of Los Alamos Canyon about 150 yd east of Bailey Bridge Canyon. The disposal site was not sampled during the 1974–1976 radiological survey. No evidence of this site was found during several site visits. The OU 1078 work plan proposed NFA for former SWMU 01-003(b). Former SWMU 01-006(a) is the drainline (structure 01-80) and outfall that served cooling tower 80. Structure 01-80 and the outfall were located on the east side of the cooling tower and south of X Building near the rim of Los Alamos Canyon. A 1987 DOE survey speculated that chromium-containing biocides may have been added to the cooling tower; therefore, chromium may have affected structure 01-80 and its outfall. Suspect contaminants were radionuclides and inorganic chemicals. Former SWMU 01-006(g) is the storm drainage system that served ML, Q, and X Buildings, and D, D-4, and D-7 Buildings in Aggregate G. The system consisted of three buried conduits and open ditches that merged to form a single outfall channel. The main drain discharged about 20 ft south of the east side of X Building. ML Building was a medical laboratory. Q Building was used to calibrate equipment, using radium-226 as a check source. X Building was used to test radioactive targets. The 1974–1976 radiological survey did not sample the drainage ditches. Suspect contaminants were radionuclides and inorganic chemicals. In 1992, the ER Project conducted an RFI that focused on the mesa-top area and the hillside below X Building and cooling tower 80. All samples were field-screened for radioactivity and organic chemicals. A total of three soil samples were taken along the mesa top. One was submitted for laboratory analysis for radionuclides, inorganic and organic chemicals. The other two samples were screened for radioactivity. At the Aggregate E hillside area, 10 samples were collected below the former location of X Building and cooling tower 80 (directly south of the Los Arboles condominiums). Six of the samples were submitted for laboratory analysis for radionuclides, inorganic and organic chemicals. The remaining samples were screened for gross alpha and gross beta activity. Antimony, lead, mercury, silver, plutonium-238, uranium-234, uranium-235, and uranium-238 were detected above BVs but below SALs and were included in a screening assessment. Plutonium-239/-240 concentrations in composite samples

		were presumed to exceed SALs. Based on results of the human health screening assessment, plutonium-239/-240 was identified as a potential contaminant but did not require further evaluation because the presence of plutonium-239/-240 above its SAL probably was an artifact of the presumed concentrations. The RFI report recommended a NFA for Aggregate E SWMUs, because the data indicated that contamination was below levels that would have an adverse effect on human health. Aggregate F Aggregate F (hillside 138) consists of former SWMUs 01-001(d) and 01-006(h). Aggregate F is southeast of Los Alamos Inn along the north rim of Los Alamos Canyon. K, R, V, and Y Buildings were associated with Aggregate F. They were decommissioned in the 1950s. Aggregate F has both mesa-top and hillside components. Office buildings and Los Alamos Inn currently occupy the mesa-top component. The hillside consists of a steep cliff, a bench area, a second cliff, and a gradual slope to the canyon floor. Suspect contaminants at Aggregate F were radionuclides, inorganic, and organic chemicals. Former SWMU 01-001(d) was a septic tank (structure 01-138) and the associated hillside and outfall into Los Alamos Canyon known as hillside 138. Structure 01-138 served K, V, and Y Buildings. K Building was a chemical stock room that contained a mercury still. V Building housed TA-01's original uranium and beryllium machine shop. Dry-grinding of boron also was conducted in V Building. Y Building housed a physics laboratory that handled tritium, uranium-238, and polonium-210. The buildings were connected to structure 01-138 by one sanitary-waste line. When structure 01-138 was removed, it contained about 2 ft of sludge that was not radiologically contaminated. The outlet line also was free of radioactive contamination, so the inlet line, located beneath an office building, was left in place. Because the 1974–1976 radiological survey showed hillside 138 was contaminated with plutonium-238, it was not decontaminated due to its inaccessibility and was fenced to prevent public access. Former SWMU 01-006(h) is a storm drain (structure 01-50) and outfall (structure 01-81) that served portions of R and of Y Buildings. The outfall was located 25 ft south of Y Building on the north rim of Los Alamos Canyon, immediately west of hillside 138. R Building housed model, glass, carpentry, and plumbing shops. The storm drain was discovered during trenching for the 1974–1976 radiological survey. In 1992 and 1993, the ER Project conducted RFIs at former SWMU 01-001(d) to determine the presence or absence of radiological and/or hazardous constituents. The RFIs focused on two major areas: the Aggregate F canyon rim study area and the Aggregate F hillside area, which included the entire drainage pathway for hillside 138 from the mesa top to the canyon floor. Samples were field-screened for radioactivity and organic chemicals. In 1992, surface and subsurface soil samples were collected from the upper and lower outfall areas, the defined bench area, and the drainages associated with hillside 138. Three samples were collected during the canyon rim study and submitted for radiological screening. Three hillside areas were selected for sampling because they were assumed to be the most likely areas where contamination would accumulate on hillside 138. The areas investigated were the septic tank 01-138 outfall area, drainage areas (including the canyon floor) and a bench area. Samples locations were based on a 1992 low-energy gamma field survey. The 1992 data identified benzo(a)pyrene, benzo(b)fluoranthene, mercury, lead, plutonium-238, plutonium-239/240, and cesium-137 at levels above SALs. Benzo(a)pyrene and benzo(b)fluoranthene are PAHs; their presence in two samples from the main channel that drains stormwater runoff was attributed to runoff from paved areas. Further evaluation of those two chemicals was not necessary. In total, 34 hillside 138 locations identified in the 1992 sampling were resampled in 1993 and analyzed for radionuclides and inorganic chemicals. In addition, 10 single-

		stage water samplers were installed along hillside 138 as part of the 1993 RFI. Contents of the water samplers were analyzed for radionuclides and inorganic chemicals; plutonium-239/-240, chromium, mercury, and lead were detected above SALs. The 1993 data indicated a possibility that mercury and lead below the detection limit were entering the canyon stream. Because sample results indicated elevated mercury, lead, plutonium, and cesium-137 concentrations, remedial actions were taken at hillside 138 in 1996 and 1997 to address NMED concerns about water quality near the site. Remediation activities consisted of installing stormwater and pollution controls, correlating field measurements and analytical data, removing contaminated soil, implementing final stabilization measures, and initiating a stormwater monitoring program. According to the remedial action status report, completing field activities greatly reduced potential contaminant migration from the site to the stormwater drainage and ultimately to Los Alamos Canyon. Results of the stormwater monitoring program will be used to determine whether remedial activities can be considered the final site remedy. Aggregate G Aggregate G consists of former SWMUs 01-001(c), 01-006(b), 01-006(c), 01-006(d), 01-006(n), 01-007(a), 01-007(b), 01-007(c), and 01-007(j). Aggregate G is adjacent to the former D, D-2, D-3, M, and Buildings and boiler house 2 that occupied this location in the 1940s and early 1950s. The aggregate is located at the rim of Los Alamos Canyon adjacent to the area now occupied by the south end of Los Alamos Inn parking lot and the hillside below. Former SWMU 01-001(c) was a septic tank (structure 01-137) that was installed in 1945. It served D-2 Building, which was a laundry for radioactively contaminated clothing and recyclable equipment. It was converted to an electronics shop after laundry operations were relocated to TA-21. In 1975, structure 01-137 was relocated and investigated as a potential source of plutonium contamination in the runoff area below the structure 01-137 outfall pipe. Structure 01-137 and its outfall pipe were removed and disposed at MDA G. Low levels of radiological activity were detected in the sidewalls of the tank excavation. Soil was removed from the excavation until gross alpha activity levels were below 25 pCi/g. Clean soil was used as backfill. Former SWMU 01-006(b) is the D Building drainline (structure 01-6) and outfall. D Building was used primarily to process plutonium. The drainline discharged to Los Alamos Canyon. The types and quantities of liquids handled by the drain are not known. During the 1974–1976 radiological study, over 9400 cu yd of soil were removed from the D and D-2 Building areas. The excavated soil was monitored with gross alpha instruments until the remaining soil showed gross alpha activity levels lower than 25 pCi/g. Suspect contaminants were radionuclides. Former SWMU 01-006(c) is the D-2 Building drainlines and outfalls. All three laundry drainlines discharged directly onto hillside 137 southwest of the building. When Building D-2 was converted to an electronics shop, structure 01-137 [former SWMU 01-001(c)] was installed and one of the waste drainlines was connected to it. During the 1974–1976 radiological survey, contamination was found in one trench located at the ends of two outfall pipes extending from the laundry. The two contaminated outfall pipes were removed and disposed at MDA G. Information about the third drainline is not available. Contaminated soil was removed from the D and D-2 Building areas during the 1974–1976 radiological study. Former SWMU 01-006(d) is the drainline (structure 01-9) and outfall that served D-3 Building and discharged to hillside 137 in the same area as the D-2 Building drainlines. D-3 Building activities included counting radioactive filter papers from H-1 Building. Suspect contaminants were radionuclides. Former SWMU 01-006(n) is the D Building storm drain (structure 01-6) and outfall.

		Structure 01-6 extended along the southeast side of the building to an outfall in Los Alamos Canyon. Suspect contaminants were radionuclides. Former SWMU 01-007(a) is suspected subsurface soil radiological contamination near former D Building. During the 1974–1976 radiological survey, contaminated soil was removed from the area. Suspect contaminants were radionuclides. Former SWMU 01-007(b) is suspected subsurface soil contamination associated with the drainlines and outfalls from the historic D-2 Building laundry facility [see former SWMU 01-006(c) unit description]. Former SWMU 01-007(c) is suspected subsurface soil contamination north and west of the former D Building. The contamination was discovered during the 1974–1976 radiological survey. An unspecified amount of soil was contaminated with plutonium at an unknown concentration. About 1300 cubic meters of soil and clay-tile waste from D Building were removed from the area. The clay-tile waste is addressed as former SWMU 01-001(s) (see Aggregate N). Former SWMU 01-007(j) is two areas of contamination near the footprint of former boiler house, north of the boiler house and another between the boiler house and Q Building. The sites were discovered and excavated during the 1974–1976 radiological survey. Excavation continued until no contamination was detectable in field radiological surveys. In 1992 and 1993, the ER Project conducted an RFI to determine the presence or absence of radiological and/or hazardous contaminants. Radionuclides and inorganic chemicals were suspect contaminants. The investigation was divided into mesa-top, canyon rim, and hillside locations; 153 samples were collected. Mesa-top sampling focused on locations with the greatest chance for residual contamination, based on the 1974–1976 radiological survey remediation work. The mesa-top RFI included Stratum I (March 1993), south of D Building, and Stratum II (September 1993), north of the building. Stratum II involved only subsurface soil sampling. Samples were screened for radioactivity and organic chemicals. All samples were analyzed for radionuclides, inorganic and organic chemicals. For the canyon rim study, five samples were taken from Aggregate G. Three were submitted for laboratory analysis for radionuclides, organic and inorganic chemicals; the remaining two were screened for gross radiological activity. The hillside investigation focused on the outfall areas for D and D-2 Buildings, the defined bench area for hillside 137, and the primary hillside 137 drainage pathway, which extends to the canyon floor. Surface and subsurface soil and stormwater runoff samples were collected. Soil samples were screened for radioactivity and organic chemicals. Single-stage water samplers were installed on hillside 137: three in the D Building outfall area, five in the bench area, and one in the primary drainage pathway. Water samples were submitted for laboratory analysis for radionuclides and inorganic chemicals. A total of 172 samples from 153 locations were analyzed for inorganic chemicals and radionuclides; 87 samples were analyzed for organic chemicals. Plutonium-239/-240 was found above its SAL in soil and water samples. Lead was above its SAL in a water sample. The RFI report stated that contaminant concentrations presented no unacceptable risk to human health based on a recreational-use scenario, and recommended NFA for all Aggregate G SWMUs. Aggregate H Aggregate H consists of former SWMUs 01-003(e) and 01-004(b), which are adjacent to the former R, S, S-1, and W Buildings. The buildings supported residential and laboratory facilities operations. No remnants of the buildings exist. A paved parking lot and a professional building currently cover the area. Aggregate H is southeast of Los

		Alamos Inn and has mesa-top and hillside components. Surface water in Aggregate H flowed primarily into a major drainage in former SWMU 01-003(e). Former SWMU 01-003(e) is a surface disposal site southeast of Los Alamos Inn on the north wall of Los Alamos Canyon. The site contains utility boxes, piping, and concrete construction and miscellaneous debris. No information about the history of this hillside disposal site is available, and no documentation states it was radioactively contaminated. Former SWMU 01-004(b) was a gas-fired incinerator (structure 01-147) installed in 1947 in a 6-ft-high sheet-metal structure on the north side of U Building. It now is beneath the paved area near the front of Los Alamos Inn. It was one of two incinerators at TA-01 used to incinerate nonradioactive trash generated at TA-01. In 1957 the incinerator was removed after it was determined to be free of radioactive contamination that could present a human health danger. The March 1995 permit modification request stated that organic materials would have combusted or dissipated since the incinerator operated. Heavy-metal residues would have been reduced to ash and disposed outside the TA-01. The March 1995 permit modification request proposed NFA for former SWMU 01-004(b) because available information indicates that contaminants are not present. In 1992, the ER Project conducted an RFI at former SWMU 01-003(e), focusing on the upper part of the hillside area above the first bench. The purpose was to determine the presence or absence of radiological and/or hazardous constituents. Samples were screened for radioactivity and organic chemicals and then sent to the TA-59 count trailer for radiological screening. A total of 15 soil samples were collected from a depth of 0 in. to 6 in. Three of the samples were submitted for laboratory analysis for radionuclides, inorganic and organic chemicals; 12 additional samples were submitted to the TA-59 count trailer. No chemicals were found above SALs. The RFI report recommended NFA at former SWMU 01-003(e). Aggregate J Aggregate J is former SWMU 01-006(e).The aggregate has only a mesa-top component. Los Alamos County currently owns the site. Former SWMU 01-006(e) consists of two drainlines and two outfalls to Ashley Pond. One drainline originated at P Building (Building 01-46) and the other served the cleaning plant [SWMU 01-001(v), not included in this consolidated SWMU.] Building 01-46 was a personnel office. No radioactive materials were used in the building, but toluene is known to have been used there. The Building 01-46 drainline was a 4-in.-diameter pipe that emptied into Ashley Pond. The second drainline was a blowoff line. Little is known about the second line except that it was replaced by a parking lot during early decommissioning activities in the 1960s. It originated at the northwest corner of the cleaning plant and extended underground to Ashley Pond. Suspect contaminants for both drainlines were organic chemicals. Ashley Pond sediments were removed several times in the 1970s. A clay liner was installed in the 1980s. In 1992 LANL conducted sampling at Aggregate J in accordance with the OU 1078 RFI work plan. Surface water and bottom sediment samples were collected from Ashley Pond to determine the presence or absence of radiological and/or hazardous contaminants in the water and/or sediment. Six sediment and six water samples were collected from ten locations; all were submitted for laboratory analysis for inorganic and organic chemicals, and radionuclides; none was present above its SAL. The RFI report recommended NFA at former SWMU 01-006(e). Aggregate K Aggregate K consists of former SWMU 01-002(a)-00, an industrial (acid) waste line located in the southern and western portions of TA-01. This former SWMU has only a

		mesa-top component; the outfall (SWMU 01-002(b)-00) is within the TA-45 boundary (see consolidated SWMU 45-001-00). Private residences, apartments, townhouse complexes, and commercial establishments occupy the current location of the former industrial-waste line. Former SWMU 01-002(a)-00 was an industrial drainline for boiler house 2 and D, H, J-2, M, ML, Q and Sigma Buildings. Boiler house 2 supplied steam for TA-01. D Building was used to process plutonium. H Building was used for source preparation of polonium-210. ML Building was a medical laboratory. M Building was used to recover enriched uranium-235. Q Building was used to calibrate laboratory equipment using radium-226 as a check source. Sigma Building was used for machining radionuclides for casting and powder metallurgy. Beginning in 1943, the industrial drainline was used to dispose of chemical and radioactive processing wastes. The drainline had two sections: the main industrial-waste disposal line south of Trinity Drive ran from D Building and the western industrial-waste disposal line ran from former J-2 Building to its junction with the main industrial-waste disposal line south of Trinity Drive. Areas along the western industrial-waste line that were remediated by excavation and disposal in 1976 are designated as former SWMU 01-007(j). From the junction, the line ran north as a single unit to the TA-45 waste treatment facility. From 1943 to 1951 the line discharged untreated effluent into Acid Canyon. The TA-45 waste treatment facility was built at the disposal line outfall in 1951 and liquid waste conveyed by the line was treated at the TA-45 plant before disposal to the canyon. During the 1974–1976 radiological survey, attempts were made to verify that the main industrial-waste line connected TA-01 buildings with the TA-45 waste treatment facility had been completely removed. The survey concluded that the line and lateral drainlines had been removed; however, during further survey excavation activities, subsurface radionuclide contamination was discovered in the main industrial-waste disposal-line trench at the former D Building location and near H and Theta Buildings. Contaminated soil within the trench was removed and disposed of at MDA G. Confirmation samples from the trench sidewalls and floor were field-screened for gross alpha activity. The last of the industrial-waste disposal line between TA-01 and the Acid Canyon outfall was removed in 1985. In 1990, IA verification sampling was conducted of the trench between Central Avenue and Rose Street, at the Central School site, in response to a request from Los Alamos schools. Five core samples were obtained along the route of the excavated industrial-waste line and one core sample was collected from a borehole located east of the former waste line. Results for analysis for organic chemicals and PCBs were below limits of analytical qualification. All RCRA-regulated inorganic chemical concentrations were below EPA's threshold criteria for TCLP metals, gross radioactive screening of the samples revealed no gross levels of radioactivity above BV, and cesium-137 levels were well within BV. Suspect contaminants at former SWMU 01-002(a)-00 include radionuclides, inorganic chemicals, and organic chemicals. In 1993 and 1994, the ER Project conducted a RFI at former SWMU 01-002 to assess whether radiological and/or hazardous contamination existed in the area and to confirm that remediation conducted during the 1974–1976 radiological survey met 1993 standards for radiological and RCRA constituents. Sampling was conducted in the vicinity of historic D, U, M, and Z Buildings. Three boreholes were drilled in Aggregate K where the former main industrial-waste disposal line was located. Six subsurface soil samples were collected from the boreholes. Samples were screened for radioactivity and organic chemicals and analyzed in the laboratory for radionuclides and inorganic chemicals. Seventeen surface and subsurface soil samples were taken from nine boreholes in the vicinity of the former main industrial-waste disposal line. The samples were field-screened for radioactivity and organic chemicals and analyzed for inorganic and organic chemicals. No chemicals were detected above SALs. The RFI report recommended NFA for Aggregate K SWMUs because, based on archival information and results of the RFI, the SWMUs had been characterized and remediated in accordance with current applicable state or federal regulations and

		available data indicated potential contaminants were not present or present in concentrations that posed no unacceptable level of risk. NMED rejected the report. Aggregate L Aggregate L consists of former SWMU 01-001(t), known as the eastern sanitary-waste line. The site served by the former waste line was in the east-central part of TA-01 and currently is occupied by a portion of Ashley Pond Park and Los Alamos Inn. Former SWMU 01-001(t) consists of sanitary-waste lines that served the Gamma, M, P-Prime, R, S, S-1, T, U, V, W, and Z Buildings. Gamma Building housed offices and a physics laboratory. M Building was used to process and recover enriched uranium. P-Prime Building was used for supply and property offices. R Building housed electrical, glass blowing, carpentry, and plumbing shops. S Building was used as a technical warehouse and stock building. S-1 Building served as garage 1 and later was used to store nonradioactive materials. T Building housed the Theoretical Division and contained offices, a silver-soldering operation, and a photography laboratory. U Building contained physics laboratories where radionuclides were used. V Building contained offices and toolmaker's shop. It was TA-01's original machine shop for machining uranium and beryllium and for dry-grinding boron. W Building housed the Van de Graaff accelerator. Z Building housed two high-voltage accelerators that were used for research on atomic nuclei. Effluent from the buildings connected to the lines discharged to septic tank 1 that discharged to a drainfield southeast of the intersection of DP Road and Trinity Drive [see SWMU 00-030(b)]. In 1993, the ER Project conducted an RFI at former SWMU 01-001(t) to determine whether radiological and/or hazardous constituents existed at the site; six soil samples were collected from six boreholes drilled where the eastern sanitary-waste line had served U and Z Buildings. Samples were screened for radioactivity and organic chemicals and sent to the TA-59 count trailer for radioactivity screening. All 6 samples were analyzed for radionuclides and inorganic chemicals. No chemicals were found above SALs. The RFI report recommended NFA at former SWMU 01-001(t) based on the six samples, the RFI results at SWMU 00-030(b), and archival information. NMED rejected the report. Aggregate N Aggregate N is the western sanitary-waste line SWMU; it consists of former SWMUs 01-001(s) and 01-001(u). The area historically was occupied by A, B, boiler house 2, C, D, G, M, J-2, V, and Sigma Buildings, which housed most processing and production operations in LANL's early days. Historical memoranda indicate the entire waste line was radioactively contaminated. The aggregate is located south of Trinity Drive, and retail stores, office buildings, and residences occupy the area. The aggregate has only a mesa-top component. Former SWMU 01-001(s) is the main sanitary-waste line that served A, B, Boiler house 2, C, D, G, M, V, and Sigma Buildings. A Building housed administrative offices. B Building had administrative offices and electronic and metallurgical laboratories. Small amounts of radionuclide foils were stored in a concrete vault in the building. Boiler house 2 supplied steam to TA-01 buildings. C Building contained machining operations and a uranium machine shop. D Building was used to process plutonium. G Building contained the Sigma Pile, a small pile of graphite and uranium. Leak-testing of radium sources also was performed in G Building. M and V Buildings are described under Aggregate L. Sigma Building was used for radionuclide machining, casting, and metallurgy. The main waste line exited D Building, ran parallel to the main industrial (acid) waste line [former SWMU 01-002(a)-00; see Aggregate K], and passed the southwest corner of C Building. It then proceeded west along Finch Street and turned north between historic T-221 and T-225 Buildings. The line connected to septic tank 5, located on the mesa top above Acid Canyon, where it discharged. Portions of the line

		that were left in place include isolated portions beneath residential and commercial buildings and the distal end that currently carries municipal sanitary liquid waste to a publicly owned treatment works (Bayo Plant). Suspect contaminants were radionuclides, inorganic chemicals, and organic chemicals. Former SWMU 01-001(u) was a branch of the main sanitary-waste line and consisted of sanitary-waste lines associated with J-2 Building. J-2 Building was used for radiochemistry work. The waste line connected J-2 Building with the main western sanitary-waste line at a junction near Finch Street. Former SWMU 01-001(u) was not removed during TA-01 D&D based on soil samples and a field survey because it was not considered contaminated. According to the Aggregate N RFI report, the developers of the Timber Ridge condominiums might have removed the line because portions of the line would have been above the present surface in the Timber Ridge residential area. There are no suspect contaminants at former SWMU 01-001(u). In 1994 and 1996, the ER Project conducted a RFI at Aggregate N. Field activities were conducted in two phases at six locations along the sanitary-waste line. Phase I objectives were to locate the sanitary-waste line and assess any residual contamination associated with soils surrounding the line. Field activities consisted of geophysical surveys, trenching, drilling, and sampling. Phase II objectives were to characterize contamination within the waste line and surrounding soils, assess pipe integrity, and remove and dispose of sections of the waste line. Suspect contaminants were radionuclides and inorganic chemicals. A total of 114 samples were collected from 107 locations. Samples were analyzed for inorganic and organic chemicals, and radionuclides. Americium-241, aroclor-1254, benzo(a)anthracene, benzo(a) pyrene, benzo(b)fluoranthene, cadmium, chromium, copper, dibenzo(a,h)anthracene, 1,4-dichlorobenzene, indeno(1,2,3-cd)pyrene, lead, mercury, plutonium-239/-240, and total uranium were found in concentrations above SALs. Based on risk assessment results, the RFI report stated that chemical constituents levels indicated no unacceptable risk to human health. The report recommended NFA at Aggregate N SWMUs. Line segment Location 1A was remediated and the NFA petition was approved prior to recent construction at the site. Aggregate P Aggregate P consists of former SWMU 01-007(l), an area of suspected subsurface soil contamination in the fill material beneath Trinity Drive, which was widened and repaved in 1966. During the project, fill material and other debris reportedly were transported from the historic location of D Building for use as fill material. The fill material contained soil, concrete fragments, pipe insulation, and other potentially contaminated debris from areas around D Building. D Building housed a facility for plutonium chemistry, metallurgy, and processing. Fill materials may have been contaminated with radionuclides and inorganic chemicals. Aggregate P is owned by Los Alamos County and has only a mesa-top component. Its current location is on Trinity Drive, bounded by Twenty-fourth Street and the access road to Timber Ridge condominiums. Former SWMU 01-007(l) was included in the 1974–1976 radiological survey, which concluded that concentrations in any remaining pockets of potentially contaminated soil used as fill material would have been greatly reduced by mixing the fill material from D Building with fill material from off-site sources. In 1993 and 1996, the ER Project conducted a RFI at Aggregate P. During construction in 1993, subsurface grab samples were collected from two excavated trenches on the south side of Trinity Drive. Three samples were taken from two locations and field-screened for radioactivity and organic chemicals. No elevated radiological activity levels or organic vapors were detected. Samples were submitted for laboratory analysis for radionuclides, inorganic and organic chemicals. No chemicals were detected above SALs. In 1996, four subsurface grab samples were collected from three locations at depths associated with the fill material and screened for radiological activity. Samples

		were analyzed for radionuclides and inorganic chemicals. No chemicals were detected above SALs. The Aggregate P RFI report recommended NFA at former SWMU 01-007(l) because any remaining chemical constituent concentrations present no unacceptable risk to human health.
01-001(h)	Administratively Complete	Septic Tank 142 served Building 118, which housed a bathroom used by personnel responsible for maintaining townsite residences. The bathroom and septic tank were used from 1946 until 1953. The septic tank was removed in 1976. The septic tank received domestic sewage only. SWMU 1-001(h) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
01-001(i)	Administratively Complete	The RFI Work Plan for Operable Unit 1078 indicated that Septic Tank 143 served the TU Building. However, LANL engineering drawings furnish evidence that rather then serving the TU Building, Septic Tank 143 served only the former J-Division Annex building (also known as Warehouse 3) until the building was removed in 1965. Thus, Septic Tank 143 received sanitary waste only. Archival records indicate that the tank was removed in 1965. The map location of this septic tank is in an area that is currently the location of townhouses and associated common areas. This area has undergone extensive soil disturbance from demolition activities associated with TU Building that occurred from 1974-1976. The demolition activities included the removal of soil and the discovery and removal of an unidentified septic tank with no radiological contamination. This septic tank was in the approximate location of Septic Tank 143. It is possible that the tank excavated during the 1970s was actually Septic Tank 143 which may have been abandoned in place in 1965 rather than removed. The former location of SWMU 1-001(i) is part of the larger subsurface soil investigation of SWMU 1-007(h). SWMU 1-001(i) is located within the boundary of the SWMU 1-007(h) investigation and is appropriate for NFA under Criterion 1.
01-001(j)	Administratively Complete	In the SWMU Report (LANL 1990), SWMU 1-001(j) was incorrectly identified as a septic tank located between Buildings U and W at TA-1. This discrepancy resulted because the relevant LANL engineering drawings do not distinguish between aboveground tanks and septic tanks. A review of engineering drawings, interviews with a former site worker and Laboratory director, and a review of an area photograph determined that Tank 149 was an aboveground tank. These sources also indicated that the tank was constructed of steel and that the tank was used for the storage of dielectric gas used in the operation of the Van de Graaff generators located in Building W. When portions of TA-1 were decommissioned in 1953 and Tank 149 was relocated to the Van de Graaff building in TA-3, the integrity of the tank was confirmed. Based on the misidentification of the type of Tank 149, its exclusive use as a product storage tank for dielectric gas, and the non-release of contaminants, SWMU 1-001(j) is appropriate for NFA under Criterion 3.
01-001(k)	Administratively Complete	Septic Tank 268 served the former TU Building from August 1945 until the building was removed in 1964. Records show that the tank was removed in 1964 along with the building. The area at the former location of Septic Tank 268 has undergone extensive soil disturbance from demolition activities associated with TU Building that occurred from 1974-1976. The demolition activities included the removal of soil. The former location of SWMU 1-001(k) is part of a larger subsurface soil investigation of SWMU I-007(h). SWMU 1-001(k) is located within the boundary of the SWMU 1-007(h) investigation and is appropriate for NFA under Criterion 1.
01-001(l)	Administratively Complete	SWMU 01-001(l) was a septic tank (numbered 269) consisting of three sections of vitrified clay pipe. Each section measured three feet long by two feet in diameter. Septic Tank 269 served Building S-1 from the mid-1940s until the building was removed in August 1954. Septic Tank 269 was also removed in August 1954. Building S-1 was located in the northeastern portion of TA-1, outside the TA-1 security fence. Because a site photograph was misinterpreted, Building S-1 was incorrectly identified as a service garage for vehicles in the RFI Work Plan for Operable Unit 1078. As a result, it was assumed that there was the potential for the release of small quantities of petroleum products from the service garage to the septic tank. After the Work Plan was completed and submitted for review, floor plans for Building S-1 were found. The floor plans indicate that Building S-1 served as a shop and a stockroom, but not as a service

		garage. The floor plans also indicate that Septic Tank 269 served one bathroom only, located in the southwestern corner of the building. Thus, only sanitary wastes would have gone into this septic tank. Reinspection of the photograph confirmed that Building S-1 had originally been misidentified as a service garage. In addition, interviews with several former TA-1 staff members confirmed that plumbers had occupied Building S-1. Septic Tank 269 received sanitary sewage only. Because this septic tank never received hazardous constituents, there was never a release to the environment. In addition the tank was removed in 1954. Therefore, SWMU 1-001(l) is appropriate for NFA under Criterion 2.
01-001(m)	Administratively Complete	SWMU 01-001(m), Septic Tank 275, was located north of Warehouse 18 but served only Warehouse 13. Engineering sketches found during the archival search for Aggregate I indicate that Septic Tank 275 was a leaching cesspool that received overflow from septic tank 274, which was connected to Warehouse 13. The outfall from Septic Tank 275 was located northeast of Warehouse 13 and discharged over the canyon rim into a branch of Los Alamos Canyon. Attempts to locate the tank between 1974 and 1976 failed, and it is no longer believed to have existed, based on extensive archival searches, site visits, and interviews with the current property owner who still uses the Warehouse 13 foundation and floor. A request for permit modification was submitted to the NMED for SWMU 01-001(m) in June 2001.
01-001(n)	Administratively Complete	SWMU 01-001(n) is Septic Tank 276, a septic tank that served the Theta Building, from 1944 to 1946. Theta building was a warehouse that had no known history of radioactivity. The building was removed in 1946. The associated septic tank [SWMU 01-001(n)] was located and removed in 1977. No radiological contamination was found in or around the tank and associated line at the time of removal. The former location of SWMU 01-001(n) is currently located on private property. SWMU 01-001(n) is located within the boundary of the SWMU 01-007(d) investigation and is appropriate for NFA under Criterion 1.
01-001(p)	Administratively Complete	
01-001(q)	Administratively Complete	
01-001(r)	Administratively Complete	
01-001(v)	Administratively Complete	
01-001(w)	Administratively Complete	
01-003(c)	Administratively Complete	
01-003(d)	In Progress	SWMU 01-003(d) is a historical surface disposal site known as the Can Dump Site. It is located at the site of the Zia Company operations at historical TA-01 (this site is included in TA-01, Aggregate I). The Zia Company operated paint, carpentry, furniture-repair and sign shops at this location, and used the area in the SWMU to dispose of empty paint and solvent cans. TA-01 was the site of Manhattan Project activities involving basic chemical operations including wet chemistry experimentation and wet and dry chemistry processing. TA-01 also housed several mechanical operations, such as casting, machining, powder metallurgy. As operations gradually relocated to new technical areas between 1945 and 1965, phased decommissioning and decontamination activities occurred at TA-01. All building superstructures were demolished and removed. Buildings at Aggregate I were vacated and demolished in the mid and late 1950s. The SWMU is located on DOE property on the north wall of Los Alamos Canyon south of the US West Communications Building and storage yard. Suspect contaminants are inorganic chemicals and organic chemicals. The ER Project conducted an RFI at SWMU 01-003(d) in 1992 to determine the presence or absence of radiological or hazardous constituents. Seven soil samples were collected and sent for laboratory analysis of isotopic plutonium, total uranium, cesium-137, inorganic chemicals, and organic chemicals. Antimony was detected at levels above its SAL. Because the SAL is based on a residential exposure and the area

		potentially containing antimony at concentrations greater than its SAL is small and located on a steep slope under DOE control, it was concluded that the presence of antimony at an elevated concentration in a single sample does not pose a human health risk. The RFI report stated that because an additional contamination site was discovered during a 1995 VCA to remove the decomposing paint cans, the conclusions and recommendations for SWMU 01-003(d) would be provided in the VCA report. The ER Project conducted a VCA at SWMU 01-003(d) in 1995 to remove decomposing paint cans. The cans were removed, and confirmatory sampling was not required because remediation was to be accomplished by removing all visible cans and associated debris. Field activities were documented with photographs of the site before and after the cleanup. While conducting cleanup activities, a large paint spill was observed along the northern slope and upper cliff face of Los Alamos Canyon. Three locations within the main spill were sampled for waste and site characterization purposes. Paint samples were collected from each of the three locations and were submitted to an analytical laboratory for metals analysis using TCLP. Soil samples from locations underlying the paint also were collected from two locations and were submitted to an analytical laboratory for total metals analysis. Analytical results for paint samples showed lead above the TCLP level. TCLP results for underlying soil samples showed lead, antimony, and zinc exceeded SALs. Analytical results indicated that cleanup of the paint spill area was necessary. The topography of the location made it unsafe to remove all of the paint; however, the majority of the paint and soil were excavated and removed from the site. Some of the material which was considered unsafe to remove remains on the upper slope. The transmittal letter for the VCA report requests NMED concurrence to remove SWMU 01-003(d) from Module VIII of the Laboratory's Hazardous Waste Facility Permit.
01-006(f)	Administratively Complete	
01-006(i)	Administratively Complete	
01-006(j)	Administratively Complete	
01-006(k)	Administratively Complete	
01-006(l)	Administratively Complete	
01-006(m)	Administratively Complete	
01-006(q)	Administratively Complete	
01-006(r)	Administratively Complete	
01-006(s)	Administratively Complete	
01-006(t)	Administratively Complete	
01-007(g)	Administratively Complete	
01-007(k)	Administratively Complete	
01-007(n)	Administratively Complete	AOC 01-007(n) consists of suspected subsurface soil contamination from a 1957 leak in the historical J-2 Building industrial drainline at TA-01. TA-01 was the site of Manhattan Project activities that involved basic chemical operations, including wet chemistry experimentation and wet and dry chemistry processing. TA-01 also housed several mechanical operations, such as casting, machining, and powder metallurgy. As operations gradually relocated to new technical areas between 1945 and 1965, phased decommissioning and decontamination activities occurred at TA-01. All building superstructures were demolished and removed. Once discovered, the leak was

		repaired and some contaminated soil was removed to a material disposal area. The drainline and additional contaminated soil were removed when the J-2 Building was demolished in 1958. Cesium-137 contamination was found in the location that corresponded with the former leaking waste line during a 1974-1976 radiological survey. Additional trenching was conducted to determine the extent of contamination, and more contaminated soils were excavated and removed from the area; however, some contaminated soil was left at one location in the floor of the trench because of the trench's depth. The soil may be contaminated with fission products and plutonium. No sampling was done to determine if hazardous nonradioactive chemical constituents were present in the remaining soil. Hazardous wastes were not managed at this AOC and could not have been released. Inclusion of this AOC in the OU 1078 work plan was based solely on elevated alpha levels found in one sample during the 1974-1976 sampling. Because this area of suspected subsurface soil contamination was not the site of hazardous waste management, the AOC was recommended for NFA in the March 1995 permit modification request.
01-007(p)	Administratively Complete	AOC 01-007(p) consists of subsurface soil contamination south of the former site of the HT Building at TA-01. TA-01 was the site of Manhattan Project activities that involved basic chemical operations, including wet chemistry experimentation and wet and dry chemistry processing. TA-01 also housed several mechanical operations, such as casting, machining, and powder metallurgy. As operations gradually relocated to new technical areas between 1945 and 1965, phased decommissioning and decontamination activities occurred at TA-01. All building superstructures were demolished and removed. The HT Building was used by the shops department for heat treating and machining natural and enriched uranium. In 1965, when the building was demolished, substantial contamination was found. The building was disposed of at a material disposal area. Uranium contamination was found in soil and on a concrete slab south of the historical location of the HT Building during a 1974-1976 radiological survey. The slab and about 35 cubic yards were excavated and disposed of at TA-54, Area G. The area was subsequently backfilled and recontoured. The area was considered decontaminated at the time, but no sampling was done to determine if hazardous nonradioactive chemical constituents were present in the remaining soil. Because this area of suspected subsurface soil contamination was not the site of hazardous waste management and was designated as a AOC based solely on the former presence of radioactivity, the March 1995 permit modification request recommended NFA for this AOC.
02-001	Administratively Complete	
02-002	Administratively Complete	
02-003(a)	In Progress	AOC 02-003(a) is the former site of the stack-gas valve house (structure 02-19) and associated 4-in. cast-iron effluent line (line 117) that was part of the gaseous effluent system associated with the Water Boiler Reactor. The Water Boiler Reactor operated from 1944 to 1974. The stack-gas valve house, constructed of reinforced concrete, was 11 ft x 9 ft x 10 ft high, with 18-in.-thick walls. Its purpose was to provide valves, pumps, and a shielded tank where condensate from the gaseous effluent line could be collected and handled. The gaseous effluent contained low levels of fission products such as cesium-137, strontium-90, technetium-99, and iodine-131. The valve house and line 117 underwent D&D in 1986. At the time, no radioactivity was detected in the soil beneath the structures. Line 117 and the valve house had high contact radiation readings when decommissioned. Environmental sampling was conducted in 1995 to determine if environmental contaminants were present at the site of the former valve house.

		Additional sampling was conducted at AOC 02-003(a) in 2000 as part of the post-Cerro Grande Fire recovery. This sampling was conducted in conjunction with sampling at adjacent AOC 02-003(e). Two boreholes were drilled at the site to the soil/bedrock interface. At both boreholes, samples were collected at the surface, immediately above bedrock, and at three intermediate depths, for a total of 11 samples including 1 field duplicate. All samples were submitted for laboratory analysis for radionuclides.
02-003(b)	In Progress	AOC 02-003(b) consists of the former location of a 205-ft section of a 3-in. stainless steel gas line (line 119) and a condensate trap (structure 02-48). The condensate trap consisted of a concrete manhole superstructure and a small-diameter standpipe that intersected line 119 at its low point between structure 02-19 [AOC 02-003(a)] and its junction with the Omega West Reactor vent line. AOC 02-003(b) structures were used to carry gaseous effluent from structure 02-19 to the intersection with the Omega West Reactor vent line. Structure 02-19 was the stack-gas valve house and associated 4-in. cast-iron effluent line (line 117) that was part of the gaseous effluent system associated with the Water Boiler Reactor. Off-gases from the Water Boiler Reactor contained low levels of cesium-137, iodine-131, technetium-99, and strontium-90. On a quarterly basis, through 1961, the condensate trap was cleaned. Material from the trap was disposed of on the alluvium in Los Alamos Canyon. Average activity of the material was 12 microcuries of cesium-137 and iodine-131. The gas line and condensate trap underwent D&D in 1986. Soil beneath the structures was excavated when cesium-137 contamination was detected during D&D. Radioactivity measuring about 1000 pCi/g was left at a depth of 5 ft and then covered with 7 ft of clean fill. AOC 02-003(b) was sampled in 1995 with former SWMU 02-009(c) (consolidated into SWMU 02-007-00). Thirty-six samples were collected for the 1995 RFI and were analyzed for inorganic chemicals, organic chemicals, and radionuclides.
02-003(c)	In Progress	AOC 02-003(c) consists of the former location of two parallel underground stainless steel delay tanks (1 ft diameter x 20 ft long and 4 ft deep) that were part of the gaseous effluent system associated with the Water Boiler Reactor. The Water Boiler Reactor operated from 1944 to 1974. The tanks provided extra volume to the gaseous effluent line to allow greater decay time for the short-lived radionuclides in the gas. Off-gases from the Water Boiler Reactor contained low levels of cesium-137, iodine-131, strontium-90, and technetium-99. The delay tanks were decommissioned and removed in 1986, and their connection to the Omega West vent line was capped. At decommissioning, the tanks exhibited activity of 8 mR/h on contact; however, no radioactivity was detected in the soil beneath the tanks. Field screening was conducted in soils in 1995, and results showed no detectable concentrations of organic chemicals and no alpha activity above instrument background. Dose rates also were below instrument background. Beta/gamma activity was slightly above instrument background. The ER Project collected eight samples from AOC 02-003(c) in 1995 and submitted them for laboratory analysis of inorganic chemicals and radionuclides. Additional sampling was conducted at AOC 02-003(c) in 2000 as part of the post-Cerro Grande Fire recovery. Two boreholes were drilled at the site to the soil/bedrock interface. At both boreholes, samples were collected at the surface, immediately above bedrock, and at an intermediate depth, for a total of six samples. All samples were submitted for laboratory analysis for radionuclides.
02-003(d)	In Progress	AOC 02-003(d) is potential contamination associated with the historical location of a "garden hose" that served as the gaseous effluent line for the Water Boiler Reactor. The garden hose was used until the stack on the mesa-top (structure 2-9) was built. The Water Boiler Reactor operated from 1944 to 1974. The ER Project conducted an RFI at AOC 02-003(d) in 1995, but did not document the investigation in a written report. Four samples were collected and submitted for laboratory analysis of inorganic chemicals and radionuclides.

		Additional sampling was conducted at AOC 02-003(d) in 2000 as part of the post-Cerro Grande Fire recovery. A surface sample and subsurface sample were collected at each location, along with one field duplicate for a total of seven samples. Subsurface samples were collected at a depth of approximately 2.5 ft. All samples were submitted for laboratory analysis for inorganic chemicals and radionuclides.
02-003(e)	In Progress	AOC 02-003(e) is the former location of an 800-L stainless steel holding tank (structure 02-62) that was associated with the Water Boiler Reactor. The Water Boiler Reactor operated from 1944 to 1974. The holding tank collected reactor-cooling water in case a breach occurred in one of the cooling coils in the reactor sphere. Radiation levels were not above instrument background levels when the tank and associated valves were removed during D&D in 1986. Soil samples from beneath the tank registered low activity levels (63 pCi/g), and the affected soil was removed until remaining activity levels fell below 25 pCi/g. The ER Project conducted an RFI at AOC 02-003(e) in 1995. Ten samples were collected and field-screened for organic chemicals and radionuclides. Field-screening results showed no detectable organic chemicals and no alpha activity above instrument background. Dose rates also were below instrument background. Beta/gamma activity was slightly above instrument background. The samples were submitted for laboratory analysis of inorganic chemicals and radionuclides. Additional sampling was conducted at AOC 02-003(e) in 2000 as part of the post-Cerro Grande Fire recovery. This sampling was conducted in conjunction with sampling at adjacent AOC 02-003(a). A single borehole was drilled at the site to the soil/bedrock interface. Radiation screening performed during drilling showed elevated readings, with a maximum of 4,000 dpm at a depth interval of 7.5 ft to 10 ft. Samples were collected at the surface, immediately above bedrock, and at 6 intermediate depths, for a total of 8 samples. The sampled intervals included the depths where elevated radiation was detected in the field screening. All samples were submitted for laboratory analysis for radionuclides.
02-004(a)	In Progress	AOC 02-004(a) is the Omega West Reactor, a uranium-enriched plate-type reactor contained in an 8-ft diameter x 24 ft-high closed stainless steel tank filled with cooling water. Two 28-in. hatches at the top of the reactor provided access to the inside of the tank when the reactor was shut down. The reactor was housed in the Omega West Reactor building (Building 02-1), which is a rectangular building about 220 ft x 110 ft. Off-gases from the Omega West Reactor were routed through a tank where vapor condensed before the gases were routed through a line to the discharge stack (structure 02-9). Primary cooling water was pumped through a closed system from the reactor tank to a surge tank and then into a cooling tower. From the cooling tower, the water was pumped into a Buffalo chiller (a cooling system) and then through ion-exchange tanks to remove contaminants. Effluent from this process was then pumped into three effluent storage tanks [see AOCs 02-004(b), 02-004(c), and 02-004(d)]. The waste in the tanks was subsequently pumped into the acid waste lines to TA-50 for treatment. Potential contamination came from two sources: small-volume leaks along the primary water cooling system and a break in a welded seam along the delay line running from Building 02-1 to the surge tank. The Omega West Reactor operated from 1953 until 1993, when it was put on standby status. Contaminants associated with operation of the reactor include fission products and activation products. Tritium and fission products, most notably cesium-137, strontium-90, and the activation product cobalt-60 were chosen as indicator contaminants during the investigation. Other potential contaminants associated with operation of the reactor are argon-41, technetium-99, uranium, plutonium, and mercury. In 1954, soil samples were taken downstream from Omega West Reactor and were analyzed for radionuclides and chemicals. Beta and/or gamma radiation above instrument background levels was detected at the points where fluid was leaving the site. In 1975, a sample was taken from the reactor's primary coolant water and was analyzed for radionuclides after several days, allowing short-lived radionuclides to decay. The sample contained cobalt-60, chromium-51, manganese-54, sodium-24, antimony-122 and –124, and tritium. In

		1985, a water sample was taken 100 yd downstream from TA-02, and cesium-137 levels were noted above the background values in the 1985 environmental surveillance report. Also, cesium-137 was detected at 6.2 pCi/g in a sediment sample taken a few hundred feet downgradient from TA-02 and at 0.34 pCi/g in a sediment sample taken upgradient from TA-02. The ER Project conducted an RFI at the Omega West Reactor in 1995 to determine if potential contaminants were present at the site. According to the RFI report, no samples were collected at AOC 02-004(a) because the facility was still active (on standby). Existing structures and utility lines presented safety concerns for drilling. The report stated that the AOC would be fully investigated during and after decommissioning of the Omega West Reactor. The reactor is scheduled to be decommissioned in 2003.
02-004(b)	In Progress	AOC 02-004(b) is one of three underground 1200-gal. stainless steel effluent storage tanks with rubberized liners (structure 02-54) associated with the Omega West Reactor [see AOC 02-004(a)]. The tanks were buried on an 8-ft x 23-ft concrete pad about 140 ft west of the Omega West Reactor building (Building 02-1). The tanks were used to store flushed effluents from the reactor's ion-exchange system. The waste in the tanks was subsequently pumped through the acid pit [AOC 02-004(e)] and into the acid waste lines to TA-50 for treatment. The reactor operated from 1953 until 1993, when it was put on standby status. Logs kept from 1970 to 1976 show that the activity of the water in the tanks was typically 1 mR/h. In at least six cases, however, activity was greater than 50 mR/h. Total gamma activity within the tanks was typically 1,000,000 pCi/L from cobalt-60. Other isotopes found in the water included chromium-51, manganese-54, antimony-124, and scandium-46. The ER Project conducted an RFI at AOC 02-004(b) in March 1995. An engineering survey for AOC 02-004(b) was conducted to review applicable engineering drawings and historical information and to conduct site reconnaissance to identify sample locations. Seven samples were collected from three locations at AOC 02-004(b). The samples were field-screened for organic chemicals and radioactivity. No organic chemicals were detected. Alpha activity was not detected above an instrument background of 0 cpm. Beta/gamma activity was detected at 40 cpm to 60 cpm above an instrument background of 100 cpm, and dose rates were not detected above an instrument background of 50 mR/h. The samples were submitted for fixed-laboratory analysis for inorganic chemicals and radionuclides. Ten inorganic chemicals were detected at concentrations above BVs. Three radionuclides were detected at concentrations above FVs. Six radionuclides were detected that lack FVs. Deviations from the SAP resulted in sample data that do not represent the most likely contaminated areas and that are not indicative of the nature and extent of contamination. No samples were collected from below the grade of the tanks. The RFI report stated that the below-grade samples would be collected when the Omega West Reactor is decommissioned, and recommendations about the disposition of AOC 02-004(b) would be deferred until the reactor is decommissioned. The tank was removed during the summer of 2000 under the Cerro Grande Fire Recovery Program. Samples were collected at that time.
02-004(c)	In Progress	AOC 02-004(c) is one of three underground 1200-gal. stainless steel effluent storage tanks with rubberized liner (structure 02-55) associated with the Omega West reactor [see AOC 02-004(a)]. The tanks were buried on an 8-ft x 23-ft concrete pad about 140 ft west of the Omega West Reactor building (Building 02-1). The tanks were used to store flushed effluents from the reactor's ion-exchange system. The waste in the tanks was subsequently pumped through the acid pit [AOC 02-004(e)] and into the acid waste lines to TA-50 for treatment. The reactor operated from 1953 until 1993, when it was put on standby status. Logs kept from 1970 to 1976 show that the activity of the water in the tanks was typically 1 mR/h. In at least six cases, however, activity was greater than 50 mR/h. Total gamma activity within the tanks was typically 1,000,000 pCi/L from cobalt-60. Other isotopes found in the water included chromium-51, manganese-54, antimony-124, and scandium-46.

		The ER Project conducted an RFI at AOC 02-004(c) in March 1995. An engineering survey for AOC 02-004(c) was conducted to review applicable engineering drawings and historical information and to conduct site reconnaissance to identify sample locations. Samples were collected from three locations at AOC 02-004(c). The samples were field-screened for organic chemicals and radioactivity. No organic chemicals were detected. Alpha activity was not detected above an instrument background of 0 cpm. Beta/gamma activity was detected at 40 cpm to 60 cpm above an instrument background of 100 cpm, and dose rates were not detected above an instrument background of 50 mR/h. The samples were submitted for fixed-laboratory analysis for inorganic chemicals and radionuclides. Ten inorganic chemicals were detected at concentrations above BVs. Three radionuclides were detected at concentrations above FVs. Six radionuclides were detected that lack FVs. Deviations from the SAP resulted in sample data that do not represent the most likely contaminated areas and that are not indicative of the nature and extent of contamination. No samples were collected from below the grade of the tanks. The RFI report stated that the below-grade samples would be collected when the Omega West Reactor is decommissioned, and recommendations about the disposition of AOC 02-004(c) would be deferred until the reactor is decommissioned. The tank was removed during the summer of 2000 under the Cerro Grande Fire Recovery Program. Samples were collected at that time.
02-004(d)	In Progress	AOC 02-004(d) is one of three underground 1200-gal. stainless steel effluent storage tanks with rubberized liners (structure 02-56) associated with the Omega West Reactor [see AOC 02-004(a)]. The tanks were buried on an 8-ft x 23-ft concrete pad about 140 ft west of the Omega West Reactor building (Building 02-1). Surface runoff from the tank area flows southward to Los Alamos Creek. The tanks were used to store flushed effluents from the reactor's ion-exchange system. The waste in the tanks was subsequently pumped through the acid pit [AOC 02-004(e)] and into the acid waste lines to TA-50 for treatment. The reactor operated from 1953 until 1993, when it was put on standby status. Logs kept from 1970 to 1976 show that the activity of the water in the tanks was typically 1 mR/h. In at least six cases, however, activity was greater than 50 mR/h. Total gamma activity within the tanks was typically 1,000,000 pCi/L from cobalt-60. Other isotopes found in the water included chromium-51, manganese-54, antimony-124, and scandium-46. The ER Project conducted an RFI at AOC 02-004(d) in March 1995. An engineering survey for AOC 02-004(d) was conducted to review applicable engineering drawings and historical information and to conduct site reconnaissance to identify sample locations. Samples were collected from three locations at AOC 02-004(d). The samples were field-screened for organic chemicals and radioactivity. No organic chemicals were detected. Alpha activity was not detected above an instrument background of 0 cpm. Beta/gamma activity was detected at 40 cpm to 60 cpm above an instrument background of 100 cpm, and dose rates were not detected above an instrument background of 50 mR/h. The samples were submitted for fixed-laboratory analysis for inorganic chemicals and radionuclides. Ten inorganic chemicals were detected at concentrations above BVs. Three radionuclides were detected at concentrations above FVs. Six radionuclides were detected that lack FVs. Deviations from the SAP resulted in sample data that do not represent the most likely contaminated areas and that are not indicative of the nature and extent of contamination. No samples were collected from below the grade of the tanks. The RFI report stated that the below-grade samples would be collected when the Omega West Reactor is decommissioned, and recommendations about the disposition of AOC 02-004(d) would be deferred until the reactor is decommissioned. The tank was removed in the summer of 2000 under the Cerro Grande Fire Recovery Program. Samples were collected at that time.
02-004(e)	In Progress	AOC 02-004(e) was an acid pit (structure 02-53). It contained pumps and valves through which radioactive wastes from the Omega West Reactor storage tanks [AOCs 02-004(b), 02-004(c), and 02-004(d)] were directed to acid waste lines and transported to TA-50 for treatment. The reinforced-concrete pit measured 7 ft x 11 ft x 7 ft deep. About 0.5 ft of the pit was aboveground. The pit was located about 138 ft west of the Omega West Reactor building (Building 02-1) and 18 ft west of the cooling tower (structure 02-49). The reactor operated from 1953 until 1993, when it was put on

		standby status. The ER Project conducted an RFI at AOC 02-004(e) in March 1995 to confirm the presence or absence of contaminants in or near the acid pit. An engineering survey for AOC 02-004(e) was conducted to review applicable engineering drawings and historical information and to conduct site reconnaissance to identify sample locations. Nine locations at AOC 02-004(e) were surveyed for radioactivity. No alpha activity was detected above instrument background of 0 cpm. Beta/gamma activity was detected at 0 to 700 cpm above instrument background of 200 cpm, and dose rates ranged from 20 to 270 mR/h above instrument background of 30 mR/h. Two surface soil samples were collected and submitted for laboratory analysis for inorganic chemicals and radionuclides. Inorganic chemicals and radionuclides were detected at concentrations above BVs/FVs. Six radionuclides were detected that lack FVs. Deviations from the SAP resulted in sample data that do not represent the most likely contaminated areas and that are not indicative of the nature and extent of contamination. The RFI report stated that additional sampling at AOC 02-004(e) would be conducted when the Omega West Reactor undergoes D&D and that recommendations concerning the disposition of AOC 02-004(e) would be deferred until the reactor is decommissioned. The concrete pit was removed during the summer of 2000 under the Cerro Grande Fire Recovery Program. Samples were collected at that time.
02-004(f)	In Progress	AOC 02-004(f) is a 49-ft x 26-ft equipment building (Building 02-44) that contains several pumps, including the main circulating pump for the Omega West Reactor's cooling water, a Buffalo chiller (a cooling system), and an ion-exchange filter system. The building is located about 75 ft west of the Omega West Reactor building (Building 02-1), 80 ft north of Los Alamos Creek, and 10 ft north of the cooling tower (structure 02-49). Small spills of primary and processed cooling water (which were common), and regenerant water from the ion-exchange system emptied through a floor drain in Building 02-44. When contamination was noted, the building was cleaned by hosing down the walls and allowing the water to discharge out the front door to Los Alamos Creek. The ER Project conducted an RFI at AOC 02-004(f) in March 1995 to confirm the presence or absence of contaminants in or near the equipment building. An engineering survey for AOC 02-004(f) was conducted to review applicable engineering drawings and historical information and to conduct site reconnaissance to identify sample locations. One surface soil sample and one QA/QC sample were collected and submitted for laboratory analysis for inorganic chemicals and radionuclides. One inorganic chemical was detected at concentrations above BVs. Six radionuclides were detected that lack BVs. Deviations from the SAP resulted in sample data that do not represent the most likely contaminated areas and that are not indicative of the nature and extent of contamination. The RFI report stated that additional sampling at AOC 02-004(f) would be conducted when the Omega West Reactor undergoes D&D and that recommendations about the disposition of AOC 02-004(f) would be deferred until the reactor is decommissioned. Decommissioning of the building is scheduled to be completed by October 2003.
02-004(g)	In Progress	AOC 02-004(g) was a 300-gal. portable storage tank. The tank was located on a platform near a guard station (structure 02-69) and was used in emergencies to store liquids from three underground storage tanks [AOCs 02-004(b), 02-004(c), and 02-004(d)] associated with the Omega West Reactor. The tank was inactive for three years before being removed. The platform and the tank were taken to TA-50 in 1986. The ER Project conducted field sampling in March 1995 at the former location of AOC 02-004(g), but no report was issued. Surface soil samples collected around the former location of the tank were field-screened for organic chemicals and radioactivity. Organic chemicals were not detected, and radioactivity was not detected above instrument background. Three samples were collected during field sampling. The samples were analyzed for inorganic chemicals and radionuclides. Upon further investigation it was discovered that the tank's location was misidentified. Sampling will be conducted at the correct location of the former tank.

02-005	In Progress	SWMU 02-005 is an area affected by drift loss of potassium dichromate from the Omega West Reactor cooling tower (structure 02-49) from 1957 to the mid-1970s. Potassium dichromate was added to the cooling water to prevent corrosion of aluminum heat exchangers. Deposition from drift loss occurred mainly to areas north and east of the Omega West Reactor building (Building 02-1) because of the northeasterly wind direction that prevails in that part of Los Alamos Canyon. Potassium dichromate use was discontinued in the mid-1970s when the aluminum heat exchangers were replaced by stainless steel heat exchangers. The ER Project conducted an RFI at SWMU 02-005 in 1995 but no report was issued. Field-screening results showed no detectable concentrations of organic chemicals and no alpha activity above instrument background. Dose rates also were below instrument background. Beta/gamma activity was slightly above instrument background. In all, 14 RFI samples were collected. The samples were submitted for laboratory analysis of inorganic chemicals and radionuclides.
02-006(a)	In Progress	SWMU 02-006(a) is a French drain associated with operation of the Omega West Reactor. The stack and drain are located on the mesa above TA-02, in TA-61. The drain was designed to catch any condensate that might flow down the exhaust stack (structure 02-9). The drain is made of 2-in. stainless steel, and is located on the mesa top south of Los Alamos Canyon. The drain runs about 20 ft northwest of the exhaust stack into a dry well. The liquid subsequently was released to the soil. The Omega West Reactor operated from 1953 until 1993, when it was put on standby status. Suspect contaminants at SWMU 02-006(a) are radionuclides. The ER Project conducted RFI sampling at SWMU 02-006(a) in 1995 and collected one sample. The sample was analyzed for inorganic chemicals and radionuclides.
02-006(b)	In Progress	SWMU 02-006(b) is an acid waste line that transported effluent from several laboratories in the Omega West Reactor building (Building 02-1). The line was made of 4-in. Duriron pipe with Oakum fittings and lead joints. The effluent discharged to Los Alamos Creek. The waste line was taken out of service more than 30 years ago. Specific chemicals discharged to this line are not known. The ER Project conducted RFI sampling at SWMU 02-006(b) in 1995, but no report was issued documenting the investigation. One sample was collected and submitted for laboratory analysis for inorganic chemicals, organic chemicals, and radionuclides. Additional sampling was conducted at SWMU 02-006(b) in 2000 as part of the post-Cerro Grande Fire recovery. Surface samples were collected from two locations near Los Alamos Creek. Collection of additional subsurface samples had been planned, but these samples could not be collected because of high stream flow in the creek. All samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals.
02-006(c)	In Progress	AOC 02-006(c) is a combined drainline connected to the chemical room in the Omega West Reactor building (Building 02-01) and several laboratories at 02-01. Drainline effluent reportedly discharged to Los Alamos Creek; however, engineering drawing C-1750 show the drainline discharging to a disposal unit. The OU 1098 work plan stated that the lines probably drained to the then current septic system (02-43). The 1993 Wastewater Stream Characterization for TA-02 states the line flows to a lift station which pumps the sewage up to the TA-03 sanitary waste collection system. The ER Project has conducted no RFI sampling at AOC 02-006(c).
02-006(d)	In Progress	AOC 02-006(d) is a drainline that received effluent from the Building 02-1 reactor control room air conditioner, sink, backflow preventer valve, and water fountain. According to the 1990 SWMU report, the drainline discharged to Los Alamos Creek. The outlet for the drainline is not shown on engineering drawings, and the exact location of the drainline was not determined. The OU 1098 work plan stated that this AOC would not be sampled because the exact location of the drain is unknown and there was no evidence of a discharge outlet to Los Alamos Creek from the vicinity of

		the room where the drain was reportedly located.
02-006(e)	In Progress	AOC 02-006(e) is a sump (structure 02-26) that received effluent from Building 02-1 reactor room floor drains and mezzanine discharge. The sump overflowed into Los Alamos Creek. Several small spills of primary cooling water are reported to have occurred when hatches to the reactor tank were opened and condensed reactor water spilled onto the top of the reactor tank and through the AOC 02-006(e) drain. Suspect contaminants are long-lived fission products. The ER Project conducted RFI sampling at AOC 02-006(e) in 1995 but did not document the investigation in a written report. One sample was collected and submitted for laboratory analysis of inorganic chemicals and radionuclides. Additional sampling was conducted at AOC 02-006(e) during 2000 as part of the post-Cerro Grande Fire recovery. Samples were collected from two locations at the site. Surface samples were collected at both locations and a subsurface sample was collected at a depth of approximately 2 ft from one location. Problems with sampling equipment prevented collection of subsurface samples at both locations. All samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals.
02-007-00	In Progress	Consolidated SWMU 02-007-00 consists of former SWMUs 02-007, 02-009(a), 02-009(b), and 02-009(c). Former SWMU 02-007 is the site of a decommissioned septic tank (structure 02-43) and drainline that received sanitary wastes from the Omega West Reactor building (Building 02-1) until the 1950s. The tank was constructed of reinforced concrete and measured 13 ft x 8 ft x 6 ft deep. Overflow from the tank was transported to a canyon outfall by a 6-in. VCP. The septic tank was reportedly disconnected from the sewer line in the 1950s; however, there is no information on how sanitary waste was handled from the 1950s to the 1970s. Memoranda from 1957 and 1967 indicate that the sludge and effluent from the septic tank were contaminated from reactor operations. A 1967 memorandum states that contaminants in the tank sludge were uranium-235, strontium-90, and cesium-137. Samples from outside the tank showed the same contaminants. The septic tank sludge was resampled in 1967 and then removed in 55-gal. containers to TA-54 for disposal. The septic tank and its associated drainage were again noted to be contaminated in 1979. The Omega West Reactor sanitary system was connected to the TA-41 treatment plant in the mid-1970s. From the mid-1970s until 1986, the tank received water pumped from the basement of Building 02-1 that was infiltrating from area springs. The septic tank and drainline were decommissioned and removed in 1986 during D&D of the Water Boiler Reactor. The 6-in. VCP between the Building 02-1 basement and the septic tank was rerouted by teeing off a 6-in. PVC pipe from a location near structure 02-43, directly to the creek a few feet downstream from the concrete debris catcher (structure 02-39). No contamination was detected in the tank during decommissioning; however, elevated radioactivity was detected in soil near the structure 02-43 outfall. The soil was removed during decommissioning. Based on the operational history of TA-02, suspected contaminants at former SWMU 02-007 include cesium-137, strontium-90, technetium-99, cobalt-60, tritium, uranium, isotopic plutonium, chromium, and mercury. Former SWMU 02-009(a) is an area of radioactive soil contamination located uphill from a boulder south of the fence corner behind the Omega-50 storage building (structure 02-50). The area was discovered in 1986 during D&D of the Water Boiler Reactor and associated buildings. A survey uphill of the boulder indicated contamination as high as 273 pCi/g. Suspect contaminants are those associated with the Water Boiler Reactor and include technetium-99, strontium-90, iodine-131, and cesium-137. Former SWMU 02-009(b) is an area of radioactive subsurface soil contamination located north of a stack-gas valve house (structure 02-19) and near the bridge at TA-

		02. The SWMU was identified during 1986 D&D activities. Contamination remained north of structure 02-19 following removal of several contaminated items and the addition of six inches of topsoil to the area. The TA-02 bridge was used as a truck-staging area during D&D activities in 1986 when detectable activity was found in the area. Suspect contaminants are those associated with the Water Boiler Reactor and include technetium-99, strontium-90, iodine-131, and cesium-137. Former SWMU 02-009(c) is composed of two areas of radioactively-contaminated soil south of a former condensate trap [structure 02-48, addressed as AOC 02-003(b)]. The areas were discovered during 1986 D&D activities associated with the Water Boiler Reactor. The first area is associated with a condensate trap from the gaseous effluent stack line for the Water Boiler Reactor and consists of a primary pit (north of Los Alamos Creek) and a secondary pit (south of Los Alamos Creek), which were used during the removal of structure 02-48. To remove subsurface structures associated with structure 02-48, a primary pit was excavated at the site. Infiltrating groundwater and contaminated soil prevented removal of the subsurface components. It became necessary to pump the infiltrating groundwater from the excavation around structure 02-48 to a secondary pit. When all of structure 02-48 was removed, the final cesium-137 activity in the soil of the primary pit was 1000 pCi/g left at a depth greater than 5 ft. This area was covered with 7 ft of clean fill. The second area of contamination at former SWMU 02-009(c) is associated with a leach field that was part of a former septic tank (structure 02-43) (former SWMU 02-007, described above). Two contaminated lengths of 6-in. VCP, totaling 54 ft of pipe, were uncovered below the route of the structure 02-43 septic tank drainpipe (former SWMU 02-007). The size of the original contaminated area was 83 ft x 22 ft, and beta-gamma activity was 2000 pCi/g to 4000 pCi/g with no detected alpha activity. The arrangement of rock, sand, and pipe were indicative of a leach field. Structure 02-43 had an effluent pipe that discharged in the suspected leach field area. Contamination in the pipe segments was a mixture of alpha, beta, and gamma emitters, the primary alpha emitter being uranium-235. Contaminated soil was removed to groundwater level. Samples taken 6 ft to 8 ft below the original grade showed remaining concentrations of beta/gamma emitters at 53 pCi/g to 67 pCi/g, with no alpha activity above detection limits. The area was backfilled with clean tuff. The ER Project conducted an RFI at former SWMU 02-007 in 1995 but did not document the investigation in a written report. Field-screening results showed no detectable concentrations of organic chemicals and no alpha activity above instrument background. Dose rates were below instrument background. Beta/gamma activity was slightly above instrument background. Eight samples were collected and submitted for analysis of inorganic chemicals, organic chemicals, and radionuclides. The ER Project conducted an RFI at former SWMU 02-009(a) in 1995 but did not document the investigation in a written report. Field-screening results showed no detectable concentrations of organic chemicals and no alpha activity above instrument background. Beta/gamma activity was slightly above instrument background. Eight samples were collected and were submitted for analysis for inorganic chemicals, organic chemicals, and radionuclides. The ER Project conducted an RFI at former SWMU 02-009(b) in 1995 but did not document the investigations in a written report. Field-screening results showed no detectable concentrations of organic chemicals and no alpha activity above instrument background. Beta/gamma activity was slightly above instrument background. Eleven samples were collected and were submitted for analysis of inorganic chemicals and radionuclides. The ER Project conducted an RFI at former SWMU 02-009(c) in 1995 but did not document the investigation in a written report. Samples were field-screened; no organic chemicals were detected and there was no alpha activity above instrument background.

		Beta/gamma activity was slightly above instrument background. Thirty-six samples were collected and submitted for analysis of inorganic chemicals, organic chemicals, and radionuclides. Additional sampling was conducted at former SWMU 02-009(b) in 2000 as part of the post-Cerro Grande Fire recovery. Two boreholes were drilled at the site to the soil/bedrock interface. Samples were collected at the surface and immediately above bedrock at both boreholes. Samples were also collected at two intermediate depths in one borehole and at three intermediate depths in the other borehole, for a total of nine samples. All samples were submitted for laboratory analysis for radionuclides. Additional sampling was conducted at former SWMU 02-009(c) in 2000 as part of the post-Cerro Grande Fire recovery. Twelve boreholes (biased on previous sampling data) were drilled at the site to the soil/bedrock interface. Composite samples were collected from each 2.5-ft core interval, screened in a field laboratory for strontium-90, and submitted for fixed laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. A total of 75 samples plus 1 duplicate were collected and submitted for analysis. The results of the field screening of the soil samples indicated no clear hot spots or plume delineation. A post-Cerro Grande Fire radiation walk over survey identified elevated beta/gamma radiation at one location at former SWMU 02-009(c). Radiation levels at this location were approximately two times background. As part of the post-Cerro Grande Fire recovery in 2000, soil at this location was excavated by hand for removal. One confirmatory soil sample was then collected at this site. The excavated area was backfilled with clean soil, reseeded, mulched, and stabilized with jute matting. A post-Cerro Grande Fire radiation survey identified elevated beta/gamma radiation at five locations at former SWMU 02-009(a). As part of the post-Cerro Grande Fire recovery in 2000, soil at these locations was excavated for removal. Excavation was conducted by hand at small areas and using a backhoe at larger areas. A total of approximately 58 cu yd of soil was removed. Confirmatory soil samples were then collected at four locations. At two of these locations, samples were collected at the surface and at a depth interval of 2 to 2.5 ft. At the other two locations, samples were collected at the surface and at depth intervals of 2 to 2.5 ft and 5 to 5.5 ft. One field duplicate sample was also collected, for a total of 11 samples. All samples were submitted for laboratory analysis for inorganic chemicals and radionuclides. The excavated areas were backfilled with clean soil, reseeded, mulched, and stabilized with jute matting.
02-008(a)	In Progress	SWMU 02-008(a) is NPDES-permitted outfall EPA 03A020 (removed from LANL's NPDES permit effective July 11, 1995), which discharged blow-down from the Omega West Reactor cooling tower (structure 02-49) to Los Alamos Creek. The cooling tower was built in 1957 and periodically discharged blow-down to the creek until 1963, when the liquid waste storage system was added to the Omega West Reactor process. Until the mid-1970s, potassium dichromate routinely was added to the cooling water to prevent corrosion of the aluminum heat exchangers. The cooling tower underwent D&D in June 2000 and was removed. The ER Project conducted RFI sampling at SWMU 02-008(a) in 1995 but the investigation was not documented in a report. One sample was collected and submitted for analysis for inorganic chemicals, organic chemicals, and radionuclides. Additional sampling was conducted at SWMU 02-008(a) in 2000 as part of the post-Cerro Grande Fire recovery. One surface sample was collected near the outfall and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. The report documenting this sampling effort associated the sampling with AOC 02-011(e), which is a duplicate of SWMU 02-008(a).

02-008(b)	Administratively Complete	SWMU 02-008(b) was initially identified as an inactive photo-processing outfall from Building TA-2-4. Building TA-2-4 was constructed in the late 1940s and was used for guard quarters, later it was used for storage purposes. Interviews with site personnel indicated that the building did not house a photo-processing operation. Engineering drawings, site visits established that no plumbing or drains ever existed in building TA-2-4. NMED conducted a site visit on January 24, 2001 and could not locate the outfall at the reported location. Field investigation and archival information do not indicate the presence of any outfall in the vicinity of this building. This site was proposed for NFA in an RFI report, which was approved by NMED in a letter dated September 23, 1997. SWMU 02-008(b) is appropriate for NFA under Criterion 1 because the site does not exist.
02-008(c)	In Progress	AOC 02-008(c) is an unpermitted outfall that discharged from the basement of the Omega West Reactor building (Building 02-1) to Los Alamos Creek. The outfall was adjacent to a concrete debris catcher (structure 02-39). The outfall began operation in 1985 when the drainline from Building 02-1 leading to a septic tank (structure 02-43) was disconnected during tank removal. The drainline was joined to a 6-in. PVC pipe that came from a sump. This line became plugged in 1988 and was left in place. The primary discharge to the outfall was spring water that infiltrated into the basement of Building 02-1, which housed several reactors. Because the drainline originated in the basement where reactors were housed, suspect contaminants at the outfall were tritium, fission products, and chromium. The ER Project conducted an RFI at AOC 02-008(c) in 1995. Field screening showed no detectable concentrations of organic chemicals and no alpha activity above instrument background. Dose rates also were below instrument background. Beta/gamma activity was slightly above instrument background. Five samples were collected and were submitted for analysis for inorganic chemicals and radionuclides.
02-009(d)	In Progress	AOC 02-009(d) is an area of radioactive contamination located near the east end of Building 02-1, which is the Omega West Reactor building. This contamination was discovered during decommissioning and removal of inactive structures at TA-2 during 1985 and 1986. The 1990 SWMU report notes that a vegetation sample from a tree in this area was analyzed and found to be radioactive. The source of the contamination at AOC 02-009(d) is not known. The ER Project conducted an RFI at AOC 02-009(d) in 1995, but did not document the investigation in a written report. Additional sampling was conducted at AOC 02-009(d) in 2000 as part of the post-Cerro Grande Fire recovery. One borehole was drilled at the site to the soil/bedrock interface. Samples were collected at the surface, immediately above the bedrock, and at two additional depth intervals for a total of four samples. These samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals.
02-009(e)	In Progress	AOC 02-009(e) is a duplicate of former SWMU 02-009(c), which is now part of consolidated SWMU 02-007-00.
02-010	In Progress	AOC 02-010 is residual soil contamination associated with a former chemical waste shack (structure 02-3). The chemical shack was built in 1944 or 1945 and contained a 6 ft x 7 ft x 20 ft-high hot cell that had 18-in.-thick walls. The hot cell was used to reprocess uranyl nitrate solution from the Water Boiler Reactor and for chemical studies on uranium-235. About 4 ft 9 in. of the hot cell was located underground. Before the hot cell was removed in 1971, cesium-137 was detected on the cell's floor, on lead bricks within a hood in the shack, and in the drain below the sink in the shack. A corrective action was performed in 1971 in which the shack, sewer line, and surrounding vegetation and soils were removed. A radiation survey performed following the corrective action showed no detectable alpha or beta/gamma radioactivity. The former location of the chemical waste shack is now occupied by the boiler house (Building 02-63). The ER Project conducted field screening at AOC 02-010 in 1995, but did not

		document the effort in a written report. Field-screening results showed no detectable concentrations of organic chemicals and no alpha activity above instrument background. Beta/gamma activity was elevated slightly above instrument background. Additional sampling was conducted at AOC 02-010 in 2000 as part of the post-Cerro Grande Fire recovery. One borehole was drilled at the site to a depth approximately 2.5 ft below the soil/bedrock interface. Samples were collected at the surface, immediately below the soil/bedrock interface, approximately 2.5 ft below the interface, and at two intermediate depths for a total of five samples. All samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals.
02-011(a)	In Progress	AOC 02-011(a) consists of the several storm drains and their related outfalls associated with the Omega West Reactor building (Building 02-1). These individual storm drain segments all drain either directly or indirectly to Los Alamos Creek, adjacent to Building 02-1. Suspect contaminants are associated with operations at the Omega West Reactor. The following storm drains are associated with this AOC: A concrete storm drain, about 50 ft long northwest of Building 02-1, that drains into a drop inlet (structure 02-36). There is no information that this drain handled anything but stormwater; a 24-in.-diameter, 8-ft-long underground CMP between structure 02-36 and another drop inlet (structure 02-27). There is no information that this drain handled anything but stormwater; an 85-ft-long concrete storm drain northwest of Building 02-1 that drains into structure 02-27. Water from the fuel transfer pit periodically was emptied into this trench. Contaminated aluminum shards commonly were discharged with the water and settled into the drain. This drain was cleaned out in 1970, but before it was cleaned, radioactivity as high as 30 mR/h was measured in the trench; a 15-in.-diameter, 15-ft-long concrete storm drain west of Building 02-1 that drains into a surface inlet (structure 02-28). There is no information that this drain handled anything but stormwater; a 24-in.-diameter, 10-ft-long concrete storm drain between structures 02-27 and 02-28. This drain may have handled the fuel pit water coming from the concrete flume, with associated contaminated aluminum shards; a 30-in.-diameter, 30-ft-long CMP between structure 02-28 and Los Alamos Creek. This drain may have handled the fuel pit water coming from the concrete flume, with associated contaminated aluminum shards; a 6-in.-diameter, 18-ft-long pipe between Building 02-1 and a salvage basin (structure 02-26) and Los Alamos Creek. This is also addressed in AOC 02-006(e); an 18-in.-diameter, 18-ft-long CMP between the Building 02-1 catch basin and Los Alamos Creek. There is no information that this drain handled anything but stormwater; a 3-in.-diameter, 25-ft-long pipe between Building 02-1 and Los Alamos Creek. There is no information that this drain handled anything but stormwater; a 12-in.-diameter, 12-ft-long drain northeast of Building 02-1 that discharged east of Building 02-1. There is no information that this drain handled anything but stormwater; and a 4-in.-diameter, 13-ft-long pipe between Building 02-1 and Los Alamos Creek. The pipe is suspected to be an acid waste line that was taken out of service in the 1960s.

		The pipe is addressed as SWMU 02-006(b) and is not included in this unit. The ER Project conducted an RFI at AOC 02-011(a) in 1995 but did not document the investigation in a written report. Eight samples were collected and submitted for analysis of inorganic chemicals and radionuclides. Additional sampling was conducted at AOC 02-011(a) during 2000 as part of the post-Cerro Grande Fire recovery. Samples were collected at three locations. Surface samples were collected at all three locations, along with one field duplicate. Subsurface samples were also collected at a depth of approximately 2.5 ft at two of the locations, for a total of six samples. All samples were submitted for laboratory analysis for inorganic chemicals and radionuclides.
02-011(b)	In Progress	AOC 02-011(b) consists of two former drains associated with former Building 02-19, the stack-gas valve house and the associated potential soil contamination. One drain was a 9 ft-long x 15-in. diameter CMP between former Building 02-19 and a former drainage basin (structure 02-35), and the second drain was a 9-ft-long x 24-in. diameter CMP from former structure 02-35 that drained outside the east fence. Suspect contaminants at the drains would have come from operations of the Clementine Reactor (no associated SWMUs or AOCs) and from the former Water Boiler Reactor. The ER Project conducted an RFI in 1995 at AOC 02-011(b) in conjunction with an RFI at 02-008(c). Samples were submitted for analysis of inorganic chemicals and radionuclides. Additional sampling was conducted at AOC 02-011(b) in 2000 as part of the post-Cerro Grande Fire recovery. A single borehole was drilled at the site to the soil/bedrock interface and samples were collected at the surface, immediately above bedrock, and at three intermediate depths, for a total of five samples. All samples were submitted for laboratory analysis for radionuclides.
02-011(c)	In Progress	AOC 02-011(c) is a storm drain associated with a reactor facility equipment building [AOC 02-004(f)], Building 02-44. The drainline is a 4-in.-diameter VCP that is approximately 12 ft long, and it drains outside the west fence. The ER Project will conducted sampling at this AOC when Building 02-44 undergoes D&D.
02-011(d)	In Progress	AOC 02-011(d) is a former NPDES-permitted outfall that discharged effluent from the reactor facility equipment building [AOC 02-004(f)], Building 02-44. Discharge was composed of primary cooling water from an ion-exchange system. Primary cooling water was circulated in the ion-exchange system to remove contaminants. Periodically, flushing clean city water through them would regenerate the ion-exchangers. Before 1963, effluent discharged directly to Los Alamos Creek. From 1963 to 1968, the effluent was held in three 1200-gal. storage tanks [AOCs 02-004(b), 02-004(c), and 02-004(d)] until short-lived radionuclides decayed or were diluted to a safe level before being discharged to the creek. After 1968, effluent was transferred to the three 1200-gal. tanks and then was transported to TA-50 for disposal. From 1957 to 1963, periodic sampling of the groundwater and creek water from monitoring points below the site showed no detectable increase in activity levels. AOC 02-011(d) was identified as outfall 03A019 on LANL's NPDES permit and was removed from the permit effective July 11, 1995. This outfall's location was incorrectly identified in the RFI work plan as discharging from AOC 02-011(c), west of Building 02-44. This outfall's location is south of Building 02-44. The ER Project conducted an RFI at AOC 02-011(d) in 1995, but the investigation was not documented in a written report. Five samples were collected and submitted for analysis for inorganic chemicals and radionuclides. Additional sampling was conducted at AOC 02-011(d) in 2000 as part of the post-Cerro Grande Fire recovery. Two surface samples, plus one field duplicate, were collected

		near the outfall. These samples were submitted for laboratory analysis for radionuclides.
02-011(e)	In Progress	AOC 02-011(e) is a duplicate of SWMU 02-008(a), the former NPDES-permitted outfall from the Omega West Reactor cooling tower (structure 02-49). Sampling was conducted at SWMU 02-008(a) in 2000 as part of the post-Cerro Grande Fire recovery. The report documenting this sampling associated the sample collected at SWMU 02-008(a) with AOC 02-011(e), rather than SWMU 02-008(a).
02-012	In Progress	AOC 02-012 is potential soil contamination beneath the former locations of two underground fuel storage tanks (structures 02-29 and 02-67). Structure 02-29 was a 1000-gal. fuel oil storage tank that was removed in 1950. Structure 02-67 was a 517-gal. tank that stored diesel fuel for an auxiliary generator at the Omega West Reactor building (Building 02-1). The tank was removed in 1950, and another tank, structure 02-1, has occupied the site since 1986. A UST tightness test performed at structure 02-1 and its associated lines in 1994 showed that neither the tank nor its associated lines were leaking. The ER Project conducted an RFI at AOC 02-012 in 1995 at the former location of structure 02-29 to confirm the presence or absence of subsurface contaminants. The site of the former tank is an asphalt parking area on the south side of Building 02-1 and about 40 ft north of Los Alamos Creek. Four samples were collected from one borehole at four depths. The samples were field-screened for organic chemicals and radionuclides. Alpha activity was not detected; beta/gamma activity was detected at 0 cpm to 40 cpm above an instrument background of 64 cpm. Organic chemicals were not detected. The samples were submitted for laboratory analysis for organic chemicals, inorganic chemicals, and PCBs. Uranium was detected at concentrations above BVs. In addition, other inorganic chemicals were detected but have no BVs. Organic chemicals and PCBs were not detected. A risk-based screening assessment was not performed for AOC 02-012 because the data set is insufficient to determine the nature and extent of contamination. Recommendations for this site were deferred until D&D of the Omega West Reactor. In addition, the area beneath and adjacent to structure 02-1 will be sampled after it is removed, pursuant to UST closure requirements. Additional sampling was conducted at AOC 02-012 in 2000 as part of the post-Cerro Grande Fire recovery. Two subsurface samples were collected from each of three locations at the site, plus one field duplicate for a total of seven samples. Samples were collected at depth intervals of 3 to 3.5 ft and 5 to 5.5 ft. All samples were submitted for laboratory analysis for total uranium and total petroleum hydrocarbons.
02-013	Administratively Complete	
03-001(a)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a) Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b) Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c) Less-than-ninety-day storage area , TA-3, Former Operable Unit 1114 SWMU 03-002(b) Satellite Accumulation Area , TA-3, Former Operable Unit 1114

		SWMU 14-004(b) Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d) Sateflite Accumulation Area , TA-16, Former Operable Unit 1082 SWMU 16-012(i) Satellite Accumulation Area , TA- 16, Former Operable Unit 1082 SWMU 16-012(j) Satellite Accumulation Area , TA-16, Former Operable Unit 1082 SWIM 16-012(l) Satellite Accumulation Area , TA-16, Former Operable Unit 1092 SWMU 16-012(m) Satellite Accumulation Area , TA-16, Former Operable Unit 1082 8WMU 16-012(n) Satellite Accumulation Area , TA-16, Former Operable Unit 1082 SWMU 16-012(p) Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t) Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u) Satellite Accumulation Area , TA-16, Former Operable Unit 1082 SWMU 16-012(x) Satellite Accumulation Area , TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
03-001(b)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, ,TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area,TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i), Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately,

		these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
03-001(c)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i)Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
03-001(d)	Administratively Complete	PRS 03-001(d) was a satellite storage area established at the Laboratory in conformance with 40 CFR 262. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. If a release occurred at one of these areas, it would have been cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases would be cleaned up immediately, these units do not have the potential to become historical release sites. The EPA and the Laboratory have agreed that accumulation areas are not PRSs provided that they have no history of release and have no credible pathways to the environment (Twombly 1992, 17-681). These areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. No historical releases are known to have occurred at this site. This SWMU is appropriate for NFA under Criterion 3.
03-001(e)	In Progress	AOC 03-001(e) is a 15-ft x 4-ft inactive storage area that served a vacuum pump repair shop (Building 03-30). AOC 03-001(e) is located on the west side of Building 03-30. From about 1950 to 1957, waste oil contaminated with radionuclides, rinse solvents, and waste mercury from vacuum pumps that were repaired at the shop was discharged

		through a pipe to an area immediately west of Building 03-30 that was identified as SWMU 03-010(a). From 1957 to the early 1960s, waste was discharged from a sink and flowed directly to containers located outside in the storage area [AOC 03-001(e)]. Interviews with past site workers indicate that containers often overflowed before they were removed for disposal. In the early 1960s, the containers were replaced by a 100-gal. to 200-gal. holding tank with a concrete secondary-containment berm. Periodically, waste oil was pumped from the holding tank into containers for disposal at TA-54. A concrete sump was constructed in the storage area in about 1984 and the surrounding area was paved with asphalt. It is not known whether the area was regraded before it was paved. Once the sump was installed waste oil again was pumped directly into 55-gal. containers located on a grate above the sump. The vacuum repair operation was discontinued in 1992. The extent of contamination and risk associated with contamination from historical disposal practices and spills associated with AOC 03-001(e) were to be addressed primarily in association with investigations conducted for SWMU 03-010(a). The SWMU and AOC are near each other and share the same contaminant source. In 1993 a Phase I investigation at SWMU 03-010(a) resulted in a VCA to remove contaminated soil from that site. A Phase II investigation was conducted to address the extent of contamination from TPH and halogenated organic compounds that were detected in the Phase I investigation. As part of the Phase II investigation, surface and subsurface soil samples were collected from the area around SWMU 03-010(a) and a borehole was drilled between SWMU 03-010(a) and AOC 03-001(e) immediately west and adjacent to the sump. Analytical information from the borehole sampling showed that the contamination probably was associated with historical disposal practices at SWMU 03-010(a) and spills from containers that overflowed during waste oil transfer activities at AOC 03-001(e). Suspect contaminants include tritium, plutonium-238, plutonium-239, uranium, cesium-137, TPH, VOCs, and inorganic chemicals. In addition to investigations conducted for SWMU 03-010(a), the work plan addendum proposed evaluating the soils directly beneath the sump to determine the presence and nature of potential contamination associated specifically with AOC 03-001(e). A biased sampling approach was proposed because the sump's integrity was unknown. The sump is to be decontaminated and decommissioned concurrently with the sampling; 22 samples are proposed to be collected from 15 surface and subsurface locations beneath and surrounding the area.
03-001(f)	Administratively Complete	
03-001(g)	Administratively Complete	
03-001(h)	Administratively Complete	
03-001(i)	In Progress	AOC 03-001(i) consists of two inactive material and equipment storage areas located near a parks and refuse office building (Building 03-70). One of the storage areas was proposed for NFA; the other, "storage area #2," is a 50-ft x 150-ft, level, unpaved area located directly northeast of Building 03-70. This AOC was used as a staging area for old transformers, containers of roofing compound, tars, and roofing adhesives. Bagged and labeled asbestos materials also were stored here in dumpsters before they were disposed of at the Los Alamos County landfill. Although there was no staining or documented release from this area, workers from the adjacent salvage yard confirm that the transformers often contained PCBs. Workers from the parks and refuse office building stated that small spills and leaks from loading and unloading transformers may not have been documented. The work plan proposed a sampling investigation using locations randomly selected from a 10-square-ft grid at this AOC to determine if contamination exists here. A total of 13 surface samples are proposed to be collected from 11 locations and analyzed for PCBs, TPH, and VOCs. The RFI work plan for OU1114 was rejected by NMED and remains an open action item for future resolution.

03-001(j)	Administratively Complete	
03-001(k)	In Progress	SWMU 03-001(k) is the former location of a less-than-90-day hazardous waste accumulation area located on a level 40 x 50 ft asphalt paved area on the south side of Building 03-16 (Van de Graaff Building). The asphalt surrounds an 8 x 10 ft concrete pad abutting double doors to west of the storage area. Drums of vacuum oil, tritium and used solvents from experiments conducted in the building were stored in this area. Additionally, power supply equipment was reportedly stored at the site. Routine spills were documented in this area by the former waste management coordinator. In a 1979 aerial photograph of the site, storage sheds along the southern fence boundary are visible in addition to small containers against the south side of the building. A 1984 aerial photograph of the site clearly shows 2 to 3 upright 55-galllon drums and 2 to 3 product drums in a horizontal position and elevated off the asphalt directly adjacent to the south side of the building. Oil samples collected in 1989 by ESH-19 from the drums and power supply equipment at this location showed less than 50 ppm PCB and results from an asphalt chip sample also collected by ESH-19 in 1990 showed 7.8 ppm PCBs. During a 1992 site visit, ER Project personnel observed the asphalt and concrete areas directly south of Building 03-16 were devoid of any stains with the exception of two rust rings on the concrete. Based on the 1990 SWMU Report, this SWMU also includes a former SAA that was located inside a fully contained metal transportable storage container near the southwest corner of the building's perimeter fence. No releases are known to have occurred from the SAA. This SWMU was proposed for NFA in the OU 1114 Work Plan and in the September 1995 Request for Permit Modification under Criterion 4 – Regulated under Another Authority. NMED did not approve the NFA and issued an NOD. In the 1997 NOD response, LANL provided NMED with the 1989-1990 sample collection information and analytical results of samples collected from the SWMU in support of the NFA determination. In January 1999, NMED requested additional sampling at the site. NMED requested that LANL confirm whether the paved surface of the former storage area was asphalt or concrete (it is primarily asphalt); provide photographs of the SWMU location; and provide copies of all previous analytical results. During the November 1999 site visit, NMED indicated that two to four confirmation samples should be collected and analyzed for PCBs. To confirm nature and extent of any residual contamination at SWMU 03-001(k), LANL collected four asphalt samples and five surface soil samples directly beneath the asphalt in July 2001. All nine confirmation samples were analyzed for PCBs, inorganic chemicals and tritium. In addition, the soil samples were analyzed for organic chemicals. Analytical results from the July 2001 confirmation samples showed elevated levels of tritium and several organic chemicals and confirmed that nature and extent of contamination at the SWMU has not been determined. As a result, LANL formally withdrew the NFA proposal for SWMU 03-001(k) in a letter to NMED dated February 11, 2002.
03-001(l)	Administratively Complete	
03-001(m)	Administratively Complete	
03-001(n)	Administratively Complete	
03-001(o)	Administratively Complete	
03-001(p)	Administratively Complete	
03-001(q)	Administratively Complete	
03-001(r)	Administratively Complete	

03-001(s)	Administratively Complete	
03-001(t)	Administratively Complete	
03-001(u)	Administratively Complete	
03-001(v)	Administratively Complete	
03-001(w)	Administratively Complete	
03-001(x)	Administratively Complete	
03-001(y)	Administratively Complete	
03-002(a)	Administratively Complete	PRS 03-002(a) is a former less-than-90-day accumulation area located in Building TA-3-66, the Sigma Building. Less-than-90-day accumulation areas, such as PRS 03-002(a), are hazardous waste accumulation areas that are regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. Prior to its removal in 1995, the PRS consisted of two, 250-gal. plastic tanks and several 55-gal. drums that were used for the accumulation of spent chemicals from an electroplating process. This PRS was regulated under 40 CFR 262 and managed accordingly.
03-002(b)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i)Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
03-002(c)	In Progress	SWMU 03-002(c) is the site of a former 19 ft x 15 ft wood storage shed (structure 03-1494) located 100 ft west of the current Johnson Controls World Services, Inc., administrative office for roads and grounds. From the early 1960s through 1984, the shed was used to store containers of liquid and powdered pesticides and possibly

		herbicides. The wood floor reportedly was permeated with pesticides. The shed was removed in 1989 and the floor was disposed of as hazardous waste. Between 1994 and 1996, the original cement pad beneath the shed was surrounded by a new cement pad that covers the site. The ER Project conducted an RFI at SWMU 03-002(c) in 1994 to determine if the storage and transfer of pesticides at the shed released contaminants. Six samples were collected from five locations and analyzed for inorganic chemicals, pesticides/PCBs, herbicides, and organic chemicals. The samples were screened for organic chemicals and radioactivity. Screening results were negative for organic chemicals. Barium, mercury, silver, and zinc were detected above BVs. Alpha-chlordane, gamma-chlordane, and DDT were detected. No chemicals exceeded their respective SALs. The 1996 RFI report recommended NFA for SWMU 03-002(c) because the site was characterized in accordance with applicable state and federal regulations, and available data indicate that potential contaminants present pose no unacceptable human health risk under current and projected future land use.
03-002(d)	Administratively Complete	PRS 03-002(d) is a former drum storage area located in the paved parking lot southeast of Building TA-3-40, the Physics Building. Drums containing used dielectric fluid from electrical power supply units were stored at this PRS from 1982 to 1986. The dielectric fluid contained no RCRA solid or hazardous wastes and/or constituents. Therefore, SWMU 3-009(d) is appropriate for NFA under Criterion 2.
03-003(a)	In Progress	SWMU 03-003(a) is a decommissioned outdoor area that was used to store salvage electrical equipment, some of which contained PCB-contaminated oils. The storage area is an L-shaped 43-ft x 27-ft concrete pad surrounded by gravel-covered soil. The equipment was stored on the north and west sides of the Magnetic Energy and Storage Facility (Building 03-218). In 1986, a survey team noted six 55-gal. containers stored next to capacitors on asphalt on the building's north side. Some of the containers leaked as evidenced by staining that was still visible at the time the work plan for this SWMU was written. Other equipment, including PCB-containing capacitors and transformers, was stored on the west side of the building. Suspect contaminants are PCBs, TPH, and lead. The ER Project conducted a Phase I RFI at this SWMU in 1994. This SWMU was investigated concurrently with SWMUs 03-003(b) and 03-042. The sampling approach for the investigation was designed to determine whether PCBs and other SVOCs and/or metals remained in the asphalt or in the surface soils. Sample locations were identified using stained areas and buildings as reference points. Two confirmatory sample locations were selected based on PCB test kit analyses to provide information about the extent of potential PCB soil contamination. Eleven samples were taken from eight locations. Samples were field screened for organic chemicals. Confirmatory samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and PCBs. Mercury and zinc were detected at concentrations above BVs but less than SALs. PCBs were detected but concentrations were below SAL. The 1996 RFI report recommended NFA at SWMU 03-003(a) because the site was characterized in accordance with applicable state and federal regulations, and available data indicate that the site does not pose an unacceptable level of risk under current and projected future land use.
03-003(b)	In Progress	SWMU 03-003(b) was a temporary outdoor storage area that was used for salvage electrical equipment that contained oil. The SWMU is located west of Building 03-253, the Electron Prototype Laboratory. The storage area once held about 100 PCB capacitors; some were observed to be leaking. In 1985 and 1986, the capacitors and underlying stained soil were removed and the storage area was decommissioned. Suspect contaminants are PCBs, SVOCs and metals. The ER Project conducted a Phase I RFI at this SWMU in 1994. This SWMU was concurrently investigated with SWMUs 03-003(a) and 03-042. The sampling approach for the investigation was designed to determine whether PCBs, other SVOCs and/or metals remained in the asphalt or in the surface soils. Sample locations were identified using stained areas and buildings as reference points. Two confirmatory sample

		locations were selected based on PCB test kit analyses to provide information about the extent of potential PCB soil contamination. Ten samples were taken from eight locations. Samples were field screened for organic chemicals. Confirmatory samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and PCBs. Mercury and zinc were detected at concentrations above BVs but less than SALs. PCBs were detected but concentrations were below SAL. The 1996 RFI report recommended NFA at SWMU 03-003(b) because the site was characterized in accordance with applicable state and federal regulations, and available data indicate that the site does not pose an unacceptable level of risk under current and projected future land use.
03-003(c)	In Progress	SWMU 03-003(c) was a temporary equipment storage area for used dielectric oils and capacitors. It was located outdoors on the south side of Building 03-287 (Syllac Laboratory/Office Building). The area was used to temporarily store 3,300 non-PCB capacitors that were used in support of a magnetic fusion energy project. The sealed capacitors contained a non-PCB castor oil and the spark-gap switches each of which required approximately two quarts of non-PCB mineral oil for electrical insulation. Prior to the mid-1980s decommissioning of this experiment by a salvage contractor, many oil samples from spark gap switches and swipes from numerous surfaces within the room where the equipment was housed were analyzed and results showed less than 50 ppm PCBs. During the decommissioning of the experiment, some of the capacitors were temporarily stored outside the building at SWMU 03-003(c). Prior to the remodeling of Building 03-287 in late 1992 and early 1993 to house the Space Technology Center, a single surface sample was collected by ESH-19 in February of 1992 from the south side of Building 03-287 to supplement the previous PCB survey of the building's interior. Results showed less than 50 ppm PCBs. Building 03-287 was constructed during 1966-68 to house a magnetic fusion energy experiment known as the Scyllac Project. The Scyllac Project was a magnetic confinement experiment for the heating and confinement of hot plasmas. The experiment was constructed from 1968 to 1972 and operated from 1972 to 1978. The Scyllac experiment was energized by a capacitor bank housing the 3,300 sealed non-PCB capacitors. SWMU 03-003(c) was proposed for NFA in the OU 1114 Work Plan and in the September 1995 Request for Permit Modification under Criterion 4 – Regulated under Another Authority. NMED did not approve the NFA and issued an NOD. In the July 1997 NOD Response, LANL provided NMED with the two memorandums, which summarize the previous sampling results at the SWMU and support the determination for NFA. In January 1999, NMED requested additional documentation on the site. This SWMU was discussed with NMED in July 1999. NMED requested that LANL confirm whether the paved surface of the former storage area was asphalt or concrete (it is asphalt); provide photographs of the SWMU location; and provide copies of all previous analytical results. During the November 1999 site visit, NMED indicated that two to four confirmation samples should be collected and analyzed for PCBs to confirm nature and extent of any residual contamination. To confirm the nature and extent of any residual PCB contamination at the site in support of the pending NFA determination, three asphalt samples were collected from the designated area directly adjacent to the southeast corner of Building 03-287 and directly east of the large overhead metal door. Surface (0 to 12 inches) soil samples were also collected directly beneath the asphalt at each of the three asphalt sample locations for a total of six samples. Sample locations were biased towards any observed staining or cracks (if present) in the pavement at the site. Results showed low concentrations of PCBs (14 mg/kg) in one of the asphalt confirmation samples. The Scyllac Building and the asphalt outside the building are scheduled for D&D during FY03. Additional confirmation samples will be collected from the former location of SWMU 03-003(c) upon completion of D&D activities.
03-003(d)	Administratively Complete	
03-003(e)	Administratively Complete	

03-003(f)	Administratively Complete	
03-003(g)	Administratively Complete	
03-003(h)	Administratively Complete	
03-003(i)	Administratively Complete	
03-003(j)	Administratively Complete	
03-003(k)	Administratively Complete	
03-003(l)	In Progress	AOC 03-003(l) is an area of potential contamination from PCB transformers #5557 and #5558 that previously were located in the Van de Graaff Building (Building 03-16). The transformers became inactive in 1988 and were removed in 1989 and taken to Building 21-61 at TA-21, where they were drained. Staining was noted at AOC 03-003(l) in 1994. Confirmatory swipes revealed elevated PCB levels. The area was double-washed and double-rinsed immediately, but post-cleanup PCB concentrations remained elevated. Additional cleanup was deemed necessary at this AOC.
03-003(m)	Administratively Complete	
03-003(o)	Administratively Complete	
03-003(p)	In Progress	AOC 03-003(p) was a storage area east of a warehouse building (Building 03-142). The building dates from 1960. Containers and miscellaneous equipment, including capacitors and transformers, were stored at this AOC from 1960 to 1994. The capacitors may have contained PCB-contaminated oil, and site visits documented unlabeled containers and apparent stains on soil from spills and/or leaks from the containers or equipment. The storage area was resurfaced with asphalt in 1994 (except for an unpaved island that contains two trees) and slopes southward from the warehouse. Asphalt and soil samples collected in 1994 identified elevated soil lead levels in the island area. The work plan addendum recommended this site for a VCA because 1994 sampling data were available to identify suspect contaminants and the remedy could be rapidly implemented. The VCA was conducted in August 1995. Three soil samples were collected from the unpaved island area. Field screening results eliminated the need to sample for radionuclides, organic chemicals, and TPH. Samples were analyzed for inorganic chemicals and PCBs. Approximately 10 cubic yd of soil and asphalt were removed from the area in which elevated lead levels were identified in 1994. Confirmatory samples collected in September 1995 from the outer limits of the island indicate the area was successfully remediated. Site restoration included backfilling the excavated area and reseeding with native grasses. AOC 03-003(p) was proposed for NFA in the 1996 VCA report to DOE.
03-004(a)	Administratively Complete	
03-004(b)	Administratively Complete	
03-004(c)	In Progress	AOC 03-004(c) is an 85-ft x 50-ft dumpster storage area at the main loading dock of the CMR Building (Building 03-29). The area is level and paved with asphalt. Two dumpsters occupy the area; they are used to stage boxed, low-level (0 to 99 nCi/g, dose rate below 0.5 mR/hr per box, and boxes weighing not more than 15 kg) radioactive waste prior to disposal. The waste is generated from offices and material-handling areas in the CMR Building. One dumpster receives compactible waste and the other receives noncompactible waste. Waste consists of gloves, paper products, glass, plastic, and metal. Runoff from the dumpster area flows to a storm drain inlet grate about 50 ft southwest of the area. The storm drain eventually discharges at NPDES

		Outfall 03A021 [the outfall is AOC 03-054(e)] in upper Mortandad Canyon. Suspect contaminants at AOC 03-004(c) are inorganic chemicals, organic chemicals, and radionuclides. The ER Project conducted an RFI at this site in July 1997 to determine whether contaminants were present and, if so, to determine the extent of contamination. Eleven samples were collected from five locations. Based on sample analysis results, this AOC was recommended for human health NFA in the 1997 RFI report.
03-004(d)	In Progress	AOC 03-004(d) is a former 75-ft x 20-ft dumpster storage area on a level, gravel-covered surface located south of the steps at the west end of Wing 9 at the CMR Building (Building 03-29). Runoff from this AOC flows to a storm drain inlet grate located approximately 100 ft west of the area. The storm drain ultimately discharges into upper Mortandad Canyon at NPDES Outfall 03A021 [AOC 03-054(e)]. A dumpster historically was located at AOC 03-004(d). The dumpster was relocated in 1992 to within Wing 9. When the dumpster was located at the AOC site, it typically received contact-handled waste generated from operations of Wing 9 hot cells. The waste was comprised of rags, small hardware, paper, machine-shop waste, and cleaning materials, and occasionally a decontaminated hot-cell item. All waste was bagged and boxed before it was placed in the dumpster. Suspect contaminants at AOC 03-004(d) are inorganic chemicals and organic chemicals. The ER Project conducted an RFI at this site in July 1997 to determine whether contaminants were present and, if so, to determine the extent of contamination. Nine samples were collected from seven locations. Based on sample analysis results, this AOC subsequently was proposed for human health NFA in the 1997 RFI report.
03-004(e)	Administratively Complete	
03-004(f)	Administratively Complete	
03-006	Administratively Complete	
03-007	In Progress	AOC 03-007 is a decommissioned firing site located southwest of the rolling mill building (Building 03-141). AOC 03-007 is located within the security fence at the Sigma Complex. This AOC includes a containment building for explosive experiments (structure 03-159), and a personnel safety barrier (structure 03-160). Structure 03-159 sits on an 8-square-ft concrete slab and has 6-in.-thick x 8-ft-high walls. An opening on one side serves as an entrance. Structure 03-160 sits on a concrete slab and has two 8-ft-high x 4-ft-wide x 6-in.-thick walls. From 1970 to 1975, approximately 50 to 75 explosive shot experiments were detonated within structure 03-159. The structure was rinsed with water after each shot. Washdown water from within structure 03-159 was released to the environment (soil immediately surrounding the building) from engineered gaps between the concrete floor and structure walls. The rinse water drained into small drainage pathways and catchment areas and eventually migrated into a thin sheet flow exiting into Mortandad Canyon. The site was cleaned in the late 1970s and no HE was detected. In the mid-1980s, structure 03-159 was modified to serve as a storage building for thoria (oxide) and thorium (metal), which were containerized within the building. Suspect contaminants at this AOC were thorium, inorganic chemicals, and HE. The ER Project conducted an RFI at this AOC in July 1997. The purpose of the investigation was to determine the nature and extent of contamination, if any, associated with this AOC. Five soil samples were collected from five locations on the north and east sides of structure 03-159. Samples were field-screened for radioactivity and organic chemicals and were analyzed for organic chemicals, HE, and inorganic chemicals. AOC 03-007 was recommended for NFA in the 1997 RFI report.
03-008(a)	Administratively Complete	
03-008(b)	Administratively Complete	

03-009(a)-00	In Progress	SWMU 03-009(a)-00 is a consolidated unit that includes former SWMUs 03-009(a), 03-028, 03-029, 03-036(a,c,d), and 03-045(g) and AOCs 03-043(b,d,h). According to the work plan addendum, former AOCs 03-043(d) and 03-043(h) are duplicates of former SWMU 03-036(a) [SWMU 03-036(a) is two tanks; each duplicate describes one of the tanks], and former AOC 03-043(g) is a duplicate of former SWMU 03-036(d). Because AOCs 03-043(d), 03-043(g), and 03-043(h), are duplicates, they are not included in this SWMU description. These former SWMUs are associated with operations at the asphalt batch plant (Building 03-73). Former SWMU 03-009(a) is a 30-ft x 300-ft fill area that has operated since 1961. It is located on the rim of a small tributary of Sandia Canyon south of the asphalt batch plant. The fill was generated by plant operations and contains small amounts of concrete, building materials, and asphalt road-construction debris. The depth of the fill is unknown. The soil is not compacted and erodes during periods of heavy rainfall, when soil spills into the tributary and eventually into Sandia Canyon. A 20-ft section of asbestos pipe reportedly was observed at former SWMU 03-009(a) when the 1990 SWMU report was in preparation. Former SWMU 03-028 is a 12-ft x 15-ft x 6-ft-deep active concrete holding pond at the northeast corner of the asphalt batch plant. The site is a settling pond for mineral dust and particulates captured by scrubber water from the plant. Water from the pond is recycled to the scrubber system. Discharge is intermittent and averages 300 gal. per day. The pond is replenished with potable make-up water. The NPDES outfall from the pond was permitted under EPA 04A109 (as of February 2001, this outfall was no longer permitted under LANL's NPDES permit). The area around the plant and the pond is not paved. Historically, some water was diverted from the pond to wash vehicles and other equipment. Wash water discharged to a ditch that led to the edge of Sandia Canyon. The work plan stated the unpaved area around the plant and the pond of former SWMU 03-028 would be stabilized. The work plan also stated that because the plant is active and water in the pond is no longer dispersed, sampling should be deferred until the plant is decommissioned or the pond is no longer needed. Former SWMU 03-029 is a former 30-ft x 70-ft landfill located near the rim of Sandia Canyon, about 300 ft south of the sample management facility (Building 03-271). Historically, landfills like this one received excess asphalt and clean-out from the asphalt batch plant and later were covered with sand. The fills raised and leveled the surface areas at the mesa rim. Debris at this SWMU appears to be asphalt pieces of less than 1 square foot. The NMED issued an NOV to LANL in November 1990 concerning pieces of asphalt and an oily sheen found in the Sandia Canyon watercourse below Building 03-73. LANL completed the required corrective action at former SWMU 03-029 in early 1993. The corrective action involved removing the asphalt within the drainage and on the associated slope, regrading the watercourse and slope to support vegetation, extending the drainage, and constructing a concrete berm to prevent additional exposure of asphalt buried in the fill. Dense grass cover was seeded and maintained on all fill slopes and disturbed areas. NMED closed out this site on October 20, 1993, with a conditional approval for water monitoring if erosion or tar reappear in the outfall. Former SWMU 03-036(a) consists of two decommissioned product tanks (structures 03-75 and 03-76) located at the asphalt batch plant. The tanks were about 25 ft to 30 ft in diameter and 8 ft to 12 ft high, and held 20,000-gal. The tanks stored asphalt emulsion and were located within a soil-bermed secondary containment area about 225 ft southwest of the plant. Each tank was located within its own containment area, which measured about 50 ft in diameter. Operations resulted in some small spills from these tanks that were contained in the berms; however, structure 03-75 ruptured near its base and released about 1500 gal. of emulsion in 1987. The spill was contained within the berm, mixed with sand and disposed of at the Los Alamos County landfill. All soil around and beneath the tanks was removed, mixed with sand, hardened, and deposited at the Los Alamos County landfill. The tanks were removed, cut up and

		disposed of at the Los Alamos County landfill between 1988 and 1989. Former SWMU 03-036(c) was a 30,000-gal. tank (structure 03-173) that was relocated from TA-49 in 1963. The tank was used to store asphalt emulsion. While in use, the tank was partially buried, with sand and gravel packed around it. In 1989, the tank was removed, cut apart, and disposed of at the Los Alamos County landfill. Inspection revealed that the tank had not leaked. The area where the former tank was located currently is used to store aggregate and to mix feed for the asphalt batch plant. Former SWMU 03-036(d) was a 10,000-gal. underground asphalt emulsion storage tank (structure 03-335) made of steel. The tank was installed in 1967; it was 8 ft in diameter and 28 ft long and located about 12 ft north of the asphalt-emusion tank [structure 03-173, SWMU 03-036(c)]. The tank was cleaned out in 1989, removed, cut apart and disposed of at the Los Alamos County landfill. Inspection revealed that the tank never leaked. The area where the tank was located currently is used to store aggregate and to mix feed for the plant. Former AOC 03-043(b) was a 10,000-gal. storage tank (structure 03-77) installed in 1948 to store asphalt emulsion. The tank was partially buried, and the exterior was packed with sand and gravel. In 1980, the tank was cleaned out, removed, cut up, and disposed of at the Los Alamos County landfill. Stained soils beneath and around the tank were excavated and taken to the landfill. The area currently is used to store aggregate and to mix feed for the plant. Former SWMU 03-045(g) is a closed and locked storm drain and an NPDES-permitted outfall (EPA 04A109) that discharges to Sandia Canyon directly south of the plant. The storm drain has been closed and locked since late 1990. Historically, kerosene was applied liberally to truck beds before they were loaded with asphalt. Excess kerosene and asphalt were washed to the storm drain. Current practice is to mist the truck beds with small amounts of #2 diesel fuel before they are loaded with asphalt. Excess diesel fuel is collected in a tank (AOC C-03-016) and recycled. Since 1987 the only intentional discharge from the plant to the outfall was from two filter ponds used to collect dust from batching operations. Stormwater from parking lots, roads, and roof drains located west of the plant also discharges to the outfall. Other historical releases to the outfall are a one-time release (AOC C-03-005) and erosion of asphalt into the canyon, which is described in the unit description for former SWMU 03-029. On a reconnaissance trip to SWMU 03-009(a) in 1992, ER Project personnel saw no visual evidence of the asbestos pipe that was reportedly observed when the 1990 SWMU report was in preparation. Because of the remediation that was done for erosion control and the proposed further expansion of this fill area, the pipe, if present, was determined not to pose a human health or ecological risk. By 1993, a concrete dam had been installed at former SWMU 03-009(a) along the base of the fill to control erosion and to allow additional fill deposition to level the grade [see former SWMU 03-029 (above) for discussion of actions taken as a result of the NOV]. This site was proposed for NFA because the landfill was stabilized and does not contain RCRA hazardous wastes. The ER Project proposed former SWMUs 03-009(a), 03-036(a), 03-036(c), 03-036(d), and 03-045(g) and AOC 03-043(b) for NFA. The RFI work plan stated that the unpaved area around the asphalt batch plant and the pond of former SWMU 03-028 would be stabilized. The work plan also stated that because the plant is active and water in the pond is no longer dispersed, sampling should be deferred until the plant is decommissioned or the pond is no longer needed.
03-009(b)	Administratively Complete	SWMU 03-009(b) is a surface disposal area. The SWMU Report (LANL 1990) described this SWMU as "Concrete and building debris are located in an approximately 1/2 acre fill area adjacent to the South Mesa fire station (TA-3-41)". However, repeated searches did not locate any debris adjacent to building TA-3-41. SWMU 3-009(b) is

		appropriate for NFA under Criterion 1 because this site cannot be located.
03-009(c)	Administratively Complete	PRS 03-009(c) was initially identified as a “disturbed area south of TA-3-66 [the Sigma Building] and concrete building debris.” Field investigations and archival information indicated the presence of fragments of concrete footings. This debris is not known or suspected of containing RCRA solid or hazardous wastes and/or constituents. Therefore, SWMU 03-009(c) is appropriate for NFA under Criterion 2.
03-009(d)	Pending	SWMU 03-009(d) is a 20-ft x 40-ft surface disposal site where small piles of cured asphalt (left over from paving a parking lot) and pieces of metal, sewer pipe, antenna tubing, and wood cable reels (origin unknown) were discarded. The site is located in a wooded area southwest of a transportable (structure 03-1572), which is (south of the physics building (Building 03-40) on the rim of Twomile Canyon. A culvert that empties between the two debris piles results in an erosion gully. Tree branches and concrete chunks have been placed in the gully to control erosion. Review of archival photographs dates the fill area to the 1950s.
03-009(e)	Administratively Complete	SWMU 03-009(e) was a site originally identified as a surface disposal area located at the head of Mortandad Canyon. Investigations of this site revealed that the SWMU was actually a fill area used to level the present TA-3 construction site, prior to construction activities. Aerial photos obtained by the facility confirmed that the area was filled between 1950 and 1952 and has no history of being used as a disposal area. SWMU 3-009(e) is appropriate for NFA under Criterion 1 because it has been shown not to exist.
03-009(f)	Administratively Complete	In the SWMU Report (LANL 1990), SWMU 03-009(f) is described as follows: "There have been reports of a landfill north of TA-3-16". The only feature in the area is a narrow strip of rocks along the roadside north of the Van de Graaff Building. A 1954 aerial photograph indicates that the road was originally constructed in 1951 when the Van de Graaff facility was built. The area below the road is grassy and slopes from the road southwest to the rim of Twomile Canyon. Aerial photographs indicate that a fill area was never located between this road fill and TA-3-16. Aerial photographs from 1984 show fresh rock fill along the road. The SWMU consists of road fill with a few concrete pieces visible along the bank. There is no indication of hazardous constituents associated with this SWMU. SWMU 3-009(f) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous waste and/or constituents.
03-009(g)	Administratively Complete	PRS 03-009(g) was initially identified as a large, soil fill area located south of the Two-Mile Canyon Bridge. Field investigations and archival information provide evidence that this PRS was used only to stockpile road construction materials consisting of soil and tuff. Since 1979, the stockpile has been used to provide fill material for several additional Laboratory construction projects. Subsequently, only a small portion of fill remains. SWMU 03-009(g) is appropriate for NFA under Criterion 2 because it was never used for the management of RCRA solid or hazardous wastes and/or constituents.
03-009(h)	Administratively Complete	SWMU 3-009(h) is a surface disposal area described as piles and concrete debris on Sigma asphalt mesa. LANL redesignated this portion of TA-3 to TA-60. As a result of this administrative action, the site was re-identified and assigned the identification number of 60-002. SWMU 3-009(h) is appropriate for NFA under Criterion 1 because it is a duplicate of SWMU 60-002.
03-009(i)	In Progress	SWMU 03-009(i) is a debris area located east of the liquid and compressed gas facility (Building 03-170). The debris consists of residue from modifications and reconstruction of buildings in the immediate vicinity of Building 03-170. Residue is composed of tuff, concrete, rock, and other construction-related items. Use of this debris site was discontinued in 1980. SWMU 03-009(i) was proposed for NFA in an Addendum to the 1114 Work Plan. The NFA recommendation was not accepted by NMED and was subsequently withdrawn. Additional site investigation will continue for this unit.
03-009(j)	In Progress	SWMU 03-009(j) is a soil fill area located west of a warehouse (Building 03-142) under a parking lot for the LANL’s Wellness Center (Building 03-1663). Interviews with site

		workers indicate that the soil fill contains construction debris consisting of tuff, concrete, rock, and other construction-related items. The site was never used to manage hazardous wastes or constituents. There are no suspect contaminants at the site. SWMU 03-009(j) was proposed for NFA in Addendum 1 of the OU 1114 RFI work plan, but not accepted by NMED. As a result, LANL formally withdrew the NFA proposal for SWMU 03-009(j) in a letter to NMED dated February 11, 2002. SWMU 03-009(j) will be characterized when the Wellness Center is relocated.
03-010(a)	In Progress	SWMU 03-010(a) is a surface disposal site located on a steep slope on the rim of Twomile Canyon about 30 ft west of a general warehouse (Building 03-30). Technicians discarded vacuum pump oil at this site in the 1950s. The oil contained radionuclides and mercury. Former workers estimated that more than 100 lbs of mercury were dumped at this SWMU. In 1992 and 1993 the ER Project conducted a Phase I RFI to define the nature and extent of contamination expected to be present at the SWMU, based on historical site knowledge. Five soil and sediment samples were collected in 1992 to identify potential contaminants. Elevated levels of mercury and TPH were found. Additional sampling in 1993 was conducted to determine the horizontal and vertical extent of mercury contamination in the soil, define TPH concentrations around the site, and determine if site runoff exceeded water-quality standards. Samples were collected from each of 10 rows and columns of a 50-point sampling grid that was established over and around the visible erosion channel. Samples were analyzed for inorganic chemicals, TPH, and radionuclides. In addition, 42 discreet samples were analyzed for total mercury; 6 of those samples were analyzed for TCLP metals. Surface water samples were collected from the stream channel below the SWMU during three separate storm events and analyzed for total and dissolved metals, TPH, tritium, isotopic plutonium, cesium-137, and radioactivity. Elevated levels of radionuclides, lead, mercury, and TPH were found during the Phase I sampling. Water samples revealed no measurable mercury migrating into the stream channel. In 1994, the ER Project conducted a VCA to remove as much source material as possible. LANL and NMED entered into an agreement to remove all mercury-contaminated soils to a concentration of 20 ppm and TPH-contaminated soils to a concentration of 100 ppm. The VCA consisted of removing three lifts of contaminated soil and/or construction fill, which created a 40-ft x 15-ft trench in the hillside west of Building 03-30. Soil samples were collected from the trench to confirm that all soils containing elevated radioactivity levels had been excavated. Additional samples were collected for TPH; TPH concentrations varied with depth, and distribution of TPH in the subsurface was thought to be influenced by geological features like tuff fractures. Field analysis of samples taken in the trench sidewalls indicated limited lateral TPH migration. Following excavation of the third lift, several tuff samples were collected from the bottom of the trench to confirm that mercury levels were below 20 ppm and that the remaining mineral oil did not contain BTEX constituents. Confirmatory sampling showed that the mercury content was below 20 ppm; however, a total VOC analysis was performed instead of the BTEX analysis. The volatile samples revealed no BTEX but did show the unexpected presence of 1,1,-dichloroethylene, 1,2-dichloroethane, and trichloroethane. Twelve other VOCs also were detected in the upper biased sample and three VOCs were detected in the east vertical wall sample. The detection of VOCs indicated that the VCA could not considered a final remedy for the site and further investigations were initiated. Following completion of the VCA, two screening assessments were performed to identify constituents remaining at the site and to determine what constituents would be considered in the risk assessment. The human health and ecological screening assessments considered surface soil and surface water data collected during the RFI Phase I investigation and the verification data collected at the conclusion of the VCA. The screening assessment of soil sample locations identified benzene, chloroform, 1,2-dichloroethane, 1,1,-dichloroethylene, and cis-1,3-dichloropropene as potential human

		health contaminants of concern. Stormwater runoff data did not indicate that SWMU 03-010(a) had an impact on surface water quality. Results of the ecological impacts screening assessment indicated that residual chemical concentrations of contamination at the site were below levels of concern to nonhuman receptors. A Phase II RFI was performed in 1994 to characterize the nature and extent of VOC contamination identified in the VCA and to determine if further remediation was necessary to protect human health and the environment. The Phase II investigation was conducted in the area surrounding the open excavation created by VCA activities. Field activities consisted of preparing the site for heavy equipment use, which included backfilling the excavation with clean fill. A bentonite layer was applied to the excavation before the excavation was backfilled to inhibit water from percolating through the site. A soil vapor probe survey was implemented followed by a drilling and sampling program that was partly based on the soil-vapor data. Seven boreholes were drilled; one was used as a monitoring well and one was used to obtain geological characterization data. Subsurface water, that contained low concentrations of VOCs, was found in three boreholes. It was determined that the quantity of water in the subsurface made it unlikely that it represents a usable water source. Intermittent surface water downgradient of the site also contained VOCs at even lower concentrations, indicating a potential connection between the subsurface water and the surface water. The RFI report stated that the surface water did not represent a viable exposure pathway for humans and concentrations of contaminants were below a level of concern for nonhuman receptors. Results of the VCA and Phase II RFI were reported in the Phase II RFI report. The RFI report stated that the VCA successfully accomplished its intent and SWMU 03-010(a) was recommended for NFA for the following reasons: (1) the VCA reduced lead and mercury concentrations to below levels of concern. Even though residual TPH concentrations still exceeded the 100 mg/kg standard, the standard was established to be protective of groundwater based on a BTEX component in the TPH. BTEX was not found at this SWMU at any value that would equate the TPH to gasoline or diesel fuel; (2) residual concentrations of 1,2-dichloroethane and 1,1,-dichloroethylene in subsurface soil were found to be below levels of concern based on the results of a site-specific human health risk assessment and a screening assessment of potential ecological impacts; (3) the source term for the VOCs was removed during the VCA; therefore, residual concentrations of 1,2-dichloroethane and 1,1,-dichloroethylene in subsurface soil and water were dramatically decreased and would continue to decrease with time due to chemical and biological degradation; (4) water found in three boreholes is most likely due to increased runoff and infiltration caused by altered drainage patterns and does not represent a usable water source; and (5) concentrations of VOCs in the channel surface water were significantly lower than those present in the monitoring well and should continue to decrease with time. Additional field activities were conducted by the ER Project from December 1999 to March 2000 to further characterize potentially affected media (groundwater, surface water, and sediment) at and near SWMU 03-010(a). Further characterization was conducted in response to an NMED request because of the surface water that was encountered during borehole drilling in the 1994 RFI Phase II activities (advancement of the borehole was halted when water was encountered and instead, a 2-in. diameter stainless steel monitoring well was installed in the borehole, which was redesignated B1/MW-1). The 1999/2000 investigation focused on potential contaminants that NMED believed were necessary for evaluating the hydrologic conceptual model that addressed the possibility that the well water and nearby surface-water flow may be interconnected. Field activities consisted of developing monitoring well B1/MW-1. The 1999/2000 data collected reflected virtually the same, or lower, concentrations of contaminants in the groundwater, surface water, and sediment collected upstream and downstream of SWMU 03-010(a). The addendum to the RFI report stated that the only potentially complete exposure pathway for the potential contaminants was inhalation of vapors from subsurface soil using two scenarios: long-term worker and trail user. Water

		was not a complete exposure pathway because contaminants were not detected in the surface water. The data acquired in the 1999/2000 investigation, combined with six years of observation, showed that water levels in the borehole varied slightly throughout the year but overall the fill material that the well monitored remained saturated, and water was present in the stream only as a result of stormwater runoff from the parking lot and roof drains. The addendum to the RFI report stated that these results confirmed that the surface water in the stream channel and the zone of saturation measured in the monitoring well were not connected. The RFI report addendum recommended NFA for this SWMU because risk values were within the 1E-04 to 1E-06 risk range for inhalation, the only potentially complete exposure pathway.
03-010(b)	Administratively Complete	
03-010(c)	Administratively Complete	
03-010(d)	Administratively Complete	
03-011	Pending	SWMU 03-011 was a rinsing station (structure 03-101) with a spigot and a concrete pad. The station was used to wash and rinse empty carboys, which had contained toluene, nitric acid, or sulfuric acid. The concrete pad is located about 110 ft southwest of a chemical warehouse (Building 03-31). Drainage from the rinsing station trended southward beneath Mercury Road then behind the security fence, where it joins a stormwater drainage that discharges into Twomile Canyon. The carboy-washing practice ceased in 1980. SWMU 03-011 was proposed for NFA in the OU 1114, addendum 1, work plan. In 2001, the ER Project conducted sampling at SWMU 03-011 to support the NFA proposed in addendum 1 of the work plan. Four samples were collected from 4 locations and submitted to an off-site analytical laboratory for organic chemical analysis. Tetrachlorethene, trichloroethane[1,1,1-], and trichloroethene were detected but were not detected above SALs. The results of this sampling will be documented in an addendum to the RFI work plan.
03-012(a)	Administratively Complete	SWMU 03-012(a) is the site of a controlled operational release located on the north slope of Mortandad Canyon. The release was a controlled operational pipe cleaning procedure. In 1972, the recirculating chilled water system at Sigma Building was treated with ammonium biflouride to remove scale deposits. A small earthen dam was built to form a holding pond to catch the effluent from the flushing of the system. Lime (calcium oxide) was used to form fluorite (calcium fluoride), an inert, nonreactive, insoluble compound. No hazardous constituents were used in the process. SWMU 3-012(a) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
03-012(b)-00	In Progress	SWMU 03-012(b)-00 is a consolidated unit consisting of two NPDES-permitted outfalls [former SWMUs 03-012(b) and 03-045(b), which are the same site; and 03-045(c)] and a holding tank [former SWMU 03-014(q)]. The SWMUs relate to the TA-03 steam plant (Building 03-22). The outfalls discharge into a small tributary of Sandia Canyon. Former SWMUs 03-012(b) and 03-045(b) are the same site: a discharge point for NPDES-permitted Outfall 01A001. The outfall receives effluent from the neutralization tank, the chlorine building, and a former cooling tower (former structure 03-58). Stormwater that collects in the concrete foundation of former structure 03-25 also flows to this outfall from pipe valves that previously were connected to the cooling system; structure 03-25 was demolished in 1990 but the concrete basin remains. The power plant used treated effluent water from the TA-03 WWTP [consolidated SWMU 03-014(a)-99] as cooling tower liquids from 1951 to 1985. Historically, chromates were used to treat the cooling-tower effluent; chlorine currently is used for that purpose. Former SWMU 03-012(b)/03-045(b) served two cooling towers (structures 03-25 and 03-58). Former SWMU 03-014(q) is the power plant's holding tank, which receives blowdown from the boilers and wastewater from the water treatment area. Effluent is treated in the holding tank to adjust pH and hinder bacterial growth; sulfuric acid or sodium hydroxide (as appropriate) is used to maintain a pH of 6 to 9. Effluent is

		dechlorinated before it is discharged into Sandia Canyon. A one-time release to this outfall occurred on May 20, 1990. Low pH values were observed in a 2.5-mi section of the watercourse below the outfall. Soda ash was added manually to the length of the watercourse, and a May 23, 1990, pH survey detected no pH measurements below 6.9. In compliance with the NPDES permits, the outfall effluent is monitored periodically for total suspended solids, pH, and total chlorine. Former SWMU 03-045(c) is NPDES-permitted Outfall 03A027, located about 55 ft east of former SWMU 03-012(b)/03-045(b). Former SWMU 03-045(c) receives effluent from a cooling tower (structure 03-285), which serves the generators that power LANL's computer system. This outfall may have received chromate-treated water. The ER Project conducted an RFI at former SWMUs 03-012(b)/03-045(b) in 1994 to determine whether the outfall discharge resulted in release of any contaminants to the environment. Five samples were collected from five locations. Sample locations were biased; three downstream sample locations were included to characterize the sediments in the outfall channel. Samples were analyzed for inorganic chemicals, organic chemicals, radionuclides, organochlorine pesticides, herbicides, and PCBs. Analysis results indicate that additional investigation is needed at SWMU 03-012(b)-00 to determine the extent of contamination.
03-013(a)-00	In Progress	SWMU 03-013(a)-00 is a consolidated unit that includes former SWMUs 03-013(a) and 03-052(f). Former SWMU 03-013(a) is a corrugated-metal pipe storm drain that may have served the floor drains in the basement of the JCNNM administration and shops (Building 03-38). These floor drains now are tied into the sanitary sewer system. The two grated inlets to the drain are in the northeast and northwest corners of Building 03-38. The drain runs underground around Building 03-38, east along the south side of the Otowi Building (Building 03-261), and four other storm drains connect to this storm drain before the drain daylights 100 ft east of the Building 03-261 where it becomes an open concrete and rock-lined ditch. The open drain continues past some transportable office buildings (Buildings 03-1616/-1617) and passes beneath streets and sidewalks to a point northeast of the Oppenheimer Study Center (Building 03-207) where it becomes NPDES-permitted Outfall EPA 03A023 [former SWMU 03-052(f)]. The outfall empties into the head of Sandia Canyon. Former SWMU 03-052(f) received wastewater from floor drains, sinks, and water fountains at Building 03-38 until 1987 when the drains were rerouted to the TA-03 sanitary sewer system. Stoddard solvent from the maintenance shop and dry acid and caustic materials from the fitters operations were discarded through sinks and floor drains to this drain in 1968. Spent paint solvents and cutting oils contaminated with machined beryllium particles may have been released to the floor drains in the 1960s and 1970s. Cooling water for welding torches was discharged directly to the drains. Wastewater discharged to the drain system may have contained lead, chromium, nickel, and other inorganic chemicals. Two spills may have entered the drain system from the syllac laboratory/office building (Building 03-287). The first spill was about 200 gal. of water/waste oil mixture that was discharged when an automatic compressor blowdown mechanism failed. A second spill from a ruptured air compressor oil line in Building 03-287 resulted in the release of about one quart of compressor oil to the drain. This spill produced an oily sheen on the surface of the water at the outfall. The outfall currently is categorized industrial and receives waters from noncontact cooling water, nondestructive testing discharge, and production facilities. Runoff from parking lots and the surrounding areas also discharges to the outfall. The outfall is monitored regularly for flow rate, total suspended solids, chlorine, pH, and total phosphorus. Suspect contaminants were those that may have accumulated in the soil as a result of historical discharges. The ER Project conducted an RFI at this consolidated SWMU in summer 1994. Seven samples were taken from five locations along the sides of and in the outfall channel at distances of 10 ft to 50 ft downstream from the outfall pipe. Locations were biased to areas where sediments could be collected and where contaminants likely would be retained. Samples were analyzed for inorganic chemicals, organic chemicals, and PCBs. Analysis detected low-level concentrations of PAHs most likely associated with

		parking-lot runoff. This consolidated SWMU was characterized in accordance with applicable state and federal regulations. The former SWMUs in this consolidated unit were proposed for NFA in the 1996 RFI report.
03-013(b)	In Progress	AOC 03-013(b) consists of floor drains in the basement of the JCNNM shop building (Building 03-38). Drains are located in the plasma-burning machine area, the metals-cutting room, and the pipe-fabrication shop. Until 1987, the drains emptied into a storm drain [SWMU 03-013(a)-00]. Piping was rerouted in 1987 and currently drains to the sanitary sewer system. Spent paint solvents and cutting oils contaminated with machined beryllium particles may have been released to the floor drains during the 1960s and 1970s. The extent of possible contamination associated with this AOC, if any, was unknown when the work plan was written. Suspect contaminants were inorganic chemicals. The ER Project conducted an RFI at this AOC and related SWMU 03-013(a)-00 in 1994. The sampling approach was designed to determine whether the storm drain discharges at the outfall released contaminants to the drainage ditch. In addition, the approach was expected to provide potential information on other AOCs that contributed to the storm-drain system. Biased sample locations were located using the outfall and channel as reference points. Sample locations were biased to areas where sediments could be collected and where contaminants likely would be retained. Seven sediment samples were collected from five surface (0-in. to 8-in.) locations. Samples were analyzed for inorganic chemicals, organic chemicals, and PCBs. The investigation found low-level concentrations of PAHs. These constituents were deemed most likely associated with runoff from the parking lot adjacent to this AOC and related SWMU, which were recommended for NFA in the 1996 RFI report.
03-013(c)	Administratively Complete	
03-013(d)	Administratively Complete	
03-013(e)	Administratively Complete	
03-013(f)	Administratively Complete	
03-013(g)	Administratively Complete	
03-013(h)	Administratively Complete	
03-013(i)	In Progress	SWMU 03-013(i) consists of soil and gravel contaminated from historical releases of hydraulic oil at Buildings 03-246 and 03-247, which were used to test the tensile strength of various steel cables used in conjunction with underground nuclear test assemblies. The facility was constructed prior to 1967 and operated until the mid-1980s when a replacement facility was constructed on Sigma Mesa. Building 03-246 is a corrugated metal building constructed on a concrete slab and contained the controls for the pull test equipment, as well as a hydraulic oil compressor and storage tank. Building 03-247 is a corrugated metal building constructed on a concrete curb surrounding a gravel floor and contains two hydraulic rams used to perform the tensile strength testing. Hydraulic oil was provided to the rams through underground pipes between Buildings 03-246 and 03-247. The contamination identified at SWMU 03-013(i) consists of oil-stained soil around Building 03-246 and oil-stained gravel inside Building 03-247. At Building 03-246, hydraulic oil appears to have been released to the concrete slab floor inside the building and to have subsequently flowed beneath the building walls and onto the soil surrounding the building. Visible soil contamination exists along the north side of the building and along the northeast and northwest corners. The gravel floor inside Building 03-247 is visibly stained with oil in several locations beneath the hydraulic ram assembly. SWMU 03-013(i) was not included in the 1990 SWMU Report or the OU1114 RFI Work Plan, but was discovered in 2004 during planning for the demolition of Buildings 03-246

		and 03-247. Two samples of the oil-stained soil adjacent to Building 03-246 were collected by the Laboratory's Solid Waste Regulatory Compliance Group in 2004 and analyzed for inorganic chemicals, organic chemicals, PCBs, and total petroleum hydrocarbons. Four inorganic chemicals (cadmium, copper, lead, and zinc) were detected above BV, but below SALs. TPH was also detected, but no organic chemicals or PCBs were detected. Oil-stained soil will be removed when the two buildings are demolished and confirmation samples will be collected by the ER Project at that time.
03-014(a)-99	In Progress	SWMU 03-014(a)-99 is a consolidated unit representing the former WWTP that operated at TA-03 from 1951 through 1992, when LANL's SWSC plant came online at TA-46. The consolidated unit includes SWMUs 03-014 (a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, u) and 03-056(d) and AOCs 03-014(b2) and 03-014(c2). The former WWTP is adjacent to and east of the utilities control center (Building 03-223) on the southern rim (near the head) of Sandia Canyon. The WWTP served TAs-03, -43, -59, and -60; the trailer park on West Jemez Road; and the holding tanks and septic system wastes throughout LANL. The WWTP also began treating sanitary wastes from TAs-02 and -41 in 1990 and TA-21 in 1992. The WWTP had two parallel systems. Each system had entrance works, an Imhoff tank, dosing siphon, trickling filter, and final clarifying tank. The north plant (Plant 1) was built in 1951. The south plant (Plant 2) was built in 1964. The plants were different in some physical dimensions but essentially functioned identically. The WWTP was designed with a 750,000-gal. per day capacity. As it entered each plant, raw sewage was metered at a splitter box, structure 03-677 [SWMU 03-014(i)], where the flow was diverted to Plant 1 or Plant 2. Effluent then passed through a comminutor [SWMU 03-014(i)] to shred any large solid material. Manually cleaned bar racks [SWMU 03-014(i)] were used if the comminutors were being repaired. Effluent flow through each plant was about 150,000 gal. per day. Water passed directly from the entrance works to the Imhoff tanks, structures 03-049 and 03-192, [SWMUs 03-014(a) and 03-014(e)]. The Imhoff tanks functioned as settling/digesting tanks. Effluent water flowed from each of the tanks to a dosing siphon, structures 03-48 and 03-193, [SWMUs 03-014(b) and 03-014(f)] that cyclically dispersed accumulated effluent water in an amount sufficient to run the trickling filter [SWMUs 03-014(c) and 03-014(g)] rotary arms, structures 03-47 and 03-194. The dosing siphons maintained the moisture throughout the trickling filter's rock media beds. The filters digested organic waste anaerobically through bacterial growth on the rock media. The digestion process went on for several months. Filter beds were 72 ft in diameter and 6 ft deep with a design capacity of 325,000 gal. per day. Material sloughed from the filter media settled in the final clarifying tanks, structures 03-46 and 03-195, [SWMUs 03-014(d) and 03-014(h)]. The resulting sludge recirculated to the head of the plant and settled out in the Imhoff tanks. After the collected sludge was digested in the Imhoff tanks it was siphoned to four 22-ft x 60-ft 3000-gal. unlined sludge drying beds, structures 03-196, 03-197, 03-198, and 03-199, [SWMUs 03-014(k, l, m, n)] through an underground steel pipe. The pipe was connected to each upper sludge drying bed; valves controlled the amount of sludge added to each bed. A batch of sludge was siphoned first to the upper drying beds, SWMUs 03-014(k,l,m,n); overflow sludge was pumped to the three lower beds, structure 03-1871 [SWMU 03-014(o)]. The upper beds were constructed of a sand/gravel filter consisting of a fine-to-coarse-grain sand layer underlain by a gravel layer that covered an open-pipe underdrain system. The upper beds were used from 1964 to 1992. Three of the beds were used for sludge drying; the fourth was used as a skimmer bed. Three additional propylene-lined sludge drying beds [SWMU 03-014(o)], which were used from the early 1980s until 1992, were located north and downslope from the first group of beds. Each of these lower beds was 22 ft x 60 ft each with an 8000-gal. capacity. SWMU 03-014(p) was a sewage lift station (structure 03-265) installed in 1966. Beginning in 1990, dried sludge was analyzed quarterly for radioactive constituents. Effluent from the sludge beds flowed from a subsurface drain system to a holding tank, structure 03-1901 [SWMU 03-014(u)]. Holding tank contents were trucked to the head of the plant for additional treatment. Dried sludge was used to amend the soil around the entrance works from the late 1950s to the late 1970s.

		Treated effluent from the WWTP flowed into an overflow outfall area until 1985 when a chlorination system, structure 03-166 [SWMU 03-014(j)], was added to the WWTP. From 1975 to 1985, this outfall was included in LANL's NPDES permit, NM0024210. The overflow outfall pipe discharged as sheet flow onto a steep slope that contains an erosion channel from stormwater runoff. The channel trends northeast into Sandia Canyon. This historical outfall is AOC 03-014(c2). The channel was cleaned out frequently with a backhoe to prevent sediments from clogging it. The removed soil was piled onto the upslope channel bank. From 1985 to 1989, the outfall emerged from the chlorine contact chamber. This effluent consisted of materials that previously were diverted to the TA-03 power plant (Building 03-22) for use as cooling tower water. Effluent was piped underground from structure 03-166 (effluent pump pit) to the contact chamber. This second outfall [also AOC 03-014(c2)] was abandoned in 1989. From 1989 to 1992, discharge from the WWTP flowed to an outfall [AOC 03-014(b2)], NPDES permit number SSS01S. The outfall was monitored three times monthly for biochemical oxygen demand, total suspended solids, pH, fecal coliform, total chlorine, and radioactive constituents. Analytical data indicate that neither RCRA nor radioactive constituents were observed over the detection limit. Although the WWTP was decommissioned in 1992 when the SWSC plant at TA-46 came online, treated effluent from the TA-46 system was still being routed through AOC 03-014(b2) (due to NPDES permit issues) until 1998 when it was switched to the outfall at the power plant, Building 03-27. SWMU 03-056(d) is an active drum-storage area located northeast of the trickling filter [SWMU 03-014(c)]. The area has been in use since about 1965. The site consists of two bermed areas that measure 25 ft x 5 ft x 10 in. deep. The berms were constructed in 1989. Before 1989 only containers of lubricating oil were stored at the site. Containers were stored on pallets over the bare soil. Active containers were mounted in racks with drip pans beneath. In a 1993 site visit, lubricating oil and a partially full 55-gal. container of motor oil were stored at the site. Stains were noted within the bermed area during the 1993 ER Project site visit but none were observed outside the berm. The asphalt floor of the bermed area is covered with oil-absorbing material. Because there was no evidence of staining outside the bermed area, it was concluded that no releases to the environment had occurred from this site. In addition, any spills that might have occurred beneath the asphalt would be considered nonhazardous because only lubricating oils were stored at the site before 1989. The ER Project conducted an RFI at the former WWTP in 1994. SWMUs that were believed to be the areas most likely to have received and retained any suspect contaminants were sampled. The area around the Imhoff tanks [SWMUs 03-014(a) and SWMU 03-014(e)] and the two historical outfalls [AOC 03-014(b2) and AOC 03-014(c2)] were sampled. The Imhoff tanks were sampled because treated sludge was directly applied to the soil in the grassy areas around the tanks. AOCs 03-014(b2) and 03-014(c2) were sampled because AOC 03-014(b2) was the currently active outfall for the WWTP; AOC 03-014(c2) was believed to be an abandoned outfall trench (it subsequently was identified as a storm drain trench and overflow outlet pipe outfall). Twelve soil samples were taken from five locations downgradient from and between the Imhoff tanks. Samples were analyzed for organic chemicals, inorganic chemicals, pesticides/PCBs, and radionuclides. Sample analysis results indicated that although chromium levels were slightly elevated, the concentration observed posed no unacceptable risk to human health and the environment because it is unlikely that the chromium is in hexavalent form (the carcinogenic variety of chromium) and the SWMU is located within LANL's primary industrial area. SWMUs 03-014(a) and SWMU 03-014(e) were recommended for NFA in the 1996 RFI report.

		AOC 03-014(b2) was sampled along the channel and in the outfall flow path. Because of the tuff outcrop at the outfall, effluent drained mainly over exposed tuff with few areas containing sediment. The sampled areas included sediment trapped by vegetation roots. (The most significant are of sediment accumulation downgradient from the outfall that is located in a wetlands area on the canyon floor. This area will be sampled at a later date by the RRES-R Program's Canyons Team.) Eight soil samples were collected from four locations. Two additional samples were collected: one as a field split and one as a collocated sample. Samples were analyzed for SVOCs, organochlorine pesticides, herbicides, inorganic chemicals, and radionuclides. AOC 03-014(b2) was recommended for NFA in the 1996 RFI report, based on sample results. AOC 03-014(c2) is located on a steep slope above a tributary near the head of Sandia Canyon. The hillside area is heavily disturbed with much fill pushed over the edge into the outfall area. Twenty soil samples were taken at nine locations at this SWMU and analyzed for SVOCs, organochlorine pesticides, PCBs, herbicides, inorganic chemicals, and radionuclides. Sample analysis at this SWMU revealed several constituents in soil at elevated concentrations (lead, cadmium, chromium, silver, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene); therefore, this SWMU and associated SWMUs 03-014(k,l,m,n,o) were recommended for additional investigation to determine the extent of contamination. Field activities for the RFI at SWMUs 03-014(k,l,o) were conducted in July 1997. One biased sampling location was selected for each bed at SWMU 03-014(k,l) and three biased locations (one per bed) at SWMU 03-014(o). Three samples were taken from each location: one from filter material within the bed and two from successive one-foot intervals (in tuff) beneath the bed. Based on sample analysis results, these SWMUs were recommended for NFA in the 1997 RFI report. SWMU 03-014(m) was sampled as part of this RFI; however, analyses indicated that further action needed to be completed at this SWMU. Analysis results indicated that Aroclor-1254 and PAHs including dibenzo(a)anthracene, benzo(a)anthracene, chrysene, benzo(b&k)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene were detected at elevated levels at SWMU 03-014(m). Analytical results from the RFI for this SWMU will be included in a future VCA report. SWMU 03-014(n) was scheduled for sampling under this RFI; however, oil was discovered in the bed and the spill was reported to regulatory authorities. The SWMU was remediated in early September 1997. Confirmatory analysis results will be included in a future RFI report.
03-014(a2)	In Progress	AOC 03-014(a2) is a floor drain in the high voltage test facility (Building 03-316) that was connected to the sanitary sewer for the historical TA-03 sanitary treatment system, the WWTP. The drain was installed in 1969. Effluent from Building 03-316 was generated from the equipment shop area of this building. The TA-03 WWTP was taken offline in 1992 when the TA-46 SWSC plant came online. All drainlines now lead to SWSC. The ER Project conducted an RFI at the WWTP in 1994. AOC 03-014(a2) was not sampled as part of that RFI. Instead, the ER Project sampled four SWMUs that were believed to be the most likely to have received and retained any suspect contaminants from the WWTP. Based on analysis results for the WWTP sampled SWMUs, AOC 03-014(a2) was recommended for NFA in the 1996 RFI report.
03-014(r)	In Progress	SWMU 03-014(r) is a sewage lift station (structure 03-693), that was built in the 1970s and is associated with the former TA-03 WWTP. Structure 03-693 is located south of Building 03-271, the Sample Management Facility. The station pumped effluent to an elevation that yielded a gravity flow. The TA-03 WWTP was taken offline in 1992 when the TA-46 SWSC plant came online. The lift station now flows to SWSC. The ER Project conducted an RFI at the WWTP in 1994. SWMU 03-014(r) was not sampled as part of that RFI. Instead, the ER Project sampled four SWMUs that were believed to be the most likely to have received and retained any suspect contaminants from the WWTP. Based on analysis results for the WWTP sampled SWMUs, SWMU

		03-014(r) was recommended for NFA in the 1996 RFI report.
03-014(s)	In Progress	SWMU 03-014(s) was a sewage lift station, structure 03-1693, that was built in the 1970s and is associated with the former TA-03 WWTP. Structure 03-1693 is located south of the university house (Building 03-443). The station pumped effluent to an elevation that yielded a gravity flow. The TA-03 WWTP was taken offline in 1992 when the TA-46 SWSC plant came online. The ER Project conducted an RFI at the WWTP in 1994. SWMU 03-014(s) was not sampled as part of that RFI. Instead, the ER Project sampled four SWMUs that were believed to be the most likely to have received and retained any suspect contaminants from the WWTP. Based on analysis results for the WWTP sampled SWMUs, SWMU 03-014(s) was recommended for NFA in the 1996 RFI report.
03-014(t)	In Progress	SWMU 03-014(t) was a sewage lift station (structure 03-1869) that was built in 1987 and is associated with the former TA-03 WWTP. Structure 03-1869 is located south of Building 03-316, the high-voltage test facility. The station pumped effluent to an elevation that yielded a gravity flow. The TA-03 WWTP was taken offline in 1992 when the TA-46 SWSC plant came online. All sewer lines now flow to SWSC. The ER Project conducted an RFI at the WWTP in 1994. SWMU 03-014(t) was not sampled as part of that RFI. Instead, the ER Project sampled four SWMUs that were believed to be the most likely to have received and retained any suspect contaminants from the WWTP. Based on analysis results for the WWTP sampled SWMUs, SWMU 03-014(t) was recommended for NFA in the 1996 RFI report.
03-014(v)	In Progress	AOC 03-014(v) was a floor drain in a former garage (Building 03-36) that was connected to the sanitary sewer for the former TA-03 WWTP. The drain was installed in 1953. Mop water from Building 03-36 was directed to a floor drain in the garage area. The TA-03 WWTP was taken offline in 1992 when the TA-46 SWSC plant came online. Building 03-36, including AOC 03-014(v), was removed for construction of Building 03-2327 (Nicholas C. Metropolis Computing Center). The ER Project conducted an RFI at the WWTP in 1994. AOC 03-014(v) was not sampled as part of that RFI. Instead, the ER Project sampled four SWMUs that were believed to be the most likely to have received and retained any suspect contaminants from the WWTP. Based on analysis results for the WWTP sampled SWMUs, AOC 03-014(v) was recommended for NFA in the 1996 RFI report. Building 03-36, gas station and auto repair shop, was removed in 1999 in preparation for construction of Building 03-2327, the Nicholas C. Metropolis Computing Center. During the task of demolishing the gas station, three AOCs [03-014(v), 03-027, and C-03-015] were removed as a presumptive remedy. Soil surrounding the UST and below the building footprint was excavated. The soil immediately below the tank and the footprint of the building was sampled for TPH. Approximately 60 cu yds of TPH contaminated soil was removed during the demolition project. Two subsurface confirmatory samples were collected from AOC 03-014(v). The samples were submitted to an analytical laboratory for analysis for organic chemicals and inorganic chemicals.
03-014(w)	In Progress	AOC 03-014(w) is a floor drain in the CMR Building (Building 03-29) that was connected to the sanitary sewer and former TA-03 WWTP. The drain was installed in 1953 and became inactive in 1991. Effluent from Building 03-29 darkroom operations, including spent photographic solutions, may have been discharged to this floor drain. The TA-03 WWTP was taken offline in 1992 when the TA-46 SWSC plant came online. The ER Project conducted an RFI at the WWTP in 1994. AOC 03-014(w) was not sampled as part of that RFI. Instead, the ER Project sampled four SWMUs that were

		believed to be the most likely to have received and retained any suspect contaminants from the WWTP. Based on analysis results for the WWTP sampled SWMUs, AOC 03-014(w) was recommended for NFA in the 1996 RFI report.
03-014(x)	In Progress	AOC 03-014(x) is a floor drain in the Sigma Building (Building 03-66) that was connected to the sanitary sewer and former TA-03 WWTP. The drain was installed in 1959. Effluent from Building 03-66 may have included spent photo processing solutions. The TA-03 WWTP was taken offline in 1992 when the TA-46 SWSC plant came online. The ER Project conducted an RFI at the WWTP in 1994. AOC 03-014(x) was not sampled as part of that RFI. Instead, the ER Project sampled four SWMUs that were believed to be the most likely to have received and retained any suspect contaminants from the WWTP. Based on analysis results for the WWTP sampled SWMUs, AOC 03-014(x) was recommended for NFA in the 1996 RFI report.
03-014(y)	In Progress	AOC 03-014(y) is a floor drain in the press building (Building 03-35) that was connected to the sanitary sewer for the historical TA-03 WWTP. The drain was installed in 1954 and became inactive in 1981 when the building was surplused. However, it was reoccupied in 1995. Mop water or spills/leaks from equipment in the basement of Building 03-35 was discharged to the basement floor drain. The TA-03 WWTP was taken offline in 1992 when the TA-46 SWSC plant came online. The ER Project conducted an RFI at the WWTP in 1994. AOC 03-014(y) was not sampled as part of that RFI. Instead, the ER Project sampled four SWMUs that were believed to be the most likely to have received and retained any suspect contaminants from the WWTP. Based on analysis results for the WWTP sampled SWMUs, AOC 03-014(y) was recommended for NFA in the 1996 RFI report.
03-014(z)	In Progress	AOC 03-014(z) is a floor drain in the Physics Building (Building 03-40) that was connected to the sanitary sewer and the former TA-03 WWTP. The drain was installed in the 1950s and became inactive in 1989 when the operations in the printed circuit board shop ceased. Mop water/spills/leaks from sinks in the shop were discharged to the floor drain. The TA-03 WWTP was taken offline in 1992 when the TA-46 SWSC plant came online. The ER Project conducted an RFI at the WWTP in 1994. AOC 03-014(z) was not sampled as part of that RFI. Instead, the ER Project sampled four SWMUs that were believed to be the most likely to have received and retained any suspect contaminants from the WWTP. Based on analysis results for the WWTP sampled SWMUs, AOC 03-014(z) was recommended for NFA in the 1996 RFI report.
03-015-00	In Progress	SWMU 03-015-00 is a consolidated unit that contains former SWMU 03-015 and former AOC 03-053. Former SWMU 03-015 is former NPDES-permitted Outfall 04A140 (removed from LANL's NPDES permit effective 8/16/95), which is located between Eniwetok Road and the security fence northeast of Building 03-141 (Rolling Mill Building). The outfall historically received effluent from janitorial sinks as well as from floor and roof drains. The basement of Building 03-141 housed electrochemical and depleted uranium processing facilities from 1962 to 1990. The floor drains were designated as former AOC 03-053. Powder characterization, plasma flame spray processing, beryllium processing, and depleted uranium processing are ongoing operations. It is not known if releases occurred through the basement floor drains formerly connected to the stormwater system that leads to the outfall. The basement floor drains in Building 03-141 have been rerouted to the TA-50 radioactive liquid waste line, and the roof drains were rerouted to an existing outfall in Mortandad Canyon in 1992. Lines draining to former SWMU 03-015 were decommissioned in February 1993. The ER Project conducted an RFI at these sites in 1994. Former SWMU 03-015 was characterized by collecting six biased surface soil samples from five locations in the drainage channel associated with the outfall. Data from the samples were used to characterize former AOC 03-053. Samples were analyzed for SVOCs, inorganic chemicals, and radionuclides. Samples were field-screened for VOCs. Analysis indicated elevated levels of PAHs from one sample. The elevated levels were attributed

		to impact from road runoff and the presence of asphalt in the sample. The RFI report recommended NFA at former SWMU 03-015 and former AOC 03-053 in the 1996 RFI report. The site will be excavated in conjunction with the preparation for the proposed Bypass Road project and confirmatory samples will be collected at that time.
03-016(a)	Administratively Complete	
03-016(b)	Administratively Complete	
03-016(c)	Administratively Complete	
03-016(d)	Administratively Complete	
03-016(e)	Administratively Complete	
03-016(f)	Administratively Complete	
03-018	Administratively Complete	SWMU 03-018 was a cesspool installed during the original construction of the Van de Graaff Building (TA-3-16) in 1952. The cesspool was located directly south of the Van de Graaff Building. It was constructed of concrete, approximately 5-ft. in height by 4-ft. in diameter. By the time facility construction was completed, the building was connected to the sanitary sewer and industrial waste systems and the cesspool was never used. It was filled with soil and abandoned in place in July of 1964. It is currently located beneath an asphalt parking lot. Because the cesspool was never used, SWMU 3-018 is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
03-019	Administratively Complete	PRS 03-019 was a septic tank (TA-3-15) initially identified as serving the Van de Graaff Facility. However, engineering drawings and Laboratory building records indicate that the septic tank was never connected to the Van de Graaff Facility. The septic tank was removed in 1964. Because the septic tank was never connected to this facility, it was never used for the management of RCRA solid or hazardous wastes or constituents. Therefore, SWMU 03-019 is appropriate for NFA under Criterion 2.
03-020(a)	Administratively Complete	In the SWMU Report (LANL 1990), SWMU 3-020(a) was described as a covered pit on the east side of TA-3-287 that contained a buried 32-gal. drum filled with gravel and fitted with a screen. The SWMU Report states that "There is a pipe running into the pit with the screen and pebbles below it. The area around the pit appeared oily. An employee indicated that the pit was used to discharge liquids from the air compressor system at TA-3-287. This pit has been inactive since 1989, when the drum, pebbles, and surrounding soil were removed by the user group (facility). The pit was used to bleed condensate and compressor oil leakage from the air compressor tank. The air compressor uses a pure petroleum-based (no detergent or additives) oil. This oil is equivalent to 30W viscosity-type motor oil. Johnson Controls removed the pit in 1990. In 1991, the area was graded and paved as part of a parking lot constructed between TA-3-105 and TA-3-287. Substances deposited by the following operations included only oil and water. The former location of SWMU 3-020(a) is in the middle of the TA-3 complex, which is in an area that is currently 100% developed and used for research and development work. The former location of the SWMU is covered by graded fill and asphalt pavement Any potentially remaining residuals are inaccessible to potential receptors and therefore pose no unacceptable risk to human or ecological receptors. SWMU 3-020(a) is appropriate for NFA under Criterion 5.
03-020(b)	Administratively Complete	AOC 03-020(b) was a pit adjacent to the southeast corner of the Parks and Refuse Office Building (Building 03-70) that was used to catch residue from steam-cleaning small engines. The pit was a 1-in. deep metal box approximately 10 x 15-ft. that was recessed into the asphalt pavement. The pit was filled with sand and covered with a metal grate. Small engines were placed on the grate to be cleaned. Oil and grease from the engines and condensed water and detergent from the steam cleaner drained into the pit and were absorbed by the sand. The sand was removed and discarded at the Los Alamos municipal landfill when the sand became saturated, and sand was replenished in the pit. The pit was cleaned, replenished with clean sand and covered with asphalt when the lot was repaved in 1991.

		The March 1995 permit modification request proposed NFA at 03-020(b) because this pit does not present a threat to human health or the environment. The permit modification received an NOD and the AOC was not accepted for the proposed NFA.
03-021	In Progress	SWMU 03-021 is a former outfall and associated daylight channel located approximately 60 ft north of the north exterior wall of the Liquid and Compressed Gas Facility (Building 03-170), NPDES-permitted Outfall 04A094 (deleted from LANL's permit effective 9/19/97). The outfall discharged caustic wash and rinse water from compressed-gas cylinder cleaning operations from about 1964 to 1976. Cylinders were washed and stripped of paint using a caustic soda solution before they were repainted. Washing and stripping were done in a below-floor-grade pit in the northern part of Building 03-170. A 2-in.-diameter iron outfall pipe in an open ditch carried the caustic wash and rinse water from the pit. Discharge from the end of the outfall pipe was directed into a northeast-trending surface ditch that continued about 180 ft to the main north-south drainage ditch. Cylinders were screened for radioactive contamination before they were brought to Building 03-170, and any exterior oil, dirt, and grease were washed from the cylinders in the adjacent parking lot before bringing the cylinders to the cleaning pit. Documentation about the chemicals and processes associated with the outfall are not available; however, paint used in that time period typically contained heavy metals. The outfall was not used after 1976, when the compressed-gas suppliers assumed cylinder washing and painting responsibilities. The outfall's exact location is unknown because of regrading and other construction work completed in preparation for nearby Building 03-1650, the compressed-gas cylinder storage shed. Construction of Building 03-1650 resulted in placement of 5 ft to 10 ft of fill material over the former outfall area. Suspect contaminants at this SWMU are SVOCs and inorganic chemicals. The ER Project conducted an RFI at this SWMU in July 1997. Twelve samples were collected from six biased locations. Samples were collected from one location within the former NPDES outfall area and at five locations along two transects positioned across the former location of the channel. Subsequent to the data analysis and reporting, this SWMU was recommended for NFA in the 1997 RFI report.
03-022	In Progress	AOC 03-022 is a concrete sump and a steel beam support structure that were components of an aboveground mineral oil storage and pumping system that supported a generator in the High-Voltage Test Facility (Building 03-316). The sump provided secondary containment for the pumping system and was constructed with reinforced concrete walls and a Hypalon-liner over a sand bottom. A steel I-beam structure within the sump supported two 500-gal. steel storage tanks, which were removed in 1995. The tanks historically held a mineral oil that was a mixture of refined hydrotreated middle distillates and severely hydrotreated light napthenic distillates. The electrical supply, pumps, and aboveground piping associated with the tanks also were removed. Oil stains on the sump walls indicate that the pumping system had leaked into the secondary containment structure. Suspect contaminants at the site were total petroleum hydrocarbons. The ER Project conducted a VCA at this AOC in August and September 1995. Remaining components, including the sump, liner, and steel I-beam, were cut up or excavated, removed, and disposed of or recycled in accordance with applicable regulations. Site restoration activities included backfilling, regrading, contouring, and reseeding the area in accordance with the LANL Storm Water Pollution Prevention Plan and LANL Facilities Engineering standards.
03-023	Administratively Complete	
03-024	Administratively Complete	SWMU 3-024 is located in former OU 1114 within TA-3. SWMU 3-024 is a pump pit (concete vault) built of reinforced concrete with a steel and concrete cover. The pump pit is 19.6-ft. long x 13.6-ft. wide x 11.8-ft. deep, with a capacity of 3,200 cu. ft. The system is a closed-circuit pump unit used to pump noncontact cooling water for electric furnaces located at building TA-3-141, the Rolling Mill Facility located within the Sigma Complex. The non-contact cooling water flows through a roof-mounted water chiller, through operating equipment in the building, and back through the pump. The unit has

		been active since 1962. No release to the environment has occurred or will likely occur because more than 3,200 cu. ft. of water would have to accumulate in order for the tank to overflow. No contaminants are associated with the pump pit because it handles only noncontact cooling water for electric furnaces. SWMU 3-024 is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
03-025(a)	Administratively Complete	PRS 03-025(a) was initially identified as an oil trap sump that connected a steam cleaning drain from the machine shop in Building TA-3-34 to a drain line that discharged to the radioactive wastewater treatment facility at TA-50. However, field investigations and archival information do not indicate the presence of an oil trap sump associated with the steam cleaning drain. In addition, all sinks and drain lines from this building discharge either to the sanitary wastewater treatment facility at TA-3 or to the radioactive wastewater treatment facility at TA-50. SWMU 03-025(a) is appropriate for NFA under Criterion 1 because it does not exist.
03-025(b)	In Progress	SWMU 03-025(b) is described as two oil traps (sumps), one active and one inactive, in the basement of the tech shops addition (Building 03-102). Water with low-level radioactive oils from the steam-cleaning room in the main tech shops (Building 03-39) is first discharged to an oil/water separator located outside the south side of the room [see AOC 03-025(c)]. After the water and oil are separated, they flow to Building 03-102 (immediately south of the main tech shops) where they pass through the active, floor-level sump, allowing the oil to collect in the trap, while the water is piped through the inactive, below-floor-level sump (the pipe passes through the space of the sump, but the sump itself is inactive). The water is then discharged to the radioactive liquid waste line. The inactive, below-floor-level sump, which is a 0.25 in.-thick welded steel container in a concrete pit, is 36 in. long x 24 in. wide x 30 in. deep. The new, active, floor-level sump is a welded steel container approximately 40 in. long x 24 in. wide x 30 in. deep with a detachable steel cover. This sump rests in an 8-in.-deep concrete berm secondary containment structure. All connecting lines associated with the sumps go to the radioactive liquid waste treatment facility at TA-50. SWMU 03-025(b) was recommended for NFA in the RFI work plan, and there has been no further investigation at this site. SWMU 03-025(b) was recommended for NFA because the sumps are contained within an active, restricted access building with no pathways to the environment. The RFI work plan for OU1114, addendum 1, was rejected by NMED and remains an open action item for future resolution.
03-025(c)	In Progress	AOC 03-025(c) is a concrete oil/water separator located outside the south side of the steam-cleaning room at the tech shops (Building 03-39). Liquid waste from steam-cleaning oil, grease, and solvents from newly machined pieces drains to the separator before the effluent is piped to the radioactive liquid waste treatment facility at TA-50. Steam-cleaning liquids had not been discharged for three to four years before the work plan Addendum was written (1995). The separator has a bypass pipe (installed in 1989) that discharges directly to the radioactive liquid waste collection system. If the oil in the separator is at capacity, an alarm light is activated; if the oil is not manually suctioned into containers, the wastewater goes directly into the radioactive liquid waste collection system. Oil has never been at capacity in the separator, and leaks have not been known to occur. AOC 03-025(c) was recommended for NFA in the RFI work plan addendum. AOC 03-025(c) was recommended for NFA because there were no releases to the environment. The RFI work plan for OU1114, addendum 1, was rejected by NMED and remains an open action item for future resolution.
03-026(a)	In Progress	AOC 03-026(a) is a sump located in the southeast corner of an open pump pit directly adjacent to, and west of the SWMU 03-037 holding tanks. The pump pit contains two electrically driven pumps that were used to evacuate the waste fluids from the holding tanks. The pump pit measures 12 ft long x 10.7 ft wide x 8.5 ft deep, with 8-in.-thick concrete walls (Engineering drawing ENG-C 24443). The west edge of the pump pit is about 3 ft from the west wall of Building 03-66 (Sigma Building). The sump was installed to pump any liquid accumulated in the pump pit (from any kind of plumbing leak) to the acid waste line. There are no reported releases from the sump.

		RFI activities at this AOC will be deferred until operations of the tanks (SWMU 03-037) cease.
03-026(b)	Administratively Complete	PRS 03-026(b) was initially identified as four active sumps in the basement of Building TA-3-132, the Computer Science Building. The four “sumps” are actually active sanitary lift stations that discharge to the sanitary wastewater system. Field investigations conducted in 1992 found an additional sump/lift station. This sump/lift station no longer exists. The sumps/lift stations are metal-lined and embedded in the concrete foundation of Building TA-3-132. One sump/lift station potentially received spent photo-processing solutions (RCRA hazardous wastes). However, the PRS is not known or suspected of releasing these substances to the environment because of its location within the concrete foundation. Therefore, SWMU 3-026(b) is appropriate for NFA under Criterion 3.
03-026(c)	In Progress	SWMU 03-026(c) is identified in the 1990 SWMU report as 11 sumps located at the base of cooling towers in the CMR Building (Building 3-29). These sumps were described as having received blow-down water from the cooling towers. The SWMU report is incorrect in identifying these structures as sumps. SWMU 03-026(c) is actually composed of aboveground holding tanks in the basement of the CMR Building; the tanks are associated with chilled water systems in Wings 2,3,4,5 and 7. The water chillers are on the first floor. Chilled water is piped to each laboratory for circulation in equipment. Returning water is piped to the basement where it empties into aboveground tanks. There are five holding tanks in each wing, each approximately 16 ft long and 4 ft in diameter. Adjacent to each holding tank are two pumps that recirculate the water to the chillers. Pipes run from the tanks to floor drains connected to the radioactive liquid waste line. Each tank is designed to discharge to the radioactive liquid waste line via the floor drain if both of the tank's recirculating pumps fail. The holding tanks are currently active and have no history of leaks. SWMU 03-026(c) was recommended for NFA in the RFI work plan, and there has been no further investigation at this site. The RFI work plan for OU1114, addendum 1, was rejected by NMED and remains an open action item for future resolution.
03-026(d)	In Progress	SWMU 03-026(d) is an active sump/lift station in Room 50 of the Van de Graaff Facility basement (Building 03-16). The sump was installed to handle sanitary wastewater from bathrooms and floor and sink drains in the building’s lower level. Wastewater is pumped via sewer lines to the wastewater treatment plant at TA-46. There is no documentation indicating that the sump has ever failed. There is no pathway to the environment from this sump, and there is no documentation or evidence that a release has occurred. This SWMU was recommended for NFA in the RFI work plan.
03-027	In Progress	AOC 03-027 is the former site of two concrete-block-lined lift wells in the floor below the hydraulic lifts at the former service station (former Building 03-36). The lift wells collected wash water and residual oil from the floor of the vehicle maintenance bays. The lift well contents were manually pumped to 55-gal. containers that were dumped into the station’s oil/water separator before the water was discharged to the sanitary sewer. A bottle-washing operation was conducted in Building 03-36 from 1976 to 1980. New sample vial bottles were immersed in a 35-percent-concentration nitric acid bath and triple-rinsed with deionized water. The rinse water was reused several times before it was discharged to floor drains, which discharged to storm drains. There was no pathway to the environment from the former lift wells at this AOC. The rinse water from the bottle-washing operation was extremely dilute, and its volume is estimated to have been very low. This AOC was recommended for NFA in the RFI work plan.

		Building 03-36, gas station and auto repair shop, was removed in 1999 in preparation for construction of Building 03-2327, the Nicholas C. Metropolis Computing Center. During the task of demolishing the gas station, three AOCs [03-014(v), 03-027, and C-03-015] were removed as a presumptive remedy. Soil surrounding the UST and below the building footprint was excavated. The soil immediately below the tank and the footprint of the building was sampled for TPH. Approximately 60 cu yds of TPH contaminated soil was removed during the demolition project. Nine subsurface confirmatory samples were collected from AOC 03-027. The samples were submitted to an analytical laboratory for analysis for organic chemicals and inorganic chemicals.
03-030	Administratively Complete	
03-031	In Progress	SWMU 03-031 is a radioactive liquid waste system within the CMR Building (Building 03-29). The system consists of double-encased stainless steel vaults, tanks, and drainlines that discharge to the radioactive liquid waste line for treatment at TA-50. From 1953 to 1982, operations at the CMR Building drained liquid radioactive waste through sumps and tanks. Floor drains, air duct wash water, and, in some cases, the perchloric acid scrubber, drained into two 10,800-gal. concrete tanks and associated sumps located in the basement. Engineering drawings illustrating the construction of the CMR Building show two 10,800-gal. tanks sited in the basement of each of five wings. The tanks in each wing are adjacent to each other and are made of 6-in.-thick concrete walls. The tanks are 10 ft long x 6 ft wide x 6 ft high. Although the tanks were designed as holding tanks, they were used more as a pass-through system. The valve at the bottom of each tank was always in the open position; therefore, all liquids drained directly to the radioactive liquid waste line. The tanks served as holding tanks if the inflow to the tank was greater than the rate of the outflow. Liquid waste from the CMR Building was carried through the radioactive waste line to pumping station 03-700 and then pumped to the radioactive liquid waste treatment facility at TA-50. Pumping station 03-700 was removed in the early 1980s, and in 1982, the present system in the CMR Building, which routes wastes directly to TA-50, began operation. This radioactive liquid waste system is completely contained in the building and no releases have been reported. SWMU 03-031 was recommended for NFA in the September 1996 permit modification request but the NFA recommendation was subsequently withdrawn.
03-032	Administratively Complete	PRS 03-032 is an aboveground, recirculation tank located in Building TA-3-38. The tank is used to control air emissions during the operation of a paint booth located adjacent to the tank. Air contaminated with paint particulates is pulled into a curtain of water that is passed through a filtration system to reduce the paint concentration in the water. The filtered water is then returned to the recirculation tank. Prior to 1987, the liquid in the tank was periodically discharged to floor drains connected to the former sanitary wastewater treatment facility at TA-3. The floor drains were plugged in 1987. Since that time, filtration water in the recirculation tank is replaced every two years. The water in the tank and the paint sludge from the bottom of the tank are put into separate drums, placed into the less-than-90-day waste accumulation in the building, characterized and sent to TA-54 for disposal. Potential releases from the floor drains will be addressed by D&D. The drain lines, have been rerouted to SWSC and remain active today. Potential releases from the drain lines will be investigated as part of a consolidated sanitary waste line PRS. The tank, itself, is not known or suspected of releasing contaminants to the environment. Therefore, SWMU 3-032 is appropriate for NFA under Criterion 3.
03-033	In Progress	SWMU 03-033 is the site of a historical liquid waste collection system for the printed-circuit shop located in the northwest corner of the physics building (Building 03-40). The system consisted of a 200-gal. transfer tank and two containment areas located adjacent to the building's northwest corner. Secondary containment for the transfer tank was a below-grade, 6-ft-diameter corrugated metal culvert section coated with epoxy. The culvert section was embedded in gravel, and in 1986 the gravel base was upgraded to a concrete vault. This 8-ft-deep vault held the 200-gal. transfer tank and associated pumps and equipment. Liquid from the transfer tank was pumped through

		underground pipes either into an 800-gal. tank, tuff tanks, or containers located above a bermed concrete sump for temporary storage pending transport and disposal. The plating rinse wastes contained trace amounts of nickel, copper, lead, silver, gold, tin, cyanides, ferric chloride, pyrophosphate solutions, fluoroborates, and hydrochloric acid. The printed-circuit shop ceased operating in January 1991. The 200-gal. transfer tank and associated pumps were removed in October 1992. Both containment areas are covered to prevent runoff from entering containment structures. Suspect contaminants were inorganic chemicals and cyanide. The ER Project conducted an RFI at this SWMU in 1994. The purpose of the investigation was to determine whether the storage and transfer of liquids or the vault overflow, resulting from a breach of containment during heavy rains, released contaminants to the environment. Fourteen samples were collected from six locations downgradient from the containment vault and on the three sides of the sump bordered by soil. The sump itself was not sampled because of hantavirus health concerns. Treating the sump for hantavirus would require introduction of a bleach solution, which would have introduced contaminants into the sample. The samples were screened for organic chemicals and were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and radionuclides. Organic chemicals were not detected in field screening. Mercury and zinc were detected at concentrations above BVs but below SALs. Fifteen PAHs were detected; their presence was attributed to runoff from upgradient asphalt pavement. The 1996 RFI report recommended NFA at SWMU 03-033.
03-034(a)	In Progress	SWMU 03-034(a) is structure 03-154 and the associated underground radioactive liquid waste storage tanks (two stainless steel tanks and two concrete tanks) located partially beneath the building. Structure 03-154 was constructed in 1961 to house operating equipment of the four USTs that received radioactive waste from wing 9 of the CMR Building (Building 03-29). SWMU 03-034(a) is located approximately 7 ft west of wing 9. From 1961 to 1983, the USTs received radioactive liquid waste (fission products from the destructive testing of reactor fuel rods) from the hot cell of wing 9 at the CMR Building. The radioactive liquid waste originally was routed to the stainless steel tanks and stored to allow decay of short-lived radionuclides. The radioactive liquid waste then was pumped through a series of stainless steel transfer lines into the concrete storage tanks. The liquid was processed through ion exchange columns, which resulted in lower-activity radioactive liquid waste. The two cylindrical stainless steel USTs located below grade beneath the north part of structure 03-154 are accessible from individual manholes outside the building. Each tank is 7 ft long and 5 ft in diameter, with a maximum capacity of approximately 1000 gal., and is located inside a concrete vault. The concrete vaults share a common wall, and each concrete vault contains pumps and stainless steel piping associated with the tanks. Each concrete tank is approximately 17 ft long x 9 ft wide x 6 ft high, with a maximum capacity of 4900 gal. A single, gravity-outflow sump pit, which served both concrete tanks, is located on the south side of the tanks and was used to drain liquid waste to the radioactive liquid waste line, which was pumped to TA-50. The stainless steel and concrete USTs were not used after 1983. Both sets of tanks were taken offline in 1985 when the former waste line was removed. The tanks were not reconnected to the new waste line that was installed at that time. All four tanks are currently on standby status; it is not known whether they will be reconnected and used in the future. One stainless steel tank and one concrete tank contain radioactive liquid waste. There have been no reported releases from the SWMU 03-034(a) tanks and no unexplained changes in fluid levels that may have indicated leaks. Only liquid radioactive waste is believed to have passed through the SWMU 03-034(a) system. The existing samping plan for this SWMU is contained in the RFI work plan for OU1114, addendum 1. RFI activities have not yet been conducted at this site.
03-034(b)	In Progress	SWMU 03-034(b) is an active industrial waste sump 10 ft x 10 ft x 11 ft deep located on the west side of the rolling mill building (Building 03-141). The concrete sump is an

		underground pit that provides secondary containment for a 50-gal. tank that processes water and liquid waste. The tank and the sump were installed in the 1960s and have been active since that time. The liquids may contain small quantities of radionuclides and acid wastes that are pumped into the radioactive liquid waste line from the tank. SWMU 03-034(b) was recommended for NFA because it is an active industrial waste line system with no history of releases and the sump provides secondary containment. The RFI work plan for OU1114, addendum 1, was rejected by NMED and remains an open action item for future resolution.
03-035(a)	Administratively Complete	SWMU 03-035(a) was a 3,000-gal. underground diesel storage tank that has undergone regulatory closure under RCRA and NMED underground storage tank (UST) regulations. This tank was installed in 1977 at the TA-3 service station on Parry Road. Due to failure of a tightness test (an annual inspection) the tank was removed along with approximately 20 cu. yd. of soil, in accordance with the procedures described in Part XII, Section 1209 of the 1991 New Mexico UST regulations. SWMU 3-035(a) is appropriate for NFA under Criterion 4.
03-035(b)	Administratively Complete	SWMU 3-035(b) is an 800-gal. underground diesel storage tank located near the Central Intrusion Detection Alarm Station, TA-3-440. This tank supplied the emergency electrical generator for the facility and never leaked; it was scheduled for replacement under UST guidelines. The tank was removed and officially closed following NMED UST regulations on September 29, 1993. SWMU 3-035(b) is appropriate for NFA under Criterion 4.
03-036(b)	In Progress	AOC 03-036(b) is two 25-gal. to 50-gal. aboveground tanks that contain #2 diesel fuel. The tanks are located 100 ft west of the asphalt batch plant (Building 03-73). The tanks are surrounded by a 3-ft soil berm. Diesel fuel from the tanks is applied to dump truck beds to prevent sticking, before they are loaded with asphalt. Residual fuel from the dump truck beds is contained in an aboveground metal catch basin on the east side of the berm. Before 1989, kerosene was stored in the tanks and used for the same purpose as the #2 diesel fuel. Periodic drips and splashes from the tanks have created dark stains on the gravel. According to the 1990 SWMU report, the tanks began operating in 1960. This is an active site that is used in the day-to-day road maintenance operations. The RFI work plan states that further action will be taken when the roads and grounds operations are decommissioned or when they are moved to another area.
03-036(e)	Administratively Complete	
03-036(f)	Administratively Complete	
03-036(g)	Administratively Complete	
03-036(h)	Administratively Complete	
03-036(i)	Administratively Complete	
03-036(j)	Administratively Complete	
03-037	In Progress	SWMU 03-037 is one below-grade, 9000-gal. concrete tank that is divided into two 4500-gal., unlined sections that are fitted with separate covers. The tank is located in the basement of the Sigma Building (Building 03-66). One section was used to store spent cyanide solution; the other section stored nitric, sulfuric, and hydrochloric acid solutions from electroplating operations. Both sections discharge to the industrial waste line. The cyanide section is inactive. The acid waste line serving the cyanide tank was found to have collapsed and leaked in 1989. The leak was repaired and areas were tested for contaminants. Sampling was performed by EM-8 in 1991; lead and uranium were detected, but contaminant levels were found to be below SALs. The RFI work plan recommended this SWMU for deferred action until operations in the other section of the tank cease.

03-038(a)-00	In Progress	Consolidated SWMU 03-038(a)-00 consists of former SWMUs 03-038(a) and 03-038(b). These SWMUs are located near the southwest end of Omega Bridge, which spans Los Alamos Canyon. Former SWMU 03-038(a) is the site of a historical acid-neutralizing and pumping building (former Building 03-700). The building consisted of a 16-ft x 22-ft x 11-ft concrete-block pump house and two 14-ft x 22-ft x 14-ft concrete underground tanks. The pumping building was the central collection point for industrial wastes from the CMR Building (Building 03-29), the Sigma Building (Building 03-66), and other LANL buildings. Once collected, the wastes were pumped from the tanks into a line leading to the TA-50 radioactive liquid waste treatment facility. Former SWMU 03-038(b) is the site of a historical 28,500-gal., steel waste-holding tank (structure 03-738) located north of Building 03-700. The tank was 11 ft in diameter and 44 ft long and was partially buried on the upper south wall of Los Alamos Canyon. The historical structures associated with SWMU 03-038(a)-00 were built in 1952 and removed in 1982 as part of the radioactive liquid waste lines removal project of 1981–1986; disposal was at TA-54. Radioactive contamination was found near former Building 03-700 in 1976. Soil was tested for radionuclides; most contamination was from plutonium-239. Pipelines and two manholes (structures 03-702 and 03-703) leading into and out of the SWMUs were removed in 1982, except for part of structure 03-702 and two sections (100 ft and 150 ft, respectively) of 8-in.-diameter VCP, which were left beneath West Jemez Road at the Diamond Drive intersection. Soil samples taken from beneath the tanks during their removal indicated that the tanks had never leaked. As part of DOE's ALARA policy, contaminated soil around the manholes was removed. Pipes beneath the road were filled with asphalt emulsion and capped with 1 to 2 cubic yards of a hard-curing concrete formulation with an adhesive additive. Warning plates were placed at each end of the pipes. Pits were backfilled with uncontaminated soil and landscaped. Guideline levels for soil cleanup were specified, but the lowest level for subsurface contamination could not be reached. Upper limits were applied on a case-by-case basis to keep radiation exposure to the public to as low as reasonably achievable. This SWMU was recommended for deferred action until any future reconstruction of the Diamond Drive/West Jemez Road intersection results in large-scale excavation that would affect the plugged pipes.
03-038(c)	Administratively Complete	
03-038(d)	Administratively Complete	
03-038(e)	Administratively Complete	
03-038(f)	In Progress	AOC 03-038(f) is the site of a former transportable building (Building 03-1502), which was used as a hot change house for industrial waste line removal workers in association with the 1980's Radioactive Liquid Waste Line Removal Project (RLWR). The transportable was connected to the old industrial waste line by a manhole (structure 03-728) until new lines were installed to connect it to the new industrial waste line through another manhole (structure 03-759). This was accomplished sometime before 1986 when the RLWR project ended. In 1987, Building 03-1502 was removed to TA-54, but the main drainline that connected the shower, sink, and toilet drains to the industrial waste line remained in place. That waste line now serves a transportable office building (Building 03-2009). Because this AOC remains active, further characterization would cause greater risk to workers than characterizing the line when it is decommissioned. Deferred action was recommended for this AOC in the RFI work plan, addendum 1.
03-039(a)	Administratively Complete	SWMU 03-039(a) is a silver recovery unit used at the site of a photographic processing operation at TA-3. Silver halide film was processed through a developer and then a fixer solution. From 1979, silver was reclaimed from the fixer solution for recycling purposes. The canisters used for this purpose were fitted with inlet and outlet valves for receiving and dispelling fixer solution. Silver was the only RCRA constituent that

		resulted from this recovery process operation. There were no reported spills or leaks associated with the silver recovery unit used in this building. The recovery canisters were collected by the Waste Management Group (ESH-19) and either stored or processed at TA-54, LANL's permitted waste disposal area. The silver recovery unit was contained within the building during the entire time of its operation. No reported spills or leaks were associated with unit while it was in operation. Therefore, there was no release of silver to the environment and SWMU 3-039(a) is appropriate for NFA under Criterion 3.
03-039(b)	Administratively Complete	
03-039(c)	Administratively Complete	
03-039(d)	Administratively Complete	
03-039(e)	Administratively Complete	
03-040(a)	Administratively Complete	
03-040(b)	Administratively Complete	
03-041	Administratively Complete	
03-042	In Progress	AOC 03-042 is a sump that was used as secondary containment for a wooden surge tank that contained dielectric mineral oil used as insulation in experiments. The AOC is located west of Building 03-218, the Magnetic Energy and Storage Facility. The sump consisted of a 43-ft x 27-ft concrete pad surrounded by an 18-in.- to 20-in.-high concrete curb. The wooden surge tank was erected on the containment sump in approximately 1965. The area surrounding the containment sump was enclosed by a chainlink fence and served as a storage yard for electrical equipment that contained PCB-contaminated oil. When heavy rains fell, water filled the containment area. Water occasionally overflowed to the surrounding soil and gravel. The surge tank, fence, concrete pad, and curb were removed between 1985 and 1988. The ER Project conducted a Phase I RFI at this AOC in 1994. This AOC was investigated concurrently with SWMUs 03-003(a) and 03-003(b). The sampling approach for the investigation was designed to determine whether PCBs, other SVOCs, and/or inorganic chemicals remained in the asphalt or in the surface soils. Sample locations were identified using stained areas and buildings as reference points. Two confirmatory sample locations were selected based on PCB test kit analyses to provide information about the extent of potential PCB soil contamination. Samples were field screened for organic chemicals. Confirmatory samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and PCBs. Mercury and zinc were detected at concentrations above BVs but less than SALs. PCBs were detected but concentrations were below SAL. The 1996 RFI report recommended NFA at SWMU 03-042 because the site was characterized in accordance with applicable state and federal regulations, and available data indicate that the site does not pose an unacceptable level of risk under current and projected future land use.
03-043(a)	Administratively Complete	
03-043(c)	In Progress	SWMU 03-043(c) is a former manhole (structure 03-718) that was part of the LANL liquid industrial waste line system that transported wastes from the Physics Building (Building 03-40) to TA-45 and then to TA-50's radioactive liquid waste treatment facility. The steel-reinforced concrete manhole was 3 ft long x 4 ft in diameter x 4 ft deep. The walls were 8-in. thick. Structure 03-718 was located below grade on the northeast side of Building 03-40. The industrial waste line, installed in 1953, passed through the bottom of the manhole, which was removed in 1984 during a facility-wide decontamination and decommissioning of the waste line. General soil cleanup guidelines for the removal project consisted of collecting soil samples at intervals from representative locations along the bottom and walls of the trench and analyzing for

		radioactivity. There is no record of soil cleanup at this SWMU; however, the pipeline connected to structure 03-718 and a manhole approximately 500 ft from structure 03-718 were sampled. Field screening results, collected during the project and documented on engineering drawings, fell below the minimum levels specified in the removal project's soil cleanup guidelines. At the time of removal, it was reportedly devoid of cracks and no fluid was observed in the bottom of the hole. This SWMU was proposed for NFA because it was misidentified in the 1990 SWMU report as a decommissioned mixed waste tank and structure 03-718 does not pose a human health or ecological risk. The NFA recommendation was subsequently withdrawn.
03-043(e)	Administratively Complete	SWMU 3-043(e) was a 10,000 gallon diesel underground storage tank (UST) located at the former service station (Building TA-3-36) on Parry Road. The tank was installed in 1982 and removed with intent to upgrade in 1989. The UST, which did not leak, underwent removal and closure in accordance with the New Mexico UST regulations. Therefore, SWMU 3-043(e) is appropriate for NFA under Criterion 4.
03-043(f)	Administratively Complete	
03-043(g)	Administratively Complete	
03-043(i)	Administratively Complete	
03-044(a)	Administratively Complete	PRS 03-044(a) was a container storage area on a concrete pad with secondary containment located southeast of TA-3-70, the Laboratory's Parks and Refuse Office. From the time of its construction in 1979 until 1987, the PRS was used for the storage of wooden cable spools and drums containing waste diesel fuel, kerosene, and oil emulsion. From 1988 until its removal in 1993, the PRS operated as a Satellite Accumulation Area (SAA). This PRS is not known or suspected of releasing RCRA solid or hazardous wastes and/or constituents to the environment prior to the establishment of the SAA. Any release that may have occurred while it served as an SAA would have been remediated in accordance with 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. Therefore, SWMU 3-044(a) is appropriate for NFA under Criterion 3.
03-044(b)	Administratively Complete	
03-045(a)	In Progress	PRS 3-045(a) is an inactive outfall from Building 03-22, the steam plant that was operational from the 1950s through May of 1993. (This outfall was incorrectly identified as NPDES EPA A01A001 in the RFI Work Plan for Operable Unit 1114, Addendum 1. The correct NPDES EPA permit number for this outfall was NPDES EPA 04A151.) The primary outflow from the building to the outfall was non-contact water from steam condensate. Water from floor drains in the basement, first floor, mezzanine, heater floor, platform, and roof drains of the steam facility previously discharged to this outfall. In 1989, an oil/water separator was installed near the outfall to prevent any oil from building machinery from reaching the outfall. In 1993, the separator was removed and the discharge pipe was capped. In mid-1991, a diesel fuel release of approximately 100 to 200 gallons associated with two above ground diesel tanks at Building 03-22 occurred. A faulty fitting on a fuel line to the diesel tanks caused the release to occur as the system was being pressurized. The release [PRS 3-036(j)] occurred directly above PRS 3-045(a), flowed down the slope south of the steam plant and into the drainage channel of this outfall and within the SWMU boundary. The spill was contained approximately 100 yards east of the leak. The drainage was blocked and an extensive cleanup to remove all diesel fuel and diesel-contaminated soil was carried out. The corrective action following the diesel fuel release included the removal of all soil and sediment in and around outfall at SWMU 3-045(a) and replacing it with clean fill. This corrective action is well documented, (provided to NMED in the 1997 NOD Response). SWMU 03-045(a) was proposed for NFA in the OU 1114 Work Plan Addendum 1 and in the September 1996 Request for Permit Modification under Criterion 4 – Regulated

		Under Another Authority (NPDES). In the NOD to the Request for Permit Modification, NMED expressed concern about RCRA constituents being present in canyon soil and sediment and having migrated downstream of the outfall. In the 1997 NOD Response, LANL provided NMED with sampling results following the cleanup of the diesel spill at the PRS and stated that investigations of PRSs 03-012(b), 03-045(b) and 03-045(c) (now consolidated PRS 03-012(b)-00) would address any potential contaminant migration down stream from this PRS. LANL also reiterated that the entire outfall area was excavated and restored with clean fill following the diesel spill cleanup. In January 1999, NMED requested additional documentation on the site. To confirm the nature and extent of any residual RCRA constituents or TPH (diesel) at this outfall, LANL collected six confirmation samples in July 2001. The six soil/sediment surface (0 to 12 inches) confirmation samples were collected from the designated area directly south of the Steam Plant (03-22) and adjacent to the former diesel spill cleanup area. The samples were analyzed for PCBs, TPH, TAL metals and SVOCs. Results indicated that further investigation is required for this SWMU to determine the nature and extent of metals and SVOCs that were detected above background levels. In February 2002, the ER Project formerly withdrew SWMU 03-045(a) from consideration for NFA in a permit modification request.
03-045(d)	Administratively Complete	SWMU 3-045(d) is an aboveground storage tank located at the Power Plant, TA-3-22 within Technical Area 3. This SWMU was duplicated as SWMU 3-014(q) as indicated in the SWMU Report. SWMU numbers 3-045(d) and 3-014(q) were both assigned to structure TA-3-336, a storage tank. The Field Unit opted to retain the number SWMU 03-014(q) for addressing the storage tank. SWMU 3-045(d) is on the HSWA module Table C. SWMU 3-045(d) is appropriate for NFA under Criterion 1 because it is a duplicate SWMU and has been investigated as SWMU 3-014(q) in the RFI Work Plan for Operable Unit (OU) 1114 (LANL 1993). The SWMU Report descriptions of both SWMUs indicates verification of the error.
03-045(e)	In Progress	SWMU 03-045(e) is an inactive outfall from a floor drain in an oil pump house (structure 03-57) located at the TA-03 steam plant (Building 03-22). One line from each diesel storage tank (structures 03-26 and 03-27) passed through the pump house to the steam plant. Valves in the pump house operated each line and allowed diesel to flow from one or both storage tanks. The drain was in place to prevent the pump house from filling with diesel fuel if a valve junction had ruptured or leaked. The drain was plugged in 1989. A concrete apron is located at the point where the drainline discharged to the outfall area in Sandia Canyon. The drainpipe also was plugged in 1989. This SWMU was recommended for NFA because there is no documented release to the environment. However, due to the discoloration of the concrete apron at the outfall, NMED has requested samples be collected at this site. In accordance with LANL's Watershed Approach, SWMU 03-045(e) will be addressed during future characterization activities for Sandia Canyon. As a result, LANL formally withdrew the NFA proposal for SWMU 03-045(e) in a letter to NMED dated February 11, 2002.
03-045(f)	In Progress	SWMU 03-045(f) is an inactive outfall from a sink drain that served the utilities control center (Building 03-223) from 1950 through 1989. The sink was used as a quench tank for welding and cutting. The sink contained only water to cool welded metal, and no leaching of metal was possible. The outfall was located on the north side of the building and emptied into Sandia Canyon. There were no known releases of hazardous wastes or hazardous constituents to the sink and its outfall. This SWMU was recommended for NFA in the OU 1114 work plan, addendum 1 and again in September 1996. The RFI work plan for OU 1114, addendum 1, was rejected by NMED and remains an open action item for future resolution. LANL formally

		withdrew the NFA proposal for SWMU 03-045(f) in a letter to NMED dated February 11, 2002.
03-045(h)-00	In Progress	SWMU 03-045(h)-00 is a consolidated unit consisting of former SWMUs 03-045(h) and 03-049(a). Both are NPDES-permitted outfalls associated with cooling towers. Former SWMU 03-045(h) is the outfall area at the north perimeter of the Sigma Complex security fence, approximately 50 ft north of a cooling tower (structure 03-187), NPDES Outfall 03A024. Treated cooling water and stormwater are discharged at the outfall. The area at the outfall pipe is about three feet wide and six feet long. Effluent drains into a corrugated metal storm drainpipe that trends northeast and east of structure 03-187 where it combines with more stormwater runoff from surrounding areas. The drainage continues south and joins a channel north of Eniwetok Drive that ultimately drains into Sandia Canyon. The outfall was active from 1953 until the late 1980s, and was reactivated in early 1995. Routine water treatment began in 1968; treatment included biocides and fungicides to reduce algae growth and chelating agents such as EDTA to inhibit corrosion. Former SWMU 03-049(a) is NPDES Outfall 03A022 and is located south of the Sigma Building (Building 03-66). The outfall discharges treated cooling water from a cooling tower (structure 03-127), which serves Building 03-66, and runoff from six roof drains at Building 03-66. The cooling tower has operated since 1960. From 1984 to 1990, the outfall also received discharge from rinse tanks associated with the electroplating operation in Building 03-66. The tanks contained the final rinse from electroplating and surface-finishing experimental components. Although the rinse tanks were flushed continually with tap water to preclude contaminant buildup, trace amounts of metals, acids, cyanide, and depleted uranium were introduced into the rinse water. The NPDES permit allowed discharge of 4680 gal. per day of treated cooling water and 24,000 gal. per day of electroplating rinse water. Since 1990, the outfall has received only treated cooling water and roof-drain runoff. The outfall discharges to Mortandad Canyon. The ER Project conducted an RFI at former SWMU 03-049(a) in July 1997. The investigation evaluated the point of discharge for the outfall and four associated sediment catchment basins through which the discharge flows before draining into Mortandad Canyon. Field activities included a site survey, geodetic survey, field screening, and sample collection. Eight random soil sample locations and two water sample locations were selected. Two random soil samples were collected from each of the four sediment catchment basins. The water samples were collected at the NPDES outfall pipe before it entered the sediment catchment basin and from flowing water exiting the last sediment catchment basin before it entered Mortandad Canyon. RFI sampling for former SWMU 03-049(a) suggests no potential contaminants exist at this SWMU. SWMU 03-049(a)is permitted as an NPDES outfall, and it discharged cooling tower water potentially containing chromium. However, chromium was demonstrated to exist primarily, if not exclusively, in the trivalent state. Trivalent chromium is an essential nutrient with a SAL 200 times the maximum value found in the sediment. These releases are not associated with potential human health risks. Former SWMU 03-045(h) never had hazardous constituents or hazardous wastes in its effluent. These former SWMUs were recommended for NFA in the 1997 RFI report.
03-045(i)	Administratively Complete	PRS 03-045(i) was initially identified as an outfall from floor and sink drains at TA-3-34, the Cryogenics Building. However, field investigations and engineering drawings revealed that no outfall is associated with these drains which discharge directly to the sanitary sewer system. In addition, all sinks and drain lines from this building discharge either to the sanitary wastewater treatment facility at TA-3 or to the radioactive wastewater treatment facility at TA-50. SWMU 03-045(i) is appropriate for NFA under Criterion 1 because the outfall does not exist.
03-046	Pending	SWMU 03-046 is an aboveground wastewater neutralization tank located within TA-03 approximately 60 ft southeast of LANL's steam plant (Building 03-22). The function of the tank is to adjust the pH of blowdown water from boilers, softeners, and a demineralization tank located at the steam plant. The tank is made of fiberglass and has a capacity of 10,000 gal. It is completely enclosed in a 14.6-ft x 14.6-ft x 12-ft-deep

		concrete secondary containment area whose walls are approximately 1 ft thick. According to the 1990 SWMU report, this tank began operating in 1980. The tank discharges to Sandia Canyon through an NPDES-permitted outfall. From May 20 to May 21, 1990, three uncontrolled releases of sulfuric acid into the neutralization tank resulted in the discharge of acidic wastewater (i.e., with a pH above or below the NPDES permit limit of 6.0 to 9.0 pH) to the outfall. The area of Sandia Canyon affected by the acidic discharge was immediately remediated and the spills were reported to EPA Region 6. This action resulted in an administrative order, which was addressed and an action plan was implemented to ensure that future discharges from the tank meet NPDES permit pH requirements. In a letter dated April 5, 1991, the EPA Region 6 Water Management Division issued a final consent agreement for the corrective action LANL took for this SWMU. The NMED Surface Water Quality Bureau also concurred with LANL's corrective action for this SWMU in a letter dated July 14, 1993, and closed the incident. No other documented releases from the tank have occurred. There has been no additional work at this site.
03-047(a)	Administratively Complete	
03-047(b)	Administratively Complete	
03-047(c)	Administratively Complete	
03-047(d)	Pending	AOC 03-047(d) is the former location of a container storage area for the Steam Plant (Building 03-22) located within the Los Alamos National Laboratory's TA-03. The storage area was located on the east side of Building 03-22 and consisted of an asphalt pad where drums of new motor oil, used oil, and Stoddard solvent were stored from 1954 until 1989. A new location for an upgraded materials storage area was selected in 1989. The asphalt pad was subsequently removed in 1989 when the storage area was decommissioned. In November 2001, the ER Project received an excavation permit for review and approval for the installation of a concrete support pad for an emergency backup generator and transformer for the TA-03 Steam Plant (Building 03-22). Prior to the excavation of soil for the concrete pad, six surface soil samples were collected by JCNNM to complete the characterization of existing site conditions and for waste characterization purposes. Results showed low concentrations of PCBs, SVOCs, TPH, and methylene chloride at different sample locations with no obvious trend that would indicate a release. Two confirmation samples were collected by JCNMM from the floor of the excavation for the concrete pad adjacent to the stairs on the east side of the Building 03-22. The analytical results showed low concentrations of SVOCs and inorganic chemicals. Methylene chloride was detected in both samples below the EQL. PCBs were not detected in either sample. Subsequent to the collection of the confirmation samples from the excavation, the six-inch main potable water supply line to the Steam Plant ruptured on January 25, 2002, where the line entered the building on the south of the stairs on the east side of the building releasing approximately 250,000 gallons of water. As a result, soil and fill along the entire eastern wall of the Building 03-22 including soil and fill within and around the AOC boundary was severely eroded. Soil that washed into the excavation was subsequently removed and the concrete support pad along with the emergency generator and transformer were installed during the spring and summer of 2002. The ER Project implemented a VCA at the site in 1995 that involved the characterization, excavation and removal of the top six inches of soil and the collection of three confirmation samples from the excavated area. Confirmation sample results showed low concentrations of PCBs, SVOCs, and inorganic chemicals. The site was restored by backfilling and compacting the excavated area, followed by revegetation.

		The site and surrounding area have been used for industrial/laboratory purposes since the 1950s. Contaminants consistent with materials previously located at the former storage area or with the former asphalt pad were detected at extremely low concentrations at AOC 03-047(d). Most of the contaminants were present at concentrations below residential SALs; all contaminants were below industrial soil screening levels. Therefore, there is no unacceptable human health or ecological risk from the low levels of contaminants detected and the SWMU was proposed for no further action in the VCA completion report submitted to DOE in September 2002.
03-047(e)	Administratively Complete	
03-047(f)	Administratively Complete	
03-047(g)	Administratively Complete	
03-047(h)	Administratively Complete	
03-047(i)	Administratively Complete	
03-047(j)	Administratively Complete	
03-047(k)	Administratively Complete	
03-048	Administratively Complete	
03-049(b)-00	In Progress	SWMU 03-049(b)-00 consists of former SWMU 03-049(b) and former AOC C-03-014. These units were consolidated because surface water drainage from both sites collects in the same locations and regrading and paving operations may have distributed contamination from one site to the other. Former SWMU 03-049(b) is a 50-ft-long x 20-ft-wide discharge area at the south wall of the press building (Building 03-35). It is associated with an inactive vacuum pump that served furnaces in Building 03-35. Building 03-35 was built in 1953. The vacuum pump evacuated oil from the furnaces that were used for experiments in the building. Experiments included fabricating enriched uranium-loaded graphite and carbide fuel elements. Also, enriched uranium was processed in the north part of the press building's first floor. The outlet is located about eight feet above the ground on the south wall of Building 03-35. The vacuum pump was deactivated in the late 1980s; at about the same time, a 10-ft x 8-ft area under the exhaust pipe outlet was paved with asphalt. Runoff from this area drains southwest toward low-lying areas. Building 03-35 was declared surplus in November 1991 but was reactivated in 1995. Suspect contaminants from the days when the vacuum pump was active are metals, TPH, and enriched uranium. Former AOC C-03-014 is a 125-ft x 100-ft equipment-storage area located southwest of Building 03-35. The area is bounded by security fences to the north, south, and west and by Building 03-35 to the east. Most of the area is paved except for a 15-ft-wide strip of grass along the southern security fence that widens to 30 ft southwest of Building 03-35. Various equipment and molds from Building 03-35 are stored at AOC C-03-014 for salvage or because of the building's space limitations. Because of radioactivity found at the area in 1994, the area was roped off and posted as radiologically controlled. When the work plan addendum was written (July 1995), the 1994 contamination had not been cleaned up or painted over by the user group to prevent contaminant spread. In 1997 the ER Project conducted an RFI at the former SWMU and AOC of this consolidated unit. Samples were collected and submitted to an off-site analytical laboratory for radionuclide, organic chemical, and inorganic chemical analysis. Arsenic and PCBs were detected higher than their SALs. More samples, defining the extent of contamination, will be collected in future RFI work.
03-049(c)	Administratively	PRS 03-049(c) is described as an outfall receiving "discharge from the condensate

	Complete	system" at Building TA-3-66, the Sigma Building. An associated PRS, PRS 03-049(d), is described as the "discharge of condensate from the flash tanks" at Building TA-3-66. The description of PRS 03-049(d) includes all components of the TA-3-66 condensate system. Therefore, SWMU 03-049(c) is a duplicate of SWMU 03-049(d) and is appropriate for NFA under Criterion 1.
03-049(d)	Administratively Complete	PRS 03-049(d) is the condensate system for Building TA-3-66, the Sigma Building. Condensate (i.e., water) forms on the pipes of the system and is collected by pits beneath flash tanks. Because the pits are open to the atmosphere, they also receive rainwater. The pits discharge the condensate and rainwater to two National Pollutant Discharge Elimination System permitted outfalls. The condensate and the rainwater do not contain RCRA solid or hazardous wastes and/or constituents. Therefore, SWMU 03-049(d) is appropriate for NFA under Criterion 2.
03-049(e)	In Progress	SWMU 03-049(e) was identified in the 1990 SWMU report as possible soil contamination from an outfall pipe, of unknown origin, located south of the Sigma Building (Building 03-66). During a site visit in 1992, an outfall was located about 100 ft southeast of Building 03-66 and determined to be the outfall associated with SWMU 03-049(e). The RFI work plan indicated that SWMU 03-049(e) was a duplicate of SWMU 03-012(a), which was identified in the 1990 SWMU report as an area contaminated by a one-time discharge from Building 03-66. The RFI retained 03-012(a) as the designator for investigations conducted at this site. SWMU 03-049(e) was recommended for NFA in the September 1996 Permit Modification Request. The basis for this recommendation was that SWMU 03-049(e) was a duplicate of SWMU 03-012(a), which had previously been investigated and recommended for NFA. SWMU 03-012(a) was subsequently removed from the HSWA Module. Additional investigations at Building 03-66 determined that SWMU 03-049(e) had received discharges in addition to those associated with SWMU 03-012(a). Specifically, SWMU 03-049(e) was found to receive discharges from three roof drains at Building 03-66. The ER Project concluded that the investigations previously conducted at SWMU 03-012(a) were insufficient to characterize the extent of potential contamination associated with SWMU 03-049(e). The ER Project developed and implemented a confirmation sampling and analysis plan for SWMU 03-049(e). This plan called for collection of four soil/sediment samples from the area of the outfall and analysis of these samples for inorganic chemicals. Results indicated that further investigation is required for this SWMU to determine the nature and extend of several metals (arsenic, lead, and zinc) that were detected above background levels and fluoride that was also detected. In February 2002, the ER Project formerly withdrew SWMU 03-049(e) from consideration for NFA in a permit modification request.
03-050(a)-00	In Progress	Consolidated SWMU 03-050(a)-00 includes SWMUs 03-050(a), 03-050(d), 03-050(f), and 03-050(g). The SWMUs are stack emissions that are associated with potential soil contamination resulting from TA-03 exhaust emissions. SWMU 03-050(a) is the SWMU attributed to emissions from 24 active exhaust stacks at the CMR Building (Building 03-29). Operations at the CMR Building include handling radioactive materials that contain uranium, plutonium, iodine, mixed fission products, and tritium. HEPA, Aerosolve 95 fabric, and charcoal filters have been used to remove radioactive particulates from the stack effluent. The CMR Building was built in 1952. SWMU 03-050(d) is the SWMU that includes emissions from the air-pollution control device on the exhaust system at the south side of the tech shops addition (Building 03-102). The device was a shaker-type baghouse located on a concrete pad. Building 03-102 was built in 1957 for machining radioactive materials. Machined items included those with uranium-235 and –238, lithium hydride, and small quantities of other inorganic chemicals. The baghouse was used as a secondary air-pollution control device to remove uranium graphite particulates in the gas stream to the stack. The baghouse was the primary air-pollution control device to remove lithium hydride particulates in the gas stream to the stack. The baghouse ceased operating in 1992 due to a failure in the dioctyl phthalate penetration test, which measures the efficiency

		of the collection system. All ventilation ducts associated with machining operations then were diverted to a high-flow-rate ventilation system connected to an operational baghouse located east of the inoperative baghouse. Radionuclide air emissions at the inoperative baghouse were monitored from the beginning of its use in 1957. Release of radioactive uranium particulates to the concrete pad through the inoperative baghouse fabric filter also was documented. The concrete pad later was painted to immobilize any existing uranium particulates. Radiological survey results showed no detectable activity on the pad or in the soil around the pad. SWMU 03-050(f) is potential soil contamination attributed to emissions from exhaust stacks located at the Physics Building (Building 03-40). Beryllium foil was made in this building in the 1950s. In the 1960s, beryllium windows were cleaned with solvents and the cleaning solvents were allowed to evaporate in the hood. Beryllium residue was put into a container and removed by a janitor. Tritium work was conducted in the calibration laboratory and laser experiments with inert gases also were conducted in the building. High molecular weight, nonvolatile laser dyes are used in the laser experiments, but airborne chemicals are not released as a result of the experiments. SWMU 03-050(g) is the SWMU attributed to tritium emissions from exhaust stacks located at the Van de Graaff accelerator laboratory (Building 03-16). Tritium work has been conducted in Building 03-16 since 1951. Emissions have been documented at all stacks in this SWMU and are lower than the minimum radioactivity necessary to cause soil contamination that exceeds NESHAPS regulatory levels. The SWMUs in this consolidated SWMU unit were recommended for NFA in the RFI work plan, addendum 1, because they were characterized in accordance with applicable state and federal regulations and available data indicate that they pose no unacceptable level of risk to human health and the environment under current and projected land use. The RFI work plan for OU 1114, addendum 1, was rejected by NMED and remains an open action item for future resolution.
03-050(b)	Administratively Complete	AOC 03-050(b) is the AOC attributed to exhaust stack emissions from the cryogenics building (Building 03-34) associated with potential soil contamination at TA-03. Active tritium work was carried out in this building from 1955 to 1984. The tritium effluent stack was shut down in July 1986 because all tritium and tritium-handling systems were removed from the building. This AOC was proposed for NFA in the RFI work plan, addendum 1. The RFI work plan for OU 1114, addendum 1, was rejected by NMED and remains an open action item for future resolution.
03-050(c)	Administratively Complete	AOC 03-050(c) is potential soil contamination attributed to emissions from exhaust stacks at the press building (Building 03-35). Building 03-35 was built in 1954 to manufacture enriched uranium-loaded graphite and carbide fuel elements. Small amounts of tritium also were handled in this building. Stack emissions have been documented at this AOC and are lower than the minimum radioactivity necessary to cause soil contamination that exceeds NESHAPS regulatory levels. This AOC was recommended for NFA in the RFI work plan, addendum 1. The RFI work plan for OU 1114, addendum 1, was rejected by NMED and remains an open action item for future resolution.
03-050(e)	Administratively Complete	PRS 03-050(e) is an inactive filter unit located on the east side of machine shop, TA-3-39. The machine shop conducted general machining of non-hazardous materials including aluminum, steel, foam, plastics, and tool steels. The filter unit, which operated from 1953 until 1993, was used to remove non-hazardous grinding particulates from the ventilation system. The particulates were collected in a 55-gal. drum and were routinely picked up for recycling. SWMU 03-050(e) is appropriate for NFA under Criterion 2 because it was never used for the management of RCRA solid or hazardous wastes and/or constituents.
03-051(a)	Administratively Complete	

03-051(b)	Administratively Complete	
03-051(c)	In Progress	AOC 03-051(c) represents two 3-ft- to 5-ft-diameter stains of vacuum pump oil and/or exhaust on asphalt and concrete located on the east side of the beryllium tech facility (Building 03-141). The site served as a vacuum pump exhaust area for Building 03-141. The ER Project conducted a VCA at this AOC in August 1995. The stained areas were excavated, and asphalt and soil were removed until nonstained soil was reached. Removed materials were field-screened for radioactivity, PAH, TPH, XRF inorganic chemicals, and VOCs. The first set of XRF samples indicated elevated thallium levels. After receipt of analysis results from cleanup verification samples, cleanup activities resumed to remove another 2 in. to 3 in. of soil from both locations, which contained residual contamination from the thallium. Two more samples, taken after additional excavation was completed, did not show elevated thallium levels. Four confirmatory samples were collected to verify site cleanup. Samples were analyzed for pesticides since thallium could be a component of pesticides. In addition, confirmatory sampling added analyses for TAL inorganic chemicals. Confirmatory VOC sampling was eliminated because verification screening results indicated that VOC levels were not elevated. Excavated areas were backfilled with soil and gravel, and fill materials were compacted. AOC 03-051(c) was proposed for NFA in the 1996 VCA report.
03-051(d)	Administratively Complete	
03-052(a)-00	In Progress	Consolidated SWMU 03-052(a)-00 includes three former SWMUs: former SWMUs 03-052(a) and 03-052(e) are two storm drains that discharged to a TA-03 storm sewer and continued to former SWMU 03-054(b), NPDES-permitted outfall 03A009. Former SWMU 03-054(b) eventually discharged into TwoMile Canyon. This outfall was eliminated in July 1996. Former SWMU 03-052(a) is a storm drain located near the main storage dock area on the east side of Tech Shops (Building 03-39). The area is about 10-ft x 100-ft. From 1954 to 1991, materials from machining operations were disposed of in dumpsters that were kept on the dock. Stored materials included aluminum, stainless steel, copper and brass filings, and solvents like trichloroethane and trichloroethene used for degreasing. In addition, ethylene glycol was used as a coolant. Material from dumpsters may have leaked and been washed into the storm drain. Subsequent to a 1993 site visit, a metal barrier was constructed around the dumpster area and the storm drain was sealed to prevent runoff and discarded materials from entering the storm drain system. Rainwater was then pumped to a basement sump outfitted with an oil/water separator before the rainwater drained to the sanitary sewer system. Currently, only metal filings go to the dumpsters and all liquids are put into containers, transported to TA-54 and eventually sent offsite for disposal. Former SWMU 03-052(e) is a storm drain located about 50-ft southeast and downgradient from an indoor paint booth that is located in Building 03-39. The storm drain may have received paint compounds and residual solvents used in paint operations. Former SWMU 03-054(b) was permitted to receive cooling tower effluent blow-down discharge water. At the time of the 1993 site inspection, the outfall was reported to discharge water from equipment in Tech Shops Addition (Building 03-102), cooling tower effluent, cooling tower blow-down, and noncontact cooling water from a furnace. Also, stormwater runoff from surface areas surrounding 26 buildings in TA-03 was routed to the storm sewer and eventually to this outfall. Since the 1993 visit, the noncontact cooling water from the furnace was rerouted to the sanitary sewer. In March 2002, sampling was conducted at SWMU 03-054(b). Eighteen surface and subsurface samples were collected and submitted to a fixed analytical laboratory for organic and inorganic chemical analyses. Based on review of the analytical results from this sampling event, further investigation and remediation are required for this SWMU.

03-052(b)	In Progress	AOC 03-052(b) consists of five storm drain access areas located about 20-ft north of the Sigma Building (Building 03-66). Surface runoff flows across the surrounding area into the system at two locations: the system on the northeast side of Building 03-66 discharges to a storm drain outlet just north of Eniwetok Drive and a single storm drain located on the northwest side of Building 03-66 discharges to a low-lying grassy area. This AOC was investigated with AOC 03-056(k) which is a container storage area and loading dock at Building 03-66 and from which contaminants may have been released into the AOC 03-052(b) storm drain system. Suspect contaminants were inorganic chemicals and depleted uranium. The ER Project conducted an RFI at this AOC in July 1997. Two samples were taken from each of four locations and one from a fifth location corresponding to the storm drain access areas. One collocated sample was also taken. Samples were analyzed for inorganic chemicals, organic chemicals, and radioactivity. Based on sampling results, this AOC was recommended for NFA in the 1997 RFI report.
03-052(c)	Administratively Complete	PRS 03-052(c) is a one-time release of approximately 20-gal. of hydraulic oil that occurred in 1986. The oil was drained from the security gate on Mercury Road into an adjacent storm sewer near Building TA-3-42. The oil flowed down the storm drain, exited at outfall PRS 03-045(a), and contaminated the soil in the immediate vicinity of the outfall. The contaminated soil resulting from the spill was located within the boundaries of PRS 03-045(a). Because, SWMU 03-052(c) is located within the boundaries of SWMU 03-045(a), it is appropriate for NFA under Criterion 1 because it does not exist.
03-052(d)	Administratively Complete	
03-054(a)-00	In Progress	Consolidated SWMU 03-054(a)-00 consists of two former outfalls: former SWMU 03-054(a), a decommissioned outfall, and former SWMU 03-054(d), former NPDES-permitted outfall 03A025 from the former Van de Graaff building (Building 03-16). Former SWMU 03-054(a) was associated with a cooling tower (structure 03-19) that operated from 1952-1966. In 1966, the cooling tower was removed and the outfall pipe was rerouted to the chilled water system in the Equipment Building (Building 03-208). The effluent from the rerouted pipe discharged to the NPDES-permitted outfall 03A025 [former SWMU 03-054(d)]. Additionally, former SWMU 03-054(d) discharged blow-down and effluent from the cooling tower on the roof of the Ion Beam Facility (Building 03-16) and wash water from three floor drains in the equipment room of Building 03-208. The equipment room in Building 03-208 supported the cooling system that serves Building 03-16. Effluent discharged to Twomile Canyon. Former SWMU 03-054(d) was discontinued as an NPDES-permitted outfall in July 1998. The SWMUs in this consolidated unit were recommended for NFA in the RFI work plan, addendum 1, because neither had managed RCRA solid or hazardous wastes or constituents, or CERCLA hazardous substances. There is no history of chromate use at the cooling tower (structure 03-19). The RFI work plan for OU1114, addendum 1, was rejected by NMED and remains an open action item for future resolution.
03-054(c)	In Progress	SWMU 03-054(c) is a former cooling tower, pump house (structures 03-156 and -163) and inactive outfall designated as NPDES permit number 03A023 (deleted from the permit on 7/11/95). The cooling tower was located southwest of the Sherwood Complex (Building 03-105) and northwest of the Syllac Building (Building 03-287) and was used to cool an electromagnet formerly located in the Sherwood Complex. The outfall discharged into the storm sewer formerly located 25 ft east of the cooling tower. The ground surface in the area between the buildings was paved with asphalt and concrete. The Laboratory's former Environmental Protection group (ESH-8) collected two composite surface soil samples directly north of the cooling tower in 1992 and two samples from the cooling tower in 1993 to characterize the structure and surrounding soils prior to decontamination and decommissioning. Samples were screened for radioactivity and submitted for analysis of total chromium and TCLP metals. No radioactivity above background was detected. Total chromium concentrations in the soil north of the cooling tower were less than 75 ppm. Total chromium results for the salt-

		like material collected from the slats, wire and piping within the the cooling tower were 1400 ppm and 1600 ppm. No TCLP metals, including chromium, were detected above RCRA TCLP threshold concentrations. The cooling tower was dismantled and removed in the mid-1990s leaving only the concrete pad of the former pump house (structure 03-163) at a depth of 10 ft bgs. Addendum 1 of the OU 1114 work plan recommended this SWMU for NFA based on the 1992 and 1993 sample results; however, the work plan addendum was rejected by NMED. As part of the D&D of the Sherwood Complex during July 2001, the former cooling tower location, including the subsurface concrete pad, the storm drain and all associated piping and pavement, were removed. Confirmation samples were collected from the bottom of the SWMU 03-054(c) excavation and analyzed for TAL metals and hexavalent chromium. Total chromium was detected above BVs, and no hexavalent chromium was detected in any of the samples. Lead was detected in a single sample above its BV. Although lead was not a potential contaminant, its extent was defined. SWMU 03-054(c) will be proposed for NFA.
03-054(e)	In Progress	SWMU 03-054(e) is an outfall located in upper Mortandad Canyon. The outfall typically discharges a steady, low-volume flow of effluent that originates from several sources at the CMR (Building 03-29). These sources include drainage from roofs over the west wing, where towers vent filtered exhaust, and surface water runoff from the asphalt area around the building. This outfall is identified by NPDES Outfall #03A021. Potential contaminants at this site include inorganic chemicals, SVOCs, PCBs, and radionuclides. SWMU 03-054(e) received effluent from a one-time release in 1974 from an industrial waste manhole (AOC C-03-006). The overflow resulted from a plug in the industrial waste line and was estimated to be between 500 gal. to 1000 gal. of radioactive liquid waste. The overflow spilled to the surrounding paved area, traveled north along Diamond Drive, flowed into the storm sewer through a storm drain gate, and ultimately discharged into upper Mortandad Canyon through the outfall [SWMU 03-054(e)]. A small dam was built in the streambed at the base of the canyon to contain the effluent. Subsequent cleanup action, based solely on residual radioactive contamination cleanup levels of 25 pCi/g, removed approximately 142 cubic ft of contaminated soil from Mortandad Canyon. In April 1995, an RFI was conducted at 03-054(e). This investigation was accelerated due to planned erosion control measures conducted to stabilize erosion below the base of the outfall pipe. Six soil/sediment samples were collected from five locations in the outfall area. Samples were collected from two depth intervals at two of the six sample locations. Based on data collected during this sampling event, the RFI report for AOC C-03-006 and PRS 03-054(e) recommended SWMU 03-054(e) for NFA.
03-055(a)	In Progress	SWMU 03-055(a) is an active outfall from the roof and the floor drain in Room 68 at the Van de Graaff Facility (Building 03-16). No hazardous materials are managed in Room 68. The outfall is located about 50 ft south of the facility and discharges to Twomile Canyon. SWMU 03-055(a) was proposed for NFA because there is no source of contamination to the outfall. The NFA recommendation has subsequently been formally withdrawn.
03-055(b)	Administratively Complete	
03-055(c)	In Progress	SWMU 03-055(c) consists of an active storm drain and associated outfall located northeast of the fire station (Building 03-41). This system channels stormwater towards Los Alamos Canyon. Previously, the storm drain was connected to building floor drains but currently only collects and channels stormwater runoff from parking lots located in the northern portion of TA-03. In 1992, the stormwater drainage channel into which the outfall flows was sampled by EM-8 as part of a reconnaissance survey associated with the construction of the

		Industrial Partnership Center at TA-03. Sampling results indicated that, with the exception of one SVOC (bis-2-ethylhexylphthalate, a widely-used plasticizer commonly found throughout LANL), target analytes were either not detected or detected at concentrations within LANL-wide BVs. Bis-2-ethylhexylphthalate was detected in two samples. Both bis-2-ethylhexylphthalate concentrations detected are below current EPA human health SALs and ecological screening levels.
03-055(d)	Administratively Complete	PRS 03-055(d) was initially identified as an outfall pipe potentially associated with a sanitary sewer lift station located northwest of Building TA-3-41, a fire station. However, archival information and field investigations have demonstrated that this PRS is a storm drain that channels storm water runoff from the fire station parking lot. SWMU 3-055(d) is appropriate for NFA under Criterion 2 because the storm drain was never used for the management of RCRA solid or hazardous wastes and/or constituents.
03-056(a)	In Progress	SWMU 03-056(a) is an active used-oil accumulation facility that was built in 1986. The 12 x 45-ft structure is located about 15-ft north of the Sample Management Facility (Building 03-271). The storage area has a concrete floor that slopes toward a sump and is surrounded by a concrete berm. The area is roofed but the sides are open. No spills from the bermed area to the environment have occurred and the area has no drains. This SWMU was proposed for NFA in the OU 1114 Work Plan and in the September 1996 Request for Permit Modification under Criterion 3 – No Release has Occurred. The NFA proposal was subsequently formally withdrawn in February 2002. In the July 1997 NOD Response, LANL provided NMED with additional information about the “sump” and its maintenance history because NMED was concerned that it could have leaked. In January 1999, NMED requested additional documentation on the site. Subsequent site visits confirmed the presence of two small “sumps” within the concrete pad, the identification and location of which were previously obscured by containers of used oil. This SWMU was discussed with NMED in July 1999; and NMED approved the NFA proposal on July 14, 1999 pending a site visit. Site access was not available during the November 1999 NMED site visit. To confirm the nature and extent of any residual TPH or lead contamination at the site, four asphalt samples were collected adjacent to each side of the concrete storage pad, approximately 1 ft away from the edge of the pad. Surface (0 to 12 inches) soil samples were also collected directly beneath the asphalt at each of the four asphalt sample locations for a total of eight samples. The samples were submitted to an off-site analytical laboratory for analysis for TPH and inorganic chemicals. THP was not detected in any samples. Inorganic chemicals were detected above BVs. Arsenic was detected above SAL.
03-056(b)	Administratively Complete	
03-056(c)	In Progress	SWMU 03-056(c) is an inactive outdoor storage area located on the north side of a utilities shop (Building 03-223). The SWMU occupies an area that extends along the length of Building 03-223 and is bounded by a security fence and the building to the south. According to previous interviews with Johnson Controls Incorporated electrical maintenance personnel at Building 03-223, the outdoor storage area was used for storing electrical equipment, capacitors, and transformers with PCB-containing dielectric fluids. Also, waste solvents were reportedly stored there in unmarked drums from 1967 to approximately 1992. The types of solvents used to clean electrical equipment and that were stored at the site may have included an unknown solvent from 1967 to approximately 1981 and Viking R30 (trichloroethane) from 1981 to 1990. Beginning in 1990 and continuing through 1992, a non-hazardous citrus-based solvent was used as a substitute for solvent-based cleaners. Transciene, which contains perchloroethene, may have been stored at the site because it was used by an electrical equipment maintenance subcontractor to retrofill transformers in the field. It is believed that the maintenance crew disposed of all these waste materials at an approved waste disposal facility. In 1991, the site's facility manager placed approximately 1-2 ft of clean fill on the area occupying the former storage area to elevate it and to reroute run-on drainage away from this site. In 1992, the storage area was decommissioned.

		Previous work conducted at this site by the ER Project includes investigations and cleanups conducted in 1994, 1995, and 1999. In 1994, an RFI investigation was conducted. A total of 22 soil samples were collected from 18 locations at depths ranging from 0-3 ft below grade. Results of the sampling indicated that inorganic chemicals, SVOCs, pesticides, and VOCs were properly characterized and these contaminants were below risk-based cleanup levels. In 1995, the site was further characterized as part of an expedited cleanup to identify the lateral extent of soils containing residual PCBs. Ten samples were collected from the western slope area to better define the lateral extent of the PCB contamination. A 45-ft diameter area was initially mapped to represent the area of suspected contamination. A 10-ft x 10-ft grid was placed over the area of suspected contamination and soil samples were collected within grid nodes. The results of the grid sampling effort were used to target areas for soil excavation. During soil excavation activities, the lateral extent of soil contamination was further defined to encompass an area approximately 130-ft long x 70-ft wide. The western slope excavation area was expanded in a northerly direction along the mesa edge. Additional site characterization samples were collected in the northern slope area of the site. PCB-contaminated soil was excavated from an area approximately 60-ft long x 70-ft wide. Additionally, three soil samples were collected from the ephemeral slope drainages, downslope from the north and west slope areas. Analytical results from this sampling effort indicated that soils containing greater that 10 ppm of PCBs were still present on the western and northern slope areas. A VCA Plan was developed in 1999 for removing PCB-contaminated soils from the western and northern slope areas and the ephemeral slope drainage areas. Because of the site's proximity to a watercourse, the PCB cleanup targets are less than 1 ppm of PCBs in soils. The VCA plan was approved by the NMED August 31, 2000. The remedial activities at the site, as specified in the VCA Plan began in August 2000. SWMU 03-056(c) was characterized using field-screening techniques to determine the extent of PCB contamination. After site characterization, the contaminated soil and unconsolidated tuff were excavated. Approximately 2,400 cu yd of contaminated soil was excavated from SWMU 03-056(c). During the excavation activities, field screening was used to provide immediate confirmation that all PCB-contaminated soil and unconsolidated tuff in the excavated area had been removed to a cleanup level of less than 1 ppm. As a result of excavation field-screening activities, it was determined that contamination extended beyond the original SWMU boundary. Following excavation activities, 89 confirmatory samples were collected from 79 locations. All samples were submitted to a fixed-laboratory for PCB analysis and 21 of these samples were also analyzed for organic and inorganic chemicals. Based on the confirmatory sampling results, four areas of elevated (greater than 1 ppm) PCBs were identified. In March 2001, these areas were excavated. In April 2001, additional confirmatory sampling was conducted. One sample was collected from each excavated location. All samples were analyzed for PCBs and three were also analyzed for organic and inorganic chemicals. Confirmatory sample results indicate the site met the EPA-mandated cleanup criterion for less than 1 ppm. Potential contaminants were assessed for their potential to pose an unacceptable risk to human or ecological receptors. These assessments found that residual concentrations of chemicals at SWMU 03-056(c) do not pose a potential unacceptable risk to human health or the environment. On this basis, NFA was recommended for this SWMU.
03-056(e)	Administratively Complete	
03-056(f)	Administratively Complete	
03-056(g)	Administratively	

	Complete	
03-056(h)	Administratively Complete	
03-056(i)	Administratively Complete	
03-056(j)	Administratively Complete	
03-056(k)	In Progress	AOC 03-056(k) is a container storage area on the north side of a loading dock at the northwest corner of the Sigma Building (Building 03-66). Waste oil, solvents and radioactively-contaminated graphite were kept in the storage area. Containers were staged outside the center doors on the east leg of the loading dock prior to transport to TA-54. Four documented radiological material releases may have contributed to contamination at this AOC. Suspect contaminants were inorganics and depleted uranium. The ER Project conducted an RFI at this AOC in July 1997. Fifteen samples were taken from six locations. Samples were analyzed for inorganic chemicals, organic chemicals, isotopic uranium and screened for gross alpha/beta/gamma radiation. Two samples were taken from each of four locations and one from a fifth location corresponding to the storm drain access areas. One collocated sample was also taken. Based on sampling results, the 1997 RFI Report recommended this AOC for no further action.
03-056(l)	In Progress	SWMU 03-056(l) is an outdoor storage facility immediately adjacent to the east side of Beryllium Tech Facility (Building 03-141). Containers of disposable clothing contaminated with beryllium powder are staged there prior to disposal. At times, there also may have been carboys for beryllium powder in water. The carboys were usually in a tray that served as secondary containment. There is no history of releases from the drums or carboys into the environment. The work plan addenedum recommended NFA at SWMU 03-056(l). However, this site is being excavated by the user group to install a concrete base for new equipment. Confirmatory samples will be collected, for beryllium analysis, during excavation for further documentation for the NFA proposal.
03-056(m)	Administratively Complete	PRS 03-056(m) was initially identified as a container storage area located outside TA-3-322, a supply building. This “storage area” was a single can, an open drum, and a pressed-board box that were used as trash receptacles. SWMU 3-056(m) is appropriate for NFA under Criterion 2 because it was never used for the management of RCRA solid or hazardous wastes and/or constituents.
03-056(n)	Administratively Complete	PRS 03-056(n) was a transfer area located outside and adjacent to Building TA-3-379, the JCI lead shop. The PRS operated from the mid-1970s until 1988 when a less-than-90-day accumulation area was formally established within the building. Prior to 1988, lead cuttings from shop operations were accumulated in closed 55-gal. drums within the building and transferred to the PRS prior to pick up for recycling. This PRS is not known or suspected of releasing RCRA solid or hazardous wastes and/or constituents to the environment prior to the establishment of the less-than-90-day accumulation area. Any release which may have occurred while it served as a less-than-90-day accumulation area would have been remediated in accordance with 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. Therefore, SWMU 3-056(n) is appropriate for NFA under Criterion 3.
03-057	Administratively Complete	
03-058	Administratively Complete	
03-059-00	In Progress	SWMU 03-059-00 is a consolidation of former AOC 03-003(n) and former SWMU 03-059. This consolidated SWMU is a former salvage yard adjacent to the Sample Management Facility (Building 03-271). Initially during the SWMU identification process, former SWMU 03-059 was identified as the former salvage yard and former AOC 03-003(n) was the location of a one-time PCB spill in that salvage yard. The former salvage yard consists of two areas: the first is about 250 ft x 115 ft and is located adjacent to the south side of Building 03-271. The perimeter is fenced except

		for the part that abuts Building 03-271, and with the exception of two small portions of the area, most of the area is asphalt-paved. The second area is about 100 ft x 60 ft and is asphalt-paved and fenced. Paving over both areas was done incrementally over the years. Equipment was stored outside the fenced areas, also. This SWMU was used to store transformers, electrical equipment, batteries, and scrap metal pending sale or reuse. Small and weather-sensitive items were stored inside Building 03-271. All other items were placed in and around the former salvage yard. The spill area [former AOC 03-003(n)] is about 20-ft south of the northwest corner of Building 03-271. At that location, a transformer ruptured in 1977 and leaked an estimated 10-gal. of PCB-contaminated oil into the soil. It is unclear whether the spill was cleaned up or if confirmatory sampling was conducted. The drainage pattern west of Building 03-271 was altered in 1991 by regrading the parking lot and applying base course. The entire area has received additional base course at least once since 1991. The salvage operation and materials were moved to the JCI Warehouse (Building 60-2) in 1993, and now the former salvage yard area is used as a parking lot and storage area for empty containers. Building 03-271 is now a drill core logging and storage facility. Suspect contaminants at SWMU 03-059-00 are PCBs, TPH, SVOCs, inorganic chemicals, and radionuclides. Stormwater runoff samples were collected from two locations downslope and east of AOC 03-003(n) in 1993. Samples were analyzed for radionuclides, inorganic chemicals, cyanide, total phenols and organic chemicals. No contamination was found at that time. The 1995 RFI work plan for OU1114, addendum 1, proposed implementing a combined Phase I/Phase II sampling strategy to identify the constituents of concern and the presence or absence of contamination and to identify the nature and extent of any existing contamination.
04-001-99	In Progress	Consolidated SWMU 04-001-99 consists of former SWMUs 04-001, 04-002, and 04-003(b), an inactive firing pit and its associated surface disposal site, and the drainline and outfall from a control building. Former TA-04, known as Alpha Site, lies within the current boundaries of TA-63 and TA-52. Alpha Site is located on Mesita del Buey, a small finger mesa that extends east from the main Pajarito Mesa. It is bounded on the north by Ten Site Canyon and on the south by Canada del Buey. Alpha Site was established in 1944 as a test firing site for small charges. It was used as a firing site for implosion studies using the "electric" method of detonation wave determination. Maximum charges fired were 200 lb. Other documented studies at Alpha Site included smaller tests of the "pin shot" and "magnetic" methods of studying implosions and "equation of state" experiments. Use of Alpha Site was discontinued in 1946 and the site underwent D&D in 1985 as part of the Los Alamos Site Characterization Program (LASCP). Former SWMU 04-001 was a 10-ft-square firing pit that was built in 1945. The pit contained associated conduit and firing lines. Debris in the vicinity of the firing pit included wire and shrapnel. The energy source for the firing experiments was HE and shot sizes ranged from 0.5 lb to 200 lb of this material. The pit was cleaned of all debris, backfilled, and contoured in 1985 during the LASCP cleanup effort. Wastes were disposed of at TA-54. The ground surface has been scraped clear of vegetation and topsoil. No radioactive or surface soil contamination was detected during the cleanup, which did not address nonradioactive contamination. LANL conducted a radiation survey at the site in 1988. At that time, beta-gamma activity was found to be above background. One surface-soil sample was collected at former SWMU 04-001 in 1991. The sample was screened for HE residues and analyzed for TCLP metals, total beryllium, total uranium, and organic chemicals. Gross-alpha, -beta, and -gamma activity was at background level. All metals were below EPA guidelines. Total beryllium and uranium were determined to be at background levels. No HE or other organic chemicals were detected. Suspect contaminants at former SWMU 04-001 are HE, uranium, lead, and beryllium. Former SWMU 04-002 is the 20-ft-wide canyon-side disposal site associated with former SWMU 04-001. The site is located on the north-facing slope of Mortandad

		Canyon immediately north of former SWMU 04-001. After a shot, residual material from the firing site was bulldozed over the edge of the canyon to the area designated as the surface disposal site. The shot debris consisted of cables, wires, and possibly small amounts of uranium, beryllium, lead, aluminum, and HE. The material was not covered, and this site was not addressed during the 1985 LASCP. Former SWMU 04-003(b) is the former drainline and outfall from a laboratory control building (Building 04-3), located at former TA-04. The outfall discharged about 20 ft north of Building 04-3 into Mortandad Canyon. No radioactivity was detected in a 1953 survey, and the building was demolished and partially removed in 1956. The concrete storm drain, electrical conduit, wood and other surface debris, and the drainpipe were removed during the 1985 LASCP cleanup effort. During the LASCP cleanup, a portable radiation monitor was used and no radioactive contamination was detected. In a 1988 survey, gamma radiation was detected at 24 microRems/hr, nearly twice the background level. The site has not been investigated for nonradioactive contamination. Suspect contaminants are not known. ER Project RFI activities were performed at these former SWMUs in 1994 and 1995. Approximately 42 samples were collected and analyzed for gross-alpha, -beta, and -gamma radiation, gamma spectroscopy, alpha spectroscopy, inorganic chemicals, and HE. Engineering surveys of former SWMUs 04-001, 04-002, and 04-003(b) were performed according to the SAP. The location of the former TA-04 firing pit, former SWMU 04-001, was established using aerial photographs of the site. Two boreholes were drilled to 20 ft deep to collect discrete soil samples at 5-ft intervals. Four of the surface samples were relocated to possible shrapnel sites in the vicinity of the former firing pit to collect potentially contaminated soil. At former SWMU 04-002, engineering surveys revealed a dozer trench leading from the site of the former firing pit to the edge of the mesa. A pile of debris is located at the edge of the mesa and has potentially migrated over the edge of the mesa. The SAP was amended to collect additional samples of potentially contaminated soil at former SWMU 04-002. The outfall trench from former structure 04-3 at former SWMU 04-003(b) was located near the former firing pit site during the engineering surveys. Sample locations were revised as a result of the engineering surveys. Because HE is a potential contaminant of concern at this consolidated unit, HE was added to the analytical suite for all samples. Forty-two samples were collected and submitted to an offsite analytical laboratory for analysis for organic chemicals, inorganic chemicals, and radionuclides. Three inorganic chemicals were detected above BVs, but only one of these chemicals was detected above SALs. Eleven radionuclides were detected above FVs, but only one radionuclide was detected above SALs.
04-003(a)-00	In Progress	Consolidated SWMU 04-003(a)-00 consists of former SWMU 04-003(a) and former AOC 04-004. Former TA-04, known as Alpha Site, lies within the current boundaries of TA-63 and TA-52. Alpha Site is located on Mesita del Buey, a small finger mesa that extends east from the main Pajarito Mesa. It is bounded on the north by Ten Site Canyon and on the south by Canada del Buey. Alpha Site was established in 1944 as a test firing site for small charges and was used as a firing site for implosion studies using the "electric" method of detonation wave determination. Maximum charges fired were 200 lb. Other documented studies at Alpha Site included smaller tests of the "pin shot" and "magnetic" methods of studying implosions and "equation of state" experiments. Alpha Site underwent D&D in 1985 as part of the Los Alamos Site Characterization Program (LASCP). Former SWMU 04-003(a) was the outfall and potential drainlines from a photoprocessing laboratory (Building 04-7). The outfall discharged on the south side of the building to a trench that led to the head of Canada del Buey. Portions of the probable path of the outfall have since been covered by two buildings (structures 52-114 and 52-115) and an asphalt parking lot. Beta activity was detected in the darkroom in 1953, and portions of the floor were removed in an attempt to remediate the contamination. The outfall was not removed when the building was dismantled in 1956, and it is not known if the drainlines remain or were removed. Suspect contaminants at

		this former SWMU are photoprocessing chemicals and uranium. Former AOC 04-004 is the building footprint of a photoprocessing laboratory (Building 04-7), where film was reportedly developed of firing tests performed from approximately 1948 to 1955. The structures have been removed but potential soil contamination may remain in the vicinity of the building footprint. Suspect contaminants are photoprocessing chemicals and uranium. RFI activities were performed at these SWMUs in 1994 and 1995. Thirty-one soil samples were collected from ten sample locations, fifteen from former SWMU 04-004 and sixteen from former SWMU 04-003(a). Samples were submitted for radionuclide, inorganic and organic chemicals analyses. Twenty-nine additional surface and subsurface samples were collected in 1998 to fill in data gaps and to provide information on the potential for HE contamination. These samples were submitted for inorganic and organic chemical analysis and HE. Contaminants detected at concentrations above BV in the sampling set included arsenic, chromium, lead, and approximately 10 organic chemicals. Of those chemicals detected, only arsenic, thallium, and benzo(a)pyrene were present at concentrations exceeding SALs.
05-001(a)-99	In Progress	Consolidated SWMU 05-001(a)-99 consists of former SWMUs 05-001(a), 05-001(b), 05-002, and 05-006(h), which are associated with historical Beta Site. Beta Site was established in 1944 as an adjunct test-firing site to Alpha Site (SWMU 04-001-99) for Manhattan Project personnel. After firing activities were halted in the late 1940s, other LANL groups used the site for various experiments involving radiation. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially was abandoned in 1959 but was used for periodic testing until the 1970s. TA-05 currently is used as a security buffer zone. In 1959, group H-3 listed structures 05-07 and 05-15 as contaminated with HE; however, other surveys conducted in 1959 to determine the presence, if any, of radioactive, HE, and toxic contamination at TA-05 showed that all structures were free of radioactive contamination, and structures 05-07 and 05-15 showed no HE contamination. Both pits were abandoned in place in 1959. In 1976, no detectable radiation was measured at structures 05-7 or 05-15. LASCP D&D activities in 1985 addressed structures 05-7 and 05-15 and included radiological monitoring, picking up debris, demolishing buildings, removing structures, exhuming underground utilities, and contouring the areas. The LASCP did not address nonradioactive contamination. Most of the 1985 D&D work revolved around a central area where depleted-uranium contamination was found. The area encompassed Building 05-9, structures 05-7 and 05-15, and a platform not included in this consolidated SWMU. Contamination was discovered in gravel seams and tree roots at Building 05-9. Soil, tuff, and vegetation were excavated until monitoring and soil sampling results were negative for radioactive contamination. At structure 05-7, steel plates around the pit, a control box, and a wood platform were removed. No contamination was detected on the surface of the structures or in the soil directly beneath the firing pit; however, because soil in the area was contaminated in several spots, structure 05-7 and other material were taken to TA-54 for disposal. Structure 05-15 contained uranium and when the metal structure was removed from the ground, more contamination was discovered. The contamination was traced vertically to a depth of about 15 ft. Soil samples were collected and monitored for radioactivity at varying depths in the excavation. When the area was decontaminated, the pit was backfilled with clean soil. Results of a radiation survey reported in 1988 indicated evidence of surface debris in the vicinity of structure 05-15. Suspect contaminants are associated with test shots that were exploded at the firing sites; contaminants include HEs, natural and depleted uranium, beryllium, cadmium, and lead. Other contaminants that may be present are photo-processing chemicals and other chemicals and acids. Former SWMU 05-001(a) is steel barricade Firing Pit No. 1 (structure 05-07). The site was used for implosion tests from 1944 to 1947. Former SWMU 05-001(b) is steel barricade Firing Pit No. 2 (structure 05-15). These pits were constructed in 1944 and

		were taken out of service in 1959. Experimental shots were set up at these two sites and fired on open ground. The shots used HEs as an energy source. The firing pits were about 200 ft apart, with overlapping areas of contamination and debris fallout. As debris accumulated, a bulldozer cleared the pit area by pushing scrap and debris north to the edge of Mortandad Canyon. The shrapnel zone included the canyon sides, canyon bottom, and about 200 ft around the firing pits. Former SWMU 05-002 is a canyon-side disposal site associated with firing pits 1 and 2. As debris from experimental shots at the firing pits accumulated, a bulldozer was used to push the debris northward to the edge of Mortandad Canyon. The debris zone extended to the canyon bottom. This site was used extensively for three years. A 1976 radiation study indicated contamination at this site. During 1985 LASCP activities, visible-surface shot debris was removed. Waste that may have been disposed of at this site includes shot debris, cables, wire, and trace amounts of lead, uranium, beryllium, cadmium, and uranium-contaminated aluminum or steel. Former SWMU 05-006(h) is potentially contaminated soil in the footprint of the former X-unit chamber (Building 05-09), located west of steel barricade Firing Point No. 2 [former SWMU 05-001(b)]. The building construction was completed in 1944, operations began in 1947 and were discontinued in 1959. The building was removed during the 1985 LASCP activities at this site. Potential contamination at this site, indicated in surveys conducted in 1958, 1959, and 1985, may include uranium and HE. RFI sampling activities at former SWMUs 05-001(a), 05-001(b), and 05-002 were conducted in 1995. Twenty-three locations were sampled and 43 samples were collected. Fifteen surface samples were collected, four boreholes were drilled and sampled at 5 ft intervals down to a depth of 20 ft., and three samples were collected from each of four hand-auger holes to a depth of 3ft. All collected samples were submitted to a analytical laboratory for analysis of radionuclides. At former SWMU 05-001(a), all samples were also submitted for inorganic chemical analysis and two samples were submitted for HE analysis. At former SWMU 05-001(b), all collected samples were also submitted for inorganic chemical analysis. At former SWMU 05-002, one sample was also submitted for HE analysis and another sample was submitted for an inorganic chemical analysis. Sampling results indicate radionuclides and inorganic chemicals are present above BV/FVs. U-234 was present in one sample at concentrations exceeding SALs and arsenic, copper, lead and iron are also present at levels exceeding SALs.
05-001(c)	In Progress	AOC 05-001(c) is a firing point referenced on maps and memoranda; it allegedly was located several hundred feet east of former SWMU 05-001(b) [now part of consolidated SWMU 05-001(a)-99], but its exact location, dates of operation, and types of releases was unknown, as reported in the 1990 SWMU Report. After unsuccessfully searching libraries, records center, and archives at LANL for information on this site, a retired Los Alamos WX-Division Leader who had established the site in 1944 was contacted and interviewed for information on the site. A site visit was also conducted to further clarify the information provided. Beta Far Site Point was established 600-700 ft south/southeast of Firing Points 1 & 2. It was located in Canada del Buey off the toe of the south mesa, 20-30 ft below the mesa top. No facilities were established at the site. Multiconductor and coax cabling was run from the existing control bunker located approximately 1400 ft west of the site. Two or three 2500 lb shots were detonated at the site during the lifetime operation. Shot debris consisted of cabling, tuballoy, steel, aluminum, and wood. The shot debris radius was estimated to be 100-200 yds from the firing point. The site was closed in the spring of 1945. This site was not part of the 1985 LASCP D&D activities that were conducted at TA-5 in 1985. A radiation grid survey at AOC 05-001(c) was conducted at the site in June,1995. A grid was established that consisted of 89 point spaced approximately 50 ft apart near the firing site, increasing to 100 ft beginning 250 ft east of the center of the firing site. The grid survey was established over an area measuring approximately 400 by 700 ft. Results from this survey indicated radiation measurements were consistent with the

		instrument background readings. RFI sampling at the site was conducted following the radiation grid survey. Thirty soil and tuff samples were collected from 20 locations. Four of these locations were sampled down to a depth of 3 ft. All sample locations were in the vicinity of the firing site and biased, where possible, towards physical features supporting the proximal location of the firing site. Collected samples were submitted to an analytical laboratory for inorganic chemicals and radionuclides. Two samples were also submitted for HE analysis during this field effort. Results of the RFI sampling indicate that inorganic chemicals and radionuclides are present at the site at levels exceeding background and lead was detected in sample at concentrations exceeding SAL.
05-003	In Progress	SWMU 05-003, structure 05-20, was a 10 ft by 10 ft calibration chamber. The chamber was constructed in late 1959 and used to calibrate neutron detector systems for experiments at TA-49. No engineering drawings of the facility have been located. Approximate dimensions and layout of the facility have been obtained through conversations with people who worked on the project and personal logs. The facility consisted of a 6 ft diameter, 35 ft deep shaft with an approximately 10 ft cubical room located to the west, at the base of the shaft. The shaft and room were connected by an 8 ft tall, 7 ft long tunnel. The connecting tunnel may have a downward slope toward the room. A second 24 in. diameter shaft extended from the center of the room to the surface. The shafts were separated by 15 ft (center to center). The smaller shaft was lined with 16 in. diameter casing and capped with concrete. The floor of the tunnel and chamber may have been covered with wood planking. The nuetron source used in the calibration facility was a critical assembly called Godiva. This assembly consisted of spherical assembly of highly enriched uranium that was operated in the underground chamber. Borated paraffin and lead bricks were used as shielding. The chamber was abandoned before 1974, it is not known when the Govida assembly was removed; however, the Godiva assembly was not present during a 1976 radiological survey of the chamber. The building over the chamber was removed at an unknown date. The concrete shaft is the only original Beta Site structure remaining at TA-05. This site was recommended for NFA in the OU 1129 work plan; however, EPA disagreed with the recommendation because it was not known at that time whether the lead shielding was still present at the site. Later interviews with personnel working the site during the operation of the facility indicate that the lead brick shielding used during the operation of the site were removed from the calibration chamber in 1976.
05-004	In Progress	SWMU 05-004 is a former septic tank (structure 05-13), lines, and associated outfall that received industrial waste from a laboratory building (Building 05-01) from 1948 to 1959. Historical information determined that the tank was free of radiation and HE contamination, but noted that it contained unspecified toxic chemicals. No evidence of radioactively contaminated soil was detected when the tank was removed in 1960. As-built drawings indicate the presence of a discharge line running from a laboratory building (Building 05-01), discharging south into Cañada del Buey. Notes taken during a 1988 radiation survey indicate evidence of an outfall near the former location of structure 05-13. Building 5-1 was removed was removed during LASCP activities conducted in 1985. At that time, the building was determined to be free of radioactive and HE contamination. The 1985 LASCP investigation confirmed removal of the tank and piping by re-excavation, and no evidence of radioactively contaminated soil was detected at that time. A 1988 survey detected slightly above-background gamma activity. The potential contaminants at the site include gross-alpha, -beta, and -gamma radiation; gamma- and alpha-emitting radionuclides; VOCs; SVOCs; metals; and HE. A radiation grid survey of the site was performed on October 18, 1994. Radiation measurements were obtained from 84 grid locations spaced at approximately 10-ft intervals located at SWMUs 05-003 and 05-004. Beta/gamma radiation measurements ranged from 188 to 298 cpm, and the average was 243 cpm, which is within background levels. Phase I sampling was performed on June 19, 1995. Three surface samples were collected (Location ID Nos. 05-2002, 05-2005, and 05-2006); two hand-auger holes were drilled to a depth of 3 ft (Location ID Nos. 05-2003 and 05-2004), and one borehole was drilled to a depth of 15 ft (Location ID No. 05-2001) in proximity to

		the former location of the septic tank. Three samples were collected from the hand-auger holes, one from each 1-ft interval. Three samples were collected from the borehole at the 3.5 to 4.5 ft, 8.8 to 9.8 ft, and 14 to 15 ft intervals. Beta/gamma radiation measurements obtained during field screening of the samples ranged from 180 to 311 cpm, which are within instrument background levels. Samples were collected and submitted to a fixed analytical laboratory for analysis of radionuclides. One sample was also submitted for HE, VOC, and SVOC analysis. A second sampling event was conducted at this site in 1998. Additional samples were collected from location 05-02001 (the location of the former septic tank), down to a depth of 24'. The former location of the drainfield and lines were also sampled during this event. Nine samples were collected from 5 locations. All samples collected during the 1998 sampling event were submitted to a fixed analytical laboratory for analysis of inorganic chemicals, HE, and SVOCs. Results from these RFI activities indicate inorganic chemicals and radionuclides are present in concentrations exceeding BVs. Arsenic was the only constituent present in concentrations exceeding SALs. An RFI report, detailing the results and recommendations for this site, is currently in preparation.
05-005(a)-00	In Progress	Consolidated SMWU 05-005(a)-00 consists of former SWMUs 05-005(a), 05-006(b), and 05-006(e). TA-05, also known as Beta Site, consisted of firing sites and associated support facilities. TA-05 was established in 1944 and decontaminated and decommissioned in 1985. The 1985 D&D addressed only radioactive contamination. Former SWMU 05-005(a) was a French drain that ran north from the firing site control building (Building 05-04) toward Mortandad Canyon. The drain was constructed in 1945 and abandoned along with the control building in 1959. It was used to discharge wastes from Building 05-04. Suspect contaminants are radioactive and chemical constituents. Former SWMU 05-006(b) is potentially contaminated soil at the location of former Building 05-04. During 1985 LASCP D&D activities at TA-05, uranium-contaminated soil was encountered at the former site of Building 05-04. Contamination in the control building area was believed to have entered the environment through the French drain. A radiation survey conducted in 1988 showed activity levels above BVs for beta-gamma. Former SWMU 05-006(e) is potentially contaminated soil associated with a former platform (structure 05-19) that was adjacent to Building 05-04. The platform was a 6-ft x 6-ft wood structure that was mounted 26 ft above the ground on two 45-ft-tall wood poles. It was built about 1953 and abandoned in place in 1959. The entire area was razed when Building 05-04 was removed in 1985, spreading potential contaminants from the control building, French drain, and platform so that they are not discernable among the former SWMUs in this consolidated unit. A small, preliminary radiation and geophysical grid survey were performed in 1994. The results of the geophysical survey were inconclusive and the radiological field screening results were within instrument background range. An expanded radiation grid survey was conducted in 1995 with similar results as the smaller 1994 survey. Phase I sampling was conducted in 1995. Fourteen locations were sampled, and 28 soil samples were collected. Seven surface samples were collected and three samples were collected from each of seven hand-augered holes, down to a depth of 6 ft. All samples collected were submitted to a fixed analytical laboratory for analysis of radionuclides, 10 samples were submitted for inorganic chemical analysis, another six samples were submitted for a mixture of HE, and organic chemical analysis. Results from this sampling indicate that cadmium, copper, chromium, nickel, lead, and zinc were present in concentrations exceeding BVs but below SALs. Fluoranthene, pyrene, and toluene were also detected in very small concentrations, all well below SALS. Three radionuclides were detected in low concentrations, none in excess of SALs.

		Results of this sampling and recommendations for any further action at this site will be presented in an upcoming SAP for this area.
05-005(b)-00	In Progress	Consolidated SWMU 05-005(b)-00 consists of former SWMUs 05-005(b) and 05-006(c). TA-05, also known as Beta Site, consisted of firing sites and associated support facilities. TA-05 was established in 1944 and decontaminated and decommissioned in 1985. The 1985 D&D addressed only radioactive contamination. Former SWMU 05-005(b)is potential contaminated soil associated with an unpermitted outfall that is thought to have orginated from the shop and darkroom [former SWMU 05-006(c)] in Building 05-05. The outfall is believed to have operated from 1944 to 1959, the years when Building 05-05 was used. Suspect contaminants include radioactive and chemical constituents. Former SWMU 05-006(c) is an area of potentially contaminated soil associated with the location of former Building 05-5. The building was variously used as a shop, a calibration facility, and a photographic darkroom. Staff who worked at the site indicated that photo-processing chemicals had probably been disposed of by pouring on the ground outside the building. The building was operational from about 1944 to 1959, and was destroyed by burning in 1960. This site is one of several areas of soil contamination at TA-5 identified during surveys conducted in 1958, 1959, and 1985. Soil contamination at these sites was reported to include HE and uranium. A 1959 list generated by Group H-3 listed Building 05-5 as an HE-contaminated structure. It was destroyed by burning in 1960. No radioactive contamination was detected at the former building's site during 1985 D&D activities. Suspect contaminants include radioactive and chemical constituents. An interview with a former Beta Site supervisor was conducted on May 15, 1995. Engineering surveys were conducted on November 30, 1994; May 3, 1995; and June 20, 1995. These surveys consisted of review of archival aerial photos and engineering drawings, site environmental surveys, site visits and walkovers to locate the former buildings, and the staking of sample locations. A radiation grid survey was performed on July 7, 1995. The radiation grid covered an area measuring approximately 70 by 120 ft and provided contiguous coverage of PRSs 5-005(b) and 5-006(c). The radiation grid locations included Location ID Nos. 05-6336 through 05-6363. The radiation grid locations were spaced at 20-ft intervals. Beta/gamma radiation measurements ranged from 155 to 293 cpm, and the average was 212 cpm, which is within background levels. Phase I sampling was performed on July 5, 1995. Ten locations were sampled, and 22 soil samples were collected (not including QA/AC duplicate samples). Four surface samples were collected (Location ID Nos. 05-2070 through 05-2073), and three samples were collected from each of six hand-auger holes which were drilled to a depth of 3 ft (Location ID Nos. 05-2039 through 05-2044). Beta/gamma radiation measurements obtained during field screening of the samples ranged from 100 to 220 cpm, which are within background levels. Samples were submitted to a fixed analytical laboratory for analysis of radionuclide, inorganic and organic chemicals. Results from this sampling indicate that one organic compound, a plasticizer, was detected. Elevated levels (above BV) of TAL metals were detected at one location in former SWMU 05-005(b) and 6 locations in former SWMU 05-006(c). As, Pb, and Sb are present at levels above SAL in the 0-6 inch interval at that location. Arsenic was also present above SAL at locations 05-2070 (0-6 inches) and 05-2040 (24-36 inches). Pb was also present above SAL at location 05-2071 (0-6 inches). Contamination appears to be largely limited to about the upper half of former SWMU 05-006(c) [which overlaps the upper portion of former SWMU 05-005(b)]. The outfall and areas downslope of the outfall did not show any contamination. Four sample locations (05-2040, 05-2041, 05-2070, and 05-2072) account for 26 of the 35 sample results above BV, and 5 of the 6 results above SAL.
05-006(a)	Administratively	AOC 05-006(a) is potentially contaminated soil in the footprint of a former laboratory

	Complete	building (Building 05-01). In 1948, Building 05-01 was relocated from TA-18, where it was used as a trim shack, to TA-05. It was used from 1948 until it was abandoned in place in 1959. TA-05, also known as Beta Site, consisted of firing sites and associated support facilities. TA-05 was established in 1944 and decontaminated and decommissioned in 1985. The 1985 D&D addressed only radioactive contamination. In a 1959 survey, AOC 05-006(a) was found to be contaminated with HE and other unspecified contaminants. Monitoring in 1973 showed that the site was free of detectable radioactive contamination. It was destroyed by fire sometime between 1973 and 1985. During 1985 D&D activities at Beta Site, some cleanup of debris left from Building 05-01 was required. Monitoring in 1985 detected no radioactive contamination. After the area was cleared of debris, it was contoured to the existing terrain. Notes from an April 1988 radiation survey indicate surface debris remained in the vicinity of the location of former Building 05-01. AOC 05-006(a) was proposed for NFA in the September 1995 permit modification request because archival evidence indicates that potential contaminants either are not present or are present in concentrations that pose no unacceptable risk under current and projected future land use.
05-006(d)	Administratively Complete	
05-006(f)	Administratively Complete	
05-006(g)	Administratively Complete	
06-001(a)	In Progress	SWMU 06-001(a) is an inactive septic tank (structure 06-40) with a volume of up to 840 gal. (precise volume is unknown) and the associated outfall area. The septic tank system serviced Building 06-1 and Building 06-3 (currently a storage building). The septic tank is located approximately 400 ft north of Twomile Mesa Road and about 100 ft north of Building 06-3. Building 06-1 included a laboratory and a carpenter shop. The laboratory was used in 1944 to develop analytical procedures for nonradioactive cobalt tracer shots. Although no further information exists on the use of the laboratory, the carpenter shop may have later expanded into the laboratory space. In the late 1950s, silver soldering may have been done in the shop. The building was not used after the carpenter shop closed in the early 1980s. Building 06-3 contained a restroom, a darkroom, and a laboratory with a lead-lined sink. The building was first used as a control bunker for explosives shots; it was remodeled in 1944 with explosion-proof fixtures. From 1945 to 1948, the building housed offices, and from 1948 until the early 1950s, the building had a firing control panel and a bridgewire-testing laboratory. In 1972, the building was remodeled into a printed-circuit shop, and it was later used as a silk-screen facility until the mid-1980s. Since the mid-1980s, the building has been used for storage. The septic system outfall drained to Tributary A of Twomile Canyon. The system was not in use in December 1986, and its drainline was plugged in 1988. Possible contaminants in the system were silver, darkroom chemicals, paint, ink, diethyl ether, acids, lead, etching chemicals, explosives and their residues, and solvents including alcohol, acetone, and carbon tetrachloride. The ER Project completed RFI sampling activities at SWMU 06-001(a) in July 1994. The objective of the investigation was to determine whether potential contaminants were present in the media surrounding the septic tank or in the outfall area of the system and, if present, whether the potential contaminants posed an unacceptable human health risk based on the results of the screening assessment process. The sampling plan was designed to investigate the potential release of materials to the surrounding media through cracks or leaks in the septic system. Seventeen samples were taken from six locations external to the septic tank. Samples were submitted for organic and inorganic chemical analyses. Six inorganic chemicals were detected in soil samples collected outside the tank and in the outfall area. These inorganic chemicals were detected above BVs, but below SALs. No radionuclide analyses were conducted at this SWMU, as no radionuclides were identified as potential contaminants. Two organic compounds, chrysene and 1,1-dichloropropene, were detected at levels greater

		than EQLs. The concentration of 1,1-dichloropropene was reported at a concentration almost equal to its EQL, and because there was no evidence of VOC contamination elsewhere at the site, this chemical was eliminated from further consideration. Because the concentration of chrysene, a carcinogen, was only 2 percent of its SAL, and because no other carcinogens were detected, no MCE was performed, and chrysene was eliminated from further consideration. The RFI report recommended NFA for SWMU 06-001(a) because contaminants pose no unacceptable risk under the current and projected land use.
06-001(b)	In Progress	SWMU 06-001(b) includes an inactive 960-gal. septic tank (structure 06-43), filter trench, and outfall area that served a storage building (Building 06-5), Building 06-6 which is currently not being used, and a laboratory (Building 06-8) until the system was deactivated in 1989. The tank is located about 300 ft north of Building 06-6; effluent flowed to Tributary A of Twomile Canyon. Sinks in Buildings 06-5 and 06-8 drained to SWMU 06-001(b); available information indicates that uranium hexafluoride was used in experiments in Building 06-8 from 1972 through 1976. Building 06-6, built in 1945, originally housed laboratory operations related to detonator assembly, an electronics work room, a chemistry laboratory, darkrooms, and restrooms. Detonator assemblies to be test-fired were prepared in Building 06-6 until 1950; carbon tetrachloride and other solvents may have been used to prepare the assemblies. During the late 1950s, the building was used as office space. In the 1970s and 1980s, it was used as a cable shop, where acetone, alcohol, and dilute acids may have been used. In addition, soldering and metal cleaning took place in Building 06-6. The janitor's sink received rinsate from copper, brass, and steel parts dipped in nitric acid to remove silver solder flux and oxidized metals. The drainline from the septic tank was plugged in 1989. In 1994, 21 samples were collected from 9 locations in the system during the RFI. Possible contaminants in the septic system included darkroom chemicals, acids, metals, carbon tetrachloride, and solvents. There is no indication that uranium hexafluoride was released to the septic system during the experiments, and radionuclides were not identified for analysis at this SWMU. The objective of the investigation was to determine if the potential contaminants were present in the media surrounding the septic tank, the sand filter trench, or in the outfall area of the system and, if present, whether the potential contaminants presented an acceptable human health risk based on the results of the screening assessment process. The sampling plan was designed to investigate the potential release of materials to the surrounding media during normal operations as well as through cracks or leaks in the system. The field investigation was intended to preferentially sample locations and media associated with the septic tank, sand filter trench, and outfall area most likely to have received and retained chemical contaminants. Areas of concern for sampling included the septic tank inlet and outlet connections, effluent release points, and outfall sedimentation areas. Samples were submitted for inorganic chemical and organic chemical analyses. Five inorganic chemicals were detected above BVs and also above SALs. One organic compound, a phthalate, was detected. Although this analyte is a common field and laboratory contaminant, it was not identified in any laboratory blanks and therefore was carried forward to a screening assessment. An MCE was performed for the five inorganic chemicals and the one detected organic chemical, which are all noncarcinogens, and it resulted in a total normalized value of 0.3. A result of less than 1.0 indicates there is little potential for unacceptable health risks. No radionuclides were submitted for analysis at this SWMU because radionuclides were not identified as potential contaminants. The RFI report recommended NFA for SWMU 06-001(b) because contaminants pose no unacceptable risk under the current and projected land use. The RFI report also recommended that, as a BMP, the tank be backfilled with clean material or concrete and abandoned in place.
06-002-00	In Progress	SWMU 06-002-00 consists of former SWMUs 06-002 and 06-003(c) and former AOCs C-06-005, C-06-006, C-06-016, and C-06-020. This consolidated unit comprises related units located on the south side of Twomile Mesa Road towards the eastern end of TA-06. Former SWMU 06-002 is the location of a former 1000-gal. septic tank (structure 06-41)

		that received process wastewater from two sources: the process wastewater from the PETN recrystallization operation in Building 06-10 and sanitary wastewater from the employee rest house (former AOC C-06-020). Both buildings that were served by this septic system were demolished by burning in 1960, and the septic tank was removed in 1965. The inlet and outlet drainlines remain in place and are part of this SWMU. Potential contaminants at former SWMU 06-002 include HE and solvents. Former SWMU 06-003(c) is an inactive firing site, a 40-ft x 60-ft asphalt pad, and a concrete-lined pit that were used as a water recovery test facility. Explosive shots were detonated in a container of water on the pad. The water was intended to slow metal fragments and minimize dispersion. Tests conducted at former SWMU 06-003(c) used depleted uranium and nonradioactive cobalt as tracers. After a shot, metal fragments were recovered by washing the pad surface into a 2-ft x 5-ft x 2-ft-deep concrete-lined pit located on the east side of the pad. Potential contaminants at this site include HE, inorganic chemicals, and radionuclides. Former AOC C-06-005 is the location of the former detonator assembly building (Building 06-13). The 16-ft x 16-ft x 9-ft-high wooden frame building housed a detonator assembly area, a chemical laboratory, and a storage area. This building was demolished by burning in 1960. The laboratory sink in this building discharged to a French drain adjacent to the east side of the building. A mass limit of two lb of explosives was set for this building. Former AOC C-06-006 is the location of a former explosives-pressing building (Building 06-14). The 16-ft x 16-ft x 8-ft-high wooden frame building was used to press PETN particulate powder into shapes required for the tested detonators. This building was demolished by burning in 1960. Former AOC C-06-016 is the location of a former explosives storage magazine. The magazine was an earthen-covered wooden structure bermed with earth as a safety measure. Engineering drawings indicate that the storage rooms were a 7-ft x 7-ft x 7-ft-high wooden frame construction with 1-ft of earth fill over the roof. The engineering drawings and photographs show the magazine as conical mounds of earth approximately 10 ft high and 30 ft in diameter with an opening to the wooden structure located to the east of the mound. Potential contaminants in the magazine are HE and inorganic chemicals. The magazine was destroyed by burning in 1955. Former AOC C-06-020 is the location of an employee rest house (Building 06-20). The structure, a 7-ft x 7-ft x 8-ft-high wooden frame building, included a restroom that discharged sanitary wastewater to a septic tank (structure 06-41, former SWMU 06-002). The rest house was moved near TA-18 in 1955. RFI sampling was conducted at these sites in 1994 and 1995. In 1994, former SWMU 06-003(c) was sampled in six locations at two depths for a total of 12 samples. These samples were submitted for gamma spectroscopy, isotopic uranium, HE, and inorganic chemical analyses. In 1995, six samples from three locations (0-ft to 0.5-ft and approximately 2-ft to 3-ft intervals) were collected from each former site, except former SWMU 06-003(c), which was sampled in 1994. Samples collected from these sites were submitted for inorganic chemical and HE analyses, and selected sites were also submitted for VOC analyses. Upon review of the data collected in 1995, additional limited sampling occurred in 1998 to fill in data gaps from the initial sampling. An additional 18 samples were collected from former SWMU 06-002 and former AOCs C-06-005, C-06-006, and C-06-016. A total of 13 chemicals were identified as potential contaminants based on a comparison with BVs/FVs for inorganic chemicals and radionuclides and on an evaluation of detected organic chemicals. These chemicals were carried forward to a screening evaluation for both human health and ecological risk. On the basis of the results of site investigations, data review, and site assessments, all former SWMUs and former AOCs that comprise 06-002-00 were recommended for NFA in the RFI report. NMED approved the RFI report stipulating that

		additional sampling must be conducted at this site before an NFA approval.
06-003(a)-99	In Progress	Consolidated SWMU 06-003(a)-99 consists of former SWMU 06-003(a) and former AOCs 06-008 and C-06-019. Former SWMU 06-003(a) is an inactive firing site consisting of a concrete bowl (structure 06-37), 100 ft in radius, used for water-recovery shots in 1944 and 1945. Testing of the water-recovery method required the detonation of explosive shots in a container of water to slow metal fragment dispersal, followed by collection of the metal fragments from the concrete bowl. A square sump in the bottom of the concrete bowl filtered wash water, which was then drained into a UST (former SWMU 06-008). Because the purpose of many of the tests carried out at the site was the recovery of metal fragments, little contamination should remain. Former SWMU 06-008 was the UST that only received material washed out of the concrete bowl of an inactive firing site [SWMU 06-003(a)]; the UST was removed in 1987. Former AOC C-06-019 is the former site of a generator building near SWMU 06-003(a). The building was intentionally burned in 1960. Potential contaminants at this consolidated SWMU include HE, metals, isotopic uranium, and, at the location of the former generator building, VOCs, SVOCs, and PCBs. Initial field activities were conducted in 1994 and focused on sampling media that would be most likely to retain residual contamination. Samples were collected from the concrete bowl [former SWMU 06-003(a)], the location of the former UST (former SWMU 06-008), and the location of the former generator building (former AOC C-06-019). A sample from the sump was collected in 1997 and is included in this data set. A total of 29 samples (which included two duplicates) were collected and analyzed for organic chemicals, radionuclides, and inorganic chemicals. Twelve inorganic chemicals were detected above BVs in at least one sample. Four of these detected inorganic chemicals, calcium, iron, magnesium, and sodium, have no established SALs and are essential human nutrients. On the basis of a default soil intake rate of 200 mg/day, ingestion of the maximum reported concentration would not exceed the established RDA for any of these chemicals. Another detected inorganic chemical, beryllium, slightly exceeded its BV in one sample. The lifetime risk caused by exposure to the maximum reported concentration was within the generally accepted risk range. On the basis of this evaluation and the fact that beryllium was detected in only one sample, it was eliminated from further consideration at this site. The detected inorganic chemicals did not exceed SALs but were still subjected to an MCE. The total noncarcinogenic MCE showed a relative risk of 1.0, at or below which the potential for unacceptable risks to human health are negligible. Five radionuclides exceeded their FVs: uranium-234, -235, and -238; strontium-90; and cesium-137. Of these, strontium-90 was eliminated from further review because of the low frequency of detection and because it has no documented association with the site. The remaining four radionuclides were carried forward in an MCE evaluation, and the results showed a relative risk well below that at which the potential for unacceptable human health effects exists. Three organic compounds were detected at levels greater than EQLs in at least one sample each. All three were eliminated from further consideration because they were detected at levels well below SALs. An additional two organic compounds were detected in the filter pit sample collected in 1997, but both were detected at levels below SALs. The RFI report recommended NFA for the former SWMUs in this consolidated unit because contaminants are not present in concentrations that pose an unacceptable risk under the current and projected land use.
06-003(b)	Administratively Complete	
06-003(d)	In Progress	SWMU 06-003(d) is a small, inactive firing site, (structure 06-7) that was used until

		1952, when the operations were moved to TA-40. In 1945, detonator development was consolidated at TA-06, and structure 06-7 was built to test-fire detonators. The firing chamber was constructed of reinforced concrete and steel plate and is located northwest of Building 06-6. SWMU 06-003(d) was used for the active recovery of detonation products and was not used extensively or for large-scale explosives testing. It is reasonable to assume that the explosives used at this site were largely consumed in the testing and that HE contamination would be similar to levels found at other sites in OU 1111. No significant HE contamination has been found at other sites in OU 1111. The assumption that no substantial HE contamination is present at this SWMU is supported by, and consistent with, the inorganic chemical and radiological results reported for similar sites at TA-06.
06-003(e)	In Progress	SWMU 06-003(e) is a small, inactive firing site (structure 06-9) that was in use until 1952, when the operations were moved to TA-40. In 1945, detonator development was consolidated at TA-06, and structure 06-9 was built to test-fire detonators. The firing chamber was constructed of reinforced concrete and steel plate and is located northeast of Building 06-6. SWMU 06-003(e) was used for the active recovery of detonation products and was not used extensively or for large-scale explosives testing. It is reasonable to assume that the explosives used at this site were largely consumed in the testing and that HE contamination would be similar to levels found at other sites in OU 1111. No significant HE contamination has been found at other sites in OU 1111. The assumption that no substantial HE contamination is present at this SWMU is supported by, and consistent with, the inorganic chemical and radiological results reported for similar sites at TA-06.
06-003(f)	In Progress	SWMU 06-003(f) is a level sand/gravel inactive firing site approximately 25 ft in diameter and located about 1900 ft west of SWMU 06-003(a) on the north side of Twomile Mesa Road. SWMU 06-003(f) was used for experiments to determine dispersal of material from explosions. Irradiated copper was used in the experiments, as was nonradioactive cobalt, which was used as a tracer. After a shot, the dispersed copper fragments were located with radiation detectors, retrieved, and sent to another TA for analysis. Few shots were fired at this site, because the radioactivity decayed quickly, making the metal debris difficult to find. On the basis of site history, metals (from shrapnel or fragments), radionuclides, and HE were identified as potential contaminants at this site. RFI field sampling at SWMU 06-003(f) was completed in August 1994. The investigation's objective was to determine if contaminants were present at the site and whether they presented an unacceptable human health risk based on the result of background and/or SAL comparison. The SWMU sampling design was based on a conceptual-release model; that is, solid debris, including metals, would be thrown some distance, and a dust cloud of other constituents would form. Generally, materials from the detonation would be deposited in concentrations that decreased with distance from the center site. Thirteen samples were analyzed from six cores taken at the site. Three cores were taken from within the area of the gravel pad. A perimeter was defined extending 10 ft beyond the firing site. This perimeter was divided into three equal sectors, and at least one additional core was taken from each sector. Two inorganic chemicals (calcium and magnesium) were detected slightly above their respective BVs. These chemicals are essential human nutrients and have no established SAL. On the basis of a default soil intake rate of 200 mg/day, ingestion of the maximum reported concentration would not exceed the established RDA for any of these chemicals, which were therefore eliminated from further consideration. Four additional inorganic chemicals (arsenic, lead, thallium, and zinc) were reported in one soil sample at concentrations in excess of BVs. Arsenic, a carcinogen, was detected above BVs in one sample. The SAL for arsenic is less than its BV. The maximum and single reported arsenic value greater than background would correspond to a risk of 2.5E-5 (.000025) relative to the Laboratory-background arsenic risk of 2.0E-5 (.000020). This is within the range of acceptable cancer risk recognized in EPA guidance. Because arsenic is not operationally associated with the site, was reported above BV at a low frequency (1

		out of 13 samples), and is not substantially greater than background, it was eliminated from further consideration. An MCE performed for lead and zinc, which are both noncarcinogens, resulted in a total normalized value of 0.3. A result of less than 1.0 indicates that there is little potential for unacceptable health risks. No radionuclides were detected at levels exceeding FVs, and no organic compounds were detected. The RFI report recommended NFA for SWMU 06-001(f) because contaminants are not present in concentrations that pose an unacceptable risk under the current and projected land use.
06-003(g)-00	Administratively Complete	SWMU 06-003(g) is the location of an inactive firing pad and former high explosives (HE) processing building. ER Project RFI activities at this SWMU involved characterization of the site in accordance with applicable state and federal regulations. RFI field sampling verified that the nature and extent of contamination was defined. Screening assessment results indicate that residual contamination at this site is at concentrations that pose an acceptable level of risk under current and projected future land use. NMED conducted a site visit on April 26, 2001, as a result, LANL submitted a revised ecological risk screening assessment for the site that has been accepted by NMED. Therefore, SWMU 06-003(g) is appropriate for NFA under Criterion 5.
06-003(h)	In Progress	SWMU 06-003(h) is the area where defective explosive lenses manufactured for use in Fat Man were destroyed by detonation in 1945. The contaminants potentially associated with SWMU 06-003(h) include barium and TNT. Twelve surface soil samples (0-in. to 6-in. depth) were collected from eleven locations, in 1994, in the vicinity of six former SWMUs associated with MDA F [SWMUs 06-005 and 06-007(a, b, c, d, and e)], as well as SWMU 06-003(h). This investigation has not been documented in a written report. Samples were submitted for organic chemical, inorganic chemical, and radionuclide analyses. Results indicate that barium, arsenic, and strontium-90 are present at the site at levels exceeding SALs.
06-004	Administratively Complete	
06-006	In Progress	SWMU 06-006 includes a 300-ft x 20-ft concrete pad and an asphalt parking lot between Buildings 06-5 and 06-6. Containers and electrical equipment were stored at this site during the 1980s. The containers and equipment are no longer present, but stains were noted on the asphalt and nearby soil. SWMU 06-006 drains into Tributary A of Two-Mile Canyon. Potential contaminants at the site include petroleum products, VOCs, SVOCs, and PCBs. There are no records of previous sampling at this SWMU. In August 1994, six surface samples and three subsurface samples were collected at SWMU 06-006 and at nearby drainage channels. Samples were analyzed for organic chemicals. In addition, field screening was performed to detect the presence of HE; the HE spot test yielded no detects. This investigation has not been documented in a written report. A VCA plan was prepared and submitted in 1995. The plan proposed excavating and removing the soil and asphalt until site-specific PRGs are met. Upon confirmation that the PRG has been met, the area will be backfilled, recontoured, and reseeded.
06-007(a)-99	In Progress	Consolidated SWMU 06-007(a)-99 is MDA F and consists of former SWMUs 06-005, 06-007(a), 06-007(b), 06-007(c), 06-007(d), and 06-007(e). These former SMWUs consist of a suspected firing site and five disposal pits. Former SWMU 06-005 consists of a timber-lined pit having approximate dimensions of 16 ft x 16 ft x 8 ft deep and is located north of Twomile Mesa Road in TA-06, just west of former SMWU 06-007(a). This pit was constructed in 1945 and is believed to have been used as a firing site, possibly for use with steel “Jumbino” explosion containment vessels. The pit was reportedly backfilled with soil in 1952. No previous environmental investigations have been conducted at former SWMU 06-005. Former SWMU 06-007(a) consists of two fenced areas on the north side of Twomile Mesa Road. These two fenced areas have historically been referred to as “MDA F” and

		contain pits used to dispose of large classified objects that could not easily be declassified by cutting. The fences were reportedly installed in 1981. Disposal of HE or radioactive materials in these pits was reportedly not allowed, though anecdotal evidence presented in the RFI work plan suggests that such disposal could have occurred. The exact dates of operation of the pits are unknown, but historical memoranda dated 1946 and 1947 describe the use of pits for disposal of classified objects at TA-06. The dimensions of the pits are unknown, but a former employee estimated dimensions of 50 ft wide x 100 ft to 150 ft long for one of the pits. Former SWMU 06-007(a) is also reportedly the location of three shafts that were drilled during the period 1950 to 1952 to dispose of spark gaps containing small amounts of cesium-137. No previous environmental investigations have been conducted at former SWMU 06-007(a) other than routine monitoring performed as part of the LANL Environmental Surveillance Program. This monitoring has not detected radioactivity above background. Former SWMU 06-007(b) consists of a former disposal pit similar to those comprising former SWMU 06-007(a). This pit was identified on historical aerial photographs taken in the 1940s and has estimated dimensions of 40 ft x 70 ft. The exact location of former SWMU 06-007(b) was not described, but it is believed to be in the vicinity of former SWMU 06-007(a). No previous environmental investigations are known to have been conducted at former SWMU 06-007(b), although this site may have been one of the three pits in this area sampled by the DOE Environmental Survey in 1987. The 1990 SWMU report describes former SWMU 06-007(c) as a disposal pit having dimensions of 6 ft x 6 ft x 6 ft. This pit was identified from a February 1950 work order, which described the purpose of the pit as burial of nonhazardous material. The exact location of former SWMU 06-007(c) was not described, but it is believed to be in the vicinity of former SWMU 06-007(a). No previous environmental investigations are known to have been conducted at former SWMU 06-007(c), although this site may have been one of the three pits in the area sampled by the DOE Environmental Survey in 1987. The 1990 SWMU report describes former SWMU 06-007(d) as a disposal pit having dimensions of 2 ft x 2 ft x 4 ft deep. This pit was identified from an August 1951 work order, which described the pit as being for disposal purposes. The exact location of former SWMU 06-007(d) was not described, but it is believed to be in the vicinity of former SWMU 06-007(a). No previous environmental investigations are known to have been conducted at former SWMU 06-007(d), although this site may have been one of the three pits in the area sampled by the DOE Environmental Survey in 1987. Former SWMU 06-007(e) consists of a disposal pit at TA-06 that was sampled by the DOE Environmental Survey in 1987, along with two other nearby disposal pits. No other information was provided in the 1990 SWMU report concerning this pit. The RFI work plan identifies an August 1949 work order calling for excavation of a 40-ft x 20-ft x 10-ft-deep disposal pit on Twomile Mesa, but it is not clear whether this work order refers to former SWMU 06-007(e). Previous environmental investigations at former SWMU 06-007(e) consist of sampling performed by the DOE Environmental Survey in 1987. The ER Project conducted a Phase I RFI at SWMU 06-007(a)-99 in 1994, but did not document the investigation in a written report. Twelve surface soil samples (0 ft to 0.5 ft) were collected from eleven locations in the vicinity of the former disposal pits and SWMU 06-003(h), a nearby inactive firing site. All samples were submitted for laboratory analysis of inorganic chemicals, radionuclides, and organic chemicals. Five inorganic chemicals were detected above BVs. Only one of these detected inorganic chemicals was detected above SALs. One radionuclide was detected above FVs and was also detected above its SAL. No organic chemicals were detected.
06-007(f)	In Progress	SWMU 06-007(f) is a surface disposal site once containing empty chemical bottles and equipment, electrical equipment, and barbed wire. An empty and broken bottle labeled "carbon tetrachloride" was also noted during a site visit. There is no documented

		operational history for SWMU 06-007(f). The nearby presence of Jumbino parts suggests that this site was used for disposal in the 1940s and may have served a carpentry shop (Building 06-1), a fabrication building (Building 06-3), and a laboratory office and shop building (Building 06-6). In 1994, the ER Project collected surface and near-surface soil samples from beneath debris at the site to determine the nature and extent, if applicable, of contamination present at the site. Six samples were collected from three locations of areas deemed most likely to be contaminated. Samples were submitted for inorganic chemical, organic chemical, and radionuclide analyses. Results from the sampling indicated the presence of inorganic chemicals and radionuclides exceeding SALs in surface and near-surface soils at the disposal site. Because the remedy was obvious and final, this site was subject to a VCA in 1995. VCA activities at this site consisted of the removal of all solid waste and debris, excavation and removal of contaminated surface soils, and the collection of confirmation samples to demonstrate success of the project. The excavated area was approximately 20 ft x 30 ft and was excavated to an average 8-in. depth. Three confirmation soil samples were collected and analyzed for inorganic chemicals and organic chemicals. The samples were also analyzed for radioactivity, using gamma spectroscopy. Results showed that residual lead and cesium-137 levels in the soil are less than their respective PRGs. The VCA completion report for SWMU 06-007(f) recommended NFA for the site.
06-007(g)	In Progress	SWMU 06-007(g) is the former location of Building 06-12 and a 5-ft x 5-ft pile of exploded detonator housings adjacent to the former site of the building. Until it was relocated in 1949, the building was used for pressing explosives. Building 06-12 was moved from this site in 1949 and attached to Building 06-1, a storage building. In 1992, parts in the pile that appeared likely to contain explosives were tested and found to be free of explosives. Field sampling activities were completed in July 1994. Sample analysis indicated that two inorganic chemicals were present at the SWMU at concentrations greater than SALs, but because no viable exposure areas or pathways exist at the SWMU, it was recommended for NFA.
07-001(a)-99	In Progress	Consolidated SWMU 07-001(a)-99 consists of former SWMUs 07-001(a), 07-001(b), 07-001(c), and 07-001(d), which are inactive firing sites. TA-07, which now is considered part of TA-06, was part of the explosives area. The earliest work at TA-07, known as the Gomez Ranch Site, consisted of firing 20-mm shells into various targets as part of gun assembly method investigations. The work lasted for a short time before activities were moved to other locations. TA-07 is thought to have been used only sporadically from the 1940s to 1959. Former SWMUs 07-001(a) and 07-001(b) are inactive firing sites. Former SWMU 07-001(b) is located about 240 ft southeast of former SWMU 07-001(a). Each site is a circular depression surrounded by an annular berm that is about 4 ft high. The sites were used in the 1950s to destroy scrap detonators and explosives. Scrap detonators and explosives were mixed with Composition B scraps or flaked TNT and the mixture was detonated. Experiments also were performed at the sites to determine optimum conditions for disposing of scrap detonators. This operation was moved to a burning and detonation area about 450 ft east of the firing point (structure 40-15) in the 1950s. Explosives fragments were found around the sites in 1959 and spent detonators have washed out of the soil berms through an access portal during rainstorms. Suspect contaminants were HE, inorganic chemicals, organic chemicals, and radionuclides. Former SWMU 07-001(c) is in an amphitheater-shaped inactive firing site where soft metal disks imbedded with bullets were discovered. It is located about 600 ft southeast of former SWMU 07-001(a) and 380 ft east of former SWMU 07-001(b). The site may have been used to study ballistic initiation of critical mass through the study of projectiles fired at lead plates. Full testing of initiators was considered sufficiently hazardous that an enclosed facility was built elsewhere for this purpose. Suspect contaminants were inorganic chemicals, HE, and radionuclides.

		Former SWMU 07-001(d) is an inactive firing site where detonator parts have been found. The site is shaped like a crater that is 20 ft in diameter and 3 ft deep. It is located about 360 ft southeast of former SWMU 07-001(b). Suspect contaminants were inorganic chemicals, HE, and radionuclides. The ER Project conducted an RFI at the former SWMUs in this consolidated unit in 1994 to determine if chemicals were present at the site at levels that exceed SALs and if they present an unacceptable human health risk. All samples were field-screened for HE, organic chemicals, and radionuclides. All screening results were negative or at BVs. At all locations, antimony was reported as undetected but the detection limit was greater than BVs. Because antimony was not expected to be associated with the site, it was eliminated from further consideration. At former SWMU 07-001(a), 13 surface and subsurface soil samples were collected and sent for laboratory analysis for HE, radionuclides, and inorganic and organic chemicals. Because SVOCs were inadvertently omitted from the 1994 field investigation, a second set of samples (13 additional samples) were collected from the site in 1996. Barium, manganese, and mercury were detected above BVs but below SALs. Calcium was detected above BVs but it has no SAL. Because it is an essential nutrient and there is little potential for contribution from the site, calcium was eliminated from further consideration. No HE was detected in any samples. Benzoic acid was the only organic chemical detected, but was six orders of magnitude less than its SAL. At former SWMU 07-001(b), 12 samples were collected. Because SVOCs were inadvertently omitted from the 1994 field investigation, a second set of samples (13 additional samples) were collected from the site in 1996. Cadmium, copper, lead, and zinc were detected above BVs but below SALs. Tetryl was detected above its EQL but below SAL. Three surface-soil samples were collected at locations containing pieces of metal debris where contaminants were judged most likely to exist at former SWMU 07-001(c). Samples were submitted for laboratory analysis of radionuclides, inorganic chemicals, isotopic uranium, HE, and strontium-90. Lead, cesium-137, and strontium-90 were detected above BVs/FVs but less than SALs. No HE was reported above the EQL in any sample. At former SWMU 07-001(d), 13 samples were collected from 6 locations in and around the crater perimeter. Copper was found at concentrations greater than BVs but less than SAL. Background activity was detected for cesium-137 and strontium-90. No HE contaminants were reported at levels greater than their EQLs. The RFI report recommended NFA at former SWMUs 07-001(a), 07-001(b), 07-001(c), and 07-001(d) because they were characterized in accordance with applicable state and federal regulations and available data indicate that the former SWMUs pose no unacceptable human health risk under current or projected future land use.
07-003(c)	Administratively Complete	SWMU 07-003(c) was a typographical error. During revisions to a LANL request for a Class 3 Permit Modification to the HSWA Module of its RCRA Hazardous Waste Facility Permit in February 1993, a clerical typing error was made. There is no record of this SWMU in the SWMU Report (LANL 1990). SWMU 07-003(c) is appropriate for NFA under Criterion 1 because it has been shown not to exist.
07-003(d)	Administratively Complete	SWMU 07-003(d) was a typographical error. During revisions to a LANL request for a Class 3 Permit Modification to the HSWA Module of its RCRA Hazardous Waste Facility Permit in February 1993, a clerical typing error was made. There is no record of this SWMU in the SWMU Report (LANL 1990). SWMU 07-003(d) is appropriate for NFA under Criterion 1 because it has been shown not to exist.
08-001(a)	In Progress	AOC 08-001(a) is the former off-gas ventilation system for an abandoned main office building (Building 08-1). TA-08 is known as Anchor West. It was the site of the original Anchor Ranch homestead, a compound of eight structures acquired by the War

		Department in 1943. The area also is known as GT Site, named for one of the workers. The developed area of TA-08 is on a broad mesa bounded on the north by Pajarito Canyon and on the south by Cañon de Valle. The mesa drains into three tributaries to Pajarito Canyon. Building 08-1 was built in 1943 and served as a control building for a gun-firing site (SWMU 08-002) during World War II. The building was used to develop explosives after the war until new buildings at TA-09 became available for that purpose from 1950 to 1953. Crystal-growth experiments also were conducted at Building 08-1 in later years. Suspect contaminants in the system's ductwork are explosives, styrene, thallous iodide, cyanogens, and methyl chloroform. A fire in the building in the 1960s may have eliminated the HE. It is unclear whether remedial actions described in a 1972 memorandum actually were conducted because the building was determined to be too structurally unsafe to inspect for the purposes of the RFI work plan. The OU 1157 work plan stated that characterization of AOC 08-001(a) would be deferred until D&D.
08-001(b)	In Progress	AOC 08-001(b) is the off-gas ventilation system at an abandoned machine shop and storage area (Building 08-2) that was built in 1943 for the gun-firing site (SWMU 08-002). TA-08 is known as Anchor West. It was the site of the original Anchor Ranch homestead, a compound of eight structures acquired by the War Department in 1943. The area also is known as GT Site, named for one of the workers. The developed area of TA-08 is on a broad mesa bounded on the north by Pajarito Canyon and on the south by Cañon de Valle. The mesa drains into three tributaries to Pajarito Canyon. A 1971 memorandum indicates that Building 08-2 was contaminated with HE. The OU 1157 work plan stated that characterization of AOC 08-001(b) would be deferred until D&D.
08-002	In Progress	SWMU 08-002 is the gun-firing site, an inactive experimental firing site for specially designed naval guns that were used during experimental testing for the Little Boy weapon. The site, composed of two sand butts, was used from 1943 to 1945. The sand butts were retained by heavy wooden beams on three sides and received experimental shots from guns mounted on concrete pads located several yards northeast of each butt. The sand butts generally received inert projectiles for recovery and examination; however, projectiles occasionally were fired at targets that were placed in the sand butts. The target tests sometimes resulted in fragmenting the targets or projectiles, scattering debris up to 75 yd. The projectiles and targets were made of combinations of steel, tungsten carbide, depleted uranium, copper, and lead. In some instances, small components made from beryllium and polonium were incorporated into the targets; there are no indications in records that any of those materials escaped from the targets. Cordite was the explosive propellant commonly used in the tests. The gun mounts and other articles were buried in 1946 in a pit known as MDA Q, SWMU 08-006(a). At the time the OU 1157 work plan was written, two sand piles and two concrete anchor pads remained at the former locations of the butts and the concrete gun pads. The piles were about 3 ft high and were spread over a 10-ft x 20-ft area. Suspect contaminants were lead, copper, beryllium, and depleted uranium. The ER Project conducted an RFI at SWMU 08-002 in 1994 to determine if contaminants were present at the site and, if so, whether they presented an unacceptable risk based on BV and/or SAL comparison. Sampling focused on the residual sand butts and the surrounding surface soil within a 82 yd radius of the sand butts. Samples were field-screened for HE, radioactivity, and chemicals (not specified in the RFI report). All field-screening results were negative or at BVs. Twenty soil samples were collected from 20 locations: 4 in the sand butts and 16 in the surrounding surface soils. Samples were submitted for analysis for inorganic chemicals. Lead was detected above BV in two samples; one of those was above SAL (420 mg/kg, sample #AAB0792). The RFI report stated that SWMU 08-002 was not expected to present an unacceptable risk to human health, and it recommended NFA for the site for the following reasons: (1) the low overall frequency at which BV or SAL was exceeded; (2) the conservative residential exposure assumptions used versus the expected current and future LANL use of the area (that is, industrial use with the industrial SAL of 1000

		mg/kg); (3) the 5-percent-greater-than-SAL exceedance in a data set that was recognized as potentially biased high; and (4) the small size of the contaminated area relative to an assumed residential exposure area.
08-003(a)-00	In Progress	Consolidated SWMU 08-003(a)-00 consists of former SWMUs 08-003(a), 08-004(a), 08-004(b), and 08-009(a). The former SWMUs are components of a removed septic system at the TA-08 abandoned bunker site. All structures have been removed. Former SWMU 08-003(a) is a former septic tank and inlet and outlet lines (structure 08-59) that served Buildings 08-1 and 08-3 from 1943 to 1968. The tank's dimensions were about 10 ft x 4 ft x 7 ft deep, and it had a capacity of 1197 gal. It was made of precast reinforced concrete and was located in a small valley on the west side of Anchor Ranch Road, 35 ft northeast of the northeast corner of Building 08-1. Building 08-1 served as a control center for the adjacent gun-firing site, and after World War II, it was used for explosives development and crystal-growth experiments. Building 08-3 served as a laboratory for the gun-firing site. At the time the OU 1157 work plan was written, neither building was in use, and both were scheduled for D&D. Activities involving photoprocessing, explosives, solvents, radionuclides, and other chemicals were conducted in both buildings. The outlet line from the tank tied into sanitary sewage piping that discharged to an outfall, former SWMU 08-009(a). In 1971, the tank contents were sampled. Background counts of gross alpha and gross beta indicated that the tank contents were free of radioactive contamination. Volatile hydrocarbons and oil, and explosives and chemical contaminants were considered to be present in the tank. Former SWMU 08-004(a) consists of former drains and drainlines in Building 08-1 that discharged to the septic tank (structure 08-59), former SWMU 08-003(a). Former SWMU 08-004(b) consists of former drainlines from Building 08-2 that also discharged to structure 08-59. Building 08-2 housed a machine shop to fabricate parts made of uranium and a variety of metals. After World War II, explosives were present in the building. Former SWMU 08-009(a) is a former storm drain inlet, drainline, and outfall that served the abandoned bunker site. The inlet received only stormwater runoff; however, just before the drainline crossed under Anchor Ranch Road, the discharge line from structure 08-59 tied into the line. The ER Project conducted an RFI at former SWMU 08-003(a) in 1994 to determine the potential effect of the inactive septic system on human health and the environment. RFI sampling results were reported in the expedited cleanup plan for the SWMU. Four samples of the tank's contents, two from the liquid phase and two from the sludge phase, were collected and analyzed for organic chemicals, inorganic chemicals, and HE. The contents also were screened for radioactivity. Manganese [3680 micrograms/L], 1,2-dichloroethane [34 micrograms/L], 1,1-dichloroethene [17 micrograms/L], and bis(2-ethylhexyl)phthalate [43 micrograms/L] exceeded SALs in the liquid phase. SALs have not been determined for sludge, but when analytical results for the sludge-phase samples were compared to SALs for soils, concentrations of chloroform [69 mg/kg], 1,1,1-trichloroethane [26,000 mg/kg], and trichloroethene [47,000 mg/kg] exceeded the soil SALs. On the basis of RFI sampling results, an expedited cleanup was proposed. The ER Project conducted an expedited cleanup at former SWMU 08-003(a) in 1995. The top of the concrete septic tank was removed. The tank's contents were removed, the inside of the tank was pressure-washed, and the washing material was vacuumed from the tank. Removed material was sent off-site for disposal. ESH-19 personnel collected verification soil samples from outside the septic tank (on all sides). Analytical data from the verification sampling showed all analytes below SALs. The tank was backfilled with sand and left in place.

		The OU 1157 work plan proposed a Phase I investigation at former SWMU 08-009(a) to determine the presence or absence of contaminants in outfall surface soil.
08-003(b)	Administratively Complete	Septic Tank TA-8-64 was installed in early 1949 to serve an office building, TA-8-9, also known as Building 11 and AW-9. These alternate designations caused some confusion on the part of the authors of the SWMU Report (LANL 1990), and the association of this septic tank with Building AW-11 in that report is in error. At the time that the tank was installed, Building AW-9 (TA-8-9) was located north of the now-abandoned TA-8 bunkers. In December 1949, the building was moved onto the Gun-Firing Site to make way for the construction of Building TA-8-21. Septic tank TA-8-64 was abandoned in place at that time. According to a worker who was working in Building AW-9 in 1950, it then housed offices for administrative and drafting work. The original engineering drawings do not show any floor drains or sinks that would be associated with photo-processing or other activities involving the use of chemicals. In fact, the drawings indicate that from the time the building was erected until the time it was moved, it housed offices only. There is no indication that hazardous constituents ever existed in this septic tank. SWMU 8-003(b) received domestic sewage only. SWMU 8-003(b) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
08-003(c)	Administratively Complete	Septic tank TA-8-67 was installed in early 1950 to serve office building AW-9 (TA-8-9) when it was moved onto the TA-8 Gun-Firing Site. Early in 1968, the tank was filled with tamped earth and abandoned in place. Although a September 28, 1971, memo suggests the possibility of chemical contamination, a previous memo dated April 18, 1967, clarifies the 1971 memo. The memo, written in 1967, indicates that the alleged contamination of TA-9-67 would have been due to 'small amounts of uranium which were used in TA-8-1 and which might have reached the septic system." A search of historical records revealed no indication of any physical connection between Building TA-8-1 and Septic Tank TA-8-67. There are no indications that hazardous constituents ever entered in this septic tank. SWMU 8-003(c) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
08-004(c)	In Progress	SWMU 08-004(c) consists of a floor drain and two sumps in a laboratory (Building 08-3) that was built in 1943 for the wartime gun-firing site (SWMU 08-002). The building had two bays, each of which had a floor drain. A 1971 memorandum stated that Building 08-3 was free of radioactive contamination, and it mentioned two outside sumps. The sumps are not marked on available engineering drawings and were not found in a visual inspection of the outside of the building. The engineering drawings show an oil sump in the west bay of the building. The OU 1157 work plan stated that characterization of SMWU 08-004(c) would be deferred until D&D.
08-004(d)	In Progress	SWMU 08-004(d) is an active sink drain and sewage line inside the Isotope Building (Building 08-24). The building was used to radiograph nuclear fuel elements from 1950 to 1971, and since then has had various other uses. It is currently used to store nonhazardous materials. In 1954, SWMU 08-004(d) was contaminated with strontium-90 as a result of a spill. The spill occurred when a heavily shielded metal container (pig) was being unloaded at the dock on the south side of the building for x-ray examination. During unloading, the pig slipped and dropped, dumping a white powder (probably a strontium-90 salt) on the truck and the dock. The powder was checked with a dosimeter and found to be highly radioactive, and the four people involved in the incident immediately decontaminated their hands by washing them in the sink in the center room of Building 08-24. Following the spill, the building's interior was scrubbed with water and decontaminated. Contaminated dirt and asphalt outside the building were removed and disposed of in a radioactive waste disposal area. A radiation survey conducted one month following the spill detected contamination in concrete cracks on the loading dock and between dock sections, and the area was sealed with concrete to avoid spreading the contamination. The ER Project conducted an RFI at SWMU 08-004(d) in 1994 to determine if residual

		contamination from the strontium-90 spill was present at the SWMU and if so, whether the contamination presented an unacceptable risk. One swipe sample was taken from the P-trap by swabbing the inside of the drainpipe. The sample was submitted for radionuclide analysis. The swipe sample was analyzed by the ESH-1 Health Physics Analytical Laboratory, which reported no detectable alpha or beta activity. Access to the building sewer line was provided by a manhole about 750 ft downgradient from the building. The channel surface was screened for beta/gamma radioactivity, which was detected within normal LANL FVs. Scale from the sewer line was sampled and field-screened for HE; the sample was negative for HE. A swipe sample of the drainage channel was taken for analysis by ESH-1, but no detectable alpha or beta radioactivity was found. A second clay pipe enters the manhole about 3 ft above the floor of the manhole; a sludge sample, for waste characterization, was collected from this pipe and was submitted for radionuclide analysis. The sample results were compared with the LANL FVs, and the comparison showed strontium-90 levels above FV but below SAL. It was determined that because the area around SWMU 08-004(d) is highly developed, there was no potential for receptors to come into contact with contaminants; therefore, there were no ecotoxicological risk concerns at the SWMU. The RFI report recommended NFA at SWMU 08-004(d) because the SWMU was characterized in accordance with current applicable state and federal regulations, and available data indicate that contaminants of concern are present in concentrations that pose no unacceptable human health risk under current and projected land use.
08-005	Pending	SWMU 08-005 was an abandoned metal square-shaped 4 ft x 4 ft x 4ft storage vessel located on the ground outside the west end of a machine shop and storage building (Building 08-2). The storage vessel had a cover with two windows in it. The vessel was used in the 1950s for crystal-growth experiments in the now-abandoned bunker buildings at TA-08. Crystals were grown in Building 08-1 for use in photographic equipment, and residue from crystal growth remained in the vessel. Sample analysis indicated the presence of naphthalene, and asbestos also was confirmed. This SWMU was recommended for a VCA in the OU 1157 work plan. The ER Project conducted a VCA at SWMU 08-005 in 1994 and 1995. About one cubic foot of solid naphthalene was removed from the storage vessel, containerized, and disposed of by LANL's Waste Services Group. Next, the asbestos was removed and disposed of. The oven was taken to the salvage yard. The former location of the oven was then inspected and field-screened for radiactivity and organic chemicals; no elevated readings were detected. A surface soil sample was taken at the former location of the oven and was analyzed for organic and inorganic chemicals. None were detected. The VCA report requested regulator concurrence to remove SWMU 08-005 from Module VIII of the Laboratory's Hazardous Waste Facility Permit.
08-006(a)	In Progress	SWMU 08-006(a), known as MDA Q, is associated with the World War II gun-firing site (SWMU 08-002). MDA Q was used in 1946 as a burial ground for the guns and projectiles from the experimental shots. It also is reported to contain expended casings and some parts of prototypes from the Little Boy weapon. These casings and parts contained no radioactive materials. MDA Q is a pit about 30 ft square and is located about 90 ft south-southwest from former Building 08-9 and 40 ft west-southwest of the decommissioned transformer station 08-72. A gun mount unearthed from MDA Q in 1947 for use off-site was found to be free of radioactive contamination. In 1994, the ER Project collected 12 surface soil samples to support the characterization of SWMU 08-006(a). The samples were submitted to an offsite analytical laboratory and were analyzed for a limited set of inorganic chemicals. Copper and lead were detected above BVs. Lead was the only chemical detected above SAL.
08-006(b)	Administratively Complete	In the SWMU Report (LANL 1990), SWMU 8-006(b) was identified as a disposal area to the east of Building TA-8-21. Material Disposal Area (MDA) Q [SWMU 8-006(a)] is located south of Building TA-8-21 in the same area as SWMU 8-006(b). A memo indicates that a construction crew found buried debris near TA-8-21. The memo further documents that additional information subsequently identified this buried debris as actually being a portion of MDA Q. The SWMU Report erroneously assigned the buried

		debris found by the construction crew as SWMU 8-006(b). SWMU 8-006(b) is a duplicate of SWMU 8-006(a); therefore, SWMU 8-006(b) is appropriate for NFA under Criterion 1.
08-007	Administratively Complete	SWMU 08-007 was a silver recovery unit used at the site of an x-ray processing operation at TA-8. Silver halide film was processed through a developer and then a fixer. Silver was reclaimed from the fixer solution for recycling purposes. The canisters used for this purpose were fitted with inlet and outlet valves for receiving and dispelling fixer solution. Silver was the only RCRA constituent that resulted from this recovery process operation. There were no reported spills or leaks associated with the silver recovery unit used in this building. The silver recovery unit was contained within the building during the entire time of its operation. No reported spills or leaks were associated with the unit while it was in operation. The silver recovery unit has subsequently been removed the building. Therefore, there was no release of silver to the environment and SWMU 8-007 is appropriate for NFA under Criterion 3.
08-008(a)	Administratively Complete	
08-008(b)	Administratively Complete	
08-008(c)	Administratively Complete	
08-008(d)	Administratively Complete	
08-009(b)	Administratively Complete	
08-009(c)	In Progress	AOC 08-009(c) is a storm sewer and outfall that serves the Betatron Building (Building 08-23). The building was built in 1950 and houses a 20-million-electric-volt betatron, a fixed-radius electron accelerator that was used to radiograph large items like nuclear fuel elements, waste containers, and weapon assemblies. In 1990, approximately one pint of oil containing an unknown concentration of PCBs was reported to have spilled from transformers in the building's basement. The transformers were located next to floor drain BFD2. The spill was cleaned up, and a trough and an absorbent boom were installed to intercept future leaks. All transformers were replaced following the spill. The drains were not plugged because of the possibility of flooding the transformers. Two other floor drains in the basement, BFD1 and BFD3, directly receive stormwater and runoff from a French drain that surrounds Building 08-23. The stormwater runoff and effluent from floor drain BFD2 are discharged to an unpermitted outfall, TA-08023-OPN-2. The outfall is located approximately 350 ft northeast of the parking lot. In 1994 and 1997, the ER Project collected 12 soil samples from Aoc 08-009(c). The samples were submitted to an offsite analytical laboratory for PCB analysis. One chemical was detected above its SAL.
08-009(d)	In Progress	SWMU 08-009(d) includes drains that discharged to a former outfall (NPDES Outfall 06A074) into Starmer Gulch, a tributary of Pajarito Canyon. The drains serve an x-ray building (Building 08-22), which was built in 1950 to house x-ray machines that are used for radiography. Photo-processing and photo-development solutions that contain silver salts sometimes were disposed of directly into a dedicated drain in the building. The outfall for the building drains was located approximately 300 ft northeast of Building 08-22 and was monitored bimonthly by LANL's EM-8. No violations were reported. Suspect contaminants at SWMU 08-009(d) were silver, chromium, and pentachlorophenol. The ER Project conducted an RFI at SWMU 08-009(d) in 1994 to determine if contaminants were present at the site and, if so, whether they presented an unacceptable human health risk based on the result of BV and/or SAL comparison. The sampling plan focused on potential areas of sedimentation and constituent retention in the outfall drainage. Initially, two samples were taken from two locations: two surface sediment samples were collected within the outfall channel from the ditch bottom at points 3 ft and 6 ft downstream from the end of the outfall pipe. Samples were field-screened for radioactivity, organic chemicals, and HE. Radioactivity levels were within

		LANL FVs, organic chemicals were less than 1 ppm, and the samples were negative for HE. In response to an NMED NOD, two additional samples were collected from a greater depth at one of the original sample locations. Field-screening results showed radioactivity above LANL FVs. Consultation with personnel in Building 08-22 indicated that the elevated radioactivity measurement might have been caused by stray radiation from activities conducted at the time of the sampling. The conclusion was supported by the radioactivity measurements conducted on the actual samples. The sediments were resurveyed in 1995; radioactivity measurements were 151 cpm to 258 cpm, further indicating that the previously elevated levels were spurious readings. All four samples were submitted for analysis for inorganic and organic chemicals. Silver, chromium, and mercury were found in concentrations above LANL BVs. Antimony was undetected in all analyses, but because the analytical reporting limit for antimony exceeds its BV, it also was identified for further evaluation. None of the inorganic chemicals exceeded SALs. In evaluating organic constituents, all pentachlorophenol analyses were determined to be less than EQL; therefore, pentachlorophenol was eliminated from further consideration at this SWMU. Bis(2-ethylhexyl)phthalate, acetone, isopropylbenzene, isopropyltoluene[4], and trichloro-1,2,2-trifluoroethane were found in concentrations that exceeded their EQLs but not their SALs. None of the detected organic chemicals was identified to be associated with operations at this SWMU. The RFI report recommended NFA at SWMU 08-009(d) because it was characterized in accordance with current applicable state and federal regulations, and available data indicate that COCs either are not present or are present in concentrations that pose no unacceptable human health risk under current and projected land use.
08-009(e)	In Progress	SWMU 08-009(e) consists of drains and an outfall for a laboratory and office building (Building 08-21). The building was built in 1950 as an administration and laboratory building; the south wing has a photo-processing and photo-development laboratory and 13 darkrooms. Until 1987, the south wing also had a metallography laboratory where plutonium parts coated with nickel were x-rayed, and where fuel elements that consisted of graphite impregnated with uranium-235 were polished. In 1982 or 1983, the metallography lab was decontaminated and the floor was removed and replaced. In about 1988, the south wing was converted to office space, and only the photo laboratory and darkrooms remain in place. Before 1991, silver was recovered from the photo laboratory waste. After recovery, the wastewater was discharged into a dedicated sewer that discharged to an outfall. When the OU 1157 work plan was written, the wastewater directly discharged to NPDES-permitted Outfall EPA 06A075, which was located across Anchor Ranch Road from the building. Effluent flowed to Starmer Gulch, a shallow tributary of Pajarito Canyon. The outfall was removed from the LANL NPDES permit effective January 14, 1998. While the outfall was permitted, effluent monitoring was performed by EM-8. Suspect contaminants at this SWMU were inorganic chemicals and organic chemicals. The ER Project conducted an RFI at this SWMU in 1994 to determine if contaminants were present at the site and if so, whether they presented an unacceptable human health risk based on the result of BV and/or SAL comparison. The sampling plan was designed to focus on potential areas of sedimentation and constituent retention in the outfall drainage. Two surface sediment samples were taken from two locations: 4 ft and 8 ft east and downstream from the end of the Anchor Ranch Road culvert. Samples were field-screened for organic chemicals, HE, and radioactivity. Organic chemicals were present at less than 1 ppm, the HE spot test was negative, and radioactivity levels were within LANL FVs. Two additional samples were collected in response to an NMED NOD. The additional samples were collected from 1-ft-depth intervals at one of the two original sampling locations. Samples were field-screened for organic chemicals, HE, and radioactivity. Organic chemicals were present at less than 1 ppm, the HE spot test was negative, and radioactivity levels were within LANL FVs. All four samples were analyzed for inorganic chemicals and organic chemicals. Silver, mercury, and zinc were detected at concentrations above LANL BVs. Antimony was undetected in all analyses, but because the analytical reporting limit for antimony exceeds its BV, it was evaluated further. No inorganic chemicals exceeded their respective SALs. No organic chemicals analyzed from samples taken at this SWMU exceeded their EQLs; therefore, organic

		chemicals were not evaluated further. The RFI report recommended NFA at SWMU 08-009(e) because the SWMU was characterized in accordance with applicable state or federal regulations, and available data indicated that contaminants posed no unacceptable level of risk under current and projected future land use.
08-009(f)	In Progress	AOC 08-009(f) is an unpermitted outfall near a manhole (structure 8-57), at the southeast end of the x-ray building (Building 08-22). The outfall discharges effluent from fluorescent penetration experiments. Fluorescent penetrants are mixtures of dyes and surfactants that are used to detect cracks in parts being prepared for installation into a weapons assembly. Historically, fluorescent penetrant, developer, and emulsifiers were discharged to the outfall through drains 1FD12 and 1FD13. As of 1993, when the OU 1157 work plan was written, those chemicals were collected and disposed of by EM-7. In 1994, the ER Project collect 9 soil samples from AOC 08-009(f). The samples were submitted to an analytical laboratory for organic chemical anaylysis. Four chemicals were detected above SALs.
08-010(a)	Administratively Complete	
08-010(b)	Administratively Complete	
08-010(c)	Administratively Complete	
08-011(a)	Administratively Complete	
08-011(b)	Administratively Complete	AOC 08-011(b) is a decommissioned, 2000-gal., stainless steel, underground diesel oil storage tank (structure 08-61) at the TA-08 abandoned bunker site. The tank served the main office building (Building 08-1). The buried concrete bunkers were built in a small arroyo north of the gun-firing site (SWMU 08-002) during World War II. The bunkers served as control points for gun-site operations and also were used for laboratory activities and storage. The tank was installed in 1943 and removed in 1987. There were no reported spills or leaks from the tank, and no contaminated soil was noted when the tank was removed. AOC 08-011(b) was recommended for NFA in the March 1995 permit modification request because it was removed in accordance with LANL's UST removal program.
09-001(a)-99	In Progress	Consolidated SWMU 09-001(a)-99 consists of former SWMUs 09-001(a) and 09-001(b) and AOC C-09-005. These SWMUs and AOC are associated with the Far Point firing site (structure 09-57), which is located about 300 ft north of Structures 09-36 (magazine) and 09-40 (environmental chambers). The explosive shots were conducted on a concrete pad with a protective barrier in an open meadow between the control chambers (structures 09-4 and 09-5). The barrier reflected debris southeast. A plastic-bonded explosive (PBX, which contained barium, RDX, polystyrene, and dioctyl phthalate) was developed and tested at this site. Former SWMUs 09-001(a) and 09-001(b) were associated with this common explosives test-firing area, and were investigated as a single unit. Suspect contaminants were inorganic chemicals and organic chemicals. Former SWMU 09-001(a) is the location of a former structure (structure 09-4), which was completed in 1944, abandoned in place in 1959, and removed in 1965. The building had reinforced-concrete walls and was 8 ft wide x 10 ft long x 8 ft high, with metal doors and an earth berm on three sides. Structure 09-4 was used as a personnel shelter from 1944 to 1956 during control tests of explosive charges. Former SWMU 09-001(b) is the location of a former structure (structure 09-5), which was completed in 1947 and until 1957 was used as a personnel shelter during control tests of HE charges. It was abandoned in place in 1959 and removed in 1965. The building was made from reinforced concrete and was 10 ft wide x 12 ft long x 8 ft high, with metal doors and an earth berm on three sides.

		Former AOC C-09-005 is the location of a former x-unit chamber (structure 09-58)where experiments involving cesium-137 were conducted. Structure 09-58 was removed in 1965. The ER Project conducted an RFI at former SWMUs 09-001(a) and 09-001(b) in 1993 and 1994 to determine if contaminants were present in elevated concentrations. Ten surface-soil samples were collected from points in a 75-ft radius of the firing pad. Samples were field-screened for HE, organic chemicals, and radioactivity. Organic chemicals were detected at less than 1 ppm, radioactivity measured within or near LANL background, and HE spot tests were negative. All samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, and HE. Barium, copper, lead, and zinc were detected at levels above BVs. Antimony was undetected, but the analytical reporting limit for antimony exceeds its BV concentration, so antimony was included in the screening assessment. Calcium also was detected in one sample but was not carried forward to the screening assessment because it is an essential nutrient and has no SAL. None of the inorganic chemicals detected above its respective BV exceeded its SAL. No organic chemicals were found in concentrations that exceeded their respective EQLs. The RFI report recommended NFA at former SWMUs 09-001(a) and 09-001(b) because the former SWMUs were characterized in accordance with current applicable state and federal regulations, and contaminants of concern were present in concentrations that posed no unacceptable human health risk. The March 1995 permit modification request recommended NFA for AOC C-09-005.
09-001(c)	In Progress	SWMU 09-001(c) is a former firing pit (structure 09-15) that was completed in 1943 and modified in 1951. The pit was 12 sq ft x 8 ft deep and had timbered sides. It was lined with 0.75-in. steel plate and had a metal cover. Structure 09-15 was designed as a recovery pit to recover metal from misfired shots. It was used only in 1943 because it did not accomplish what was expected. The pit was certified clean from radiation and toxic materials in 1959, but the soil was contaminated with HE detonation byproducts. On May 9, 1995, three core samples were collected at depths ranging from 8.5 ft to 10 ft, from three locations at this SWMU. Samples were submitted to a fixed analytical laboratory for analysis for inorganic chemicals and HE. HE was not detected in any of the samples collected and arsenic was detected at concentrations exceeding both BVs and SALs.
09-001(d)	In Progress	SWMU 09-001(d) is the area associated with a decommissioned flash photography (x-ray) laboratory building (Building 09-1). It was a wood-frame building, with reinforced concrete. It was 60 ft wide x 25 ft long x 16 ft high, with an addition that was 25 ft wide x 15 ft long x 16 ft high. The building was used to study implosions of small spherical charges. Two firing chambers were associated with the building, one open and one enclosed. The open chamber is believed to have had a 3-lb limit for explosive test shots. Both chambers were roofed. The building was flashed (i.e., quick-burned at high temperature to eliminate HEs) in 1965, and the open-firing chamber was trucked to Mesita del Buey and buried. Suspect contaminants were HE, inorganic chemicals, organic chemicals, and radionuclides. The ER Project conducted an RFI at SWMU 09-001(d) in 1993 and 1994 to determine whether contamination was present in the media associated with the former facilities and, if present, whether it posed an unacceptable human health risk based on results of a screening assessment. The SWMU was sampled as part of a set of SWMUs associated with decommissioned Buildings 09-1, 09-2, 09-3, and 09-13; the set is referred to as the Old Anchor East set. Other SWMUs in this sampling set include 09-003(g), 09-003(h), and 09-003(i). The set was grouped because of past activities (HE research, development, and testing) and subsequent D&D of the buildings. Earthmoving activities from D&D of the facilities in the area may have distributed materials further across the surrounding landscape. In April 1994, 14 samples were taken from 13 locations in the Old Anchor East set: 13

		surface-soil samples and 1 field replicate. Samples were analyzed for inorganic chemicals, organic chemicals, and HE. Relative gross alpha and gross beta activity present in the samples, which were screened before shipment to the analytical laboratory, indicated no significant radionuclide contamination at the SWMU set; radionuclides were eliminated from further consideration. Each sample was subjected to an HE spot test. All HE spot tests were negative. Inorganic chemicals that were present at the SWMU set in concentrations above BVs were arsenic, silver, calcium, cadmium, mercury, lead, and zinc. Antimony was undetected in all samples but its reporting limit exceeds BVs; therefore, antimony also was identified for further evaluation. Arsenic was present in concentrations above its respective SAL. No organic chemicals were found in concentrations above BVs; therefore, organic chemicals were eliminated from further consideration. The RFI report recommended NFA at SWMU 09-001(d) because the SWMU was characterized in accordance with current applicable state or federal regulations, and available data indicated that contaminants posed no unacceptable risk under current and projected future land use.
09-002	In Progress	SWMU 09-002 is a decommissioned inactive burn pit that was used to dispose of film, photographs, and papers from high-speed photography of detonations at the Far Point firing site [consolidated SWMU 09-001(a)-99]. The burn pit consists of an open surface depression, approximately 10 ft x 13 ft x 3 ft deep. It is located on top of Pajarito Mesa in a lightly wooded, unused area about 400 ft north of the TA-09 processing area. The burn pit is a topographically closed basin. The bottom of the pit is stabilized with grass. Surface runoff flows to Pajarito Canyon through Arroyo LaDelfe. The burn pit was used from 1945 until 1956. The area of TA-09 in which SWMU 09-002 is located, Old Anchor East Site, was decommissioned in 1965. Suspect contaminants at the SMWU were inorganic chemicals. The ER Project conducted an RFI at SWMU 09-002 in 1994 to determine if a release of RCRA-regulated contaminants had occurred. Two surface-soil samples were collected from two locations in the bottom of the burn pit and submitted for laboratory analysis for antimony, cadmium, chromium, lead, and silver. The samples were field-screened for organic chemicals and HE. Organic chemicals were detected at less than 1 ppm, and the HE spot-test kit results were negative. Chromium and lead were detected in the samples, but were reported at concentrations below BVs. Antimony, cadmium, and silver were not detected. The RFI report recommended NFA at SWMU 09-002 because no release to the environment has occurred or is likely to occur in the future. NMED issued an RSI for the RFI report in April 1999, stating nonconcurrence with the RFI report recommendation because the burn pit location may not have been properly identified or sampled. NMED requested that LANL submit a SAP to further investigate the location and nature and extent of contamination at SWMU 09-002. In LANL's May 1999 response to the RSI, LANL proposed collecting more samples and submitting them for a full-suite analysis to address NMED’s concerns. LANL asserted that the burn pit location was identified correctly, based on aerial photographs, site visits, and interviews with former site workers, and invited NMED to visit the site. LANL has requested that NMED not require a SAP if NMED accepts LANL’s proposal.
09-003(a)-99	In Progress	Consolidated SWMU 09-003(a)-99 consists of three former swmus at the Old Anchor East Site: SWMUs 09-003(a), 09-003(b), and 09-003(e). At Old Anchor East Site, temporary and semipermanent buildings housed research and development activities on explosion systems and casting, characterization, formulation, pressing, and machining of explosives. Most of these buildings were constructed in the early 1940s and were used until the 1950s, when new TA-09 facilities were built. The former SWMUs in this consolidated unit served a heavily used HE processing and development laboratory (Building 09-14). Each structure was designed to remove contaminants by settling them out from that building's processing and development wastewater; the primary contaminants were uranium and HE. Building 09-14 was destroyed by burning in 1965. Suspect contaminants are radionuclides and HE. Former SWMU 09-003(a) is the location of a settling tank that was listed on engineering

		drawings as an acid-drain manhole (structure 09-83). The tank was abandoned in place and removed and disposed of at TA-54 in 1965. Former SWMU 09-003(b) is the location of a settling tank (structure 09-84), which was abandoned in place and removed and disposed of at TA-54 in 1965. Former SWMU 09-003(e) is the location of a basket pit (structure 09-62); it was located south of the covered walkway, near structures 09-83 and 09-84. The basket pit was abandoned in place and demolished and removed in 1965; it was disposed of at TA-54. Core barrel samples were collected at depth from this consolidated SWMU in 1995. Seven samples were collected from six locations at former SWMU 09-003(a), six samples were collected from six locations at former SWMU 09-003(b), and seven samples were collected from six locations at former SWMU 09-003(e). All collected samples were submitted to an analytical laboratory for analysis for HE, inorganic chemicals, organic chemicals, and one sample was submitted for tritium analysis. At the time of collection, all samples were field screened for HE and radioactivity and all samples had no detectable activity nor detectable HE. Analytical results for the samples collected indicate several inorganic detected above BVs with only arsenic exceeding SALs. RDX was the only HE detected in the samples at a maximum value of 1.3 ppm and tritium was not detected in the one sample submitted for tritium analysis. Three organic chemicals were detected but not in concentrations that exceeded SALs.
09-003(c)	Administratively Complete	Structure TA-9-85 was an electrical control manhole built in 1943. The SWMU Report misidentified this structure number as a sump (LANL 1990). The manhole was constructed of brick and served Building TA-9-14, a laboratory. The manhole was abandoned in place in September 1962. In 1965, the top was removed 24 in. below the surface and the structure was filled and covered with dirt. During a utility upgrade in 1985, this structure was found and removed. SWMU 9-003(c) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
09-003(d)	In Progress	SWMU 09-003(d) is the location of a settling tank (structure 09-88) that served former Building 09-1. Building 09-1 was a firing chamber used for small HE shots. The settling tank was removed and taken to TA-54 for disposal. The adjacent soil was sampled after the tank was removed and no contamination was found at the time of removal. In 1995, six samples were collected from five locations at depths ranging from 3.5- 8.5 ft. These samples were submitted to a fixed analytical laboratory for analysis of HE, inorganic, and organic chemicals. Results indicate HE present in concentrations exceeding SALs for three of the six samples collected. Four organic chemicals were detected but none exceeding SALs. Fourteen inorganic chemicals were detected, arsenic and mercury both exceeded SALs.
09-003(f)	Administratively Complete	SWMU 09-003(f) was a settling tank that served an environmental test chamber. The chamber was installed in 1950 to serve Building TA-9-51. The test chamber was removed when the building was modified later that year (1950). The test chamber contained ovens that cycled through ranges of temperatures in order to test sealed weapon components. The testing operation produced no hazardous wastes. SWMU 9-003(f) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
09-003(g)	In Progress	SWMU 09-003(g) consists of potentially contaminated soil associated with decommissioned sumps and pipes that served a dark room and boiler plant (Building 09-2) that was used until 1947. Building 09-2 was a wood-frame structure, 18 ft long x 24 ft wide x 9 ft high. The building was decommissioned in 1959; it was intentionally destroyed by fire in 1960, and the associated sumps and pipes that comprise SWMU 09-003(g) were removed in 1965. Soils at this SWMU may have been contaminated by releases from the firing site at SWMU 09-001(d), and from redistributing potentially contaminated soils after Building 09-2 was demolished and underground sumps and pipes were retrieved. Because this SWMU is located in an area that had been used for HE research, development, and testing, suspect contaminants were HE, inorganic chemicals, organic chemicals, and gross alpha and gross beta radiation. The ER Project conducted an RFI at this SWMU in 1993 and 1994. The SWMU was

		sampled as part of a set of SWMUs associated with decommissioned Buildings 09-1, 09-2, 09-3, and 09-13; the set is referred to as the Old Anchor East set. Other SWMUs in this sampling set include 09-001(d), 09-003(h), and 09-003(i). The set was grouped as a result of the past activities (HE research, development, and testing) and subsequent D&D of the buildings. The objective of the investigation was to determine whether contamination was present in the media associated with the former facilities and, if present, whether it posed an unacceptable human health risk based on results of a screening assessment. In April 1994, 14 samples were taken from 13 locations: 13 surface-soil samples and 1 field replicate. Samples were analyzed for inorganic chemicals, organic chemicals, and HE. Relative gross alpha and gross beta activity present in the samples, which were screened before they were shipped to the analytical laboratory, indicated no significant radionuclide contamination at the SWMU set; radionuclides were eliminated from further consideration. Inorganic chemicals above BVs were silver, calcium, cadmium, mercury, lead, and zinc. Antimony was undetected in all samples but its reporting limit exceeds its BV; therefore, antimony was identified for further evaluation. During the human health screening assessment, none of the inorganic chemicals were found to exceed its SAL. No organic chemicals were found in concentrations above BVs; therefore, organic chemicals were eliminated from further consideration. Each sample was subjected to an HE spot test. All HE spot tests were negative. The RFI report recommended NFA at SWMU 09-003(g) because the SWMU was characterized in accordance with applicable state or federal regulations, and available data indicate that the contaminants pose no unacceptable level of risk under current and projected future land use.
09-003(h)	In Progress	SWMU 09-003(h) consists of a decommissioned sump and associated pipes that served an HE casting facility (Building 09-3) from 1943 to 1957. The facility had two sections: one was 17 ft wide x 29 ft 6 in. long x 8 ft high, and the other was 12 ft wide x 12 ft long x 9 ft high. The former building had three reinforced-concrete walls and one wood-frame wall, plus a wood-frame addition that was 9 ft 5 in. wide x 9 ft 5 in. long x 8 ft 6 in. high. The building was surrounded on three sides and the top by an earth berm, and joined by wood-framed corridors. Building 09-3 contained a hydraulic press and was used as a magazine; as a solvent-storage area to process, press, and machine explosives; and as a chemical power plant. It also was used to store radioactively contaminated equipment. The building was abandoned in place in 1959, destroyed, and removed in 1965. All concrete floors, sump, drains, and walls were removed; all were contaminated. Hazardous materials used in the building included solvents, cyanogen, acid baths, plasterizer, depleted uranium, and organic chemicals. Because this SWMU is located in an area that had been used for HE research, development, and testing, potential contaminants were HE, inorganic chemicals, organic chemicals, and gross alpha and gross beta. This SWMU was sampled as part of a set of SWMUs associated with decommissioned Buildings 09-1, 09-2, 09-3 and 09-13; the set is referred to as the Old Anchor East set. Other SWMUs in this sampling set include 09-001(d), 09-003(g), and 09-003(i). The set was grouped as a result of the past activities (HE research, development, and testing) and subsequent D&D of the buildings. The objective of the investigation was to determine whether contamination was present in the media associated with the former facilities and, if present, whether it posed an unacceptable human health risk based on results of a screening assessment. In 1994, 14 samples were taken from 13 locations: 13 surface-soil samples and 1 field replicate. Samples were analyzed for inorganic chemicals, organic chemicals, and HE. Relative gross alpha and gross beta activity present in the samples, which were screened before they were shipped to the analytical laboratory, indicated no significant radionuclide contamination at the SWMU set; radionuclides were eliminated from further consideration. Inorganic chemicals above BVs were silver, calcium, cadmium, mercury, lead, and zinc. These chemicals were identified for further evaluation. In addition, antimony was undetected in all samples but its reporting limit exceeds BV; therefore, antimony was identified for further evaluation. During the human health screening assessment, none

		of the inorganic chemicals were found to exceed its SAL. No organic chemicals were found in concentrations above BVs; therefore, organic chemicals were eliminated from further consideration. Each sample was subjected to an HE spot test. All HE spot tests were negative. The RFI report recommended NFA at SWMU 09-003(h) because it was characterized in accordance with applicable state or federal regulations, and available data indicate that the contaminants pose no unacceptable level of risk under current and projected future land use.
09-003(i)	In Progress	SWMU 09-003(i) consists of potentially contaminated soil associated with a decommissioned sump and pipes that from 1945 to 1956 served a building called the machine shop and the charge preparation building (Building 09-13) . Building 09-13 was made of wood; it was 17 ft wide x 20 ft long x 9 ft high. Building 09-13 was used in HE research and development; the building and the sump and drains were considered contaminated with HE. The building was burned in 1965, and the associated sump and drains were removed, cleaned, and disposed of at TA-54. Because this SWMU is located in an area that had been used for HE research, development, and testing, potential contaminants were HE, inorganic chemicals, organic chemicals, and gross alpha and gross beta radiation. The ER Project conducted an RFI at this SWMU in 1993 and 1994. The SWMU was sampled as part of a set of SWMUs associated with decommissioned Buildings 09-1, 09-2, 09-3, and 09-13; the set is referred to as the Old Anchor East set. Other SWMUs in this sampling set include 09-001(d), 09-003(g), and 09-003(h). The set was grouped as a result of the past activities (HE research, development, and testing) and subsequent D&D of the buildings. The objective of the investigation was to determine whether contamination was present in the media associated with the former facilities and, if present, whether it posed an unacceptable human health risk based on results of a screening assessment. In 1994, 14 samples were taken from 13 locations: 13 surface-soil samples and 1 field replicate. Samples were analyzed for inorganic chemicals, organic chemicals, and HE. Relative gross alpha and gross beta activity present in the samples, which were screened before they were shipped to the analytical laboratory, indicated no significant radionuclide contamination at the SWMU set; radionuclides were eliminated from further consideration. Inorganic chemicals above BVs were silver, calcium, cadmium, mercury, lead, and zinc. Antimony was undetected in all samples but its reporting limit exceeds its BV; therefore, antimony was identified for further evaluation. During the human health screening assessment, none of the inorganic chemicals were found to exceed its SAL. No organic chemicals were found in concentrations above BVs; therefore, organic chemicals were eliminated from further consideration. Each sample was subjected to an HE spot test. All HE spot tests were negative; HE was eliminated from further consideration. The RFI report recommended NFA at SWMU 09-003(i) because the SWMU was characterized in accordance with applicable state or federal regulations, and available data indicate that the contaminants pose no unacceptable level of risk under current and projected future land use.
09-004(a)-99	In Progress	Consolidated SWMU 09-004(a)-99 consists of former SWMUs 09-004(a), 09-004(b), 09-004(c), 09-004(d), 09-004(e), 09-004(f), 09-004(h), 09-004(i), 09-004(j), 09-004(k), 09-004(l), 09-004(m), and 09-004(n). All former SWMUs in this consolidated unit are settling tanks. The tanks, all rectangular-shaped, were installed and completed in 1952, and are made of reinforced concrete. Settling tanks are externally submerged basins lined with a corrosion-resistant material and are open to the outside. They generally are located at the end of industrial-waste plumbing systems where the systems exit the buildings. Large solids are collected before they enter the waste system; small solids are filtered out but fine particles may enter the settling tanks. The tanks are cleaned and debris is removed using specially equipped trucks. The tanks are inspected periodically to ensure their integrity. The settling tanks in this consolidated SWMU historically discharged to former NPDES-permitted Outfalls 05A066 and 05A067 (deleted from LANL’s NPDES permit effective March 10, 1998). Former SWMU 09-004(a) (structure 09-84) and former SWMU 09-004(b) (structure 09-

		185) receive industrial waste from laboratories on the south and north sides, respectively, of a laboratory and office building (Building 09-21). The tank linings, which were aluminum, were replaced in 1991 because they were not chemically resistant. Activities in the building involve laboratory-scale HE synthesis and testing. No signs of leaks or contamination of the concrete or soil surrounding the settling tanks were identified. Former SWMU 09-004(c) (structure 09-186) receives industrial waste from the laboratory on the south side of a processing laboratory (Building 09-37). Activities in Building 09-37 include HE-synthesis scale-up and processing, which uses HE processing and development equipment. Former SWMU 09-004(d) (structure 09-187) receives industrial waste from the laboratory on the south side of a processing laboratory (Building 09-38). Activities in Building 09-38 include HE casting and pressing; small-scale mixers and extruders also are located in the building. Former SWMU 09-004(e) (structure 09-188) receives industrial waste from the laboratory on the south side of a processing laboratory (Building 09-45). The tank lining, which was aluminum, was replaced in 1991 because it was not chemically resistant. Activities in Building 09-45 include HE-synthesis scale-up and processing and development. In addition, the building contains various-sized reactors, mixers, and extruders. Explosives are ball-milled and sieved in Building 09-45. Former SWMU 09-004(f) (structure 09-189) receives industrial waste from a processing laboratory (Building 09-46). The building was used as a storage facility for radioactive materials and waste until 1991. Historical activities in Building 09-46 included HE-synthesis scale-up and processing, although the building was not used extensively. Former SWMU 09-004(h) (structure 09-191) receives industrial waste from a laboratory building (Building 09-32). Activities in Building 09-32 include mass spectroscopy, tritium analysis, and HE analytical work. Also, some pressing, packaging, and short-term storage occur in the building. Former SWMU 09-004(i) (structure 09-192) receives industrial waste from a laboratory building (Building 09-33). Activities in Building 09-33 include compressed gas reactions using cyanogens, fluorine, chlorine, and hydrogen cyanide. The building has been decontaminated and currently is inactive. Former SWMU 09-004(j) (structure 09-193) receives industrial waste from a processing laboratory (Building 09-34). Activities at Building 09-34 have included HE pressing, mixing, and sieving. Small-scale propellant grain preparation also was conducted in the building. Most activity in the building is welding and opening containers with weapons components and cutting explosive crystals. Former SWMU 09-004(k) (structure 09-194) receives industrial waste from a processing laboratory (Building 09-35), where large-scale HE pressing occurs. Except for kimwipes contaminated with solvent, oil, and/or HE from equipment cleanup, no waste is generated during HE processing. Former SWMU 09-004(l) (structure 09-195) is a sump installed outside an ovens building (Building 09-40), for potential HE operations inside the building. Activities in the building include temperature compatibility studies. The building contains large environmental test chambers and ovens. No liquid industrial wastes are generated in the building. Former SWMU 09-004(m) (structure 09-196) receives industrial waste from a processing laboratory (Building 09-42). The building contains ovens for nuclear compatibility aging studies. No liquid or solid industrial wastes are generated in those

		operations. Former SWMU 09-004(n) (structure 09-197) historically received industrial waste from a processing laboratory (Building 09-43). Building 09-43 has presses for HE operations (which generate no liquid industrial waste), but the building has not been used for several years and was inactive when the OU 1157 work plan was written. Kimwipes contaminated with solvents, oil, and/or HE during equipment cleanup were collected and disposed of at TA-16. The OU 1157 work plan recommended deferring the settling tanks for characterization until they are decommissioned.
09-004(g)	In Progress	SWMU 09-004(g) is a settling tank (structure 09-190) that serves a receiving and shipping building (Building 09-50). Activities in Building 09-50 included shipping and receiving and short-term HE storage. Small-scale laser experiments historically were conducted in the building. Building 09-50 was being used for storage when the OU 1157 work plan was written. The OU 1157 work plan recommended deferring characterization of structure 09-190 until Building 09-50 is decommissioned.
09-004(o)	In Progress	SWMU 09-004(o) is an active settling tank (structure 09-198) that receives industrial waste from an HE machining building (Building 09-48). The rectangular, reinforced-concrete tank was installed and completed in 1952. Settling tanks are externally submerged basins lined with a corrosion-resistant material and are open to the outside. They generally are located at the end of industrial waste plumbing systems where the systems exit the buildings. Industrial waste from the buildings that the tanks serve travels through a sump and into the tanks, which trap HE residues. Large solids are collected before they enter the waste system; small solids are filtered out but fine particles may enter the tanks. The tanks are cleaned and debris is removed using specially equipped trucks. The settling tanks are inspected periodically to ensure their integrity. Structure 09-198 historically discharged to former NPDES-permitted Outfall 05A066 or 05A067 (deleted from LANL's NPDES permit effective March 10, 1998). The OU 1157 work plan recommended deferring characterization of structure 09-198 until Building 09-48 is decommissioned.
09-005(b)	Administratively Complete	Structure TA-9-105 is an inactive, 1500-gal. reinforced-concrete sanitary septic tank that received sanitary liquid waste from Buildings TA-9-21, TA-9-28, and TA-9-29. The tank was constructed in August 1952 and abandoned in place in December 1988. There are no documented records of a release of hazardous constituents to this tank. Laboratories in this building have dedicated industrial waste drains and/or sinks for the collection of any hazardous materials, which are not connected to this septic system. SWMU 9-005(b) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
09-005(c)	Administratively Complete	SWMU 09-005(c) is an inactive 750-gal. septic tank. It was installed in 1952 and abandoned in place in 1988. This septic tank received sanitary wastes from Buildings TA-9-21, TA-9-33, TA-9-34, TA-9-37, and TA-9-38. These buildings are used for high explosives processing. Laboratories in these buildings have dedicated industrial waste drains and/or sinks for the collection of any hazardous materials, which are not connected to this septic system. SWMU 09-005(c) is appropriate for NFA because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
09-005(e)	Administratively Complete	SWMU 09-005(e) is a septic tank that was used from 1952 to 1992. The septic tank was abandoned in place in 1992. Engineering drawings show that this tank received only sanitary waste from Buildings TA-9-41, TA-9-42, TA-9-43, TA-9-45, and TA-9-46. Laboratories in this building have dedicated industrial waste drains and/or sinks for the collection of any hazardous materials, which are not connected to this septic system. SWMU 09-005(e) is appropriate for NFA because is has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
09-005(f)	Administratively Complete	SWMU 09-005(f) is a reinforced concrete 750-gal. sanitary septic tank. The tank was installed in 1952 and was taken out of service in 1992 and abandoned in place when

		the site-wide sanitary wastewater systems consolidation line was installed. Engineering drawings also show that this tank was connected only to sanitary waste lines from Building TA-9-4. Laboratories in this building have dedicated industrial waste drains and/or sinks for the collection of any hazardous materials, which are not connected to this septic system. SWMU 9-005(f) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
09-005(g)	In Progress	SWMU 09-005(g) is an active, 750-gal., reinforced-concrete sanitary septic tank (structure 09-109) that serves a receiving and shipping building (Building 09-50). The tank was installed in 1952. It is estimated to be 5 ft wide x 8 ft long x 4 ft deep. Outflow from the tank, which receives only sanitary waste, formerly combined with waste from the industrial sewer from Building 09-50 at a manhole (structure 09-145). This site was recommended and approved for no further action, by the EPA, in the OU 1157 RFI work plan. In the March 1995 permit modification request, LANL recommended NFA at SWMU 09-005(g) because there is no indication that hazardous or radioactive wastes ever were generated, treated, or disposed of in the septic tank.
09-005(h)	Administratively Complete	SWMU 09-005(h) is a prefabricated steel septic tank. The tank capacity was 320-gal.and it was installed in 1951. The tank was taken out of service in 1992 and abandoned in place when the site-wide sanitary wastewater systems consolidation line was installed. This tank received only sanitary waste from Building TA-9-51. Building TA-9-51 was a test chamber that contained ovens that cycled through a range of temperatures in order to test sealed weapons components. Operations in this building have never generated hazardous waste. The building is currently used for storage of nonhazardous materials. Engineering drawings show that this tank was connected only to sanitary waste lines from Building TA-9-51. SWMU 9-005(h) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
09-006	In Progress	SWMU 09-006 is potentially contaminated soil at the site of a former sanitary septic tank (structure 09-203) that served a boiler plant and dark room facility (Building 09-2). Structure 09-203 was built in 1943 and used from 1943 to 1950. It was made of reinforced concrete, measured 4 ft wide x 9 ft long x 4 ft deep, and had a wood cover. A 1959 inspection revealed that former structure 09-203 was contaminated with HE and radionuclides. It was removed in 1965 and disposed of at TA-54. RFI sampling at this site was conducted in April, 1995. Two samples were collected from two locations at depths of 8.5 and 6.5 ft. Samples were submitted to a fixed analytical laboratory for analysis of HE, inorganic and organic chemicals, and radionuclides. A number of inorganic chemicals, including lead, chromium, and silver were detected at concentrations exceeding BVs. Low concentrations of four organic chemicals were detected. There were no HE or radionuclides detected in the samples collected. Only arsenic was present in concentrations exceeding SALs.
09-007	Administratively Complete	SWMU 09-007 is an inactive basket pit that served Building TA-9-51. The pit is constructed of reinforced concrete and has a hinged steel lid. It was built in 1952 as a replacement to a settling tank that was removed to accommodate a building addition. Building TA-9-51 was a test chamber that contained ovens that cycled through a range of temperatures in order to test sealed weapons components. The testing operation produced no hazardous wastes. SWMU 9-007 is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
09-008(a)	Administratively Complete	
09-008(b)-99	In Progress	Consolidated SWMU 09-008(b)-99 consists of former SWMUs 09-005(a), 09-005(d), and 09-008(b). Former SWMU 9-005(a) is a decommissioned septic tank (structure 09-81) built in 1950 that served Buildings 08-20, 08-21, 08-22, 08-23, and the isotope building (Building 08-24) until a new system was installed in 1970. The building was used to radiograph nuclear fuel elements from 1950 to 1971, and since then has had various other uses. It

		currently is used to store nonhazardous materials. Structure 09-81 was the receiving septic system for wastewater from Building 08-24 when a strontium-90 spill occurred in 1954 [see SWMU 08-004(d)]. Structure 09-81 was abandoned in place in 1970 and later removed during a sewage-system upgrade in 1985. Although the tank was decommissioned, the surrounding soils may have been contaminated from the strontium-90 spill. Former SWMU 09-005(d) is a 4000-gal. septic tank (structure 09-211) built in 1970 as part of the sanitary-system upgrade. Structure 09-211 is concrete and measures 4 ft wide x 30 ft long x 6 ft deep. It is divided into four compartments; each is 3.5 ft in diameter x 4 ft long with a steel-plate cover. Structure 09-211 is located northeast of a manhole (structure AE-82). Before it was removed from service in 1988, both the contents of the tank and the three access ports for structure 09-211 were removed. Structure 09-211 served the sewer line from Building 08-24, where the strontium-90 spill is thought to have occurred in 1954. The outlet from structure 09-211 discharged to the adjacent sewage oxidation pond, former SWMU 09-008(b). Former SWMU 09-008(b) is an oxidation pond that received sanitary waste from structure 09-211. The pond is 65 ft long x 15 ft wide x 6 ft deep and is located 15 ft east of structure 09-211, about 250 ft east of Anchor Ranch Road. The oxidation pond was used to treat sanitary waste from Old Anchor Site East and West. The ER Project conducted an RFI at former SWMUs 09-005(a), 09-005(d), and 09-008(b) in 1995 to determine if strontium-90 had been transported to the SWMU through the sewage system that was in service at the time. Four samples were taken from four locations at former SWMU 09-005(a). Samples were field-screened for organic chemicals, HE, and radionuclides. Organic chemicals were detected at less than 1 ppm, the HE spot tests were negative, and radioactivity readings were within instrument backgrounds. Two of the four samples were submitted for laboratory analysis of organic chemicals, inorganic chemicals, and radionuclides. Silver was detected in concentrations above BVs and mercury was detected in one sample at less than the 0.11 mg/kg reporting limit; neither was found at levels greater than SAL. Strontium-90 levels did not exceed FV. Two organic chemicals, toluene and isopropylbenzene, were determined to be present at concentrations greater than their EQLs but below SALs. No HE was detected. The RFI report recommended NFA at former SWMU 09-005(a) because the site was characterized in accordance with current applicable state and federal regulations and available data indicate that potential contaminants either are not present or are present in concentrations that pose no unacceptable level of risk under current and projected land use. The objective of the RFI at former SWMU 09-005(d) was to determine if strontium-90 was present in waste material in the abandoned septic tank. Two samples of the tank contents (sludge) were collected. Two additional samples were collected from the tank sides. Samples were field-screened for radioactivity, organic chemicals, and HE; radiation levels were within insturment background, organic chemicals were less than 1 ppm, and HE spot tests were negative. Samples were submitted for laboratory analysis for strontium-90. Strontium-90 was detected in one sample at a level above FVs for soil, but did not exceed SAL. The RFI report recommended NFA at former SWMU 09-005(d) because the site was characterized in accordance with current applicable state and federal regulations and available data indicated that potential contaminants either are not present or are present in concentrations that pose no unacceptable level of risk under current and projected land use. The objective of the RFI sampling at former SWMU 09-008(b) was to focus on worst-case sampling of the oxidation pond and associated receiving drainage to determine if strontium-90 was present. Two surface sediment samples and one field replicate were

		collected from the pond bottom. A fourth surface-soil sample was collected from the pond's receiving drainage outfall. Samples were field-screened for radioactivity, organic chemicals, and HE. Field beta/gamma measurements were slightly elevated (instrument background ranges from 150 cpm to 250 cpm; sample screening results were 240 cpm to 293 cpm). Organic chemicals were less than 1 ppm, and HE spot tests were negative. Samples were submitted for laboratory analysis for strontium-90. Strontium-90 was detected above FV, but did not exceed SAL. The RFI report recommended NFA at former SWMU 09-008(b) because the site was characterized in accordance with current applicable state and federal regulations and available data indicate that potential contaminants either are not present or are present in concentrations that pose no unacceptable level of risk under current and projected land use.
09-009	In Progress	SWMU 09-009 consists of a treatment lagoon (structure 09-218) and sand filters that were built to treat sanitary waste from Buildings 09-20, 09-21, 09-28, 09-29, 09-32, 09-33, 09-34, 09-35, 09-37, and 09-38. The lagoon is 60 ft long x 32 ft wide x 7 ft deep; the sides are concrete and the bottom is bentonite. The lagoon discharged to two sand filters that cover a total (combined) area that is 60 ft long x 33 ft wide. The sand filters have a flexible membrane liner and are surrounded by a concrete lip. After flowing through the sand filters, effluent discharged to NPDES-permitted Outfall 55502S (deleted from LANL's NPDES permit between 1990 and 1994). The lagoon and sand filters were replaced by a sitewide sanitary wastewater system. The lagoon may have been contaminated with strontium-90 after it was connected to the sanitary wastewater system from TA-08 in 1986. The ER Project conducted an RFI at SWMU 09-009 in April 1994. Because the only potential contaminant during sampling was strontium-90, the field investigation assessed potential contamination as if it were the result of a past release of strontium-90. The objective of the investigation was to determine whether contamination was present in the lagoon and, if present, whether it posed an unacceptable human health risk based on results of a screening assessment. Two samples were taken from the lagoon. Strontium-90 was present in the samples at levels below FV. Normally, negative FV results would eliminate a chemical from further consideration; however, due to the atypical nature of the sample (septic tank sludge), strontium-90 was carried through the screening assessment. Sample concentrations were screened against SALs. Strontium-90 levels were below the threshold screening level; therefore, strontium-90 was eliminated from further consideration. The RFI report recommended NFA at SWMU 09-009 because it was characterized in accordance with current applicable state or federal regulations and available data indicate that contaminants pose no unacceptable level of risk under current and projected future land use.
09-010(a)	In Progress	AOC 09-010(a) was a three-sided corrugated steel waste can (structure 09-207) that was located in the northwest corner of an HE-machining building (Building 09-48). The structure was 2 ft, 6 in. wide x 11 ft, 6 in. long x 6 ft, 6 in. high. It was constructed of four steel pipe posts that were anchored in concrete, with a steel-grid floor suspended above the ground. There was no secondary containment below the floor of the structure. It was built in 1961 and used to store HE-contaminated solid waste from Building 09-48. Chips and chunks of HE waste from machining operations and solvent-contaminated Kimwipes used to clean machinery and equipment were collected in heavy plastic bags and kept in metal containers until they were transferred to the open shelter. The waste was picked up and disposed of either by Group WX-3, Group M-1, or Group EM-7. The ER Project conducted a VCA at AOC 09-010(a) in 1995 to remove structure 09-207. Confirmatory sampling and soil removal were not required because earlier sampling at the AOC revealed that the suspect contaminants were below SALs. The storage shelter and concrete were field-screened for gross alpha/beta/gamma radioactivity and organic chemicals and then removed. The debris was field-tested for HE. Field-screening did not indicate the presence of radioactivity above instrument background or organic chemicals; no HE was detected. When the steel pipes anchored in concrete were removed, they left open holes in the ground. The holes were filled with

		gravel. The VCA completion report requested DOE concurrence to approve NFA for AOC 09-010(a).
09-010(b)	In Progress	AOC 09-010(b) is the former site of a waste-can shelter (structure 09-206) located in the southwest corner of a processing laboratory (Building 09-45). The structure was 2 ft, 5 in. wide x 11 ft, 5 in. long x 6 ft, 5 in. high. It was constructed of four steel pipe posts that were anchored in concrete, with a steel-grid floor suspended above the ground and a secondary containment pan below the floor of the structure. It was built in 1961 and used to store organic solvents in 55-gal. containers and 5-gal. cans. The ER Project conducted a VCA to remove the structure because chemicals could be stored more effectively elsewhere at this TA. The storage shelter, anchored in concrete, was removed and disposed of at the Los Alamos County landfill. The shelter was field-screened for gross alpha/beta/gamma radioactivity and organic chemicals and field-tested for HE. Field-screening did not indicate the presence of organic chemicals above BVs or radioactivity above instrument background; no HE was detected. When the steel pipes were removed, they left open holes in the ground; the holes were filled with gravel. No confirmatory sampling or soil removal was required because previous sampling activities at the site revealed that the potential contaminants were below SAL. The VCA completion report requested DOE concurrence to approve NFA for AOC 09-010(b).
09-010(c)	Administratively Complete	
09-011(a)	Administratively Complete	
09-011(b)	Administratively Complete	
09-011(c)	In Progress	AOC 09-011(c) is the location of a former solvent storage rack and a storage and washdown area for HE-contaminated equipment. The rack was a free-standing, three-sided corrugated steel shelter that was supported on steel posts and anchored in cement. It probably was installed around 1949, when similar structures were built at TA-09. The storage rack has been removed, but was located at the south entrance to a processing laboratory (Building 09-38). Building 09-38 is used to process and develop HE. The solvent storage rack once housed dimethylsulfoxide and isobutyl acetate. The OU 1157 work plan proposed Phase I screening to determine the presence or absence of contaminants.
09-012	In Progress	AOC 09-012 is a former waste pit in the decommissioned area of Old Anchor East. Its location is not known precisely, although it may have been in an area where 15 circular, nonvegetated sites were found. The circles are each about 6 ft in diameter and are spaced about 5 ft apart. They begin about 100 yd north of Building 09-29 and continue north in a straight line, ending in the TA-09 decommissioned area. In 1994, 18 surface soil samples were collected from 8 locations within the 15 circular, non-vegetated sites. Becasuse little was known of the nature of contamination, a broad suite of analyses were performed; inorganics, gros radioactivity, and organic chemicals. In 1995, two subsuface samples were collected from two locations and submitted to an analytical laboratory for the same broad suite as the samples collected in 1994. Results from all samples collected at this site indicate that inorganic chemicals were detected above BVs, with arsenic and total cyanide present in concentrations exceeding SALs. Organic chemicals were present in the samples collected in very low concentrations. Pesticides were also present in the samples in low concentrations. There were no PCBs, HE, or SVOCs detected in any of the samples collected.
09-013	In Progress	SWMU 09-013 is MDA M, which consists of two former disposal areas: a 3.2-acre circular surface MDA and a satellite disposal area located about 750 ft northwest of the main disposal area. Both areas are located on a mesa between two branches of Pajarito Canyon. The main disposal area was surrounded by an earth berm that was

		eroded through by surface-water runoff. MDA M and the satellite area are located within the secure area of TA-09, southeast of guard station 502 and northeast of Old Anchor East Site, TA-08. MDA M was used as a surface dump for construction debris and other solid wastes. Metal and debris generated during the removal of the Old Anchor East and West sites and construction of the present TA-08 and TA-09 facilities (1945 to 1965) were flash-burned to remove any HEs, and deposited over the surface of the site. Nonhazardous wastes from the construction of other sites also were disposed of at MDA M from 1960 through 1965. MDA M has been inactive since 1965. A general radiation survey conducted in 1992 showed no areas above background levels. The ER Project conducted an RFI at MDA M in 1995 and remediated the site in 1996 in an expedited cleanup; all hazardous and nonhazardous wastes were removed. A report for the 1995 RFI was not written, but preliminary results from the RFI Phase I sampling were provided in the expedited cleanup plan. RFI sampling results indicated the presence of heavy metals, organic chemicals, and radionuclides above SALs. Additionally, the presence of asbestos in the disposal area was confirmed visually. The area was divided into a grid of 167 cells for the RFI. Each cell was field-screened for radionuclide contamination, organic chemicals, and HE. Eighteen soil samples were collected from the main disposal area and one sample was collected from the satellite area. In addition, 14 random soil samples were collected from soils underlying the surface debris within the main disposal area, and one sample was collected from the satellite area. These 14 additional samples were collected to supplement the original samples and were analyzed for the same contaminants. Four samples were collected from residual liquid in reagent bottles disposed of at the main disposal site. Three sediment samples were collected from potentially contaminated surface sediments that appeared to have eroded from the main disposal site and washed downgradient by surface runoff. The samples were collected from three locations in the runoff channels: two from the westernmost channel and one from the easternmost channel. Three single-stage surface-water runoff samples also were collected and submitted for laboratory analysis for organic chemicals, inorganic chemicals, HE, organochlorine pesticides, and PCBs. A gross alpha/beta screening also was performed. Finally, three samples were collected from springs in the canyons south and east of MDA M. These samples were analyzed for organic chemicals, inorganic chemicals, organochlorine pesticides, PCBs, major ions, TDSs, pH, alkalinity, conductivity, dissolved oxygen, hardness, fecal coliform, temperature, and HE. Gross alpha/beta/gamma screens and tritium analyses also were performed. Organic chemicals with concentrations above SALs (or BVs where SALs were not available) were detected in six samples: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysenedibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and phenanthrene. Inorganic chemicals were detected at levels above SAL (or BVs where SALs were not available) in 31 samples. Detected compounds were arsenic, calcium, chromium, copper, iron, lead, and mercury. Uranium-234, uranium-238, and dieldrin, an organochlorine pesticide, also were detected above SALs. PCB concentrations were above SALs, with Aroclor-1254. No HE was detected in the soil and sediment samples. Only inorganic chemicals were detected at levels above SALs in the samples collected from residual liquids in containers. All four samples yielded chemical concentrations above SAL. Detected chemicals were: arsenic, barium, beryllium, cadmium, chromium, lead, manganese, mercury, nickel, and selenium. No organic chemicals, organochlorine pesticides, or PCBs were detected in the sample analysis. No compounds in concentrations above SALs were detected in the downgradient sediment analysis. In surface runoff samples, inorganic chemicals detected at levels above SALs were

		antimony, barium, beryllium, cadmium, chromium, lead, manganese, nickel, and vanadium. Methylene chloride was detected above SAL. No organochlorine pesticides, PCBs, or HE were detected in the surface water runoff samples. In the spring and creek samples, HE was detected above SAL. Low levels of radioactivity were detected by concentrations did not exceed BVs/FVs. No other organic chemicals, organochlorine pesticides, or PCBs were detected in the spring and creek samples. Based on review of the preliminary data, the expedited cleanup plan stated that soil samples indicated that surface soils throughout the site had elevated levels of inorganic chemicals. The elevated levels of organic chemicals, PCBs, and uranium were limited to a small number of samples. Residual-liquid samples indicated only inorganic chemicals, which were determined compatible with one another for disposal. Downgradient samples indicated no contaminant levels above SALs in the soils downgradient from the main disposal site. Surface-water runoff samples indicated that inorganic chemicals were being transported from the site through runoff. Spring and creek samples indicated that MDA M might not be the cause of the HE contamination in the water because HE was detected upgradient and downgradient from the disposal site. LANL proposed conducting an expedited cleanup at MDA M because of the potential for erosion and off-site transport of contaminants. The ER Project conducted an expedited cleanup at MDA M in 1995 and 1996 to remove and dispose of surface debris and contaminated soil. Waste was characterized on the site. Nonhazardous wastes were disposed of at the Los Alamos County landfill. Radiological and hazardous wastes were containerized for disposal. After the debris was removed, the site was regridded for a verification survey. A total of 26 samples were collected: 2 from each of 13 grids. Samples were analyzed for organic and inorganic chemicals, radionuclides, PCBs, and asbestos. Results showed that all contaminants either were not detected or were below recommended cleanup levels. The site access road was regraded and revegetated. The main disposal area was scarified, graded, and tiered to prevent erosion, and then seeded to control soil movement and erosion. The 1996 expedited cleanup report recommended NFA at SWMU 09-013.
09-014	Pending	AOC 09-014 is a camera mount (structure 09-176) associated with the TA-23 (Nu Site) firing site. TA-23 is a small decommissioned area that lies within the boundaries of TA-09. The camera mount is a roofed 15-sq-ft x 8-ft-high structure with an earth barricade on three sides. The firing area is north of the road that runs through TA-09, between Buildings 09-43 and 09-48. It was associated with two irregularly shaped firing pits in a concrete apron that was 3 ft 6 in. wide x 12 ft long x 12 ft thick. The site was used to test lens charges of up to 135 lb of HE. The camera mount was removed in 1952. Suspect contaminants are HE, depleted uranium, lead, mercury, and beryllium. In 1994, 10 surface soil samples from 10 locations were collected and submitted for inorganic and organic chemical, and HE analysis. No SVOCs or HE was detected in any of the samples collected. Barium, beryllium, chromium, lead, and nitrates were detected in all samples collected. Lead was present at concentrations exceeding SALs in 9 of the 10 samples collected.
09-015	Administratively Complete	
09-016	Administratively Complete	
10-001(a)-99	In Progress	Consolidated SWMU 10-001(a)-99 consists of former SWMUs 10-001(a), 10-001(b), 10-001(c), 10-001(d), 10-001(e), 10-005, and 10-008. These units are inactive firing sites [former SWMUs 10-001(a), 10-001(b), 10-001(c), 10-001(d), and a satellite firing site, former SWMU 10-008)] and an open surface disposal pit (former SWMU 10-005) used to contain shot debris that was swept from the firing sites and adjacent areas. Former SWMUs in this consolidated unit were used from 1943 to 1961 to conduct experiments using HE in conjunction with nuclear weapons research. Due to the

		proximity and overlapping dispersion areas of the firing sites and use of the disposal pit, source terms cannot be separated by former SWMUs. Former SWMU 10-001(e) was believed to have been an area adjacent to the firing sites that was used for sand-pile detonation tests; however, this former SWMU is not documented in any original site maps and contained no underground structures. Any potential residual surface contamination from this former SWMU would be addressed during sampling activities associated with the firing site SWMUs included in this consolidated SWMU. Each primary firing site had a shot pad, a battery building, and a fire control building. The primary firing sites were near Bayo Canyon and were rotated for use. After a shot, residual material reportedly was moved to a disposal pit (former SWMU 10-005) near the firing sites. Former SWMU 10-005 was used in the 1940s and 1950s. It was located about 62 ft west of the northwest firing point. Pit dimensions are unknown as are the quantities and types of materials that were placed into it. In 1957, former SWMU 10-005 was excavated, the wastes were burned, and the ash was taken to MDA C at TA-50. D&D activities at TA-10 began in 1960; explosives testing ceased in 1961. Sitewide decommissioning of the firing sites, radiochemistry laboratory, and associated structures was completed in 1963. TA-10 was released to Los Alamos County in 1967. Parts of Bayo Canyon are open to the public for recreational use. Suspect contaminants at this SWMU were HE, lead, beryllium, barium, uranium, and strontium-90. SVOCs may have been dispersed by the explosives testing. Former SWMU 10-008 was located about 1400 ft northwest of the primary firing sites. It was identified during 1994 IA activities to address shrapnel in Bayo Canyon. During the IA, shrapnel was found embedded in the northwestern sides of trees in the area, opposite the known firing sites. The presence of the shrapnel suggested the existence of an additional firing site. Archival research indicates that former SWMU 10-008 was used for nonradioactive shots during the 1940s. The ER Project conducted two RFIs at units included in this consolidated SWMU: one in June and the other in October-November 1994. An RFI was conducted in June 1994 at former SWMUs 10-001(a), 10-001(b), 10-001(c), and 10-001(d) to determine if residual hazardous constituents existed in surface deposits near the firing pads and to confirm that no human health or ecological risks were associated with the radiological constituents found in previous investigations. Field activities included collecting surface soil and stream sediment samples for analysis. The Bayo Canyon drainage was sampled along its length in the areas suspected to be influenced by testing operations; 145 samples were collected from 93 locations. Samples were analyzed for inorganic and organic chemicals, HE, strontium-90, uranium, and gamma activity. Copper, mercury, nickel, thallium, zinc, strontium-90, and uranium were detected at concentrations above BVs. Detected organic chemicals include amino-2,6-dinitrotoluene(4-), dinitrotoluene(2,6-), HMX, nitrobenzene, nitrotoluene(m-), nitrotoluene(o-), and nitrotoluene(p-). Strontium-90 and thallium concentrations exceeded SALs. Amino-2,6-dinitrotoluene(4-) has no SAL. Its toxic mechanisms are similar to 2,4,6-trinitrotoluene, which was used as a proxy SAL for amino-2,6-dintrotoluene(4-). Calculations showed that the concentrations of amino-2,6-dinitrotoluene(4-) eliminated it as a potential contaminant. From October to November 1994, the ER Project conducted a subsurface investigation at former SWMU 10-005. Suspect contaminants were strontium-90, total uranium, lead, beryllium, barium, inorganic chemicals, and HE. The investigation included a geodetic survey, a radiological survey, a geophysical survey, drilling, and subsurface sampling; 20 samples were collected from 5 locations. Samples were analyzed for inorganic and organic chemicals, HE, radionuclides, and uranium. Barium was detected at concentrations that exceeded BVs, but concentrations were not statistically elevated compared to the LANL-wide soil data.

		Although not among the former SWMUs specifically addressed by the RFIs, samples collected during the RFIs were used to evaluate SWMU 10-008. Results of the 1994 RFIs indicate that no suspect contaminants in this consolidated SWMU are present at concentrations that present a human health risk. The RFIs recommended NFA at former SWMUs 10-001(a), 10-001(b), 10-001(c), 10-001(d), 10-001(e), and 10-005. A separate RFI report addressing former SWMU 10-008 also recommended NFA for former SWMU 10-008.
10-001(e)	Administratively Complete	
10-002(a)-99	In Progress	Consolidated SWMU 10-002(a)-99 consists of former SWMUs 10-002(a), 10-002(b), 10-003 (a-o), 10-004(b), and 10-007. These SWMUs are associated with the former liquid disposal complex serving the radiochemistry laboratory at TA-10. The complex discharged to leach fields and pits. The entire complex underwent D&D in 1963. All aboveground and belowground structures were removed and were taken either to TA-50, MDA C or to TA-54, Area G. The remaining materials were placed in a pit at TA-10 (former SWMU 10-007) that remains in place. Former SWMU 10-002(a) is a former solid waste disposal pit for the former radiochemistry laboratory. It was 8-ft-long x 5-ft-wide x 12-ft-deep. Spent chemicals, laboratory equipment, and trash like gloves, rags, and acid bottles were disposed of in the pit, which was used from 1945 to 1950. After it was no longer used, it was covered with soil until cleanup activities began in 1963. The amount of buried contaminants is unknown; however, suspect contaminants were strontium-90, total uranium, barium, cadmium, and inorganic and organic chemicals. All wastes were removed and the pit was excavated to a depth of 15 ft and backfilled with clean soil during the 1963 cleanup activities. Former SWMU 10-002(b) was a waste disposal pit used to dispose of spent chemicals, laboratory equipment, and trash like gloves, rags, and acid bottles. In addition, the pit was used for disposing of residues from the lanthanum-140 extraction process performed in the radiochemistry laboratory. The pit was used between 1945 and 1950. After it was no longer used, it was covered with soil until cleanup activities began in 1963. The amount of buried contaminants is unknown; however, suspect contaminants were strontium-90, total uranium, barium, cadmium, platinum, benzene, carbon tetrachloride, unspecified acids, and unspecified organic and inorganic chemicals. Former SWMU 10-002(b) was decontaminated and decommissioned in 1963 and wastes were taken to TA-54, Area G, for disposal. Former SWMUs 10-003(a-o) and 10-007 were in the Central Area at TA-10. The Central Area includes the former radiochemistry laboratory liquid waste disposal complex [former SWMU 10-003 (a-o)] and the building debris landfill (former SWMU 10-007). The landfill was created during the 1963 decontamination and decommissioning of TA-10. The radiochemistry laboratory was used to separate, precipitate, and encapsulate lanthanum-140 into sources. The liquid disposal complex consisted of liquid disposal pits, industrial waste manholes and septic tanks, industrial waste lines, and a leach field that received the liquid radioactive and chemical wastes generated by radiochemistry laboratory operations. Former SWMU 10-007 is a landfill located near the intermittent stream in the drainage channel below TA-10. Items in the landfill include concrete from two firing site detonation control buildings and soil from the vicinity of the inspection building, one of the battery buildings, and the control building (Building 10-13). The landfill remains in place. Former SWMU 10-004(b) is a former reinforced-concrete sanitary septic tank that served the radiochemistry laboratory from 1944 to 1963. The tank was 4 ft x 10 ft x 4 ft deep, with a 540-gal. capacity. The tank handled sanitary waste but was suspected also to have received liquid wastes from the radiochemistry laboratory. Overflow from the tank drained through a 4-in., open-joint, VCP drainpipe to the stream channel. The tank was removed during D&D activities in 1963 and disposed of at TA-54, Area G. Suspect contaminants at this SWMU were strontium-90, total uranium, barium,

		cadmium, lead, beryllium, and inorganic and organic chemicals. The ER Project conducted an RFI of possible subsurface contamination at these SWMUs from May to November 1994. Using geodetic surveys, radiological surveys, geophysical surveys, drilling, and subsurface sampling, the SWMUs in this consolidated unit were characterized. In all, 269 samples were collected from 67 locations. Sample analysis results indicated that radioactive contamination from strontium-90 could pose a hazard with respect to future land use; therefore, IA was taken. The RFI report recommended NFA at former SWMUs 10-002(a), 10-002(b), and 10-004(a) because the site was characterized in accordance with applicable state and federal regulations, and available data indicate that the site poses no unacceptable risk under current and projected land use. The ER Project conducted an IA at this SWMU unit in February 1997 to address radioactively contaminated plants in the TA-10 Central Area [former SWMUs 10-003(a-o) and 10-007] in Bayo Canyon. Surface and subsurface soil and vegetation samples were taken from 98 locations. Samples showed elevated strontium-90 levels. The IA objectives were to minimize the potential for exposure of humans and foraging animals to strontium-90 contamination until a final remedy is implemented and to reduce the potential for contaminant migration in soil and plant litter as a result of stormwater runoff. To control access to the area, an exclusion zone was constructed by installing a fence. Signs were posted at 30-ft intervals along the fence. Stormwater control measures included installing a silt fence inside the exclusion zone fence along the northern and eastern parts of the site to trap soil or debris that might be transported by sheet flow. In addition, straw bales were placed along the edge of a channel that emerges from a culvert along the western part of the site to prevent a potential high-discharge storm event from flowing onto the site. Stormwater runoff-control measures will be inspected monthly and/or within 72 hr of rainfall events that exceed 0.5 in. in the Bayo Canyon area.
10-004(a)	In Progress	SWMU 10-004(a) was a 1060-gal. septic tank (structure 10-40), associated lines, and outfall that served the personnel building (Building 10-21) from 1949 through 1963. The tank discharged to a pit measuring 8 ft long x 12 ft deep. The septic system discharged to a drainline and outfall located in a stream channel about 200 ft northeast of SWMU 10-002(a). The tank was removed during D&D activities in 1963 and disposed of at TA-54, Area G. It was unclear whether the 4-in.-diameter tile drain and the soil around the outfall were removed during decommissioning. Suspect contaminants were strontium-90, total uranium, barium, cadmium, lead, beryllium, and inorganic and organic chemicals. The ER Project conducted an RFI at this SWMU in September and October 1994. Thirty-one samples were taken from eight subsurface locations at this SWMU. Samples were analyzed for inorganic and organic chemicals, total uranium, and strontium-90. This SWMU was recommended for NFA because available data indicate that contaminants pose no unacceptable level of risk under current and projected future land use.
10-006	In Progress	SWMU 10-006 represents various burning operations at TA-10 that were conducted primarily in the 1950s and early 1960s. Uranium-238 solutions were deposited on plywood and burned in 1955. The fate of the ash is unknown. A LANL work order was issued in 1956 to construct a burn pit for combustibles; the ash was to be disposed of at TA-50, MDA C. The purpose of the burn pit is not definitely known nor is the specific pit location. As decommissioning of TA-10 progressed, many structures were burned in place or in other locations at the site. Open-burning records are incomplete and details about location, type of materials, and ash disposition are unknown. Based on radiation doses in the ash, the contaminated ash likely was transported either to TA-50, MDA C or to TA-54, MDA G. Contaminants associated with open burning would have included uranium, strontium-90, and HE. This SWMU was proposed for NFA because its location is unknown and any residual surface contamination would be encountered in the course of sampling activities

		associated with consolidated SWMU 10-001(a)-99.
10-009	In Progress	AOC 10-009 is a former Bayo Canyon landfill discovered during routine surface shrapnel characterization activities in Bayo Canyon. A small depression was noted that contained materials such as asbestos siding, heavy-gauge and coaxial wire and cable, glass laboratory equipment, and other debris. A geophysical survey conducted in the area indicates additional bgs material. The landfill area differs from the surrounding area, as there are fewer boulders in the immediate vicinity, smaller and younger trees, and potential bulldozer blade cuts. Additional interviews conducted with former area workers confirmed that the area had been used for disposal. EPA was notified of a new SWMU in May 1995. The site was fenced in 1995, pending further investigation and/or remediation.
11-001(b)	Pending	SWMU 11-001(b) is an inactive munitions site. It is the firing pit between the former betatron building, which now is a control building (Building 11-2), and the former cloud chamber building, which now is a control building (Building 11-3). From 1944 to 1945, tests of up to 200 lb HE were detonated in contact with uranium and aluminum in this firing pit. Test assemblies consisted of uncased HE. Between 1946 and 1956, photofission studies of uranium, uranium-235, uranium-238, and plutonium were conducted in a former shelter (structure 11-23) in the area between Buildings 11-2 and 11-3. The shelter no longer exists and the area now is covered by a 15-ft berm that is spray-coated with gunite. Buildings 11-2 and 11-3 now are used as control buildings for the drop tower complex, which was built in 1956. A 1956 radiation survey at Buildings 11-2 and 11-3 found no significant radioactive contamination. The extent of possible contamination associated with the HE tests is a 700-ft-radius area surrounding the drop tower (structure 11-25). The OU 1082 work plan recommended deferred action until the site is decommissioned because it is integral to the TA-11 active-firing-site operation. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. SWMU 11-001(b) was included in the submission because possible contamination at the site is exempt from RCRA regulation under the military definition of munitions (20.4.1.100 NMAC, 40 CFR 260.10; 20.43.1.700 NMAC, 40 CFR 266). The sole purpose of activities at SWMU 11-001(b) has always been to perform activities that included research, development, testing, and evaluation of military munitions, weapons, or weapons systems. Therefore, hazardous wastes as defined by RCRA/NMHWA regulations never were managed at the site.
11-001(c)	In Progress	SWMU 11-001(c) is an inactive firing site in an area known as K-Site West. It is the former location of a firing pit that consisted of a 12.5-ft semicircular wall made of 37-in.-thick concrete. The wall was 4.5 ft high. The former location of the pit is on the edge of Water Canyon west of a metal-forming building (Building 16-370). The ER Project conducted a Phase I RFI at SWMU 11-001(c) in 1995 and documented the results in a VCA plan. The purpose of the RFI was to determine the presence or absence of HE or uranium in surface soil. Eight surface and subsurface samples were collected from four locations; the samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, total uranium, and HE. The samples were field-screened for organic chemicals and radioactivity; results ranged from 0.8 ppm to 6 ppm for organic chemicals and no radioactivity was detected above instrument background. One inorganic chemical, arsenic, was detected at concentrations greater than BVs. Asbestos, metal pieces, wire, and at least one detonator at the site were visually identified during RFI field activities. The ER Project conducted a VCA at SWMU 11-001(c) in 1996 to remove debris identified during RFI activities and to remove soil and debris in the area of the high-arsenic value. Six confirmation samples were collected: three from areas where soil and debris had been removed, two from random locations within the SWMU boundary where there had been no soil or debris removal, and one from an area containing nonnative soil. Confirmation samples were analyzed for inorganic chemicals. Samples showed no inorganic chemicals at concentrations greater than BVs. The VCA report did not recommend disposition of this SWMU.

11-003(a)	Administratively Complete	
11-003(b)	Pending	AOC 11-003(b) is a mortar impact area that is the target associated with the decommissioned air-gun facility (Building 11-24). This AOC is immediately adjacent to the active drop-tower complex at TA-11 (K-Site). The air-gun facility was completed in 1956. The gun was used to launch experimental packages into targets located south of Building 11-24. The targets, which were located 150 ft to 250 ft south of Building 11-24, were 12 sq ft, 12-in.-thick poured concrete slabs that were set in line with the gun bore. Firing into the targets tested various weapons packages designed to withstand extremes of acceleration and deceleration. Some devices contained HE and depleted uranium. On a single occasion in 1972, a steel target was erected about 250 ft from the gun muzzle for an impact test of an inert mockup of a radioactive thermal-generator power supply. The device was a 12-in.-diameter, hollow-steel sphere filled with steel or lead ball bearings suspended in a graphite matrix. The sphere fractured upon impact, potentially leaving behind 0.5-in.-diameter lead balls. The OU 1082 work plan recommended deferred action until this site is decommissioned because AOC 11-003(b) is integral to the active firing-site operation.
11-004(a)-99	Pending	Consolidated SWMU 11-004(a)-99 consists of former SWMUs 11-004(a), 11-004(b), 11-004(c), 11-004(d), 11-004(e), and former AOC 11-004(f). The former SWMUs and AOC are components of the active TA-11 drop-tower complex, which was built in 1956 when TA-11 was modified to conduct explosives and weapons-safety studies. Consolidated SWMU 11-004(a)-99 is located 180 ft east of two control buildings (Buildings 11-2 and 11-3). The consolidated unit consists of a 160-ft-high drop tower [structure 11-25, former SWMU 11-004(a)], which is surrounded by a 130-ft-diameter concrete pad [structure 11-26, former SWMU 11-004(b)]; two hoists [structures 11-27 and 11-28, former SWMUs 11-004(c) and 11-004(d)]; and two asphalt drop pads [structures 11-41 and 11-42, former SWMU 11-004(e) and former AOC 11-004(f)]. The drop tower was used to conduct drop- and skid-sensitivity tests and continues to be an active test-firing facility. The asphalt pads on the concrete apron are arranged such that debris is thrown primarily to the south and east. Cased warheads and bare explosives charges were dropped from the tower to measure impact sensitivity. The OU 1082 work plan recommended deferred action at the former SWMUs and AOC in this consolidated unit because they are an integral part of an active firing site. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. Consolidated SWMU 11-004(a)-99 was included in the submission because possible contamination at the site is exempt from RCRA regulation under the military definition of munitions (20.4.1.100 NMAC, 40 CFR 260.10; 20.4.1.700 NMAC 40 CFR 266). The sole purpose of activities at consolidated SWMU 11-004(a)-99 has always been research, development, testing, and evaluation of military munitions, weapons, or weapons systems. Therefore, hazardous wastes as defined by RCRA/NMHWA regulations have never been managed at this site.
11-005(a)	In Progress	SWMU 11-005(a) is an active septic system that has served the sinks and restrooms in Buildings 11-1 and 11-4 since 1944. The system consists of drainlines from Buildings 11-1 and 11-4, a septic tank (structure 11-20), and an open-joint tile drain in an 18-in., rock-filled trench from the septic tank to the outfall. The outfall discharges to a slightly sloped area of unconsolidated porous soil. Currently, Building 11-1 is a storage area for electrical equipment but it formerly served as a control building for two buildings: the former betatron building (Building 11-2, which now is a control building) and the former cloud chamber building (Building 11-3, which now is a control building). The Building 11-1 drainline is capped; the only current source for the septic system is a restroom in Building 11-4. Although historically Building 11-4 contained a machine shop and a photo-processing facility, Building 11-4 now is the control building for the vibration test facility (Building 11-30). A memo from 1950 indicated that a mercury spill occurred in

		Building 11-4 but the location, source, and extent of the spill are not known. The OU 1082 work plan recommended subsurface sampling in the drainfield and at the outfall to determine the presence or absence of contaminants at SWMU 11-005(a).
11-005(b)	In Progress	SWMU 11-005(b) is an active septic system constructed in 1963. The septic system has a drainline from the control building (Building 11-3) to a septic tank (structure 11-43), a drainline from the septic tank to an outfall, and a drainfield west of the drainline. The outfall discharges to a slightly sloped area of porous soil. The system serves the restroom facility that was added to the exterior of Building 11-3. No engineering or as-built drawings have been found for the system, but former site workers recalled that some drains in the former air-gun building (Building 11-24), which currently houses offices and a machine shop, also were connected to this septic tank. The OU 1082 work plan recommended subsurface sampling in the drainfield and at the outfall to determine the presence or absence of contaminants at SWMU 11-005(b).
11-005(c)	In Progress	SWMU 11-005(c) is an inactive outfall north of the former betatron building (Building 11-2, which now is a control building) from a capped drainline. The drainline was installed in 1944 and served a sink, a hot water heater, and a floor drain. The outfall discharged to a slightly sloped area consisting of fill from an adjacent roadbed. The drainline was capped before the drop tower complex was constructed in 1956. Suspect contaminants are organic solvents, uranium and plutonium isotopes, and inorganic chemicals from photofission experiments. The OU 1082 work plan proposed sampling at the outfall to determine the presence or absence of contamination.
11-006(a)-99	In Progress	Consolidated SWMU 11-006(a)-99 consists of former SWMUs 11-001(a), 11-002, 11-006(a), 11-006(b), 11-006(c), 11-006(d), and former AOC C-11-001. Former SWMU 11-001(a) is a former HE firing pit located about 140 ft southeast of a control building (Building 11-2). The firing pit consisted of a 12.5-ft- x 37-in.- x 4.5-ft-deep, semicircular concrete wall (structure 11-14) that is open to the west. The firing pit was used to test the integrity of aluminum, steel, and copper nose shields that covered the x-ray ports of two control buildings: Buildings 11-2 and 11-3. Before they were control buildings, Building 11-2 housed the betatron and Building 11-3 was the cloud chamber building. The firing pit was demolished in 1956 for construction of the drop-tower complex. Before demolition, a radiation survey was conducted at structure 11-14; no significant radioactive contamination was found. The concrete apron of the drop tower now covers the location of the firing pit. During construction of the drop tower, the concrete remains of the pit were moved and now lie about 125 ft southeast of the drop tower. Former SWMU 11-002 is a 30-ft-diameter active burning area located east of the drop tower at the edge of its asphalt apron. From 1948 to 1992 it was used as an experimental burning area for components on or in assembled configurations with HE, propellants, and jet fuel. HE and propellant burns were conducted directly on the sand pad, and jet fuel burns occurred within an open-topped steel containment tank. The former SWMU remains an active experiment area. Former SWMU 11-006(a) is an HE sump (structure 11-39). The sump consists of a 4.5-ft x 5.3-ft x 4.25-ft-deep concrete box, the upper rim of which is level with the concrete pad for the drop-tower complex. The sump was installed in 1961, and drains across the asphalt into one of three catch basins [former SWMUs 11-006(b), 11-006(c), and 11-006(d)]. HE is collected for disposal at the TA-16 burning ground after it settles in the sump. Former SWMUs 11-006(b), 11-006(c), and 11-006(d) are catch basins (structures 11-

		50, 11-51, and 11-52, respectively) and their associated outfalls. The catch basins are concrete boxes with aluminum tops and overflow drains. They receive washdown water and runoff from the asphalt apron. After the HE in the catch basins settles, it is collected for disposal at the TA-16 burning ground. All outfalls were permitted under LANL's NPDES permit; only one remains active. Structure 11-50 discharged to NPDES-permitted Outfall 05A069; structure 11-51 discharged to NPDES-permitted Outfall 05A096. Both outfalls were removed from the NPDES permit effective May 15, 1998. Structure 11-52 discharges to active NPDES-permitted Outfall 05A097. The outfalls are channeled along asphalt-lined drainages into natural drainages that flow east from TA-11 into Water Canyon. Former AOC C-11-001 is the former site of a 6-ft x 32-ft wood-frame building (Building 11-5). The building was constructed after 1945 and was removed before 1956. It may have housed the laboratory that was used to prepare samples for the 1946-1956 photofission experiments on uranium and plutonium. It also may have been used as a darkroom. The asphalt apron of the drop tower covers former AOC C-11-001. The OU 1082 work plan proposed a sampling strategy to explore the potential for off-site contaminant migration through the outfalls and proposed deferring action on the sites in this consolidated unit until the drop-tower complex is decommissioned. For the outfalls, the work plan proposed sampling sediment catchments in the Water Canyon tributary to determine if contaminant migration has occurred. In 1998, four samples were collected at SWMU 11-006(a)-99. Samples were collected from the drainages associated with the catch basins to evaluate any contaminant migration during storm events. Samples were submitted to an analytical laboratory for analysis for organic and inorganic chemicals. The results of the sampling indicate that inorganic chemicals were detected at concentrations exceeding BVs, with arsenic being the only chemical above SALs. HE was detected in one of the samples but well below SALs.
11-007	Administratively Complete	SWMU 11-007 is a surface disposal area containing large blocks of concrete and some road-building debris. This surface disposal area is located at the head of the small canyon drainage that borders the south side of the major developed area at TA-11. On the east-facing slope, several concrete blocks, which served as targets for an air gun in TA-11-24, had been laid for erosion control. Other concrete scraps are scattered about. To the south, several sections of concrete culvert are scattered near the road. Some road--building debris (asphalt, rebar, gravel, etc.) is also in evidence in the immediate area. SWMU 11-007 is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
11-008	Administratively Complete	
11-009	In Progress	Former SWMU 11-009 is MDA S, a fenced, active experiment plot about 10 sq ft x 2 ft deep. The site is located in front of a storage magazine (structure 11-36). The area has been used since 1965 to study the effects of soil and weather on the decomposition of explosives. Sample materials are placed in a tube that has a fine-mesh, stainless steel screen on the bottom and a cloth over the top. Sample containers are buried in the experiment plot; the tops of the tubes are flush with the surrounding surface. The OU 1082 work plan recommended deferred action at this site until the experiment plot is decommissioned.
11-010(a)	Administratively Complete	
11-010(b)	Administratively Complete	
11-011(a)-00	In Progress	Consolidated SWMU 11-011(a)-00 consists of former SWMUs 11-011(a) and 11-011(b). The former SWMUs are active outfalls.

		Former SWMU 11-011(a) is permitted in LANL's NPDES permit as Outfall 03A130. Effluent from the building (Building 11-30A) that contains support equipment for the vibration test building discharges to the outfall. Electrical equipment in Building 11-30A is cooled by water circulating through a cooling tower. Cooling tower blowdown is discharged untreated to the outfall, which also receives discharge from floor drains in Building 11-30A. The outfall is 2-in., insulated pipe located about 6 ft east of the northeast corner of Building 11-30, and discharges to a 20-ft drainage channel. Suspect contaminants are organic chemicals. Former SWMU 11-011(b) also serves the floor drains in Building 11-30. A sink drain formerly connected to this outfall has been removed. The outfall consists of a 3-in. pipe that extends about 10 in. beyond the side of a hill and discharges to a 5-ft drainage channel. Suspect contaminants are organic chemicals. The OU 1082 work plan proposed sampling below the outfall discharge areas to determine if contamination is present.
11-011(c)	Administratively Complete	PRS 11-011(c) was initially identified as the discharge from a boiler in Building TA-11-24. The boiler system reputedly discharged through a pipe that exited the building onto the surrounding asphalt pavement. However, field investigations and archival information do not indicate the presence of a boiler system discharge to the pavement outside the building. Therefore, SWMU 11-011(c) is appropriate for NFA under Criterion 1 because it does not exist.
11-011(d)	In Progress	SWMU 11-011(d) is an active outfall associated with a building that houses offices and a light machine shop (Building 11-24, the former air-gun building). The outfall consists of a 4-in. steel pipe that is located on the south side of Building 11-24. Suspect contaminants are organic cleaning agents, cutting oils, and metals used in the machine shop. The OU 1082 work plan proposed sampling at the outfall to determine the presence or absence of contaminants.
11-012(a)	Administratively Complete	
11-012(b)	In Progress	AOC 11-012(b) is potential soil contamination at the site of a former HE storage magazine (structure 11-8). Built in 1945, the magazine was a 9-ft x 11-ft wood structure with earthen berms on three sides. It was located approximately 225 ft north of the metal forming building (Building 16-370). A 1956 survey showed the structure was free of radioactive contamination. A 1959 inspection again showed no radioactivity but did show HE contamination. Structure 11-8 was destroyed in 1960 by intentional burning and the ashes were removed and disposed of at the TA-16, MDA P. The ER Project conducted an RFI at AOC 11-012(b) in 1995 to determine the presence or absence of contamination. Four samples were collected and field-screened for organic chemicals, radioactivity, and HE. No radioactivity was detected above instrument background, and the HE screen was negative. The sample with the highest reading for organic chemicals was submitted for laboratory analysis for inorganic chemicals, organic chemicals, and HE. No inorganic chemicals or HE were detected in the laboratory analysis, but trace amounts of benzoic acid, bis(2-ethylhexyl) phthalate, and di-n-butyl phthalate were detected. All were detected at concentrations below SALs. The RFI report recommended NFA for AOC 11-012(b).
11-012(c)	In Progress	AOC 11-012(c) is an area of potential surface-soil contamination at the top of a knoll about 500 ft west of a control building (Building 11-4). AOC 11-012(c) is located at the site of a former 16-sq-ft wood storage structure (structure 11-9). Former structure 11-9 was built in 1945. A 1956 survey showed the structure was free of radioactive contamination; a 1959 inspection showed the building was free of radioactivity but showed HE contamination. Structure 11-9 was destroyed in 1960 by intentional burning

		and the ashes were removed and disposed of at the TA-16, MDA P. Suspect contaminants at the site are HE, HE impurities, and HE degradation products. The OU 1082 work plan proposed sampling at the site to determine if contaminants are present.
11-012(d)	In Progress	AOC 11-012(d) is an area of potential soil contamination associated with a former personnel shelter (structure 11-10). Structure 11-10 was a 6-sq-ft wood structure that was built in 1945 and destroyed by intentional burning following D&D in 1960. The potentially contaminated soil is about 75 ft southeast of the current control building (Building 11-4) for the vibration test facility. Structure 11-10 may have been used to store small quantities of HE scraps for disposal. Concrete blocks about 1 ft thick presently cover the area. A 1956 survey showed the structure was free of radioactive contamination; a 1959 inspection again showed the building was free of radioactivity but showed HE contamination. Structure 11-10 was destroyed in 1960 by intentional burning and the ashes were removed and disposed of at the TA-16, MDA P. Suspect contaminants at the site are HE, HE impurities, and HE degradation products. The OU 1082 work plan proposed sampling at the site to determine if contaminants are present.
12-001(a)-99	In Progress	Consolidated SWMU 12-001(a)-99 consists of former SWMUs 12-001(a), 12-001(b), and 12-002, and former AOC C-12-005. TA-12 (L-Site) was constructed in 1945 for the Explosives (X) Division. The site is considered a buffer zone and has not been used for any LANL operations. Former SWMU 12-001(a) is an inactive, belowground, steel-lined firing pit (structure 12-4) that was used from 1945 to 1953. It is hexagonal in shape, measuring 10.5 ft on each side and 11.5 ft deep. A 20-ft x 22-ft x 5-ft steel cover filled with soil covers the top of the pit. A 5-ft x 5-ft hole in the center of the cover was used to lower explosives into the firing area. Recovery shots, which used uranium, were conducted in the pit. The pit is located approximately 3200 ft east of the TA-12 entrance. Former SWMU 12-001(b) is an open firing pit about 175 ft east of former SWMU 12-001(a) on the north side of Redondo Road. The pit is 21 ft x 17 ft x 3 ft deep. Group X-1B used the pit in 1945 for calorimetric experiments. Following WWII, HE shots using lead and uranium were fired in this pit. Use of this site was discontinued in the 1950s. Former SWMU 12-002 is an area of a few square feet that was used once in 1962 to burn scrap HE. A can containing 0.5 lb HE was discovered during a property survey. The can was burned to destroy the HE. Former AOC C-12-005 is the former site of a junction box (structure 12-6) for the firing site. The junction box was located 25 ft west of the steel-lined firing pit [former SWMU 12-001(a)]. It was 3 ft x 3 ft x 4 ft high with a soil berm on three sides. The structure housed diagnostic equipment, signal cables, and electrical power equipment. The purpose of the structure was to act as a relay between the control building (Building 12-2) and the two firing sites. About 750 ft of detonation wire connected the junction box to Building 12-2. When the OU 1085 work plan was written, the detonation wire and some conduit remained at the site. A 1959 inspection found structure 12-6 free of radioactive and HE contamination. Structure 12-6 was built in 1945, taken out of service in 1953, and intentionally burned in 1960. The ER Project conducted an RFI at former SWMU 12-001(a) in 1995 to determine the presence or absence of contaminants. Field-screening did not show elevated radiation levels. Two samples were collected from the bottom of the pit and three were collected from the surrounding area. The samples were submitted for laboratory analysis for inorganic chemicals, uranium, and HE. Analytical results showed arsenic concentrations above SAL. An MCE for other inorganic chemicals at levels above

		background showed that those chemicals were potential contaminants. Due to the arsenic level and MCE results, and because it may be preserved as an historical site, a VCA was conducted in 1996. RFI analytical results are documented in the VCA plan. During the VCA, all soil in the pit was removed. No confirmation samples were collected because all soil was removed. Investigation at this former SWMU is ongoing. The ER Project conducted an RFI at former SWMU 12-001(b) in 1995 to determine the presence or absence of contaminants. Eight locations were field-screened for radiation. Four samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and HE. Based on RFI results, which showed uranium above SAL, a VCA plan was submitted in 1997. Investigation at this former SWMU is ongoing. The OU 1085 work plan recommended NFA for former SWMU 12-002; the March 1995 permit modification request also recommended NFA for former SWMU 12-002, because SWMU 12-002 was the site of a one-time event and was not a waste disposal area. The ER Project conducted an RFI at former AOC C-12-005 in 1995 to determine the presence or absence of contaminants. Two samples were collected, field-screened for HE and radiation, and submitted for laboratory analysis for inorganic chemicals, total uranium, and HE. No analytes were detected at levels above SALs. The RFI report recommended NFA at this site.
12-003	Administratively Complete	
12-004(a)	In Progress	AOC 12-004(a) consists of the former lanthanum radiation experiment site and surrounding area, including drainage. The site contains a former soil-bermed radiation shelter (structure 12-8) and three telephone poles, all of which remain. The shelter and poles were constructed in a line parallel to a drainage channel that flows southwest from Redondo Road to the edge of Threemile Canyon. The site was constructed in 1950 and the experiment was conducted over a three-week period. A 1959 survey reported the shelter and telephone pole closest to the road were contaminated with HE and strontium-90. A 1966 survey showed all structures were contaminated; they subsequently were decontaminated (date of decontamination is unknown). A 1993 radiation screening survey inside the shelter showed a cardboard box with beta/gamma radioactivity at ten times background levels. No other readings above instrument background were observed. The site is considered a buffer zone and is currently not used for any LANL operations. The ER Project conducted an RFI at AOC 12-004(a) in 1995 to determine the presence or absence of contaminants. Fifteen surface soil samples were collected from fourteen locations around the site and field-screened for radiation and HE; all field-screening was negative. Six of the samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and HE. Mercury and zinc were detected at levels above BV but below SALs. An MCE showed a hazard rating less than 1 and the chemicals were eliminated from further consideration. The RFI report recommended NFA for AOC 12-004(a).
12-004(b)	In Progress	AOC 12-004(b) is an aluminum pipe on the edge of Redondo Road about 78 ft north of a soil-bermed radiation shelter (structure 12-8). The pipe protrudes 8 in. aboveground; its outer diameter is 25.5 in. A 1993 radiation survey did not detect radiation above instrument background levels. The site is considered a buffer zone and is currently not used for any LANL operations. The ER Project conducted an RFI at AOC 12-004(b) in 1995 to determine the presence or absence of contamination. Two samples were collected from two locations next to the pipe. The samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, radionuclides, and HE. Lead and mercury were detected at levels above BVs but below SALs. An MCE showed a hazard rating less than 1 and the chemicals were eliminated from further consideration. The RFI report recommended NFA for AOC 12-004(b).

13-001-99	In Progress	Consolidated SWMU 13-001-99 consists of former SWMUs 13-001, 13-002, 16-035, and 16-036. The former SWMUs are associated with firing activities at former TA-13. Former TA-13, originally called P-Site, is located at the eastern end of the current TA-16 explosives manufacturing area. Former TA-13 was built in 1944 to support the HE project of the Manhattan Project, and has been used since then for a variety of LANL activities. It was principally designed as a site for counter x-ray diagnostics of HE lens configurations. Activities that supported the diagnostics included operating counter x-ray equipment, HE assembly, and research in the magnetic method program. In 1944-1945, HE shots were fired every 10 minutes. Assemblies contained HE lenses, uranium, and other metals. The counter x-ray program was suspended in 1945. Former TA-13 was converted to initiator testing in mid-1945. Initiator assemblies consisted of HE, beryllium, polonium, and other metals. A memo suggests that, in 1948, the site was to be upgraded for renewed HE firing. Buildings in the western half of former TA-13 were demolished in the early 1950s to make way for the construction of Building 16-340, the Explosives Synthesis Building and its associated structures. Former TA-13 was incorporated into TA-16 (S-Site) in 1957. More recent use of former TA-13 buildings was for experimental and high-speed machining tests for the S-Site weapons groups. Suspect contaminants at the former SWMUs are inorganic chemicals, HE, and radionuclides. Former SWMU 13-001 is a firing site and soil contaminated from firing activities to an approximate radius of 300 ft. It is located between two battleship bunkers, structure 13-3 (renumbered to 16-477) and structure 13-4 (renumbered to 16-478). The area has some debris and shrapnel including firing cables, lead balls, and chunks of steel and copper. Former SWMU 13-002 is a landfill south and east of the firing site [former SWMU 13-001]. It extends about 500 ft south of the firing point and includes a large amount of debris and shrapnel scattered around the two battleship bunkers (structures 16-477 and 16-478). Former SWMU 16-035 is suspected soil contamination associated with control bunker, structure 13-2 (renumbered to 16-476). Former SWMU 16-036 is suspected soil contamination located beneath battleship bunkers, structures 16-477 and 16-478. The OU 1082 work plan proposed soil sampling at the former SWMUs in this consolidated unit to determine if suspect contaminants are present. The work plan proposed an aggregate-wide sampling grid because of contaminant dispersal related to the firing site and landfill.
13-003(a)-99	In Progress	Consolidated SWMU 13-003(a)-99 consists of former SWMU 13-003(a) and former AOC 13-003(b), an inactive septic system associated with activities at former TA-13. Former TA-13, originally called P-Site, is located at the eastern end of the current TA-16 explosives manufacturing area. Former TA-13 was built in 1944 to support the HE project of the Manhattan Project and has been used since then for a variety of LANL activities. It was principally designed as a site for counter x-ray diagnostics of HE lens configurations. Activities that supported the diagnostics included operating counter x-ray equipment, HE assembly, and research in the magnetic method program. In 1944-1945, HE shots were fired at a rapid pace of every 10 minutes. Assemblies contained HE lenses, uranium, and other metals. The counter x-ray program was suspended in 1945. TA-13 was converted to initiator testing in mid-1945. Initiator assemblies consisted of HE, beryllium, polonium, and other metals. A memo suggests that, in 1948, the site was to be upgraded for renewed HE firing. Buildings in the western half of former TA-13 were demolished in the early 1950s to make way for the construction of 16-340, Explosives Synthesis Building and its associated structures. Former TA-13 was incorporated into TA-16 (S-Site) in 1957. More recent use of former TA-13 buildings was for experimental and high-speed machining testing for the S-Site weapons groups. Suspect contaminants at the former SWMU and former AOC are

		inorganic chemicals, HE, organic chemicals, and radionuclides. Former SWMU 13-003(a) is the location of decommissioned and removed septic tank (former structure 13-12) that served an office and shop building (Building P-1, renumbered Building 16-475) associated with early implosion and initiator testing. The building had a toilet, lavatory, and small darkroom adjacent to the sewer hookup. The tank served Building 16-475 from the 1940s until 1951. The tank was decommissioned and removed in 1951 when the entire area was leveled to make room for construction of Building 16-340. Parts of Building 16-340 were built on top of the original location of the septic tank. Types of liquid wastes discharged to the septic tank are unknown, but a 1948 report states that HE or radionuclide contamination might exist in the subsurface soil. Former AOC 13-003(b) is the drain field associated with the septic tank (structure 13-12). The drain field is located about 100 ft northeast of the former location of the decommissioned and removed septic tank. There are no records documenting that the drain field was removed. The ER Project conducted an RFI at former SWMU 13-003(a) and former AOC 13-003(b) in 1995 to determine if a release had occurred from the septic system and drainline and if that release caused contamination above action levels. Available technology was used to locate the drainlines and septic tank without success. Analytical samples were taken from the location most likely to have intersected the drainline. Two samples were taken from one borehole at the distal end of the drain field. Drilling tools could not be safely advanced in other locations due to the density of underground utilities. The samples were field-screened for HE, radioactivity, and organic chemicals. All screening results were negative. Analytical results showed no radionuclides or organic chemicals, and no inorganic chemicals at levels greater than background. The limited analytical results are not sufficient for assessing the drain field. The RFI report recommended NFA at former SWMU 13-003(a) because it was removed. The RFI report recommended a Phase II SAP at former AOC 13-003(b) proposing investigation using less aggressive methods than drilling.
13-004	In Progress	SWMU 13-004 consists of one or more burning pits at former TA-13. The pits were not located on engineering diagrams or by 1948 aerial photographs. According to the OU 1082 work plan, it is likely that the pits were located in the western half of former TA-13 and have been disturbed and covered by S-Site construction activities. Former TA-13, originally called P-Site, is located at the eastern end of the current TA-16 explosives manufacturing area. Former TA-13 was built in 1944 to support the HE project of the Manhattan Project and has been used since then for a variety of LANL activities. It was principally designed as a site for counter x-ray diagnostics of HE lens configurations. Activities that supported the diagnostics included operating counter x-ray equipment, HE assembly, and research in the magnetic method program. In 1944-1945, HE shots were fired every 10 minutes. Assemblies contained HE lenses, uranium, and other metals. The counter x-ray program was suspended in 1945. Former TA-13 was converted to initiator testing in mid-1945. Initiator assemblies consisted of HE, beryllium, polonium, and other metals. A memo suggests that in 1948 the site was to be upgraded for renewed HE firing. Buildings in the western half of former TA-13 were demolished in the early 1950s to make way for the construction of Building 16-340, the Explosives Synthesis Building and its associated structures. TA-13 was incorporated into TA-16 (S-Site) in 1957. Recent use of former TA-13 buildings was for experimental and high-speed machining tests for the S-Site weapons groups. The OU 1082 work plan proposed sampling at SWMU 13-004 using a reconnaissance approach. If SWMU 13-004 cannot be located, the work plan stated that it is assumed that the site-wide drainage sampling will provide an adequate understanding of any risk associated with this site.
14-001(a)	Administratively Complete	
14-001(b)	Administratively	

	Complete	
14-001(c)	Administratively Complete	
14-001(d)	Administratively Complete	
14-001(e)	Administratively Complete	
14-001(g)	Pending	AOC 14-001(g) is a three-sided blast shield at an active firing site; the shield directs the force of detonation away from the nearby control building (Building 14-23). At the base, the shield is a 2-ft-thick x 6-ft concrete pad overlaid by a neoprene shock pad, a 4.5-in. steel plate, and several inches of sand. Materials are placed on the pad and detonated from Building 14-23. Known as Q-site, TA-14 has been used since 1944 for explosives development and testing, including testing that involves radioactive materials. The site is served by four drainages that ultimately discharge to Cañon de Valle. The ER Project issued an RFI report in 1996 that included AOC 14-001(g), although AOC 14-001(g) was not sampled during the RFI. The RFI report stated that any corrective action at this AOC would be deferred until the site is decommissioned.
14-002(a)-99	In Progress	Consolidated SWMU 14-002(a)-99 consists of former SWMUs 14-002(a), 14-002(b), 14-002(f), 14-009, and 14-010, and AOCs 14-001(f) and C-14-008. The former SWMUs and AOCs in this consolidated unit are components of an active firing site and have overlapping dispersion areas. TA-14, known as Q-Site, was built in 1944 for close observation of small explosive charges. Former SWMU 14-002(a) is the site of a former HE firing chamber (structure 14-2) that was located on the west end of Q-Site; the chamber has been removed. Completed in 1944, it was made of heavily reinforced concrete with steel plate lining, and was 16 ft x 26.6 ft x 13 ft tall. In the early 1970s, structure 14-2 was removed because a new HE test facility was to be built in the same area. A survey showed that structure 14-2 was contaminated with alpha radiation. Radioactively contaminated materials were removed and disposed of at TA-54, and the building was burned on the site in 1973. The remaining noncombustible building materials that were contaminated with HE and radionuclides were placed in MDA P (SWMU 16-018). HE-contaminated debris was disposed of at MDA J (SWMU 54-005) and radioactive pieces were disposed of at MDA G [consolidated SWMU 54-013(b)-99)]. At the time structure 14-2 was burned, an HE sump (structure 14-10) associated with the building was removed. Uranium-contaminated asphalt in the surrounding area also was removed and taken to MDA G. A water line installed in 1960 may have been used when the new firing chamber was built. Former SWMU 14-002(b) is the site of a former HE firing pedestal (structure 14-17). Built in 1945, it was made of reinforced concrete and was 4 ft x 4 ft x 2 ft thick with a steel-plate top and an 8-ft-high earthen barricade. Structure 14-17 was located in the west-central portion of the western TA-14 firing site. The open, horseshoe-shaped, steel firing chamber was 10 ft in diameter x 30 ft long with a 40-in.-thick wall. The firing chamber faced south (away from surrounding structures). The targets were planar cross sections of weapons that contained HE. Sandbags were used to protect x-ray film and equipment from the blast and shrapnel. When the bags were torn, the sand and shot debris were shoveled into a wheelbarrow and dumped over the edge of the canyon. The RFI work plan stated that the area was contaminated with uranium, lead, copper, and explosives. Former structure 14-17 was removed in 1952. Former SWMU 14-002(f) is the site of a former junction box shelter (structure 14-12) that was associated with former SWMU 14-002(b). Built in 1945, it was of wood-frame construction and was 6 ft x 6 ft x 6 ft tall with earth fill on three sides. Structure 14-12 was removed in 1952. Former SWMU 14-009 is a 45-ft x 50-ft x 1-ft-deep surface disposal area on the southwest slope of the western firing area. It is a waste pile of ruptured sandbags.

		When explosives were tested, sandbags were placed around a firing site to contain the detonation. When the pressure of a blast ruptured the sandbags, the sand was used to control erosion around the firing site. The waste pile was included in the 1987 DOE environmental survey; the survey indicated radioactivity levels above background values at the site. Former SWMU 14-010 is a decommissioned explosive waste sump and drainline and its associated drainage area south of and adjacent to structure 14-2 [a decommissioned firing chamber, former SWMU 14-002(a)]. The sump's contents were removed and disposed of in 1973 and the area was paved over or replaced by the bullet test facility. Former AOC 14-001(f) is a gun-firing site (structure 14-34) that is referred to as a bullet test facility. The former AOC consists of structure 14-34 and its underlying sump. The facility is located in the center of the western portion of Q-Site. In 1957, it replaced a former HE firing pedestal [structure 14-17, former SWMU 14-002(b)]. Structure 14-34 is a reinforced concrete structure that is 13.3 ft x 13.6 ft x 8 ft tall. Bullets consisting of copper-jacketed lead, plastic, steel, and depleted uranium are tested at the facility. Firing is conducted in a 10-ft-diameter steel tube and test material usually is contained in the tube or is vaporized. Residual materials are placed in 55-gal. containers for treatment and disposal. Sandbags are used to shield disintegrate from blast pressure and when removed, the bags are used to control erosion at the site. The sump is made of reinforced concrete and is 13 ft x 13 ft x 4.5 ft deep. Former AOC C-14-008 is the site of a former magazine (structure 14-11) that was located about 75 ft northeast of the current magazine (structure 14-30) in the west complex. It was of wood construction and measured 5 ft x 5 ft x 5 ft high, with an earthen berm on three sides and top. The former magazine was built in 1945 and removed in 1952. The former site of the building was cleared and scraped, and dirt was heaped in a long, low pile along the north edge of the pavement. No sign of structure 14-11 remains. During the ER Project's 1995 RFI at former SWMU 14-002(a), one ruptured sandbag, presumably associated with the firing chamber, was sampled. Sample results indicated that uranium was present at the site in concentrations that exceeded SAL. The RFI report recommended development of a VCA plan. RFI results, conclusions, and recommendations were included in the VCA plan that was submitted to DOE in 1997. Former SWMU 14-002(b) was not sampled during the ER Project's 1995 RFI. The RFI report recommended NFA at the site because efforts to locate the site of the former HE firing pedestal were unsuccessful. The alleged location of the shelter, based on a 1946 photograph, was checked with a sodium iodide beta/gamma meter and no radioactivity was detected. HE spot-test results were negative. Discussions with a former contractor who built TA-14 indicated the former chamber was located where the current fire road is now and the firing chamber was removed in 1952, mounded next to the assembly and storage building (Building 14-43), and paved over with asphalt. Former SWMU 14-002(f) was not sampled during the ER Project's 1995 RFI; the RFI report recommended NFA for the site because efforts to locate the site of the former structure were unsuccessful. The alleged location of the shelter, based on a 1946 photograph, was walked over with a sodium iodide beta/gamma meter and no radioactivity was detected. HE spot-test results were negative. Discussions with a former contractor indicated the former shelter was located where the current fire road is now. No evidence of the former shelter exists at this location. During the ER Project's 1995 RFI at former SWMU 14-009, visual surface contamination of depleted uranium and a positive HE spot test resulted in the RFI report's recommendation to conduct a VCA at this former SWMU. The report stated that all specific results, conclusions, and recommendations would be included in the

		VCA plan. During the ER Project's RFI at former SWMU 14-010, four surface-soil samples and one subsurface-soil sample were collected. The samples were submitted for laboratory analysis for inorganic chemicals, uranium, HE, and radionuclides. RFI results indicated that uranium was present in concentrations above SAL. The RFI report recommended development of a VCA plan for former SWMUs 14-002(a) and 14-010. RFI conclusions and recommendations were included in the VCA plan that was submitted to DOE in 1997. The ER Project conducted an RFI at former AOC 14-001(f) in 1995 and sampled the existing drainline. Three samples were collected: two from within the bullet test facility and one from the underlying sump. Analytical results showed uranium and HE at concentrations above their respective SALs, and manganese above its BV. The RFI report recommended development of a VCA plan. RFI results are provided in the VCA plan that was submitted to DOE and NMED in 1996. The ER Project conducted a VCA at former AOC 14-001(f) in 1996 and removed all sand contained in the bullet test facility and beneath the sump. Following removal of the sand, a radiological survey was conducted of the interior surfaces of the steel tube and the sump. Readings above background were found on both structures. Uranium was removed from the surfaces of the sump and some areas of the steel tube. Additional radioactivity in the steel tube was determined to be fixed radioactivity and those areas were painted in accordance with LANL's ESH-1 requirements. A sign was placed in the bullet test facility indicating fixed radioactivity. At the request of the operating group, the sump drain was plugged following the VCA. Confirmation sampling was not conducted because all sand was removed and sealing the drain eliminated any potential for environmental release. During the 1995 ER Project's RFI at former AOC C-14-008, two samples were collected from the footprint of structure 14-11. No readings greater than site-specific background were reported during field screening, and HE spot tests were negative. The samples were submitted for off-site laboratory analysis for inorganic chemicals, HE, and gamma scan. No potential contaminants were identified as a result of the sample analysis results. The RFI report recommended NFA for former AOC C-14-008 because the site was characterized in accordance with applicable state and federal regulations, and available data indicate that contaminants pose no unacceptable risk under current and projected future land use.
14-002(c)-99	In Progress	Consolidated SWMU 14-002(c)-99 consists of former SWMUs 14-002(c), 14-002(d), and 14-002(e). The former SWMUs are located in the eastern part of TA-14 on a flat circular area about 100 ft in diameter. Former SWMU 14-002(c) is a control building (Building 14-5), built in 1945 for small-scale explosive tests. It is 11 ft long x 18 ft wide x 10 ft high and originally had a concrete bunker faced with 0.5-in. steel plate. Soil berms cover the east and west sides of the building. The tests were conducted on two firing pads located 20 ft to 30 ft from the building's south end. The building served as a storage site from 1961 to 1965, after which it was used until the 1970s for temporary storage of pressurized tanks of cyanogen gas. Former SWMUs 14-002(d) and 14-002(e) are the former sites of two firing pads that were located on a gravel area adjacent to the south end of Building 14-5. These sites are associated with former structures 14-14 and 14-15, respectively. The pads were used from 1944 to the mid-1950s for small-scale explosives tests. The pads were checked for radiation in 1957 and none was found. The firing pads are no longer at the site. The ER Project conducted an RFI at former SWMU 14-002(c) in 1995. The site was sampled only by radiological field-screening and HE spot tests because no

		environmental media were present inside the building. No indication of contamination was detected. The RFI report recommended NFA at this site. The ER Project conducted an RFI at former SWMUs 14-002(d) and 14-002(e) in 1995 to determine if contamination was present. Four samples were field-screened for radiation and HE; results were negative for HE and radiation levels were within background screening values. The samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, total uranium, and HE. Lead, thallium, and total uranium were detected at concentrations above BVs but below SALs. The RFI report recommended NFA at these sites.
14-003	Pending	SWMU 14-003 was a 5-ft x 20-ft grass-covered burning area located about 300 ft northeast of a control building (Building 14-5) at the end of an abandoned asphalt-paved road. On three sides, the area was enclosed by a 3-ft-high soil berm. The area was used to burn HE-contaminated debris and for flash-burning noncombustible HE-contaminated debris remaining from experimental test shots. Debris burned in the area may have contained barium, lead, and uranium. Operations began in 1951 and ceased in the 1960s. The ER Project conducted an RFI at this site in 1995 to determine if contamination was present. Two samples were collected from two locations within the bermed area. Samples were field-screened for radioactivity and HE; screening showed no elevated levels. The samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, total and isotopic uranium, gamma spectroscopy, and HE. Sample results indicated inorganic chemicals and uranium were present at levels exceeding SALs. The RFI report recommended a VCA for the site. RFI sampling results are documented in the VCA plan. In 1997, the ER Project conducted a VCA at SWMU 14-003. VCA activities included additional sampling and field-screening to further define the extent of contamination, removal of contaminated soil within the bermed area, and collection of confirmation samples to verify that cleanup goals were achieved. In 2001, LANL requested that DOE release this property in accordance with DOE Order 5400.5 because the site was evaluated in accordance with the Order and LANL believes that NFA is required at the site.
14-004(a)	Administratively Complete	
14-004(b)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i)Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit

		1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
14-004(c)	Administratively Complete	
14-005	In Progress	SWMU 14-005 is an active, open burning unit that operates under RCRA interim status. The unit consists of a 55-gal. drum with a capacity of 3 cubic-feet. The unit sits on a steel tray. It is used to burn paper and small pieces of laboratory equipment that potentially are contaminated with HE. The OU 1085 work plan recommended deferred action at this site until RCRA closure. The RFI report for TA-14 stated that investigation at SWMU 14-005 would be deferred until it is decommissioned.
14-006	In Progress	SWMU 14-006 consists of an HE sump (structure 14-31), associated drainline, and unpermitted outfall for a control building (Building 14-23). The sump is made of steel and concrete, and is 4.5 ft wide x 8.3 ft long x 4.8 ft deep. The sump outlet is plugged. Two floor drains and an asphalt roof drain bypass the sump in a metal-covered concrete culvert and discharge to the outfall. Sludge in the sump is collected for burning. Building 14-23 was built in late 1944 or 1945. The ER Project conducted an RFI at this site in 1995 to determine the presence or absence of contamination. Six samples were collected from four locations downslope from the sump and the outfall. The samples were field-screened for radiation and HE; radiation levels were within background screening values, and no HE was detected. The samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, radionuclides, and HE. Seven inorganic chemicals were detected at levels above background but below SALs. Eighteen organic chemicals were detected and seven (all PAHs) were detected at concentrations greater than SALs. The results of the sample analysis were used to perform a risk-based, human health screening assessment. The screening assessment did not consider the organic chemicals above SALs (all were PAHs) because their presence was attributed to runoff from an asphalt-paved parking lot adjacent to the sump. Based on the results of that assessment, the RFI report recommended NFA for the site.
14-007	In Progress	SWMU 14-007 is an inactive septic tank (structure 14-19) and its associated drainfield. The tank was built in 1944 to serve the restrooms in a storage building (Building 14-6). Made of reinforced concrete, it is 4 ft wide x 7 ft long x 6 ft deep and has a capacity of 640 gal. Structure 14-19 was connected to an overflow drainline that ran northeast for 130 ft before daylighting into an outfall about 1 ft wide. A drainfield installed in 1988 replaced a drainline from the septic tank. The septic tank was disconnected in 1992 when Building 14-6 was connected to the SWSC. Building 14-6 was built as shop but later was used as a darkroom. It was used for storage since 1965. The ER Project conducted an RFI at SWMU 14-007 in 1995 to determine the presence or absence of contamination. Six soil samples were collected from the drainfield. They were field-screened for radiation and HE; no HE was detected, and radiation levels were below background screening values. The samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, total cyanide, HE, and radionuclides. Five inorganic chemicals and uranium-235 and uranium-238 were detected at concentrations above BVs. No organic chemicals were detected. Based on results of a human health risk screening assessment, no chemicals were retained as

		potential contaminants. The RFI report recommended NFA for this site.
14-008	Administratively Complete	
15-001	In Progress	AOC 15-001 consists of a storage area, referred to as The Boneyard, which is located within TA-15 at inactive Firing Site G [former SWMU 15-004(g)]. AOC 15-001 is located just northeast of structure 15-9, which was the former firing bunker. Firing Site G was active no earlier than 1949 and was in use as late as 1967. Although Firing Site G is inactive, AOC 15-001 is actively used to store materials associated with activities at the DARHT and PHERMEX facilities in TA-15. Materials stored at AOC 15-001 include equipment, steel, experimental vessels, and construction debris. Materials are stored in the open, on the ground surface, as well as within structures. The most recent structure location map for TA-15 identified three transportainers (structures 15-369, 15-434, and 15-455) and a shed (structure 15-340) at the site. The RFI work plan indicated a low potential for this site to be contaminated as a result of storage activities. For example, experimental vessels used at PHERMEX are decontaminated at PHERMEX and sealed prior to storage at AOC 15-001. However, AOC 15-001 is located within the area that could have been impacted by shot debris from former SWMU 15-004(g). Potential contaminants at this site include uranium, inorganic chemicals, and HE. Although previous sampling efforts have not specifically addressed AOC 15-001, they have addressed the general area that could have been impacted by former SWMU 15-004(g), including the area occupied by AOC 15-001. An aerial radiological survey in 1982 did not identify radionuclides above BVs at the firing site or adjacent areas. Several areas of radiological surface contamination were identified, however, during surface surveys performed during 1991 and 1996. This contamination was believed to be associated with uranium debris from tests conducted at the firing site. The RFI work plan proposed collection of three surface samples from AOC 15-001 and analysis of these samples for uranium, inorganic chemicals, and HE. The RFI report indicated that this AOC was being deferred from further action until decommissioning. Portions of AOC 15-001 were within the random sampling grid described in the RFI work plan for former SWMU 15-004(g). Surface and subsurface samples collected from this grid were to be analyzed for uranium, inorganic chemicals, and HE. The RFI report reported uranium detected above SAL and recommended further action at this site.
15-002-00	In Progress	Consolidated SWMU 15-002-00 consists of former SWMUs 15-002 and 15-007(a), which are a burn pit and landfill, respectively. This consolidated unit is located south of the R-40 laboratory and office complex in the northwest corner of TA-15, near a laboratory storage building, Building 15-23. Former SWMUs in this consolidated unit received various wastes associated with operations in TA-15 during the period 1949 to 1965. Former SWMU 15-002 is an inactive burn pit surrounded on three sides by a 3-ft-high, 10-ft-diameter berm. The exact nature of the materials disposed in this burn pit is unknown. Former employees described a site suspected to be this burn pit that was used to burn oil/uranium mixtures and HE. The exact dates of operation of the burn pit are also unknown. A site believed to be this burn pit was identified on aerial photographs taken in 1949-1950 and 1958. The site appeared to be inactive in the 1958 aerial photograph. This site also appears to be at the location of a trash-burning area identified on a 1956 engineering drawing. The only historical environmental survey at this site that was described in the RFI work plan was an aerial radiological survey conducted in 1982. This survey did not identify radiation above BVs at this site . Former SWMU 15-007(a) is an inactive landfill known as MDA N. This landfill was reportedly used to dispose of remnants of several TA-15 structures that had been exposed to explosives or chemical contamination. MDA N is believed to have been used to dispose of the debris from demolition of Buildings 15-1 and 15-7, which were a laboratory and shop and a control room and dark room associated with Firing Sites C and D. Hazardous materials known to be present in these buildings include thorium in Building 15-1 and mercury and photographic chemicals in Building 15-7. MDA N was reportedly opened in 1962 and was shown in an aerial photograph from 1965 to be

		closed. The landfill is believed to be approximately 300 ft long x 100 ft wide. The RFI work plan described the presence of rebar and metal at the site and indicated that the site was mounded above the original grade. The only historical environmental survey at this site described in the RFI work plan was an aerial radiological survey conducted in 1982. This survey did not identify radiation above BVs at this site. The ER Project conducted a Phase I RFI at Former SWMU 15-002 in 1995. The RFI focused on determining whether potential contaminants were present in the former burn pit. Phase I efforts consisted of performing a radiological survey of the site and collecting a surface and subsurface (18- to 24-in.-deep) sample at each of two locations from within the pit. All samples were field-screened for radioactivity, HE, and inorganic chemicals, and subsurface samples were field-screened for organic chemicals. All samples were submitted for laboratory analysis for uranium, inorganic chemicals, and organic chemicals. Inorganic chemicals above BVs were barium, copper, and mercury. None of these inorganic chemicals was present above its SAL. Uranium was not present above its FV. No organic chemicals were detected. The results of the Phase I RFI sampling were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for former SWMU 15-002. The basis for the NFA recommendation was that the site has been characterized, and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The results of the Phase I RFI were also used to perform an ecological assessment. The ER Project conducted a Phase I RFI at Former SWMU 15-007(a) in 1995. The RFI focused on determining whether potential contaminants were present in the landfill. Sampling was preceded by a surface radiological survey and geophysical surveys (magnetometry, electromagnetic, and resistivity) intended to define the boundaries of the landfill. One surface and two subsurface samples were collected from each of seven locations identified based on the results of the geophysical surveys. These locations were different than those originally specified in the RFI work plan, which were based on historical records. All samples were field-screened for radioactivity, HE, and inorganic chemicals, and subsurface samples were screened for organic chemicals. Thirteen of the samples collected were submitted for laboratory analysis for uranium, thorium, inorganic chemicals, and organic chemicals. Inorganic chemicals above BVs were antimony, lead, and mercury. None of these inorganic chemicals was present above its SAL. Uranium and thorium were not present above FVs. The only organic chemical detected was acetone. Acetone was not considered to be a COPC because it is a common analytical laboratory contaminant. The results of the Phase I RFI sampling were used to perform a human health risk-based screening assessment. This assessment identified no potential contaminants. Although no potential contaminants were identified, the RFI report indicated that further characterization of the site was warranted because the Phase I sampling may not have been conducted in areas of contaminated fill. A second geophysical survey was recommended using new methods. Based on the results of this geophysical survey, additional sampling might be performed.
15-003-00	Pending	Consolidated SWMU 15-003-00 consists of former SWMUs 15-003 and 15-006(a), which are a burn pad and firing point, respectively. This consolidated unit is located at the PHERMEX facility at the southeast corner of TA-15. Former SWMU 15-003 is a burn pad intended to be used for disposal of scrap HE. The RFI work plan indicated that former SWMU 15-003 had an interim status hazardous waste permit for treatment of HE scraps by detonation but had never been used for such purposes. The exact date of construction of former SWMU 15-003 was not specified in the RFI work plan but the PHERMEX facility has been in operation since approximately 1961. The PHERMEX firing site is expected to continue to be operated well into the twenty-first century. This former SWMU is located at the active PHERMEX firing point and, thus, could be contaminated with the materials used in tests at PHERMEX. These materials include uranium, beryllium, lead, mercury, thorium, and HE. Past environmental surveys at the PHERMEX firing site include an aerial

		radiological survey conducted in 1982 that identified elevated levels of uranium-238. Surface soil sampling conducted in 1987 and 1994 identified elevated concentrations of uranium and beryllium. A 1991 surface radiation survey identified elevated contact exposure rates believed to be associated with chunks of depleted uranium at the firing point. Former SWMU 15-006(a) is the active firing point where explosives are detonated as part of the tests conducted at PHERMEX. This former SWMU is collocated with former SWMU 15-003, and the historical and descriptive information for former SWMU 15-003 also applies to former SWMU 15-006(a). Because this consolidated unit is an active firing site, the RFI work plan proposed deferring characterization until decommissioning of the site. The basis for deferring characterization was that there is no current health risk to occupational workers at the site and that the location and concentrations of hazardous materials could change with time due to usage of the site. The RFI work plan included a risk assessment for occupational workers at PHERMEX to determine whether there was a health risk to workers. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. Consolidated SWMU 15-003-00, containing former SWMUs 15-003 and 15-006(a), was included in the submission because possible contamination at the consolidated SWMU is exempt from RCRA regulation under the military munitions rule (40 CFR 260.10 and 40 CFR 266). The sole purpose of activities at consolidated SWMU 15-003-00 was to perform activities including research, development, testing, and evaluation of military munitions, weapons, or weapons systems. Therefore, solid wastes as defined by RCRA were never managed at this site.
15-004(a)	Pending	SWMU 15-004(a) consists of an inactive firing site, known as Firing Site C, located near the center of TA-15. Firing Site C began operation in 1945 and was used until approximately 1948. Concrete slabs were used as firing platforms at this site, but were removed by 1947. The disposition of these platforms was not reported. Structures associated with Firing Site C were a headquarters building/control room (former Building 15-7) and an x-unit (former Building 15-35). Both of these structures have been removed. The explosive tests at Firing Site C were conducted within 25 ft of the x-unit, which suggests that the explosions were small in size. Information is limited concerning the materials used in tests at Firing Site C, but these materials are suspected to include natural uranium, beryllium, lead, mercury, and HE. The tests conducted at SWMU 15-004(a) could potentially have dispersed these materials around the firing site. Past environmental surveys at this site include an aerial radiological survey conducted in 1982 that identified background levels of radiation. A soil sample was collected from the site in 1991 as part of the Sanitary Wastewater System Consolidation Project. This sample was taken near the location of the former x-unit and was analyzed for radionuclides, inorganic chemicals, and organic chemicals. Analysis of this sample showed radionuclides at FVs and inorganic chemicals below EPA guidelines. No organic chemicals were detected. The ER Project conducted a Phase I RFI in 1995 to determine the extent, concentration, and depth profile of potential contaminants at this firing site. Samples were collected from 27 locations on a grid around the firing site. Surface samples were collected at each site, and subsurface samples (generally 18- to 24-in.-deep) were collected at 12 of the locations. All samples were screened in the field for radioactivity, inorganic chemicals, and HE. Based on the field-screening results, seven surface samples and four subsurface samples from six locations were submitted for laboratory analysis for radionuclides and inorganic chemicals. Inorganic chemicals detected above BVs were copper, lead, mercury, and nickel. None of these inorganic chemicals was present at concentrations exceeding SALs. Uranium was the only radionuclide detected above its FV. Uranium concentrations did not exceed the SAL for uranium. The results of the Phase I RFI sampling were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 15-004(a). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are

		present in concentrations that pose no unacceptable risk under the projected land use. The results of the Phase I RFI were also used to perform an ecological screening assessment. Uranium and lead were noted to exceed ecological SALs. The RFI report indicated that a baseline ecological risk assessment would be needed to assess the significance of the long-term impacts of these chemicals to resident plant and animal populations. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. SWMU 15-004(a) was included in the submission because possible contamination at the SWMU is exempt from RCRA regulation under the military munitions rule (40 CFR 260.10 and 40 CFR 266). The sole purpose of activities at SWMU 15-004(a) was to perform activities including research, development, testing, and evaluation of military munitions, weapons, or weapons systems. Therefore, solid wastes as defined by RCRA were never managed at this site.
15-004(b)-99	Pending	Consolidated SWMU 15-004(b)-99 consists of former SWMUs 15-004(b) and 15-004(c), which are two inactive firing sites known as Firing Sites A and B, respectively. This consolidated unit is located on the west side of TA-15, southeast of the R-183 laboratory and office complex. The former SWMUs in this consolidated unit were among the first firing sites used at LANL and operated from approximately 1945 to 1952. Former SWMUs 15-004(b) and 15-004(c) were located approximately 200 ft apart on a flat area that had formerly been farm land. The RFI work plan indicates that most of the experiments were conducted at former SWMU 15-004(b) and involved relatively small amounts of HE (i.e., up to 50 lb). Tests involving larger quantities of HE were conducted at former SWMU 15-004(c). Aerial photographs taken in 1958 indicate that the areas of land cleared of vegetation and affected by explosives were relatively small. The two sites were reportedly decommissioned in 1967, and the sites were regraded. None of the structures and buildings formerly associated with the firing sites remain. Two of these buildings, a bunker (former Building 15-14) and a control building (former Building 15-74), were surveyed in 1965 before decommissioning and were found to contain no detectable levels of HE or radionuclides. Information is limited concerning the materials used in tests at Firing Sites A and B, but these materials are suspected to include natural uranium, beryllium, lead, mercury, and HE. The amount of uranium used at any time was reportedly only a few kg. The tests conducted at former SWMUs 15-004(a) and 15-004(b) could potentially have dispersed these materials around the firing sites. Any contamination from the two firing sites would be expected to be commingled due to the proximity of the sites and the regrading that occurred following decommissioning. Past environmental surveys at this site include an aerial radiological survey conducted in 1982 that identified background levels of radiation. Five surface soil samples were collected at and around former SWMUs 15-004(a) and 15-004(b) in 1991 as part of the Sanitary Wastewater System Consolidation Project. These samples were analyzed for radionuclides, inorganic chemicals, and organic chemicals. Analysis of these samples showed radionuclides at BVs and inorganic chemicals below EPA guidelines. No organic chemicals were detected. The ER Project conducted a Phase I RFI in 1994 to determine the extent, concentration, and depth profile of potential contaminants at this firing site. Samples were collected from 19 locations on a grid around the firing sites. Surface samples were collected at each site, and subsurface samples (18- to 24-in.-deep) were collected at 9 of the locations. All samples were screened in the field for radioactivity, inorganic chemicals, and HE. Based on the field-screening results, six surface samples and four subsurface samples from six locations were submitted for laboratory analysis for radionuclides and inorganic chemicals. Inorganic chemicals present above BVs were barium, cadmium, copper, lead, and mercury. The only inorganic chemical above SAL was lead. Uranium was the only radionuclide present above its FV, but did not exceed SAL. Based on the presence of elevated lead concentrations at two locations near the site of former SWMU 15-004(b), an additional sampling effort was conducted in 1995 to better define the distribution of lead in soils. This effort involved collection of surface samples at 70 locations around the two hot spots and analysis of samples for lead. The SAL for lead was exceeded in 15 of the samples. The results of this sampling were

		used to estimate the extent of lead concentrations in soil exceeding SAL and identified an additional hot spot near former SWMU 15-004(b). The results of the Phase I RFI sampling were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended an EC for former SWMU 15-004(b) and NFA for former SWMU 15-004(c). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The results of the Phase I RFI were also used to perform an ecological screening assessment. Barium, cadmium, copper, lead, mercury, and uranium were noted to exceed ecological SALs for former SWMUs 15-004(b) and 15-004(c). The RFI report indicated that a baseline ecological risk assessment would be needed to assess the significance of the long-term impacts of these chemicals to resident plant and animal populations. A VCA for former SWMU 15-004(b) was performed in 1996. As part of the VCA, a new sampling grid was established based on an historical aerial photograph of Firing Sites A and B, obtained in 1995, that indicated that the original sampling grid may have been located too far east. Using this grid, 155 soil samples were collected at new sample locations and analyzed for lead. The SAL for lead was exceeded in 4 samples. Based on these results and the Phase I RFI results, 4 areas were identified where lead exceeded the PRG. Soil was excavated from these areas until lead concentrations were below the PRG, as determined by field XRF analysis of 86 confirmation samples. Five additional confirmation samples were then collected (one each from three excavations and two from the remaining excavation) and submitted for lead analysis in a fixed laboratory. All results were below the SAL and PRG. The excavations were backfilled with clean fill. A total of twelve 55-gal. drums of waste were generated during the VCA. These wastes were sampled to determine whether they were hazardous or radioactive. The wastes were found to be nonhazardous and were managed as low-level radioactive wastes because uranium had historically been used at this site. The wastes were disposed of at TA-54. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. Consolidated SWMU 15-004(b)-99, containing former SWMUs 15-004(b) and 15-004(c), was included in the submission because possible contamination at the consolidated SWMU is exempt from RCRA regulation under the military munitions rule (40 CFR 260.10 and 40 CFR 266). The sole purpose of activities at consolidated SWMU 15-004(b)-99 was to perform activities including research, development, testing, and evaluation of military munitions, weapons, or weapons systems. Therefore, solid wastes as defined by RCRA were never managed at this site.
15-004(d)	Administratively Complete	AOC 15-004(d) was reported in the 1990 SWMU report as an inactive firing site designated as Firing Point C, located near the center of TA-15. The site is associated with structure 15-35, a 4.75-ft x 4-ft x 8-ft wooden structure that functioned as a "control chamber." SWMU 15-004(a) was reported as two 12-ft x 12-ft x 2-ft concrete firing platforms located at an unknown firing point. A review of engineering drawings indicate that the platforms [SWMU 15-004(a)] were actually located at Firing Point C. Firing Point C began operation in mid- to late 1944 and was used until mid-1948. The explosives testing at Firing Site C were conducted within 25 ft of the control chamber, structure 15-35. The explosions associated with this testing are thought to have been small. Although information is limited concerning the materials used in the tests, test-firing materials were believed to include natural uranium, beryllium, lead, mercury, and HE. All structures associated with Firing Point C were removed from the site by 1969. Based on engineering drawings, the ER Project has demonstrated that the former firing platforms [SWMU 15-004(a)] identified in the 1990 SWMU report as associated with an unnamed firing point at TA-15 are actually situated within Firing Point C. AOC 15-004(d) was proposed for NFA in August 2002, as this site is a duplicate of SWMU 15-004(a).
15-004(e)	Administratively	

	Complete	
15-004(f)-99	In Progress	Consolidated SWMU 15-004(f)-99 consists of former SWMUs 15-004(f) and 15-008(a), which are an inactive firing site and a surface disposal site, respectively. This consolidated unit is located on the central eastern side of TA-15. The former SWMUs in this consolidated unit were operated from at least 1947 until 1981. Former SWMU 15-004(f) consists of an inactive firing site, Site E-F, comprised of three inactive firing points covering a total area of approximately 60 acres. Firing Site E-F is the largest, most heavily contaminated inactive firing site at LANL. Firing Site E-F is believed to have originally been the site of Firing Site D, a small firing site. In 1947, this site was expanded into Firing Point E, which was a large firing site for shots up to 2500 lb of HE, and Firing Point F, which was a smaller site. These two firing points were approximately 800 ft apart and were both connected to an underground control bunker (structure 15-27). The two firing points were originally depressions in the ground. As the sites were used, they were either regraded or filled in with new gravel. Eventually, soil mounds were constructed on two sides of Firing Point E to protect TA-15 structures from shrapnel. Firing Site E-F was operated extensively from 1947 through 1973 and was last used in 1981. Tests conducted at former SWMU 15-004(f) involved an estimated 63,000 kg of natural and depleted uranium, 320 kg of beryllium, and unknown amounts of lead and mercury. Other materials used in tests at this firing site include bismuth, copper, cobalt, nickel, tin, and thorium. Tests conducted at Firing Point E may have sent shrapnel as far as 3500 ft from the firing points, but most debris is expected to be within 1000 ft. Studies have previously been conducted at this site, including several in the late 1970s and early 1980s, to characterize soil contamination. These studies identified extensive uranium contamination, including the presence of chunks of oxidized uranium metal in soil. An aerial radiological survey conducted in 1982 identified elevated levels of radiation at this site. Former SWMU 15-008(a) consists of two small surface disposal areas south of former SWMU 15-004(f). This site is located south of Firing Point E on the edge of Potrillo Canyon, and the two disposal areas are approximately 200 ft apart. Apparently, this former SWMU was used for disposal of debris from tests conducted at Firing Site E-F. Reportedly, this debris included metal pieces, soil, plastic, rock, pebbles, electrical cable, electrical accessories, and miscellaneous debris. Each disposal area consists of a pile of debris approximately 8 ft in diameter x 2 ft high that was apparently dumped from a truck. The exact period of operation of this site is not known. Potential contaminants in this material were expected to be those associated with Firing Site E-F, i.e., uranium, beryllium, lead, and mercury. An aerial radiological survey conducted in 1982 did not identify elevated levels of radioactivity at this site. The ER Project conducted a Phase I RFI at Former SWMU 15-004(f) in 1994 to determine the extent, concentration, and depth profile of potential contaminants at this firing site. Samples were collected from 85 locations around the firing sites. Surface samples were collected at each site, and subsurface samples (generally 18- to 24-in.-deep) were collected at 35 of the locations. All samples were screened in the field for radioactivity, inorganic chemicals, and HE. Based on the field-screening results, 43 surface samples and 17 subsurface samples from 53 locations were submitted for laboratory analysis for radionuclides and inorganic chemicals. Inorganic chemicals present above BVs were barium, beryllium, cadmium, chromium, copper, lead, manganese, mercury, nickel, silver, vanadium, and zinc. None of these inorganic chemicals was detected above SAL. Radionuclides detected above FVs were uranium, protactinium-234m, thorium-234, americium-241, and cesium-137. The only radionuclide above SAL was uranium, which exceeded SALs in 21 samples The ER Project conducted a Phase I RFI at Former SWMU 15-008(a) in 1994 to determine the extent, concentration, and depth profile of potential contaminants at this firing site. Three surface samples were collected at each of the two waste piles, and four additional surface samples were collected from nearby drainages. All samples were screened in the field for radioactivity, inorganic chemicals, and HE. All ten

		samples were then submitted for laboratory analysis for radionuclides and inorganic chemicals. Inorganic chemicals present above BVs were antimony, barium, beryllium, cadmium, copper, lead, mercury, nickel, silver, and zinc. Copper, the only inorganic chemical detected above SAL, exceeded its SAL in two samples. Radionuclides detected above FVs were uranium, protactinium-234m, thorium-234, and americium-241. The only radionuclide above SAL was uranium. Total uranium concentrations exceeded the SAL in four samples. The SALs for uranium-235 and uranium-238 were exceeded in one sample. Based on the results of the Phase I sampling and analysis, the RFI report recommended an EC for the two former SWMUs comprising this consolidated unit. At a minimum, the EC was to include removal of visible chunks of uranium around the former firing points and copper wire at the surface disposal areas. In addition, the EC plan was to include a human health risk assessment to determine the necessity for soil remediation. Barium, beryllium, cadmium, chromium, copper, lead, mercury, zinc, and uranium were noted to exceed ecological SALs for former SWMUs 15-004(f) and 15-008(a). The RFI report indicated that a baseline ecological risk assessment would be needed to assess the significance of the long-term impacts of these chemicals to resident plant and animal populations. In 1997, the ER Project prepared an IA plan for former SWMUs 15-004(f) and 15-008(a). The IA described in this plan called for visual identification and removal of pieces of uranium from the ground surface. In 1999, the ER Project submitted to NMED a plan for a technology feasibility demonstration project at former SWMU 15-004(f).
15-004(g)-00	In Progress	Consolidated SWMU 15-004(g)-00 consists of former SWMUs 15-004(g) and 15-008(c), which are an inactive firing site and a surface disposal site, respectively. This consolidated unit is located on the central southern side of TA-15. The former SWMUs in this consolidated unit were operated from approximately 1949 through 1967. Former SWMU 15-004(g) consists of inactive Firing Site G. This firing site began operation by 1949 and was used for somewhat larger tests than those conducted at nearby Firing Sites A and B. Structures present at Firing Site G consisted of a control chamber (structure 15-9), an x-unit (structure 15-28), and a barricade (structure 15-16) to the south of the control chamber. The x-unit and barricade were removed in 1967, and only the control chamber remains. The exact nature of the materials used during tests at this site is unknown, but materials are believed to include natural or depleted uranium, other inorganic chemicals, and HE. Previous investigations have included an aerial radiological survey in 1982 that did not identify any elevated radiation levels at the firing site. However, small pieces of metallic uranium were observed on top of structure 15-9 during a 1986 field survey. Also, several areas of radiological surface contamination were identified during surface surveys performed during 1991 and 1996. This contamination was believed to be associated with uranium debris from tests conducted at the firing site. Former SWMU 15-008(c) consists of several small surface disposal areas used to dispose of residues from tests conducted at former SWMU 15-004(g). These areas are located in the vicinity of structure 15-233, which is a carpenter shop south of structure 15-9. The exact nature of the materials disposed of at this site and its period of operation are unknown. A radiological survey and soil sampling were performed near this site in 1987 and detected elevated radiation and elevated levels of uranium in soil. No HE was detected. For Former SWMU 15-004(g), the RFI work plan proposed collection of one surface and one subsurface sample from each of nine random sample grid locations around the former firing site and nine biased locations near the former firing point. These samples would be screened for radioactivity, inorganic chemicals, and HE, and selected samples would be submitted for laboratory analysis for uranium and inorganic chemicals. The ER Project conducted a Phase I RFI at this site from June 1995 to March 1996 to determine the nature and extent of contamination at the site. The RFI

		report did not provide details of the activities conducted during the RFI or sampling results. The RFI report did indicate that uranium was detected at this site in excess of its SAL and PRG and was identified as a potential contaminant. The RFI report recommended an IA for former SWMU 15-004(g) consisting of removal of visible pieces of surface uranium. This IA plan was to provide all specific analytical results, conclusions, and recommendations. The site would then be evaluated for further actions. For former SWMU 15-008(c), the RFI work plan proposed collection of one surface and one subsurface sample from each of two sample locations. These samples were to be screened for radioactivity, inorganic chemicals, and HE and then submitted for laboratory analysis for uranium and inorganic chemicals. The ER Project conducted a Phase I RFI at this site from June 1995 to March 1996 to determine the nature and extent of contamination. The RFI report did not provide details of the activities conducted during the RFI or sampling results. The RFI report did indicate that uranium was detected at this site in excess of its SAL and PRG and was identified as a potential contaminant. The RFI report recommended an IA for former SWMU 15-008(c) consisting of removal of visible pieces of surface uranium. This IA plan was to provide all specific analytical results, conclusions, and recommendations. The site would then be evaluated for further actions.
15-004(h)	In Progress	AOC 15-004(h) consists of inactive Firing Site H (structure 15-17). This firing site was built in 1948 and operated until 1953. It was used for tests involving larger amounts of explosives than those conducted at Firing Site A. Firing Site H is at the location of the active PHERMEX facility in the southeast corner of TA-15. The old firing point is located approximately 100 ft north of the power control building for PHERMEX (structure 15-185). Of the structures associated with the inactive firing site, only the camera chamber (structure 15-92) remains. The surface of the site was reportedly regraded in 1992. The exact nature of the materials used during tests at this site is unknown, but materials are believed to include depleted uranium, beryllium, lead, and HE. Previous investigations have included an aerial radiological survey in 1982. This survey identified elevated levels of radiation, but these were believed to be associated with activities at PHERMEX, rather than those of the inactive firing site. The RFI work plan proposed collection of one surface and one subsurface sample from each of nine random sample grid locations around the former firing site and nine biased locations at the former firing point. These samples would be screened for radioactivity, inorganic chemicals, and HE, and selected samples would be submitted for laboratory analysis for uranium and inorganic chemicals. The RFI report indicated that because of its close proximity to PHERMEX, actions at this AOC were being deferred until decommissioning of PHERMEX.
15-004(i)	In Progress	SWMU 15-004(i) consists of an inactive firing site that was reportedly used to conduct two test explosions in 1944. This site was identified in a historical document and was referred to as “The Gulch.” The location of this site was described as approximately one mile below R-Site, but the precise location is unknown. The tests consisted of up to 300 lb of HE and 500 lb of ammonium picrate, each being detonated approximately 10 ft from a canyon wall to observe the damage to the canyon wall. Because the location of this site is unknown, no previous environmental investigations have been conducted. The RFI work plan recommended NFA for this site based on its unknown location and the limited tests performed at the site. This SWMU was recommended for NFA in the March 1995 permit modification request. The basis for this request was that the location of the site could not be found, based on available information, and only two tests were known to have been conducted at the site.
15-005(a)	Administratively Complete	
15-005(b)	In Progress	AOC 15-005(b) consists of an active hazardous waste container storage area that is located at an HE make-up building (Building 15-242). This AOC is used to store containers of waste containing HE and is regulated under 40 CFR 262, Standards

		Applicable to Generators of Hazardous Waste. This site is located along the western side of TA-15, approximately 500 ft east of the R-183 office/laboratory complex. There is a grassy field on three sides of the building and an asphalt road on the other side. The period of operation of this site and the types and quantities of wastes in storage are unknown. No previous environmental investigations were identified for this site. The RFI work plan recommended collection of samples at two locations outside Building 15-242. The ER Project performed a Phase I RFI for this site from June 1995 to March 1996 to determine whether contamination was present that could be associated with site activities. Three surface samples and two subsurface (18- to 24-in. in depth) were collected from two locations immediately outside Building 15-242. These samples were screened for radioactivity, inorganic chemicals, and HE and submitted for laboratory analysis for uranium and inorganic chemicals. Uranium was not detected above its FV, and inorganic chemicals were not detected above BVs. Based on these results, the RFI report recommended NFA for AOC 15-005(b). The basis for the NFA recommendation was that the site has been characterized, and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use.
15-005(c)	In Progress	AOC 15-005(c) consists of an active hazardous waste container storage area that is located at an HE storage building (Building 15-41). This AOC is used to store containers of waste containing HE and is regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. This site is located in the central portion of TA-15, near inactive Firing Site C. The ground surface on three sides of the building is unpaved, and there is an asphalt road on the other side. The period of operation of this site and the types and quantities of wastes in storage are unknown. No previous environmental investigations were identified for this site. The RFI work plan recommended collection of samples at two locations outside Building 15-41. The ER Project performed a Phase I RFI for this site from June 1995 to March 1996 to determine whether contamination was present that could be associated with site activities. Two surface samples and two subsurface (18- to 24-in. in depth) samples were collected from two locations immediately outside Building 15-41 on unpaved areas. These samples were screened for radioactivity, inorganic chemicals, and HE and submitted for laboratory analysis for uranium and inorganic chemicals. Uranium was not detected above its FV, and inorganic chemicals were not detected above BVs. Based on these results, the RFI report recommended NFA for AOC 15-005(c). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use.
15-005(d)	Administratively Complete	
15-006(b)	Pending	SWMU 15-006(b) is the active Ector firing site, which is used for dynamic radiography of explosion-driven weapons components. This SWMU is located along the eastern side of TA-15. This firing site was originally established in 1973 and used periodically until 1982. The Ector radiography machine was then constructed at this site, and the site has operated with this machine from the mid-1980s until the present. Structures associated with the firing site are the firing point chamber (structure 15-276), the multidiagnostic hydrotest building (Building 15-306), and blast protection (structure 15-319). Materials used in the tests at this site include uranium, beryllium, lead, and HE. Past environmental surveys at this site include an aerial radiological survey conducted in 1982 that showed radioactivity to be at BVs. A 1991 surface radiation survey identified elevated contact exposure rates on blast mats and shields and on chunks of uranium in soil. Surface and subsurface soil samples were collected in 1991 as part of the Sanitary Wastewater Collection System Project. These samples showed uranium to be present above BVs. Inorganic chemicals did not exceed BVs, and organic chemicals and HE were not detected. Because SWMU 15-006(b) is an active firing site, the RFI work plan proposed deferring

		characterization until decommissioning of the site. The basis for deferring characterization was that there is no current health risk to occupational workers at the site. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. SWMU 15-006(b) was included in the submission because possible contamination at the SWMU is exempt from RCRA regulation under the military munitions rule (40 CFR 260.10 and 40 CFR 266). The sole purpose of activities at SWMU 15-006(b) was to perform activities including research, development, testing, and evaluation of military munitions, weapons, or weapons systems. Therefore, solid wastes as defined by RCRA were never managed at this site.
15-006(c)-99	In Progress	Consolidated SWMU 15-006(c)-99 consists of former SWMUs 15-006(c) and 15-008(b), which are an inactive firing site known as Firing Site R-44 and an associated surface disposal site, respectively. This consolidated unit is located on the eastern side of TA-15. Former SWMU 15-006(c) is the inactive R-44 firing site, which is named for its control building (structure 15-44) and was the third most extensively used firing site at TA-15. This firing site was originally constructed in 1951 and was used extensively from 1956 through 1978 for diagnostic tests of weapons components. The diagnostic capabilities of this site were different from and modest compared with those of the PHERMEX and Ector firing sites, which are also located in TA-15. The R-44 firing site was used only for small experiments once PHERMEX and Ector became operational and was last used in 1992. Materials used in the tests at this site include uranium, beryllium, lead, and HE. Records indicate that approximately 7000 kg of uranium (mostly depleted), 350 kg of beryllium, and 15 kg of lead were expended at the R-44 firing site from 1953 to 1978, when most of the experiments were performed. This firing site is located on a flat, open area on a narrow mesa over Threemile Canyon, and debris from explosives tests has been scattered into the canyon. Past environmental surveys at this site include an aerial radiological survey conducted in 1982. The results of this survey were used to estimate an inventory of 2300 kg of uranium in soil at the R-44 firing site. Soil sampling was conducted at the site in 1987 and showed concentrations of uranium, beryllium, and lead decreasing with distance from the firing point. No HE was detected. A surface radiological survey conducted in 1991 indicated elevated exposure rates believed to be associated with chunks of uranium. This survey was used to identify large pieces of uranium for removal. Former SWMU 15-008(b) consists of a surface disposal site associated with operation of Firing Site R-44 [former SWMU 15-006(c)]. As described above for former SWMU 15-006(c), Firing Site R-44 is located on a narrow mesa. Former SWMU 15-008(b) consists of a shelf of soil and debris created on the edge of the mesa, north of the firing site, where materials from the firing site have been pushed aside. Additionally, some of this material has been pushed over the rim of the canyon. Materials at the site were observed to range in size from less than one inch to several feet in diameter. Former SWMU 15-008(b) is within the general area previously investigated for former SWMU 15-006(c). As described for former SWMU 15-006(c), these previous investigations have detected the presence of uranium, beryllium, and lead, and these materials are also expected to be present at former SWMU 15-008(b). Materials from wire, such as copper, were also expected to be present at former SWMU 15-008(b). The ER Project conducted a Phase I RFI at former SWMU 15-006(c) from June 1995 through March 1996. The RFI report did not present the results of sampling performed at this former SWMU, but indicated that uranium, beryllium, lead, arsenic, and RDX were present above PRGs and were retained as potential contaminants. Based on the sampling results and human health screening assessment, the RFI report recommended an EC for this site and the associated former SWMU 15-008(b). The RFI report indicated that an EC plan would be prepared and that this plan would include the RFI sampling results, conclusions, and recommendations. The ER Project conducted a Phase I RFI at former SWMU 15-008(b) in 1994 to determine whether potential contaminants were present in surface and subsurface soils

		at levels above SALs. Samples were collected from 11 biased locations based on field observations. Eleven surface samples were collected from 10 locations and 5 subsurface samples (18- to 24-in.-deep) were collected from 5 locations. All samples were field-screened for radioactivity, inorganic chemicals, and HE. Based on the field-screening results, nine surface samples and five subsurface samples from nine locations were submitted for laboratory analysis for radionuclides and inorganic chemicals. Inorganic chemicals present above BVs were antimony, arsenic, beryllium, chromium, copper, lead, mercury, nickel, silver, and zinc. Inorganic chemicals above SALs were antimony, copper, and lead. Antimony exceeded its SAL in two samples, copper exceeded its SAL in one sample, and lead exceeded its SAL in six samples. Uranium was the only radionuclide detected above its FV and was present above its SAL in eleven samples. The RFI report indicates that an inspection of the mesa was performed during the spring of 1995 and that the area of former SWMU 15-008(b) was determined to be much larger than originally indicated in the RFI work plan. Sampling and analysis conducted for the nearby former SWMU 15-006(c) reportedly indicated a larger area of beryllium, lead, and uranium contamination, including the drainage areas from the disposal site. This expanded area of apparent contamination was noted to overlap the area affected by the R-44 firing site [former SWMU 15-006(c)]. The RFI report for former SWMU 15-006(c) recommended EC for both former SWMUs comprising this consolidated unit. This RFI report indicated that an EC plan addressing both former SWMUs would be prepared. The results of the Phase I RFI for former SWMU 15-008(b) were also used to perform an ecological screening assessment. Antimony, arsenic, beryllium, chromium, copper, lead, mercury, nickel, silver, uranium, and zinc were noted to exceed ecological SALs for former SWMU 15-008(b). The RFI report indicated that a baseline ecological risk assessment would be needed to assess the significance of the long-term impacts of these chemicals to resident plant and animal populations. An EC was performed during the summer of 2000 following the Cerro Grande Fire. The purpose of the EC was to pick up shrapnel and debris from the SWMU and surrounding area. Approximately 10 tons of nonhazardous, nonradioactive shrapnel and debris were accumulated and disposed of along with 7 tons of low-level radioactive shrapnel and debris, and 1600 pounds of mixed low level.
15-006(d)-99	In Progress	Consolidated SWMU 15-006(d)-99 consists of former SWMU 15-006(d) and AOC 15-008(g), which are an inactive firing site known as Firing Site R-45, and a pile of sandbags associated with this firing site, respectively. This consolidated unit is located in the northeast corner of TA-15. Former SWMU 15-006(d) is the inactive R-45 firing site, which is named for its control building (structure 15-45). This firing site was constructed in 1951 and used until 1992. When this firing site was active, it was the least used of the TA-15 firing sites. The R-45 firing site had two firing points and was used for experiments involving small amounts of explosives, such as testing shock-wave phenomena and optical diagnostics. Materials used in the tests at this site include uranium, beryllium, lead, and HE. Past environmental surveys at this site include an aerial radiological survey conducted in 1982 that did not detect radioactivity above BVs. A surface radiological survey conducted in 1991 reportedly detected localized, elevated exposure rates at the surface of the camera building closest to the firing point, possibly associated with uranium debris. Former AOC 15-008(g) consists of a pile of broken up sandbags located at the R-45 firing site [former SWMU 15-006(d)]. Apparently, these sandbags were used as shielding for the explosions carried out at the R-45 firing site and may have received fragments from the explosions. Materials present at this former AOC would be the same as for the firing site, i.e., uranium, beryllium, lead, and HE. No previous environmental investigations have specifically addressed this former AOC. However,

		because this former AOC is collocated with former SWMU 15-006(d), it would have been included in the radiological surveys conducted at the latter site. These surveys did not appear to indicate elevated radioactivity associated with the sandbags. The ER Project conducted a Phase I RFI for former SWMU 15-006(d) during from June 1995 to March 1996 to determine whether contamination was present that could be associated with site activities. Phase I efforts consisted of performing a radiological survey of the site and collecting 35 surface samples and 32 subsurface samples from 31 locations at and around the firing site. All samples were field-screened for radioactivity, HE, and inorganic chemicals. Fourteen surface samples and 10 subsurface samples from 17 locations were submitted for laboratory analysis for uranium, inorganic chemicals, and HE. Copper was the only inorganic chemical above BVs but was not present above its SAL. Similarly, uranium was present above its FV but did not exceed its SAL. HE was not detected in any samples. The results of the Phase I RFI sampling were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for former SWMU 15-006(d). The basis for the NFA recommendation was that the site has been characterized, and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The RFI report indicated that this site would be evaluated for ecological risk once an ecological risk assessment methodology had been approved. The ER Project conducted a Phase I RFI for former AOC 15-008(g) from June 1995 to March 1996 to determine whether contamination was present that could be associated with site activities. Phase I efforts consisted of performing a radiological survey of the site and collecting a surface sample from one location. The sample was field-screened for radioactivity, HE, and inorganic chemicals and were submitted for laboratory analysis for uranium, inorganic chemicals, and HE. No inorganic chemicals were detected above BVs. Similarly, uranium was not present above its FV. HE was not detected. Based on these results, the RFI report recommended NFA for former AOC 15-008(g). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use.
15-006(e)	Administratively Complete	
15-007(b)	In Progress	SWMU 15-007(b) consists of a landfill known as MDA Z. This landfill is located near inactive Firing Site G in the south central portion of TA-15. The landfill was operated from 1965 to 1981 and received construction debris, used sandbags filled with concrete, and steel blast matting from PHERMEX. At the time of the Phase I RFI in 1995, waste materials observed at the site included concrete, steel reinforcing bars, and partially burned wood. MDA Z is roughly triangular in shape, with dimensions of approximately 225 ft x 50 ft, and appears to have been constructed in a natural depression. The used sandbags filled with concrete were apparently used to form a retaining wall along one side of the landfill, and waste was placed behind this wall. The waste materials disposed of at this site have not been covered with soil and are exposed to precipitation. Previous investigations at this site include an aerial radiological survey in 1982 that did not identify radiation above BVs. Sampling of the site, as part of a DOE environmental study in 1989, resulted in the detection of elevated levels of metals. The ER Project conducted a Phase I RFI for SWMU 15-007(b) from June 1995 to March 1996 to determine whether potential contaminants were present at concentrations above SALs in surface and near-surface soils at the site and to determine their extent. Phase I efforts consisted of performing a geophysical survey of the site to define boundaries of the landfill and collecting 21 surface samples and 12 subsurface samples from 13 locations within and around the landfill. All samples were field-screened for radioactivity, HE, and inorganic chemicals; subsurface samples were screened for organic chemicals also. Fourteen surface samples and 12 subsurface samples from 9 locations were submitted for laboratory analysis for uranium, inorganic

		chemicals, and organic chemicals. Inorganic chemicals detected above BVs were beryllium, copper, lead, mercury, and silver. No inorganic chemicals were detected above SALs. Uranium was detected above its FV and was above its SAL in 7 samples with a maximum concentration of 349 mg/kg. Twelve organic chemicals (anthracene; benzo[a]anthracene; benzo[a]pyrene; benzo[b]fluoranthene; benzo[g,h,i]perylene; bis[2-ethylhexyl]phthalate; chrysene; di-n-butylphthalate; fluoranthene; indeno[1,2,3-cd]pyrene; phenanthrene; and pyrene) were detected. Benzo[a]anthracene exceeded its SAL in two samples. Benzo[a]pyrene and benzo[b]fluoranthene exceeded SALs in one sample. The results of the Phase I RFI sampling were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report concluded that the contents of the landfill pose a potential risk to human health and recommended an expedited cleanup. The basis for the recommendation was that the remedy was obvious and would consist of excavation, screening, sorting, and disposal. The RFI report indicated that a baseline ecological risk assessment would be needed to assess the significance of the long-term impacts of potential contaminants at the site to resident plant and animal populations.
15-007(c)-00	Pending	Consolidated SWMU 15-007(c)-00 consists of former SWMUs 15-007(c) and 15-007(d), which are both 6-ft-diameter x 130-ft-deep underground shafts dug into the tuff and used to conduct underground explosive tests. The shaft openings are located within 20-ft x 20-ft concrete pads and are covered with wood. These former SWMUs are located near Firing Site R-45, approximately 300 ft east of Building 15-263, in the northeast corner of TA-15. The shafts were both constructed in 1972, and each was used for only one test. Former SWMU 15-007(c) (structure 15-264) was used to conduct a single test involving approximately 2 tons of HE. This test was designed to determine the ability of tuff to absorb the explosion. The explosion was confined to the bottom of the shaft by backfilling the shaft with magnetite, Cal-Seal cement, sand grout, bentonite, sand, and gravel. HE was the only material used in the underground test (i.e., radioactive materials were not used). At the time the RFI work plan was prepared, however, pieces of 0.25-in.-diameter lead shot was present at the site, scattered on the concrete pad at the surface of the shaft. The source of this lead was believed to be a bag of lead shot used for instrument shielding during experiments. Shot was also present on the soil adjacent to three sides of the pad. Former SWMU 15-007(d) (structure 15-265) was used to conduct a single test involving 500 lb of HE, approximately 400 Ci of tritium, and less than 200 g of beryllium. This test was confined to the bottom of the shaft by backfilling the shaft in the same manner as described for former SWMU 15-007(c). Former SWMU 15-007(c) was recommended for NFA in the RFI work plan because of low source-term quantities and no reasonable pathway to receptors. This recommendation was made with respect to potential contamination resulting from the test conducted in the shaft. With respect to the lead shot present on the surface, the RFI work plan indicated that the lead shot would be collected and disposed of properly. In 1997, the ER Project prepared an IA plan for former SWMU 15-007(c). The IA described in this plan called for removal of visible lead shot from the concrete pad and the soil extending 10 ft to 20 ft from the pad. The recovered lead would then be recycled. Former SWMU 15-007(d) was recommended for NFA in the September 1995 permit modification request. The basis for this request was the low source-term quantities and the absence of a reasonable pathway to receptors. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. Consolidated SWMU 15-007(c)-00, containing former SWMUs 15-007(c) and 15-007(d), was included in the submission because possible contamination at the consolidated SWMU is exempt from RCRA regulation under the military munitions rule (40 CFR 260.10 and 40 CFR 266). The sole purpose of activities at consolidated SWMU 15-007(c)-00 was to perform research, development, testing, and evaluation of military munitions, weapons, or

		weapons systems. Therefore, solid wastes as defined by RCRA were never managed at this site.
15-008(d)	In Progress	SWMU 15-008(d) consists of building debris located south of Building 15-22. Building 15-22 is located on the west side of TA-15 in an area referred to as The Hollow. This building is now identified as a storage building, but was originally constructed in the 1970s as a control center for an experimental accelerator in nearby Building 15-203. This control center was never needed to operate the accelerator, and the building was never used for this purpose. The nature and quantity of the building debris comprising this SWMU are unknown. The work plan did indicate that activities involving hazardous materials were not conducted in Building 15-22 and that the building debris was not present in 1992 when the work plan was prepared. No previous environmental investigations were identified for this site. Because Building 15-22 is an active facility, the RFI work plan recommended that actions involving this SWMU be deferred until the building is decommissioned. At that time, Building 15-22 and the surrounding area would be surveyed for HE and uranium.
15-008(e)	Administratively Complete	
15-008(f)	In Progress	AOC 15-008(f) consists of several sand mounds that are located around the active I-J Firing Site [SWMU 36-004(e)]. I-J firing site is located on a mesa overlooking Potrillo Canyon and was part of TA-15 when it was originally constructed in 1948. This AOC became part of TA-36 in 1981 when the boundaries of TA-36 were expanded. The RFI work plan for OU 1130 does not specifically address this AOC in the discussion of the SWMU 36-004(e), I-J Firing Site. The purpose and characteristics of these mounds are not described, but they were likely associated with explosives tests conducted at I-J Firing Site. Tests at I-J Firing Site involved a variety of solid and liquid explosives, up to 500 lb per shot, as well as a variety of inorganic chemicals, including aluminum, antimony, beryllium, cadmium, copper, iron, lead, mercury, steel, uranium, lithium-magnesium alloys, and lithium hydride. Previous environmental investigations at this site include a surface radiological survey in 1991 that identified localized areas of elevated radiation levels. Numerous pieces of depleted uranium and oxidized depleted uranium have reportedly been found at and around I-J Firing Site. In addition, there is evidence of barium contamination in Potrillo Canyon watershed near TA-15. During remediation of the septic tank [SWMU 36-003(b)] at this firing site, elevated radiological readings were reportedly observed in surface soil samples collected along the surface water runoff pathways from the firing site and sand mounds [AOC 15-008(f)]. Because I-J Firing Site is an active firing site, the RFI work plan for OU 1130 recommended deferring investigation and remediation of the AOC until decommissioning of the firing site. However, the need for an IA was apparently identified based on the contamination observed in surface water runoff pathways during the septic tank remediation. The ER Project prepared an IA plan in 1997 that included removal of visible pieces of uranium from the firing site and surrounding area, installation of stormwater flow diversions, and stabilization of the sand mounds [AOC 15-008(f)] by covering them with tarps.
15-009(a)-00	In Progress	Consolidated SWMU 15-009(a)-00 consists of former SWMUs 15-009(a), 15-011(a), 15-011(b), 15-011(c), 15-014(i), 15-014(j), and 15-014(k), which include a septic tank, concrete trench drains, an unlined drainage channel, outfalls to Cañon de Valle, and a roof drain. The former SWMUs in this consolidated unit are all associated with disposal of liquid wastes from a series of buildings in the northwest corner of TA-15 known as The Hollow. Former SWMU 15-009(a) is an active septic tank (structure 15-51) that receives sanitary wastes from a shop and laboratory (Building 15-20) and sink and drinking fountain discharges from a shop building (Building 15-50). This reinforced-concrete septic tank was constructed in 1949. Before the mid-1970s, the effluent from this septic tank was discharged to an outfall at the edge of Cañon de Valle, which is approximately 250 ft to the west of the septic tank. In the mid-1970s, a 4-ft-diameter x 50-ft-deep seepage pit was constructed 85 ft to the west of the septic tank to receive the effluent.

		Building 15-50 has been used to perform various activities associated with assembly of experiments conducted at the TA-15 firing sites. Hazardous wastes handled in this building included acid wastes. The Wastewater Stream Characterization Report, published in 1992, states that discharges to this septic tank from Building 15-50 include a water fountain drain and a sink for hand washing. In 1981 the tank contents were reportedly sampled and tested for HE, with none being detected. No other previous environmental investigations were reported for this site. Former SWMU 15-011(a) consists of a group of concrete trench drains that formerly received discharges from a shop and laboratory building (Building 15-20) during the early years of its operation. These discharges were reportedly routed to SWMU 15-011(a) through another trench drain [former SWMU 15-014(k)] and two manholes (structures 15-150 and 15-151). The effluent from SWMU 15-011(a) was then discharged through a drainpipe to an outfall near the edge of Cañon de Valle [former SWMU 15-011(c)]. One of the manholes (structure 15-150) was reportedly removed in the past, and the drainpipe to the outfall was plugged. The RFI work plan did not identify the types of materials that might have been discharged to SWMU 15-011(a). The description and drawings in the RFI work plan, however, suggest that discharges from former SWMU 15-011(a) currently go to the septic tank [former SWMU 15-009(a)] through the remaining manhole (structure 15-151), rather than to the outfall [former SWMU 15-011(c)]. No previous environmental investigations have been performed at former SWMU 15-011(a). Former SWMU 15-011(b) is an unlined drainage channel from a pulse power laboratory (Building 15-194) that leads to an outfall at the edge of Cañon de Valle [former SWMU 15-011(c)]. The RFI work plan indicates that Building 15-194 had a vapor degreaser and stripping tanks and that former SWMU 15-011(b) may have received discharges containing solvents and acid solutions containing sulfuric, chromic, and/or hydrochloric acids. The vapor degreaser was reportedly removed from Building 15-194 around 1987, and the source of discharges is now limited to a sink. No previous environmental investigations have been performed at this former SWMU. Former SWMU 15-011(c) consists of an outfall on the edge of Cañon de Valle, where many of the drainages associated with discharges in The Hollow converge. These discharges include those from former SWMUs 15-011(a), 15-011(b), 15-014(i), 15-014(j), and 15-014(k). Former SWMU 15-011(c) is located west of, and approximately 100 ft lower than, the buildings in The Hollow. Materials that could have been discharged to this SWMU include acid residues from sulfuric, chromic, and hydrochloric acids; degreasing solvents; inorganic chemicals; and uranium. No previous environmental investigations have been performed at this former SWMU. Former SWMU 15-014(i) is a roof drain from a pulse power laboratory (Building 15-194) and the shelter between Buildings 15-194 and 15-50. It appears that this roof drain discharges to the ground surface at the northeast corner of Building 15-194 and joins the surface drainage that flows to an outfall [former SWMU 15-011(c)]. The RFI work plan did not identify specific materials expected to be present in roof drain discharges. No previous environmental investigations have been performed at this former SWMU. Former SWMU 15-014(j) consists of three outfalls from Building 15-50 and an associated concrete trench drain. On the basis of the information presented in the RFI report, it appears that these outfalls discharge to the ground surface north of Building 15-50, and the concrete trench drain joins the surface drainage that flows to an outfall [former SWMU 15-011(c)]. The trench drain is described as being partially asphalt just below the outfalls. The specific materials discharged to this former SWMU were not described. Building 15-50 is a shop building that has been used to perform various activities associated with assembly of experiments conducted at the TA-15 firing sites. No previous environmental investigations have been performed at this former SWMU. Former SWMU 15-014(k) consists of a trench drain that collected discharges from

		Building 15-20 during the early years of its operation. These discharges were reportedly routed to two manholes (structures 15-150 and 15-151) and then to another trench drain [former SWMU 15-011(a)]. The effluent from former SWMU 15-011(a) was then discharged through a drainpipe to an outfall near the edge of Cañon de Valle, former SWMU 15-011(c). One of the manholes (structure 15-150) was reportedly removed in the past, and the drainpipe to the outfall was plugged. The discharge from the remaining manhole (structure 15-151) was then routed to a septic tank [former SWMU 15-009(a)]. The description and drawings in the RFI work plan, however, suggest that discharges from former SWUM 15-014(k) currently go to the septic tank [former SWMU 15-009(a)] through structure 15-151, rather than to former SWMU 15-011(c). The RFI work plan did not identify the types of materials that might have been discharged to former SWMU 15-011(a). No previous environmental investigations have been performed at this former SWMU. The Phase I RFI work plan proposed collection of two sludge samples from the septic tank [former SWMU 15-009(a)] and three subsurface soil samples from a 55-ft-deep borehole installed next to the seepage pit. The report indicates that further action at this SWMU will be deferred until decommissioning of Building 15-50. Former SWMU 15-011(a) was originally described in the RFI work plan as a sump that had been removed at some unspecified date. This description is similar to the one in the 1990 SWMU report, which described this unit as a 6-ft x 3-ft x 2.5-ft sump that had been installed in 1949 and used until the 1950s. The RFI work plan proposed sampling the soil at the location of this former sump, just outside the west side of Building 15-20. During the Phase I RFI conducted by the ER Project during the period of June 1995 through March 1996, this former SWMU was determined to be in place and to consist of a series of concrete trench drains, rather than a sump. There were no cracks present in the drains and no media present within the drains that could be sampled. Although no samples could be collected at this former SWMU, the RFI report noted that the SWMU eventually drains to former SWMU 15-011(c), which is an outfall that collects discharges from The Hollow. As a result, the RFI report indicated that contaminants associated with former SWMU 15-011(a) would be detected in the investigation of former SWMU 15-011(c). The RFI report recommended NFA for former SWMU 15-011(a). The basis for this recommendation was that the site is located within, and therefore investigated as part of, another SWMU. Former SWMU 15-011(b) was originally described in the RFI work plan as a drainline and associated 4-ft-diameter x 50-ft-deep seepage pit (dry well) connected to Building 15-194. This seepage pit was reportedly constructed in 1978. This description is consistent with the one in the 1990 SWMU report, which describes this unit as a 4-ft-diameter x 50-ft-deep dry well constructed in 1978 at the canyon edge west of Building 15-194. The RFI work plan proposed installing a 55-ft-deep boring next to the seepage pit and collecting samples at three depths. During the period of June 1995 through March 1996, the ER Project conducted a Phase I RFI at this site to determine whether contamination associated with site activities was present. The RFI report describes this former SWMU as a dirt drainage ditch, rather than as the drainline and seepage pit described in the RFI work plan. A surface sample and a shallow subsurface soil sample (10 in. to 16 in. deep) were collected from one location within this drainage ditch, near the location of the seepage pit shown in the RFI work plan. These samples were field-screened for radioactivity, HE, inorganic chemicals, and organic chemicals. Both samples were submitted for laboratory analysis for uranium, inorganic chemicals, organic chemicals, and HE. Inorganic chemicals above BVs were copper, lead, mercury, and zinc; none of these inorganic chemicals exceeded its SAL. Uranium was not present above its FV. The only organic chemical detected was acetone, and because it is a common laboratory contaminant, it was not considered to be a potential contaminant. HE was not detected in the soil samples. The results of the Phase I RFI sampling were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 15-011(b). The basis for the NFA recommendation was that the site has been characterized, and

		available data indicate that contaminants either are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The RFI report also indicated that this site would be evaluated for ecological risk once an ecological risk assessment methodology had been approved. The ER Project conducted a Phase I RFI at SWMU 15-011(c), an outfall, from June 1995 to March 1996 to determine whether contamination associated with site activities was present. A surface sample and a shallow subsurface sample (i.e., less than 36 in. deep) were collected from each of two sample locations. One sample location was at the point where the various drainages from The Hollow intersect. The other location was away from the drainages and served to provide data for comparative analysis. These samples were field-screened for radioactivity, HE, inorganic chemicals, and organic chemicals. All samples were submitted for laboratory analysis for uranium, inorganic chemicals, and organic chemicals. Mercury was the only inorganic chemical detected above BVs, but did not exceed its SAL. Uranium was not present above its FV. No organic chemicals were detected. The results of the Phase I RFI sampling were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for former SWMU 15-011(c). The basis for the NFA recommendation was that the site has been characterized, and available data indicate that contaminants either are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The RFI report also indicated that this site would be evaluated for ecological risk once an ecological risk assessment methodology had been approved. The ER Project conducted a Phase I RFI at SWMU 15-014(i), a roof drain, from June 1995 to March 1996 to determine whether contamination associated with site activities was present. A surface sample and shallow subsurface sample (12 in. to 18 in. deep) were collected from one sample location within the drainage. This sample was field-screened for radioactivity, HE, inorganic chemicals, and organic chemicals and submitted for laboratory analysis for uranium, inorganic chemicals, and organic chemicals. Inorganic chemicals above BVs were antimony, copper, lead, silver, and zinc. None of these inorganic chemicals exceeded its SAL. Uranium was not present above BV/FV. No organic chemicals were detected. The results of the Phase I RFI sampling were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for former SWMU 15-014(i). The basis for the NFA recommendation was that the site has been characterized, and available data indicate that contaminants either are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The RFI report also indicated that this site would be evaluated for ecological risk once an ecological risk assessment methodology had been approved. The ER Project conducted a Phase I RFI at SWMU 15-014(j), three outfalls and a concrete trench drain, during the period of June 1995 to March 1996 to determine whether contamination associated with site activities was present. Three surface samples and two shallow subsurface samples (i.e., less than 36 in. deep) were collected from three sample locations within the drainage north of Buildings 15-194 and 15-50. These samples were field-screened for radioactivity, HE, inorganic chemicals, and organic chemicals and submitted for laboratory analysis for uranium, inorganic chemicals, and organic chemicals. Inorganic chemicals above BVs were copper, mercury, silver, and zinc. None of these inorganic chemicals exceeded its SAL. Uranium was not present above its FV. Two organic chemicals, acetone and 2-butanone, were detected. Both of these organic chemicals were also detected in the laboratory blank and were not considered potential contaminants. The results of the Phase I RFI sampling were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for former SWMU 15-014(j). The basis for the NFA recommendation was that the site has been characterized, and available data indicate that contaminants either are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The RFI report also indicated that this site would be evaluated for ecological risk

		once an ecological risk assessment methodology had been approved. The RFI work plan had originally proposed collecting samples from former SWMU 15-014(k), trench drains. During the Phase I RFI conducted by the ER Project from June 1995 through March 1996, no sampling medium was present in the trench drains; therefore, no samples could be collected. No cracks in the trench drains were noted. Although no samples could be collected at this former SWMU, the RFI report noted that this SWMU eventually drains to former SWMU 15-011(c), which is an outfall that collects discharges from The Hollow. As a result, the RFI report indicated that contaminants associated with former SWMU 15-011(a) would be detected in the investigation of former SWMU 15-011(c). The basis for this recommendation was that the site is located within, and therefore investigated as part of, another SWMU.
15-009(b)	In Progress	SWMU 15-009(b) is a septic tank (structure 15-61) at the inactive R-45 firing site. SWMU 15-009(b has a capacity of 540 gal. and is constructed of reinforced concrete. SWMU 15-009(b) was constructed in 1951 and received sanitary wastes from the firing site control building (structure 15-45). The R-45 firing site has been deactivated and was used last in 1992. Although the R-45 firing site has been deactivated, the septic tank is still connected to structure 15-45. No hazardous materials were known to have discharged to this tank. Based on the RFI work plan, it appears that this septic tank originally discharged to an outfall. In the 1970s, a 4-ft-diameter x 50-ft-deep sump was constructed to receive effluent from the tank, and the outfall was plugged. Previous environmental investigations at the R-45 firing site have not been directed at SWMU 15-009(b) specifically. The RFI work plan recommended NFA for SWMU 15-009(b) because nothing other than sanitary waste had been introduced to the septic tank. This SWMU was recommended for NFA in the September 1995 permit modification request because no hazardous materials have knowingly been introduced into the tank. The basis for this request was that the site has never been used to manage RCRA solid or hazardous wastes and/or constituents, radionuclides, or other CERCLA hazardous substances.
15-009(c)	In Progress	SWMU 15-009(c) is a septic tank (structure 15-62) at the inactive R-44 firing site. The septic tank has a capacity of 540 gal. and is constructed of reinforced concrete. SWMU 15-009(c) was constructed in 1951 and received sink-drain wastes from the firing site control building (structure 15-44). The R-44 firing site has been deactivated and was used last in 1992. Although the R-44 firing site has been deactivated, the septic tank is still connected to structure 15-44. No hazardous materials were known to have discharged to this tank. Based on the RFI work plan, this septic tank originally discharged to an outfall, which has since been plugged. Previous environmental investigations at the R-44 firing site have not been directed at SWMU 15-009(c) specifically. The RFI work plan recommended NFA for this SWMU because nothing other than sanitary waste had been introduced to the septic tank. This SWMU was recommended for NFA in the September 1995 permit modification request because no hazardous materials have knowingly been introduced into the tank. The basis for this request was that the site has never been used to manage RCRA solid or hazardous wastes and/or constituents, radionuclides, or other CERCLA hazardous substances.
15-009(d)	Administratively Complete	
15-009(e)	In Progress	SWMU 15-009(e) is a septic tank (structure 15-72) at inactive Firing Site E-F. Structure 15-72 has a capacity of 1200 gal. and is constructed of reinforced concrete. SWMU 15-009(e) was constructed in 1947 and received sanitary waste from the firing site control building (structure 15-27). The septic tank apparently was in use until 1981 when Firing Site E-F was used last. All discharges from this septic tank went to an outfall at the edge of Potrillo Canyon. Previous environmental investigations at Firing Site E-F have not been directed at SWMU 15-009(e) specifically. The ER Project conducted a Phase I RFI in 1994 to characterize the contents of structure 15-72. Two samples of liquid were collected from the tank and submitted for

		laboratory analysis for radionuclides, inorganic chemicals, organic chemicals, and HE. Inorganic chemicals present above BVs were beryllium, lead, and mercury. Lead was the only inorganic chemical detected above its SAL, in one sample. The only radionuclide present above its FV was uranium, which also exceeded its SAL in both samples. No organic chemicals or HE were detected. Based on the results of the Phase I RFI, a VCA was recommended for SWMU 15-009(e). The ER Project conducted a VCA at this SWMU in 1997. The VCA consisted of removing the tank contents and sampling to determine nature and extent of contamination present, if any. Analytical samples were collected from the inlet, the outlet, and adjacent to and below the septic tank. Samples were also collected from the drainage channel, the outfall area, and the tank construction materials (concrete). The interior of the septic tank was pressure-washed, and a confirmation sample was collected from the rinsate to demonstrate the adequacy of the corrective action. In all, 14 soil samples, including 2 field duplicates, a sample of the tank construction material, and a rinsate sample were collected during this VCA and submitted for inorganic and organic chemical analysis, HE analysis, and radionuclide analysis. A report was prepared using preliminary data (rather than validated data) that concluded there were no analytes detected at this site above SALs in the soils at the drainage area, below the inlet and outlet, and adjacent to and below the septic tank. The area around 15-009(e), including the outfall and drainage area, has been extensively sampled, and there are no contaminants present at concentrations that pose an unacceptable risk to human health. The site was recommended for NFA in the VCA report.
15-009(f)-00	In Progress	Consolidated SWMU 15-009(f)-00 consists of former SWMUs 15-009(f) and 15-009(k), which are inactive septic tanks in the R-183 area on the west side of TA-15. Both septic tanks received sanitary waste from laboratory buildings. Former SWMU 15-009(f) is a septic tank (structure 15-195) located approximately 75 ft northwest of a laboratory and office building (Building 15-183). This septic tank has a capacity of 4000 gal. and is constructed of reinforced concrete. Former SWMU 15-009(f) was constructed in 1988 and received sanitary waste from Building 15-183. Former SWMU 15-009(f) is no longer active, but the date that it was removed from use is not known. Based in the RFI work plan, discharges from this septic tank apparently went to a 4-ft-diameter x 50-ft-deep sump. This former SWMU has not been addressed by previous environmental investigations. Former SWMU 15-009(k) is a septic tank (structure 15-423) located approximately 250 ft north a radiographic support laboratory (Building 15-313). This septic tank has a capacity of 1000 gal. and is constructed of reinforced concrete. Former SWMU 15-009(k) received sanitary waste from Building 15-313 and is no longer active. The date of construction and period of operation of the septic tank are unknown. Based on the RFI work plan, discharges from former SWMU 15-009(k) went to a leach field located north of the septic tank. This former SWMU has not been addressed by previous environmental investigations. The ER Project conducted a Phase I RFI from June 1995 through March 1996 to determine whether contamination was present at former SWMU 15-009(f) that could be associated with site activities. One sludge sample was collected from the septic tank and submitted for laboratory analysis for uranium, inorganic chemicals, organic chemicals, and HE. Constituents present in the waste sample include uranium, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, vanadium, and zinc. No organic chemicals or HE was detected. Based on the results of the Phase I RFI, NFA was recommended for former SWMU 15-009(f). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The ER Project conducted a Phase I RFI from June 1995 through March 1996 to determine whether contamination was present at former SWMU 15-009(k) that could be

		associated with site activities. Two samples of sludge were collected from the septic tank. One was submitted for laboratory analysis for uranium, organic chemicals, and HE and the other was submitted for laboratory analysis for inorganic chemicals. Uranium was detected above BV/FV, but did not exceed its SAL. Inorganic chemicals present above BVs were arsenic, barium, beryllium, cobalt, manganese, mercury, nickel, vanadium, and zinc; none was present above its SAL. No organic chemicals or HE was detected. Based on the results of the Phase I RFI, NFA was recommended for former SWMU 15-009(k). The basis for the NFA recommendation was that the site has been characterized and available data indicate no unacceptable risk under the projected land use.
15-009(g)	In Progress	SWMU 15-009(g) is a septic tank (structure 15-205) at the active PHERMEX firing site at the southeast corner of TA-15. Structure 15-205 has a capacity of 605 gal. and is constructed of reinforced concrete. SWMU 15-009(g) was constructed in 1960 and receives sanitary wastes and sink and water fountain drainage from a power control building (Building 15-185) and a detection chamber (Building 15-186). Based on the RFI work plan, all discharges from this septic tank apparently go to a leach field. Previous environmental investigations at the PHERMEX firing site have not been directed at SWMU 15-009(g) specifically. Because this SWMU is active and is located at an active firing site, the RFI work plan proposed deferring characterization until the site is decommissioned. The basis for deferring characterization was that there is no current health risk to workers at the site and that concentrations of hazardous materials could change with time due to usage of the site.
15-009(h)	In Progress	SWMU 15-009(h) is a septic tank (structure 15-282) at the active Ector firing site on the east side of TA-15. Structure 15-282 has a capacity of 905 gal. and is constructed of reinforced concrete. SWMU 15-009(h) was constructed during the late 1970s and receives sanitary wastes from the Ector control building (structure 15-280). No hazardous materials are handled in structure 15-280. Based on the RFI work plan, all discharges from this septic tank apparently go to a leach field. Previous environmental investigations at the Ector firing site have not been directed at SWMU 15-009(h) specifically. The RFI work plan recommended NFA for this SWMU because nothing other than sanitary waste had been introduced to structure 15-282. The September 1995 permit modification request recommended this SWMU for NFA because no hazardous materials are thought to have been introduced into the tank. The basis for this request was that the site has never been used to manage RCRA solid or hazardous wastes and/or constituents, radionuclides, or other CERCLA hazardous substances.
15-009(i)	In Progress	SWMU 15-009(i) is a septic tank (structure 15-284) at the location of inactive Firing Site G on the southwest side of TA-15. This septic tank has a capacity of 750 gal. and is constructed of reinforced concrete. SWMU 15-009(i) was constructed in 1979 and receives sanitary wastes and shower, lavatory, water fountain, hot water heater, and floor drainage from an active carpenter shop (Building 15-233). All discharges from this septic tank go to a 4-ft-diameter x 50-ft-deep sump. Previous environmental investigations at Firing Site G have not been directed at SWMU 15-009(i) specifically. In 1995, one waste characterization sample was collected from the septic tank. This sample was submitted to an analytical laboratory and was analyzed for organic chemicals, inorganic chemicals, and uranium. Further action for this site will be deferred until decommissioning of Building 15-233. The sample plan for this site, located in the RFI work plan, indicated that two samples would be collected from this septic tank and three subsurface samples would be collected from a 55-ft-deep borehole to be installed next to the sump.
15-009(j)	Administratively Complete	SWMU 15-009(j) is a former septic tank and two seepage pits that were used to process sanitary waste from Building TA-15-285. Because TA-15 facility management requested that the tank be removed to accommodate potential development of the site, the Laboratory ER Project implemented a VCA at this SWMU. VCA activities included

		hydrating and removing dried sludge from the septic tank, removing the tank and back filling the excavation, decontaminating the interior of the tank, and collecting samples to characterize the area surrounding the tank. VCA activities at the site were conducted in accordance with applicable state and federal regulations. Confirmation sampling verified that no release occurred at this site. SWMU 15-009(j) is appropriate for NFA under Criterion 3 because it is not known to have released or is suspected off releasing contaminants to the environment.
15-010(a)	In Progress	SWMU 15-010(a) is a septic tank (structure 15-80) at the R-40 office and laboratory area in the northwest corner of TA-15. Structure 15-80 was constructed in 1944 and connected to a laboratory and shop (Building 15-01) that was removed in 1962. Structure 15-80 later was connected to a relocated laboratory storage building (Building 15-23). Structure 15-80 also may have been connected to the photography laboratory in former Building 15-7. According to the RFI work plan, structure 15-80 was taken out of service in 1961. It was surveyed in 1965 and found free of HE and radioactivity. The RFI work plan reported that structure 15-80 had been removed and disposed of in 1967. The ER Project conducted a Phase I RFI from June 1995 to March 1996. Originally, the RFI was to have included soil sampling at the location of structure 15-80. However, because structure 15-80 was found to be in place, the RFI was modified to characterize its contents. It was approximately 8 ft long x 5 ft wide x 3 ft wide with an approximately 900-gal. capacity. The top was broken and the tank apparently had been backfilled with sand. Two soil samples were collected from one location within and near the bottom of structure 15-80. These samples were field-screened for radioactivity, inorganic chemicals, and HE and submitted for laboratory analysis for radionuclides, inorganic chemicals, organic chemicals, and HE. Inorganic chemicals present above BVs were chromium, copper, lead, mercury, silver, and zinc. Mercury was the only inorganic chemical detected above its SAL. Radionuclides present above FVs were thorium-231, thorium-234, uranium-235, and uranium-238; none exceeded its SAL. Acetone was the only organic chemical detected and it was believed to be an analytical laboratory contaminant. The results of the Phase I RFI were used in a human health screening assessment, which identified mercury as a potential contaminant. The Phase I RFI recommended Phase II sampling to better characterize contamination at this site; Phase II sampling was conducted in 1997. Four samples were collected from four subsurface locations at depths ranging from 8 ft to 9 ft. Samples were submitted to an off-site analytical laboratory for analysis of HE and inorganic chemicals. Arsenic was detected in concentrations greater than SAL in these additional samples. Mercury was present in concentrations greater than background, with a maximum detected value of 10.5 ppm. A formal report documenting the results of this sampling and the recommended action at the site has not been prepared.
15-010(b)	In Progress	SWMU 15-010(b) is an inactive septic tank (structure 15-147) located near the R-40 office and laboratory area in the northwest corner of TA-15. Structure 15-147 was constructed in 1947 and connected to the drainline from the building (Building 15-08) that housed HE machining operations during the 1950s. Building 15-8 currently is a storage building. Structure 15-147, which also has been described as a clean-out tank and settling tank, is constructed of concrete, is 5 ft x 5 ft x 5 ft, and holds approximately 900 gal. The tank discharged to an outfall at the edge of Threemile Canyon. No previous environmental investigations have been conducted at SWMU 15-010(b). Because the HE machining operations in Building 15-8 used water as a coolant, discharges to the tank may have contained HE, which could have settled out in the tank. The ER Project conducted a Phase I RFI from June 1995 to March 1996 to determine whether contamination was present that could be associated with site activities. One sludge sample was collected from the tank, a surface and subsurface soil sample were collected at the outfall, and one additional surface-soil sample was collected from drainage below the outfall. These samples were field-screened for radioactivity, inorganic chemicals, and HE and submitted for laboratory analysis for HE. No HE was detected in any samples. Based on the results of the Phase I RFI, NFA was

		recommended for SWMU 15-010(b). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use.
15-010(c)	Pending	SWMU 15-010(c) is a steel drainline that collects rainwater from the landing at the bottom of the steps leading to the camera chamber (Building 15-92) for inactive Firing Point H at the PHERMEX site. Because this landing is below the ground surface and exposed to rainfall, it requires a drainline to remain dry. The drainline runs south approximately 105 ft to the edge of Water Canyon, where it discharges. This SWMU was identified as a sanitary sewer line in the CEARP and in the 1990 SWMU report. During preparation of the RFI work plan, the sanitary sewer line designation was found to be erroneous. In addition, a 1992 wastewater characterization study determined that no drains are located within Building 15-92, nor are there discharges from this building. The RFI work plan concluded that this drainline has received only rainwater and no hazardous materials are known to have discharged to this drainline. Engineering drawings show that this drainline was installed in 1950 when Building 15-92 was constructed. Because Building 15-92 is still in place, the drainline continues to discharge rainwater. There have been no previous environmental investigations at this site. Because no documentation suggests that this drain ever carried anything but rainwater, NFA was recommended for this SWMU. The June 2001 permit modification request also recommended NFA, based on the site's never having been used to manage RCRA solid or hazardous wastes and/or constituents.
15-012(a)	Administratively Complete	SWMU 15-012(a) was initially identified as a reputed operational release of vacuum pump oil. However, no information as to the location of the SWMU or to a structure associated with the SWMU was provided with the initial SWMU description. The Laboratory ER Project has attempted to locate this SWMU, but has no basis on which to find it. NMED concurred with LANL and approved the site for NFA under Criterion 1 because the site cannot be located.
15-012(b)	Administratively Complete	SWMU 15-012(b) is an area formerly used for washing explosive devices. The Laboratory ER Project implemented a VCA at this SWMU. VCA activities involved removing contaminated soils from the site until acceptable cleanup levels were achieved. VCA remediation of the site was conducted in accordance with applicable state and federal regulations. Confirmation sampling verified that nature and extent of contamination was defined. Screening assessment results indicate that residual contamination is at concentrations that pose an acceptable level of risk under current and project future land use. Therefore, SWMU 15-012(b) is appropriate for NFA under Criterion 5.
15-013(a)	Administratively Complete	
15-013(b)	Administratively Complete	
15-014(a)-00	In Progress	Consolidated SWMU 15-014(a)-00 consists of former SWMUs 15-014(a) and 15-014(b), which are outfalls associated with a laboratory and office building (Building 15-183) located in the southwest corner of TA-15. Former SWMU 15-014(a) is an outfall that is used for discharges from various drains in Building 15-183. This outfall has been in use since 1961; originally, waste discharged to this SWMU included photographic waste. The drain associated with this outfall reportedly was replaced in 1987 with a new drain installed at the same location. This outfall operated as NPDES-permitted Outfall EPA 06A123 and was removed from the NPDES permit January 14, 1998. Photographic wastes were not discharged to this outfall after it was added to the NPDES permit. This outfall is located approximately 130 ft from the edge of Cañon de Valle. Discharges from the outfall follow a surface drainage to the canyon and the location of the drainage is marked by increased vegetation. No previous investigations have been conducted at this SWMU, other than the routine monitoring required by the NPDES permit. This monitoring included sampling and analysis for pH and silver and, before August 1994, also included analysis for cyanide.

		Former SWMU 15-014(b) consists of two separate outfalls from drains in Building 15-183. Drains discharging to these outfalls include 13 floor drains, 5 sinks, and a water fountain. The dates of use for this SWMU are unknown. The two outfalls are located west of a trailer on the west side of the parking lot west of Building 15-183. Discharges from the two outfalls follow surface drainages that join to create a single drainage approximately 130 ft from the edge of Cañon de Valle. This drainage then carries the combined flow of the two outfalls to the canyon. The nature of any hazardous materials that may have been present in these discharges is not known, and there have been no previous investigations at this SWMU. The ER Project conducted a Phase I RFI at former SWMU 15-014(a) from June 1995 through March 1996 to determine whether contamination was present that could be associated with site activities. Surface samples were collected at each of four locations in the drainage at and downstream of the outfall. Shallow subsurface samples (less than 32 in. deep) also were collected at three locations, for a total of seven samples. These samples were field-screened for radioactivity, inorganic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals and organic chemicals. Silver was the only inorganic chemical present above BVs, but it did not exceed its SAL. Acetone was the only organic chemical detected, but was believed to be a laboratory contaminant. Based on these results, the RFI report recommended NFA for PRS 15-014(a). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report notes that subsequent to the Phase I sampling, this SWMU was disturbed by construction activities and soil was removed and/or redistributed over the site. Because the sampling results were no longer representative of site conditions, former SWMU 15-014(a) could not be evaluated to determine whether potential ecological contaminant sources exist. The ER Project conducted a Phase I RFI at former SWMU 15-014(b) from June 1995 through March 1996 to determine whether contamination was present that could be associated with site activities. Seven surface samples and six shallow (less than 36-in.-deep) samples were collected from six locations. Samples were collected at each outfall, at the convergence of the drainages from the two outfalls, and at three locations downstream of the convergence to the edge of the canyon. These samples were field-screened for radioactivity, inorganic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals and organic chemicals. No inorganic chemicals were present above BVs. Thirteen organic chemicals were detected: acenaphthene, anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, dibenzofuran, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. Four of these organic chemicals were present above SALs: benzo(a)pyrene, benzo(b)fluoranthene, dibenzofuran, and indeno(1,2,3-cd)pyrene. Sampling results were used in a human health screening assessment. Based on the results of this assessment, the RFI report recommended NFA for PRS 15-014(b). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report notes that subsequent to the Phase I sampling, this SWMU was disturbed by construction activities and soil was removed and/or redistributed over the site. Because the sampling results were no longer representative of site conditions, former SWMU 15-014(b) could not be evaluated to determine whether potential ecological contaminant sources exist.
15-014(c)	Administratively Complete	
15-014(d)	Administratively Complete	
15-014(e)	Administratively	

	Complete	
15-014(f)	Administratively Complete	
15-014(g)	In Progress	SWMU 15-014(g) is a former outfall located east of the northeast corner of a laboratory building (Building 15-203) that is one of the buildings in an area on the west side of TA-15 referred to as “the hollow.” The RFI work plan reported that this outfall was used to discharge once-through cooling water from an air compressor located in Building 15-203. The 1990 SWMU report indicated that this outfall received discharges from a pulse-power laboratory (Building 15-194) located near Building 15-203. The outfall discharged to a ditch that is partially lined with asphalt and discharges to Cañon de Valle. The air compressor in Building 15-203 reportedly was taken out of service and removed. The period of operation of this outfall is unknown. This outfall operated under the NPDES permit as Outfall EPA 04A 093, but was removed from the permit some time before 1994. No hazardous materials are known to have discharged to this outfall. No previous investigations have been conducted at this SWMU. The ER Project conducted a Phase I RFI at this SWMU from June 1995 through March 1996 to determine whether contamination was present that could be associated with site activities. Two surface samples were collected from one sample location at the outfall. These samples were field-screened for radioactivity, inorganic chemicals, and HE. Both samples were submitted for laboratory analysis for HE, one by an off-site laboratory and the other by the DX-2 laboratory. One of the samples also was submitted for laboratory analysis for inorganic chemicals, uranium, and organic chemicals. Inorganic chemicals present above BVs were copper, lead, mercury, and zinc; none was present above its SAL. Uranium was not present above BVs. Nine organic chemicals were detected: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, bis(2-ethylhexyl) phthalate, chrysene, fluoranthene, phenanthrene, and pyrene. One of these organic chemicals [benzo(a)pyrene] was present above its SAL, but was not considered a potential contaminant because it was not related to site activities. The source of this organic chemical was believed to be runoff from a nearby asphalt walkway, asphalt roofs, and/or creosote-treated power poles. Sampling results were used in a human health screening assessment. Based on these results, the RFI report recommended NFA for PRS 15-014(g). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report indicated that this site would be included as a potential contaminant source in the ecological risk assessment that would be performed once an ecological risk assessment methodology had been approved.
15-014(h)	In Progress	AOC 15-014(h) is composed of three outfalls located on the northeast side of a laboratory and office building (Building 15-40) in the northwest corner of TA-15. Liquids discharged from the first of these three outfalls include photographic wastes. Discharges from this outfall apparently flow north to Threemile Canyon. This outfall operated under the NPDES permit as Outfall EPA 04A 103, but was removed from the NPDES permit at some unknown date. The second outfall is used to discharge noncontact cooling water, roof drainage, and floor drainage from Building 15-40. The floor drains reportedly can receive flow from drain valves in a potable water system. This outfall is located at the discharge from an 8-in.-diameter VCP, approximately 60 ft to 100 ft north of Building 15-40. As with the first outfall, these discharges apparently flow north to Threemile Canyon. This outfall operated under the NPDES permit as Outfall EPA 04A 102, but was removed from the permit before 1994. The third outfall discharges storm drainage from yard drains north and east of Building 15-40. The storm drain is a 12-in.-diameter corrugated metal pipe. Discharge from this outfall flows into Threemile Canyon. There is no evidence that this outfall has ever received hazardous materials. The operational periods of all three outfalls are unknown. No previous investigations have been conducted at any of the three outfalls in this AOC. The ER Project conducted a Phase I RFI at this AOC from June 1995 through March 1996 to determine whether contamination was present that could be associated with

		site activities. A surface and a shallow (less than 3 ft deep) subsurface sample were collected from each of two sample locations at and downstream of the first and second outfalls. A duplicate surface sample also was collected downstream of the second outfall for a total of nine samples. No samples were collected from the third outfall because there was no history of discharge of hazardous materials. All samples were field-screened for radioactivity, inorganic chemicals, and HE. The four samples associated with the first outfall were submitted for laboratory analysis for inorganic chemicals and organic chemicals. Samples associated with the second outfall were not submitted for laboratory analysis. Inorganic chemicals present above BVs were copper, mercury, silver, and zinc; none was present above its SAL. Acetone was the only organic chemical detected, but it was not considered a potential contaminant because it is a common laboratory contaminant. The results of the sampling were used in a human health screening assessment. Based on the results of this assessment, the RFI report recommended NFA for AOC 15-014(h). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report indicated that this site would be included as a potential ecological contaminant source in the ecological risk assessment that would be performed once an ecological risk assessment methodology had been approved.
15-014(l)	Pending	SWMU 15-014(l) is a drainline and outfall associated with a cooling tower (structure 15-202) located near the PHERMEX facility in the southeast corner of TA-15. This active drainline and outfall are used to discharge blowdown from structure 15-202, and these discharges flow to Water Canyon. According to ESH-18, the outfall also receives de minimus amounts of heating-system water, deionized water, air-compressor drainage, pump bearing cooling water, floor washings (soap), boiler drainage, and dehalogenation wastewater from the PHERMEX power control building (Building 15-185). This drainline and outfall currently are in use, but the date that they were first used is unknown. Operations at PHERMEX began in the early 1960s. The outfall currently is included in the NPDES permit as Outfall EPA 03A 028. The permit covers both cooling tower blowdown from structure 15-202 and de minimus discharges from Building 15-185. The only chemicals added to the cooling water used in structure 15-202 are antiscalants and corrosion inhibitors. Two such products have been used at this cooling tower. Both use 2-phosphono-1,2,4-butane-tricarboxylic acid and benzotriazole as active ingredients and one also contains sodium molybdate. None of these constituents meets the definition of a RCRA hazardous waste or constituent. Hexavalent chromium has never been added to the water at this cooling tower. No previous investigations have been conducted at this SWMU. Because no documentation suggests that hazardous materials were ever discharged from this outfall, the ER Project recommended NFA for this SWMU. SWMU 15-014(l) was recommended for NFA in the June 2001 permit modification request. The basis for the NFA recommendation was that this site is regulated in accordance with another state and/or federal authority and is not known to release or is suspected of releasing RCRA solid or hazardous wastes and/or constituents to the environment.
15-014(m)	Administratively Complete	SWMU 15-014(m) is an operational outfall permitted under National Pollutant Discharge Elimination System (NPDES) Permit Number 04A143. This drainline and outfall handled non-contact cooling water from Building TA-15-306. SWMU 15-014(m) is appropriate for NFA under Criterion 4.
16-001(a)-99	In Progress	Consolidated SWMU 16-001(a)-99 consists of former SWMUs 16-001(a), 16-001(b), and 16-001(c), which are associated with the TA-16 steam plant (Building 16-540). The steam plant served the S-Site explosives-development mission. The former SWMUs consist of two tanks and two dry wells that received effluent from the steam plant. Effluent included cooling water for boilers and flow from floor and roof drains. The dry wells discharged to NPDES-permitted Outfall 02A007, which was removed from the LANL NPDES permit effective May 15, 1998. Suspect contaminants at this consolidated SWMU are chromates. Chromates typically were used as algaecides to prevent fouling the boilers. According to a LANL engineer cited in the OU 1082 work plan, chromates were not used as descalers at this steam plant. Chromates remain as suspect contaminants because steam plant operations in the 1950s and 1960s were

		not documented thoroughly. Solvents and oils may have been discharged through floor drains. Former SWMU 16-001(a) was a blowdown tank (structure 16-456), which served the steam plant boilers. Structure 16-456 was located about 40 ft from the northeast corner of the steam plant. It was a 2000-gal.-capacity, 7-ft-long steel tube with an inside diameter of 6 ft and was half-buried in the ground. The tank received hot water blowdown from the steam boilers and was designed to cool the water before it discharged to an outfall; a release stack allowed superheated water to vent to the atmosphere. The tank was replaced in 1988. Former SWMU 16-001(b) consists of two connected dry wells, which are 4 ft in diameter. One is 6 ft deep and the other is 7.5 ft deep. Both are made of concrete and are covered with a manhole cover. The wells are located about 50 ft downslope and northeast of structure 16-456. The dry wells are designed to allow effluent to seep into the ground. A pipe equipped with a splash deflector enters each well near its bottom. The primary well has an outflow pipe leading to the secondary well. The dry wells previously received overflow from structure 16-456, but were bypassed after 1988 because their capacity was inadequate. The dry wells discharged to former NPDES-permitted Outfall 02A007. The dry well system was refurbished after 1988 with new blowdown and settling tanks. Former SWMU 16-001(c) is a tank (structure 16-541), which received steam plant blowdown. It was installed in 1962 and operated until 1968, when blowdown was diverted to another tank (structure 16-456). Structure 16-541 remained in place on level ground just south of structure 16-456 at the time the OU 1082 work plan was written. It was covered with a concrete pad and equipped with a wire-mesh vent. A standpipe vent is located about 8 ft east of the tank. About 100 ft further downslope is a ditch that, according to the OU 1082 work plan, may have received outfall from the tank. Before the outfall was permitted (former NPDES Outfall 02A007), effluent was analyzed for iron and copper, which suggests that compounds containing those elements may have been used as descalers. The OU 1082 work plan proposed sampling to determine if contamination is present in and around the blowdown tanks and dry wells.
16-001(d)	In Progress	SWMU 16-001(d) is a dry well that served a building (Building 16-208). SWMU 16-001(d) had not been located at the time the OU 1082 work plan was written. According to an engineering drawing, the dry well was 3 ft in diameter and 9 ft deep, and was connected to Building 16-208 with a 4-in. pipe. The dry well was located northeast of Building 16-208. Building 16-208 was a 10-ft-long x 30-ft-wide metal structure on a concrete foundation that was built in 1952 to house 55-gal. drums on racks along the long walls. The building was in use as a chemical storage facility at the time the OU 1082 work plan was written and was still in use for that purpose in 2001. The outlet to the dry well was plugged at an unknown time before the OU 1082 work plan was written. Suspect contaminants at SWMU 16-001(d) include organic solvents, corrosives, and toxic liquids. No record of a spill in the building has been found. The OU 1082 work plan proposed sampling to determine if contamination is present in and around the dry well.
16-003(a)	In Progress	SWMU 16-003(a) is an inactive HE sump and outfall associated with an assembly building (Building 16-410). Building 16-410 is a test device assembly building where explosive charges and other components are assembled into finished test devices. Building 16-410 also is used to disassemble devices that have undergone nondestructive tests. The sump was installed in the early 1950s and modified in 1966 to improve its effectiveness and to reduce HE handling. It was a rectangular tank with a removable 0.25-in. aluminum lid. Its outside dimensions are 12 ft long, 4 ft wide, and 5 ft high. The walls and bottom are 8-in.-thick steel-reinforced concrete. The sump operated to remove suspended solids from process water before it was discharged to the outfall. HE fines (scrap) were collected in a cloth filter bag secured inside a metal filter basket. The baskets and filter bags periodically were collected and cleaned at the

		basket-washing facility (structure 16-390), which is located at the burning ground. HE fines that were too small to be collected in the filter bags settled to the bottom of the sump. To assist separation of the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to the outfall. HE in the bottom of the sump periodically was removed and burned. The inactive outfall was NPDES-permitted Outfall 05A053 and was removed from the LANL NPDES permit effective January 14, 1998. Waste at SWMU 16-003(a) consisted of washdown water. According to the OU 1082 work plan, small amounts of potentially hazardous effluent may have been discharged to the environment. The outfall received effluent from the HE sump and floor, roof, and equipment drains. Effluent flowed into a common drainline that discharged to the outfall, which discharged to Water Canyon. Suspect contaminants are explosives, natural and depleted uranium, ethylene glycol, metals, and other solvents. The OU 1082 work plan proposed including this SWMU in a generic TA-16 sump sampling plan. Sampling was completed in 1995. In July 2000, this site was seeded and mulched, and straw wattles were installed as a BMP to minimize any potential contaminant migration from the site.
16-003(b)	In Progress	SWMU 16-003(b) is an inactive HE sump and an inactive outfall associated with the truck-washing building (Building 16-400). The sump was installed in the early 1950s and modified in 1966 to improve its effectiveness and to reduce HE handling. It is a rectangular tank with a removable 0.25-in. aluminum lid. Outside dimensions were 12 ft long, 4 ft wide, and 5 ft high. The walls and bottom were 8-in.-thick, steel-reinforced concrete. The sump received HE-bearing water from the truck-washing activities. The sump operated to remove suspended solids from wash water before it was discharged to the outfall. The sump is currently plugged. HE fines (scrap) were collected in a cloth filter bag secured inside a metal filter basket. The baskets and filter bags periodically were collected and cleaned at the basket-washing facility (structure 16-390), which was located at the burning ground. HE fines that were too small to be collected in the filter bags settled to the bottom of the sump. To assist separation of the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to the outfall. HE in the bottom of the sump periodically was removed and burned. The inactive outfall was NPDES-permitted Outfall 05A063 and was removed from the LANL NPDES permit effective December 5, 1995. The outfall received effluent from the HE sump and a steam-pit drain. Effluent flowed to a common drainline that discharged to the outfall, which discharged to a level meadow. Building 16-400 is a truck-washing facility, although it has been used for cleaning other HE-contaminated materials, such as drainpipe, that was excavated from World War II HE sumps. Most of the trucks were used to transport boxed HE and process equipment. Suspect contaminants are HE and solvents. The OU 1082 work plan proposed including this SWMU in a generic TA-16 sump sampling plan. Sampling was completed in 1995.
16-003(c)-99	In Progress	Consolidated SWMU 16-003(c)-99 consists of former SWMUs 16-003(c) and 16-026(v). This consolidated SWMU contains one inactive HE sump [former SWMU 16-003(c)] and its associated drainline and outfall [former SWMU 16-026(v)] from a decommissioned analytical chemistry laboratory (Building 16-460). Wastes consisted primarily of fine grains of HE from analytical chemistry experiments. Historically, small quantities of HE were used in the building and small quantities of solvents and other chemicals were discharged to the sump. The outfall was NPDES-permitted Outfall 05A072, and it received effluent from the sump and building floor drains, bench-sink cup drains, steam-cup drains, sink drains, and a drinking fountain. The outfall was removed from the LANL NPDES permit effective September 19, 1997. Building 16-460 currently is used to support bioremediation studies in nearby greenhouses. Potential contaminants at this consolidated SWMU are HE, inorganic chemicals, and laboratory chemicals such as solvents. The ER Project conducted an RFI at former SWMU 16-026(v) in 1995 to determine if a

		release had occurred from the outfall and if so, if the release had caused contamination above action levels. Two boreholes were drilled near the outfall: one at the outfall and one at the next downstream sediment trap. In addition, the ER Project sampled 14 other downstream locations. Samples were field-screened for HE, radiation, and organic chemicals. Samples were analyzed for organics, HE, inorganics, and uranium. Elevated PAH levels were found and attributed to continuing releases from nearby parking lots and roof drains. Elevated chromium in one sample was believed to be the result of naturally high values of chromium in the geologic subunit of the Bandelier Tuff that underlies former SWMU 16-026(v). The RFI report recommended NFA at this SWMU. In 1998, a straw bale barrier was installed as a BMP to minimize erosion at the site.
16-003(d)-99	In Progress	Consolidated SWMU 16-003(d)-99 consists of former SWMUs 16-001(e), 16-003(d), 16-003(e), 16-003(f), and 16-003(g), which includes seven inactive HE sumps and the associated inactive dry well located along the 300 Line. The 300 Line consists of process Buildings 16-300, -302, -304, and -306. The 300 Line was built in late 1951 for casting HE. Buildings were converted to other uses when casting explosives were replaced by plastic-bonded explosives. The 300 Line sumps discharged to a single NPDES-permitted outfall (Outfall 05A058), which was removed from the LANL NPDES permit effective July 31, 1996. Solvents historically were disposed of in the sumps, but currently are containerized and disposed of off the site. Suspect contaminants are HE and solvents. Former SWMU 16-001(e) is an active dry well located about 100 ft east of Building 16-306 at the head of a small tributary of Water Canyon. The dry well is adjacent to the outfall of the Building 16-300 process line. The dry well was built in the early 1980s but did not function properly because it drained to impermeable tuff. By the time the OU 1082 work plan was written, the dry well had been filled with soil and overgrown with vegetation. Suspect contaminants at former SWMU 16-001(e) are HE and solvents. Former SWMU 16-003(d) consists of two inactive HE sumps that served Building 16-300. Building 16-300 is a mock (inert) explosives preparation facility where wash-down water was drained to the sumps. Raw materials including penterythritol, barium nitrate, cyanuric acid, and nitrocellulose are blended into plastic-bonded molding powders. At the time the OU 1082 work plan was written, no HE operations took place in Building 16-300. Former SWMU 16-003(e) consists of two inactive HE sumps that served Building 16-302. Building 16-302 was a casting facility where explosives were melted in steam-heated kettles and poured into molds. Castings later were machined to their final shapes. Molds, kettles, and other equipment were cleaned using steam and high-temperature wash water that drained into the sumps. Small-to-moderate amounts of castable explosives and solvents historically were discharged to the environment. Building 16-302 currently is used as a non-HE operations facility. Former SWMU 16-003(f) consists of two inactive HE sumps that served Building 16-304. No HE was being used when the OU 1082 work plan was written and the work plan stated that the probability of HE in the sumps was low. Building 16-304 is a plastics and plastic component development and production facility. Polycarbonate components are fabricated using injection-molding machines. Other components are made using hydraulic presses. Large high-temperature ovens are used to dry-mold powders and to cure thermoset plastics. Solvents have been used at Building 16-304. By the time the OU 1082 work plan was written, solvents were containerized and sent off-site for disposal. In June 2000, the area occupied by former SWMU 16-003(f) was seeded and mulched, and straw wattles were installed as a BMP to minimize any potential contaminant migration from the site. Former SWMU 16-003(g) consists of two inactive HE sumps that served Building 16-306. Building 16-306 is a plastic component development and production facility. Operations include molding polysiloxane foam and polyurethane components, intrusion

		molding, and epoxy and laminate work. Ovens are used to cure thermoset plastics. Solvents historically used at Building 16-306 include acetone, chlorothene, Freon-PCA solvent, and methylene chloride. Solvents historically were discharged to the sumps but current practice is to containerize them and dispose of them off-site. The OU 1082 work plan proposed including the SWMUs in this consolidated unit in a generic TA-16 sump sampling plan. Sampling was completed in 1995.
16-003(h)-99	In Progress	Consolidated SWMU 16-003(h)-99 consists of former SWMU 16-003(h) and former AOC 16-030(d). This consolidated SWMU contains an inactive HE sump [former SWMU 16-003(h)], drainline and outfall [former AOC 16-030(d)] associated with an inspection building (Building 16-280), which was a physical inspection and metrology laboratory for HE and other weapons components. The outfall was former NPDES-permitted Outfall 05A061. It was removed from the LANL NPDES permit effective July 31, 1996. Building 16-280 is also a staging facility for assembling test device components. Solvents and HE historically may have been discharged to the sump but at the time the OU 1082 work plan was written, solvents were containerized for off-site disposal. No other effluent sources were discharged to the outfall. The OU 1082 work plan proposed including the former SWMUs in this consolidated SWMU in a generic TA-16 sump sampling plan. Sampling was completed in 1995.
16-003(i)	In Progress	SWMU 16-003(i) is an inactive HE sump and outfall associated with structure 16-265, an HE assembly/rest house. The sump received effluent from a sink and a drinking fountain. It discharged to a NPDES-permitted outfall (Outfall 05A057), which was removed from the LANL NPDES permit sometime before 1994. Suspect contaminants in the sump are 1,1,1-trichloroethane, chloromaleic anhydride, and HE. The OU 1082 work plan proposed including this SWMU in a generic TA-16 sump sampling plan. Sampling was completed in 1995.
16-003(j)	In Progress	SWMU 16-003(j) is an inactive HE sump associated with a rest house (structure 16-267). The sump received effluent from a janitorial sink and discharged to a NPDES-permitted outfall (Outfall EPA 05A149), which was removed from the LANL NPDES permit sometime prior to 1994. The suspect contaminant for this SWMU is HE. The OU 1082 work plan proposed including this SWMU in a generic TA-16 sump sampling plan. Sampling was completed in 1995.
16-003(l)-99	In Progress	Consolidated SWMU 16-003(l)-99 consists of former SWMUs 16-003(l) and 16-030(h). This consolidated SWMU contains three active HE sumps [former SWMU 16-003(l)] associated with drainlines and three inactive outfalls [former SWMU 16-030(h)] from an HE pressing facility (structure 16-430) where plastic-bonded explosive and mock HE powders were pressed to shape. The three sumps received effluent from five pressing bays. Waste primarily consisted of small quantities of HE powder and solvents. Most solvents and HE collected in the sumps were removed and burned. Each outfall received effluent from the sumps. The effluent from each outfall flowed to a common drainage ditch and discharged to a single drainage channel. The outfall was NPDES-permitted Outfall 05A071, which was removed from the LANL NPDES permit effective March 10, 1998. The 1990 SWMU report stated that known releases of acetone and methyl ethyl ketone occurred, but documentation of the releases was not found. The OU 1082 work plan proposed including this SWMU in a generic TA-16 sump sampling plan. Sampling was competed in 1995. In 1996, a sediment trap was installed at former SWMU 16-030(h) as a BMP. As part of the post-Cerro Grande fire recovery, former SWMU 16-030(h) was seeded and mulched, and straw wattles were installed to further minimize erosion at the site.
16-003(m)-99	In Progress	Consolidated SWMU 16-003(m)-99 consists of former SWMUs 16-003(m) and 16-006(d), and former AOC 16-030(g), all of which were associated with the HE inspection building (Building 16-380). This consolidated SWMU contains one inactive HE sump [former SWMU 16-003(m)], a septic system [former SWMU 16-006(d)], and an outfall [former AOC 16-030(g)]. Building 16-380 is a former inspection site for raw HE powder

		brought to TA-16 and currently is used to store ammunition for LANL security forces. Former SWMU 16-003(m) received wash-down water from cleaning activities. Former SWMU 16-006(d) is an active septic system that includes a 540-gal., reinforced concrete septic tank, drainlines, distribution box, and tile drainfield that serves Building 16-380. Five floor drains, two water closets, and one deep sink discharged to the septic tank. Suspect contaminants are HE, inorganic chemicals, and organic chemicals. Former AOC 16-030(g) received effluent from the sump, two roof drains, the steam-heating system, and a drop inlet from a parking lot. The outfall was NPDES-permitted Outfall 05A052, and discharged to Water Canyon. When the RFI report was written, the outfall received only parking lot runoff and was in the process of being removed from the LANL NPDES permit. The sump and the steam-heating system discharges have been plugged. Suspect contaminants at former AOC 16-030(g) are HE and metals. The ER Project conducted RFIs at former SWMU 16-006(d) and former AOC 16-030(g) in 1995. The RFIs were conducted to determine if a release had occurred from each of the former units and if so, whether the release caused contamination. At former SWMU 16-006(d), six samples were collected from three locations. Samples were field-screened for HE, radioactivity, organic chemicals, and inorganic chemicals, and analyzed for organic chemicals, radiation, inorganic chemicals, and HE. No elevated chemical concentrations were found, and the RFI report recommended NFA at former SWMU 16-006(d). At former AOC 16-030(g), two boreholes were drilled: one at the outfall and one at the next downstream sediment trap. In addition, sample locations were screened for HE at 10-ft intervals downgradient. At the first negative HE screening location, 3 surface soil samples were collected at 20-ft intervals. Two additional surface samples were taken further downgradient. In all, 7 locations were sampled and 12 samples were collected. All samples were field-screened for organic chemicals, radiation, and HE. All field-screening results were negative. The samples showed elevated lead and PAH levels, but the levels were determined not to represent a human health risk. Erosion controls were installed at this site as a BMP. The RFI report recommended NFA at former AOC 16-030(g).
16-003(n)-99	In Progress	Consolidated SWMU 16-003(n)-99 consists of former SWMUs 16-003(n) and 16-029(i). Former SWMU 16-003(n) is an inactive HE sump that was associated with Building 16-342. Former SWMU 16-029(i) was recommended for NFA in Addendum 2 of the OU 1082 work plan and in the rewritten Chapter 6 of the OU 1082 work plan because it is a duplicate of former SWMU 16-003(n). Building 16-342 was an HE process building on the 340-Line at TA-16 that was used to mix and blend constituents of plastic-bonded explosive formulations. The sump was a rectangular tank with a removable 0.25-in. aluminum lid. Outside dimensions are 12 ft long, 4 ft wide, and 5 ft high. The walls and bottom are 8-in.-thick, steel-reinforced concrete. The sump operated to remove suspended solids from process water before it was discharged to a now inactive outfall. HE fines (scrap) were collected in a cloth filter bag secured inside a metal filter basket. The baskets and filter bags periodically were collected and cleaned at the basket-washing facility. HE fines that were too small to be collected in the filter bags settled to the bottom of the sump. To help separate the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to the outfall. HE in the bottom of the sump periodically was removed and burned. Water was filtered and tested before it discharged to the outfall, which discharged to former NPDES-permitted Outfall 05A062, which discharged to Cañon de Valle. The outfall was removed from LANL's NPDES permit effective July 31, 1996. Solvents were containerized for disposal, but historically the solvents were discharged to the sump. Natural uranium was used at Building 16-342. The sump received process and wash-down water following cleaning activities. Former SWMU 16-029(i) is a duplicate of former SWMU 16-003(n). Suspect contaminants at former SWMU 16-003(n) are HE, organic chemicals, inorganic chemicals, and radionuclides. The OU 1082 work plan proposed including former SWMU 16-003(n) in a generic TA-16 sump sampling plan. Sampling was completed in 1995. As part of the post-Cerro Grande fire recovery, seed, mulch, a straw bale barrier, and straw wattles were installed as a BMP at former SWMU 16-003(n) to minimize any potential contaminant

		migration from this site.
16-003(o)	In Progress	SWMU 16-003(o) consists of six inactive HE sumps and the outfall associated with the explosives synthesis building (Building 16-340). The sumps historically discharged to former NPDES-permitted Outfall 05A054. The outfall was removed from the LANL NPDES permit effective July 20, 1998. Building 16-340 was used in producing plastic-bonded explosives. VOCs are used in plastic explosive preparation. Most VOCs are distilled during processing. The remaining solvents historically were discharged with the wastewater to the sumps. A solvent distillation unit, the "fish ladder," was installed in the late 1980s to trap and volatilize residual solvents. The OU 1082 work plan reported that Building 16-340 was the largest solvent user at TA-16. The building is slated for decommissioning. The RFI work plan proposed including this SWMU in a generic TA-16 sump sampling plan. Sampling was completed in 1995 and confirmed the presence of contamination. Seed, mulch, and a straw-bale barrier were installed in 2000 as a BMP to minimize contaminant migration and erosion at this site.
16-003(q)	Administratively Complete	
16-004(a)-99	In Progress	Consolidated SWMU 16-004(a)-99 consists of former SWMUs 16-004(a), 16-004(b), 16-004(c), 16-004(d), 16-004(e), and 16-004(f). These former SWMUs were components of the inactive TA-16 sanitary WWTP, which received wastewater only from the TA-16 sanitary sewer system. The WWTP was built in 1953 during the expansion of TA-16 and was disconnected when the LANL SWSC became operational in 1992. The WWTP was designed for gravity flow. The WWTP had an NPDES-permitted outfall (Outfall SSS03S). As part of its NPDES permit, the outfall for the WWTP was monitored for inorganic chemicals, organic chemicals, and pesticides. Effluent was monitored bimonthly for radionuclides and standard parameters for wastewater systems, e.g., biological oxygen demand, chemical oxygen demand, total dissolved solids, and anions. Suspect contaminants at this consolidated SWMU are HE, solvents, inorganic chemicals, and radionuclides. Former SWMU 16-004(a) is a concrete Imhoff tank that measures 18 ft x 35 ft x 22 ft deep, with nine interconnected compartments that served as settling boxes. Effluent from the boxes flowed over a weir into a dosing siphon. The tank had an emergency overflow pipe that discharged onto a slope northeast of the tank. Former SWMU 16-004(b) is a trickling filter that received effluent from the dosing siphon. The trickling filter is about 56 ft in diameter, with a rotating arm that distributed water from the Imhoff tank over a pebble bed. The trickling filter's capacity was 100,000 gal. per day. Former SWMU 16-004(c) is the final tank that received discharge water from the trickling filter. Former SWMU 16-004(c) is a 20-square-ft concrete box located about 45 ft east of the trickling filter. Trickling-filter discharge entered an insert at the bottom of the final tank. Water spilled over the insert to a surrounding trough and flowed to an outlet at the southeast corner of the clarifier. The clarifier was rated at 117,600 gal. per day. Discharge from the clarifier flowed through a metering concrete outfall box and to Outfall SSS03S, and then to a tributary of Water Canyon. Former SWMUs 16-004(d) and 16-004(f) are two sludge-drying beds. Sludge periodically was siphoned from the bottom of the Imhoff tank and sent to the drying beds. The beds are adjacent concrete rectangles about 15 ft x 30 ft x 1 ft deep, located about 100 ft below the Imhoff tank. Each bed has an inlet valve at the west end of the bed. Sludge from the drying beds was monitored quarterly for radioactivity and tritium before it was removed and disposed of at MDA G. Former SWMU 16-004(e) is a 5-square-ft-screen that filtered out large solids. The screen was made of round, 1-in.-diameter bars and was discarded at the northwest corner of the WWTP site. The screen was replaced by a comminutor that was housed

		in a lidded concrete box about 5 ft x 10 ft x 3 ft high. The OU 1082 work plan proposed sampling the former SWMUs in this consolidated SWMU. Permanent seeding, mulching, and straw wattles were installed at this former SWMU in 2000 to minimize erosion at the site, as part of the post-Cerro Grande fire recovery.
16-005(a)	In Progress	SWMU 16-005(a) is potentially contaminated subsurface soil at the site of a decommissioned septic tank (structure 16-161) and its associated drainfield, which were located in the southwest region of TA-16 and drained to the south. The tank served Buildings 16-1, -2, -7, -10, -16, -22, and -525. The septic system was installed in 1945; its use was discontinued in 1952, and it was removed in 1967. Buildings 16-1 and -2 are decommissioned office buildings. Building 16-7 was a steam plant and machine shop, but the building was used for storage at the time the Addendum 1 to the OU 1082 work plan was written. The steam plant part of the building was removed in 1956. The machine shop repaired equipment from TA-16 and machines were decontaminated before they were sent to the shop. Building 16-10 was a storage building for casting molds and was no longer in use when the OU 1082 work plan addendum was written. Building 16-16 was a cafeteria that was decommissioned in 1992; it currently is used for offices. Building 16-22 was an office building that was removed in 1961. Building 16-525 was a women's change house and laundry facility that was built in 1951 and demolished in 1989. The septic system served the toilets, a floor drain in the equipment room, and two roof drains for Building 16-525. All other wastewater from Building 16-525 went to the grease trap [structure 16-1137, SWMU 16-005(l)]. Most of the 6-in. VCP that was connected to structure 16-161 is active and is tied in with an intersecting line that carries sanitary waste from other buildings at the site to the TA-16 WWTP. The line was plugged at a point just beyond the new connection at a manhole (structure 16-776). The section of line that connected Buildings 16-1, -2, -10, -16, -22, and -525 to the main line is inactive. Suspect contaminants are HE and organic and inorganic chemicals. The OU 1082 work plan addendum proposed RFI sampling at SWMU 16-005(a) to locate the most likely regions of potential contamination, beginning with field-screening for HE.
16-005(b)	Administratively Complete	PRS 16-005(b) consists of a concrete septic tank, associated drain line, distribution box and outfall. The PRS was initially identified as being connected to Building TA-16-502 (a small steam facility). However, engineering drawings show the septic tank was connected to Building TA-16-142, a fire station which was built in 1945. The septic tank received only sanitary wastewater from the fire station. The septic tank was abandoned in place in 1955 and was removed sometime between September 1959 and August 1961. SWMU 16-005(b) is appropriate for NFA under Criterion 2 because it was never used for the management of RCRA solid or hazardous wastes and/or constituents.
16-005(f)	Administratively Complete	SWMU 16-005(f) was a 1500-gal. septic tank (TA-16-272), associated line, doser chamber, distribution box, and outfall associated with TA-16-260, the HE machining line at TA-16. TA-16-272 was built in 1951, abandoned in 1952, and later removed; no removal date was recorded. Following decommissioning of TA-16-272 in 1952, TA-16-260 was connected to the site-wide sanitary waste water treatment system, which was located approximately 190-ft. from the northeast comer of TA-16-260. Available drawings indicate that the system was connected to several bathrooms along the west side of Building TA-16-260. As reported in a memo from a former site worker, Septic Tank TA-16-272 was monitored and found to be free of radioactive contamination and is not listed as having an HE hazard. Documentation indicates that this septic tank received only sanitary waste from TA-16-260. SWMU 16-005(f) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
16-005(h)	In Progress	SWMU 16-005(h) is the location of potentially contaminated subsurface soil at the site of a decommissioned septic tank (structure 16-431). Structure 16-431 served an HE processing building (Building 16-430), where plastic-bonded explosives and mock HE

		powders were pressed into shape. The tank was built in 1951 and was located about 200 ft from the southwest corner of Building 16-430. The tank's use was discontinued in January 1952 and was removed in 1968. Since Building 16-430 was completed in July 1951 and sanitary sewer lines, leading to the TA-16 waste water treatment plant, were not connected to the building until January 1952, it is possible that the tank was used during the first six months that Building 16-430 operated. Structure 16-431 had an associated outfall, SWMU 16-003(l)-99. Suspect contaminants for the outfall are organic chemicals and HE; Addendum 1 for the OU 1082 work plan lists the same suspect contaminants for SWMU 16-005(h), based on suspect outfall contaminants. The OU 1082 work plan addendum proposed RFI sampling at SWMU 16-005(h) to locate the most likely regions of potential contamination, beginning with field-screening for HE.
16-005(i)	Administratively Complete	SWMU 16-005(i) is a septic tank originally designated as structure number TA-13-12, which was given a SWMU number of 13-003(a). When TA-16 merged with TA-13, structure number TA-13-12 was redesignated as structure number TA-16-486. Another SWMU number [16-005(i)] was given to this redesignated structure. SWMU 16-005(i) is a duplicate of SWMU 13-003(a); thererfore, SWMU 16-005(i) is appropriate for NFA under Criterion 1.
16-005(k)	In Progress	SWMU 16-005(k) is the location of potentially contaminated subsurface soil adjacent the site of a decommissioned septic tank (structure 16-1132). The tank was installed in January 1944 and served the administration building (Building 16-1) and a steam plant and machine shop building (Building 16-7). The tank was removed in 1956 and was found to be free of contamination upon removal. The tank was the original septic system for Buildings 16-1 and 16-7. Sewer lines from the buildings joined at a manhole (structure 16-784) and led to the septic tank. The tank discharged to a drainfield 140 ft to the west. When the sewer system for the septic tank (structure 16-161) was built in 1945, the tank was connected to a manhole (structure 16-784). The VCP from the manhole to structure 16-1132 then was decommissioned. The OU 1082 work plan addendum proposed sampling at SWMU 16-005(k) to locate the most likely regions of potential contamination, beginning with field-screening for HE.
16-005(l)	In Progress	SWMU 16-005(l) is the location of potentially contaminated subsurface soil adjacent to a decommissioned manhole/grease trap (structure 16-1137). Structure 16-1137 served Building 16-525, the women’s change house. The grease trap was located about 98 ft south of Building 16-525, next to an existing steam manhole (structure 16-1082). Structure 16-1137 was 6.5 ft in diameter x 4 ft deep. It was a cylinder made of reinforced concrete and had a steel cover that resembled a manhole. The grease trap was partially buried 5.5 ft into the ground and the top protruded about 1 ft above the ground surface. Structure 16-1137 discharged to an outfall ditch through 4-in. VCP that was buried about 3 ft belowground. Structure 16-1137 was removed but the removal date is unknown. Building 16-525 originally was a women’s change house with laundry facilities. It was built in 1951 and demolished in 1989. Wastewater from the showers, sinks, and all but one floor drain and two roof drains discharged to structure 16-1137; the floor drain and roof drains discharged to SWMU 16-005(a). Wash water from the laundry room also drained to the grease trap. The OU 1082 work plan addendum proposed RFI sampling at SWMU 16-005(l) to locate the most likely regions of potential contamination, beginning with field-screening for HE.
16-005(n)	In Progress	SWMU 16-005(n) is a septic tank (structure 16-173) associated with a latrine (structure 16-162) that was put in service in 1949. The latrine was removed in 1971. The latrine and septic tank were north of the 90s Line HE machining buildings. The septic tank was removed from service in 1971. A contamination survey conducted in 1971 found that gross alpha and gross beta activity in the tank’s water were below detection limits that were in place at the time of the survey. The OU 1082 work plan recommended NFA for this SWMU because documentation indicated that the septic tank received only sanitary waste from a latrine located several

		hundred feet from the nearest process building and there was no potential for release to the environment.
16-005(o)	Administratively Complete	SWMU 16-005(o) is identified as a septic tank, TA-16-420. According to the 1990 SWMU Report, it was removed in 1962. This septic tank served Building TA-16-101, a guardhouse. There is no documentation suggesting this septic tank received anything other than sanitary waste from its associated guardhouse. SWMU 16-005(o) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
16-006(a)	In Progress	SWMU 16-006(a) was a septic tank (structure 16-175). It was a 500-gal. capacity, 10-ft x 5-ft, reinforced-concrete tank and a 4-in.-diameter VCP that ran from the instrumentation/test building (Building 16-54) to the tank. The tank was installed in 1964 and was replaced in 1988. The drainline's use was discontinued and left in place. Building 16-54 was initially a barium nitrate grinding facility. The building was used as an environmental testing laboratory from the late 1950s to 1988. The laboratory had physical testing machines that included a vibration table and shock-testing and drop-impact machines. Building 16-54 currently is used as an office building. An environmental survey of the septic tank conducted in November 1988 detected organic chemicals. Suspect contaminants are barium and organic chemicals. The OU 1082 work plan proposed sampling the tank prior to decontamination and decommissioning.
16-006(b)	Administratively Complete	SWMU 16-006(b) is a reinforced concrete septic tank that was built in 1952, with a capacity of 380-gal. This septic tank serves an inactive guardhouse. This tank receives sanitary wastes from the guardhouse, and overflow from the tank went to an associated leach field. There is no documentation that would indicate that this septic tank receives anything other than sanitary waste from its associated guardhouse. SWMU 16-006(b) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
16-006(c)-00	In Progress	Consolidated SWMU 16-006(c)-00 consists of former SWMUs 16-006(c) and 16-026(a). Former SWMU 16-006(c) is a septic system that served the metal forming building (Building 16-370). The building was built in 1953 and housed barium nitrate and metal-forming operations. Former SWMU 16-026(a) is potentially contaminated soil associated with outfalls and drainlines from Building 16-370. The outfall areas from these two SWMUs overlap, and suspect contaminants are commingled. Suspect contaminants are HE, inorganic chemicals, uranium, and organic chemicals. Former SWMU 16-006(c) is a 1200-gal. reinforced-concrete septic tank (structure 16-371), and its associated drainlines, drainfield, and outfall. The septic system was installed in 1953. The tank serves six floor drains, three water closets, and two lavatories on the third floor of Building 16-370. The units are connected to a common line that empties to a manhole (structure 16-831), which drains to the septic tank. At the time of the ER Project RFI at this former SWMU, the tank was used as a holding tank for water from floor drains and third-floor restrooms, and the drainline to the outfall was plugged at the tank. The tank was pumped regularly when Building 16-370 was operational, but at the time of the RFI the building was inactive. Former SWMU 16-026(a) is potentially contaminated soil associated with two outfalls and associated drainlines from Building 16-370. One outfall received discharge from a roof drain on the east side of Building 16-370 and the other received discharge from a steam pit condensate drain from the south side of the building. Effluent from the outfalls drained into Water Canyon. The steam pit drain joins NPDES-permitted Outfall 04A092, SWMU 16-028(b). The outfall was deleted from the LANL NPDES permit effective January 14, 1998. Addendum 2 of the OU 1082 work plan proposed NFA at former SWMU 16-026(a) because no process-related hazardous constituents have been introduced into the roof drains or the steam pit drains. The ER Project conducted an RFI at former SWMU 16-006(c) in 1995 to determine if a release had occurred and if so, if the release resulted in contamination. Samples were field-screened for HE, radioactivity, and organic chemicals; in addition, nine samples

		were collected from six locations and submitted for laboratory analysis. One supplemental sample was collected in September 1996 because the 1995 data did not bound the downgradient extent of contamination from the outfall. Elevated levels of barium and benzo(a)pyrene were found in the samples, but were thought to pose no unacceptable human health risks. The RFI report recommended NFA for former SWMU 16-006(c).
16-006(f)	Administratively Complete	SWMU 16-006(f) is a 1000-gal. septic tank that was constructed in 1987. The tank was installed to service bathroom facilities in TA-16-1153. A drain field associated with the septic tank is located to the southwest of the tank. There is no documentation that would indicate that this septic tank receives anything other than sanitary waste. SWMU 16-006(f) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
16-006(i)	Administratively Complete	SWMU 16-006(i) is an active septic tank. This septic tank was originally designated as structure number TA-16-00 during the design phase of this tank. Once the septic tank construction was completed, LANL's Engineering Division assigned the structure a permanent number (TA-16-1153). Both structure numbers were mistakenly assigned SWMU numbers, 16-006(i) and 16-006(f) respectively. SWMU numbers 16-006(i) and 16-006(f) are in fact the same unit. SWMU 16-006(i) is appropriate for NFA because it is a duplicate of SWMU 16-006(f).
16-007(a)-99	In Progress	Consolidated SWMU 16-007(a)-99 consists of former SWMUs 16-007(a), 16-024(e), 16-025(e), 16-025(f), and former AOC 16-024(d). These are settling ponds and three machining buildings (including their associated sumps and drainlines) located in the GMX-3 (HE and implosion systems) 30s-Line area in the central portion of S-Site. This consolidated SWMU encompasses an area that was the location of three identical HE machining buildings (Buildings 16-31, -32-, and -33), sumps and drainlines that discharged to a series of four waste ponds, and a former magazine. The buildings were part of a row of structures referred to as the 30s-Line that also included magazines, radiographic facilities, and utility buildings. The area is bounded on the north by structures 16-89, -90, -91, –92, and –93; on the east by a road; on the west by the administration area east of Anchor Ranch Road; and on the south by the road. S-Site was used for HE processing from 1944 to the early 1950s. Operations at GMX-3 were devoted to developing techniques to produce HE lenses, the explosives component of a nuclear weapon, with high chemical purity and accurate shape. HE was subjected to disruptive processes like casting and machining. Casting operations consisted of melting powdered HE and pouring the melts into shaped molds. Cooling protocols were controlled carefully during the casting stage to ensure perfect shape. To control cooling, casting buildings generally were equipped with piping arrays that provided water and steam at various temperatures and pressures to cooling jackets that surrounded the castings. HE vapor was produced while the cast HE was melted and the vapor tended to coat the interiors of the casting buildings. The widely dispersed HE was removed daily using high-pressure mixtures of steam and hot water. Wash water drained through troughs in the floors into sumps, or it leaked out through cracks in building floors and walls. After casting, risers (ridged imperfections in the cast) were sawed off and the HE charges were machined under a stream of water. Fine HE powder in machining buildings, from riser sawing and machining, also was washed into sumps and may have collected or passed through cracks in the building's floors. HE normally was held in magazines and rest houses between operations, where occasional spillage occurred. Buildings associated with those operations were hosed down periodically to remove HE contamination; wash water was discharged to sumps and drainage systems. Most buildings were decommissioned, destroyed by intentional burning, and removed to MDA P. All decommissioned buildings were surveyed for radiation, HE, and toxic chemicals before they were burned. Results of those surveys were negative unless otherwise indicated in this unit description. Sumps and drainlines were removed and associated HE-contaminated soil was cleaned to a residual level of 3% HE. Former SWMU 16-007(a) consists of four backfilled ponds about 100 ft southwest of the process building (Building 16-90). The ponds were aligned in a row and each was

		flat-bottomed and about 100 ft square. The ponds were 8 ft to 10 ft deep and separated by berms 4 ft to 6 ft high. The ponds received effluent from drains in historical machining buildings (Buildings 16-31, -32, and -33), which were decommissioned and burned in January and February 1960. The ponds are believed to have received HE-contaminated liquids containing barium and organic chemicals. Natural uranium also may have been discharged to the ponds. No documentation indicates a release occurred from the ponds. The locations of the historical ponds are level with the mesa and covered with grasses. In 1967, the ponds were excavated as part of the S-Site demolition and restoration. In 1988, subsurface soil samples were collected from the bottoms of each of the ponds. Samples were analyzed for HE, inorganic and organic chemicals, and radionuclides. Elevated levels of inorganic chemicals were detected. No samples were taken from beneath the pond floors. Former SWMUs 16-024(e), 16-025(e), and 16-025(f) were three identical HE-machining buildings (Buildings 16-31, -32, and -33). Each building consisted of two 13-square-ft chambers for machining and an 8-square-ft control room. Pipes connected the control room to the machining chambers. The buildings were made of wood and had concrete slab floors with fill dirt around and between them. Each building was almost entirely buried and had a door to the control room that was exposed on the southwest side. Doors to the machining chambers were located in blowout walls on the northeast side. An air conditioning system was mounted atop each mound that surrounded each machining building. Originally, each machining chamber had a lead-lined trough for washing out HE. The lead-lined troughs were replaced with concrete troughs with spark-proof mastic covering in August 1945. In the 1950s, the buildings were converted to other purposes. A sump that received effluent from the troughs of two machining chambers was located between each building and the road northeast of the 30s-Line. Each sump had a drainline that passed beneath the adjacent road, under an earthen barricade, and into the settling ponds [former SWMU 16-007(a)]. These sumps and drains are treated as part of this consolidated SWMU. The buildings were listed as having HE contamination in 1959. Suspect contaminants are HE and inorganic chemicals. Former AOC 16-024(d) is the footprint of a historical HE magazine (structure 16-34). Structure 16-34 was 12 ft wide x 17.5 ft long x 8 ft high. It was a wood-frame structure with a concrete floor and was bermed on three sides and on top. The magazine was located within the 30s-Line. Raw or finished HE products and machined products for physical and x-ray examination were stored at structure 16-34. The magazine was built in 1945 and had no plumbing. Structure 16-34 collapsed by 1960 and was demolished at a later unknown date. Suspect contaminants were inorganic and organic chemicals and HE. No previous investigations were conducted at this site. The OU 1082 work plan proposed sampling to determine the nature and extent of contamination, if any, at former SWMU 16-007(a). The ER Project conducted an RFI at former AOC 16-024(d) in 1997 to determine if elevated contaminant concentrations were present in soils. Ten field-screening samples were taken from five locations in and adjacent to the building footprint. Samples were field-screened for HE and radionuclides. Samples were negative for radionuclides and one sample was positive for HE. The positive sample was submitted for laboratory analysis and analyzed for organic and inorganic chemicals and HE. No elevated chemical concentrations were detected, and the RFI report recommended NFA at former AOC 16-024(d) because no hazardous chemicals were present. Addendum 1 of the OU 1082 work plan proposed subsurface sampling at former SWMUs 16-024(e), 16-025(e), and 16-025(f) to locate residual HE. Because of the small size of the buildings and the large amounts of soil contained in the barricades around them, Addendum 1 of the OU 1082 work plan stated that it was likely that contamination in the building footprints was diluted when the barricades were bulldozed.

16-007(b)	Administratively Complete	
16-008(a)-99	In Progress	Consolidated SWMU 16-008(a)-99 consists of former SWMUs 16-008(a), 16-017(a)-99, 16-017(b)-99, 16-017(c)-99, 16-017(d)-99, 16-017(e)-99, 16-026(m), 16-026(n), 16-026(o), 16-026(p), 16-029(k), 16-029(l), 16-029(s), 16-029(t), 16-029(u), and former AOC C-16-067. This consolidated SWMU is the location of the footprints of former HE-processing buildings, former materials storage buildings, and sumps, drainlines, and outfall systems (drainages) associated with the 90s Line of HE-processing buildings in the historic GMX-3 area. GMX-3 developed and used production techniques for shaped HE charges. The process involved large quantities of HE. Most structures in this consolidated SWMU were built in 1950 for machining HE. Shortly after the buildings were constructed, LANL began using HE pressing techniques rather than casting, which reduced the volume of HE removed by machining. As a result, HE machining in the 90s Line was at a smaller, more experimental level. After 1970, all of the buildings were used for storage until they were removed from service (by 1991). The structures were removed during D&D activities in 1996. Descriptions of the former SWMUs and the one AOC are grouped by system below (e.g., building, sump, and drainline/outfall for each associated building). Each building was equipped with two sumps that received effluent from drain troughs in the concrete slab floors. Initially, the sumps contained filter baskets, but the sumps subsequently were converted to conventional concrete sumps that were cleaned by vacuum-removal of wastewater. All the sumps were removed from service in 1970. In addition to effluent from the building sumps, drainage from driveways, roof drains, and building washdown discharged to the drainlines and outfalls described below. Each outfall/drainage consists of a buried VCP from the sumps, drainage channel along the road where the pipes daylight, buried VCP beneath the road, and an open-air drainage channel. Effluent discharged into a drainage that emptied into Cañon de Valle 600 ft north of the 90s Line or to the 90s Line pond. The DOE sampled potentially contaminated sites at the 90s Line during the late 1980s. Samples were taken from the outfall area draining the processing building (Building 16-93), former SWMU 16-029(k). Samples were analyzed for HE, cyanide, metals, and organic chemicals. Elevated levels of barium, cadmium, lead, zinc, and cyanide were found; none was above SALs. HE was not detected in the samples. No previous analyses were conducted for samples within the boundaries of the other former SWMUs and AOC in this consolidated unit. Historical samples from the pond [former SWMU 16-008(a), into which the drainlines from Buildings 16-89, 16-90, and 16-91 discharged] may be representative of contaminants from those buildings. Pond sampling (soil) data indicate that nickel and cadmium were above BVs but below SALs. Acetone, which has no BV, was also detected but was below its SAL. Within the pond, barium in water and HE in soils exceeded SALs. Former SWMU 16-017(e)-99 is a former HE machining building (Building 16-89), a 1684-square-foot wood building on a concrete slab. It was surrounded on three sides by an earthen berm that was packed against steel pilings. The building subsequently was converted to a storage facility that operated from 1950 to 1970. Former SWMU 16-029(u) consists of two former sumps in Building 16-89. Each sump is about 15 ft long x 5 ft wide x 5 ft deep. In the mid- to late-1960s, the HE sumps were filled with gravel. Former SWMU 16-026(p) consists of the drainlines and outfall from the sumps for Building 16-89. Former SWMU 16-017(d)-99 is a former HE machining building (Building 16-90), a 2165-square-foot wood building on a concrete slab. It was surrounded on three sides by an earthen berm that was packed against steel pilings. Building 16-90 was completed in 1950 and machining activities were at maximum levels until mid-1951, when the modern HE machining building (Building 16-260), was finished. The building subsequently was converted to a storage facility during the late 1950s or early 1960s. It operated from 1950 to 1980. Former SWMU 16-029(t) consists of two former sumps for

		Building 16-90. The sumps are 15 ft long x 5 ft wide x 5 ft deep. In the mid- to late-1960s, the HE sumps were filled with gravel. Former SWMU 16-026(o) consists of the drainlines and outfalls from the sumps for Building 16-90. Former SWMU 16-017(c)-99 is a former HE machining building (Building 16-91), a 1332-square-foot wood building on a concrete slab. It was surrounded on three sides by an earthen berm that was packed against steel pilings. The building was converted in the late 1950s or early 1960s for cleaning and refurbishing HE-contaminated equipment. It operated from 1950 to 1980. Former SWMU 16-029(s) consists of two former sumps for Building 16-91. Each was about 15 ft long x 5 ft wide x 5 ft deep. The HE sumps were filled with gravel in the mid- to late-1960s. Former SWMU 16-026(n) is the drainline and outfall from the sumps for Building 16-91. Former SWMU 16-017(a)-99 is the footprint of an HE machining building (Building 16-92), a 1332-square-foot wood building on a concrete slab. It was surrounded on three sides by an earthen berm that was packed against steel pilings and operated from 1950 to 1955. The building subsequently was converted for cleaning and refurbishing HE-contaminated equipment. By 1970, it was devoted entirely to storage. Former SWMU 16-029(l) is potentially contaminated soil associated with two former sumps in Building 16-92. Each sump is about 15 ft long x 5 ft wide x 5 ft deep. In the mid- to late-1960s, the HE sumps were filled with gravel. Former SWMU 16-026(m) is potentially contaminated soil associated with the drainline and outfall from the sumps in Building 16-92. Operations at Building 16-92 may have resulted in uranium contamination from the handling of disassembled items containing uranium. Former AOC C-16-067 was a drum storage platform (structure 16-191), adjacent to the HE machining building (Building 16-90). It was made of wood and sat on steel legs a few feet off the ground. The platform was 8 ft long x 8 ft wide x 4.5 ft high. The platform was constructed in 1950 along with the 90s Line and was used to store oils, solvents, and possibly HE in containers that had spigots. The drainline for Building 16-90 extended through the boundary of AOC C-16-067. The platform was decommissioned in 1970. Former SWMU 16-017(b)-99 is the footprint of an HE machining building (Building 16-93), a 1627-square-foot wood building on a concrete slab. It was surrounded by an earthen berm on three sides; the berm was packed against steel pilings. The building subsequently was converted to an electroplating facility, then to a storage facility. It began operating in 1950. By the 1970s, Building 16-93 was devoted to storage. Former SWMU 16-029(k) consists of two former sumps, a drainline, and an outfall from Building 16-93. In the mid- to late-1960s, the HE sumps were filled with gravel. Surface soil data from samples taken in the vicinity of the plating outfall drainage in the late 1980s showed barium, cadmium, lead, zinc, and cyanide above BVs but below SALs. Soil samples were analyzed for HE, inorganic chemicals, and organic chemicals. No HEs were detected in the samples. Former SWMU 16-008(a) is a 200-ft-diameter, inactive, unlined settling pond that received liquid waste from the HE sumps at three processing buildings (Buildings 16-89, 16-90, and 16-91). Buildings 16-92 and 16-93 did not empty into former SWMU 16-008(a). The pond may have been 10 ft to 15 ft deep. An engineering drawing shows that this site was once an HE-burning area. The pond may have received HE, barium, uranium, and organic chemicals. No documentation has been found that the pond was cleaned. The area currently contains runoff and occasionally dries up in the summer. Samples taken from the pond in the 1980s indicate that barium, nickel, and cadmium were above BVs but below SALs. Acetone, which has no BV, was also detected but was below its SAL. Within the pond, barium in water and HE in soils exceeded SALs. The OU 1082 work plan proposed sampling at SWMU 16-008(a) to determine the depth of the pond floor and sediment layering, and to detect HE, inorganic chemicals, organic chemicals, and radionuclides.

		The ER Project conducted a VCA in 1996 at the former SWMUs and AOC in this consolidated unit, with the exception of former SWMU 16-008(a), in conjunction with D&D activities. VCAs were conducted following D&D removal of all surface and subsurface structures and contaminated soil within two feet of sumps and drainlines. The ER Project conducted a VCA at former SWMUs 16-026(m) and 16-029(l) in 1996, following D&D removal of all surface and subsurface structures. Following removal of the structures, 20 quantitative field-screening samples were taken. Four samples were lateral-bounding. Samples were screened for RDX and TNT, inorganic chemicals, organic chemicals, and radionuclides. Twenty locations were above BVs for barium, one was above BVs for zinc, five were above BVs for nickel, six were above BVs for copper, and six were above SAL for uranium. The soil containing the highest level of each potential contaminant above BVs was submitted for laboratory analysis of HE, total uranium, inorganic chemicals, and organic chemicals. No analyte was detected above SAL. The VCA report recommended NFA at former SWMUs 16-026(m) and 16-029(l) because available data indicate that potential contaminants are not present. In 1996, a VCA was performed at former SWMUs 16-026(n) and 16-029(s). The ER Project took 41 field-screening samples. Sixteen were lateral-bounding, quantitative field-screening samples, two were vertical-delineation samples, and four were vertical-bounding samples. Samples were screened for HE, inorganic chemicals, organic chemicals, and radionuclides. Thirty-one screening locations were above BVs for barium and seven were above BVs for silver. The soil that contained the highest level of each potential contaminant above BVs was submitted for laboratory analysis. Six potential contaminant and bounding laboratory samples were taken and analyzed for inorganic chemicals, organic chemicals, and HE. Cadmium and barium were detected above BVs but below SALs. RDX was above SAL and TNB was above PRGs. PAHs were detected in the analysis but were attributed to non-point source runoff from surrounding parking lots and roads. Contamination was bounded at all locations except one during COPC sampling. Because there are no multiple constituent problems at former SWMUs 16-029(s) and 16-026(n), the VCA report stated that the one location where TNB was above PRG would be below PRG based on a hazard index of 1. All other locations were below PRGs. After verification sampling results were received, trenches from the excavated drainlines and sumps and the cleanup sites were backfilled with clean soil, compacted, and contoured to blend with the surrounding topography. The area was seeded with native grasses. The VCA report recommended NFA at former SWMUs 16-029(s) and 16-026(n) because the SWMU was remediated in accordance with current applicable state or federal regulations, and available data indicate that potential contaminants are either not present or are present in concentrations that pose no unacceptable risk to human health under present and projected future land use. In a 1996 VCA performed by the ER Project at former SWMUs 16-026(o) and 16-029(t), 41 field-screening samples were taken. Eighteen were lateral-bounding, quantitative field-screening samples and seven were vertical-bounding samples. Samples were screened for HE, inorganic chemicals, organic chemicals, and radionuclides. Thirty screening locations were above BVs for barium, four were above BVs for zinc, one was above BVs for silver, and two were above BVs for thorium. The soil that contained the highest level of each COPC above BVs was submitted for laboratory analysis. Seven potential contaminant and bounding laboratory samples were taken and analyzed for inorganic chemicals, organic chemicals, and HE. TNT and RDX were detected above PRGs; TNB was detected above SAL. Bounding samples were below SAL and PRGs except at three locations where the soil was later excavated. The vertical extent of contamination was defined by bounding samples at locations that were remediated. After verification sample results were received, trenches from the excavated drainlines and sumps and the remediated sites were backfilled with clean soil, compacted, and contoured to blend with the surrounding topography. The area was seeded with native grasses. Contaminated soils were

		removed and soil remaining at the site was below PRGs. The VCA report recommended NFA at former SWMUs 16-026(o) and 16-029(t) because the PRS was remediated in accordance with current applicable state or federal regulations, and available data indicate that potential contaminants either are not present or are present in concentrations that pose no unacceptable risk under present and projected future land use. In 1996, the ER Project conducted a VCA at former SWMUs 16-026(p) and 16-029(u); 28 field-screening samples were taken. Ten of the samples were lateral-bounding, quantitative field-screening samples and two were vertical-bounding samples. Samples were screened for HE, inorganic chemicals, organic chemicals, and radionuclides. Eighteen of the samples were submitted for laboratory analysis for organic chemicals, inorganic chemicals, and HE. TNT, RDX, and beryllium were present at levels above SALs and industrial cleanup levels. Contaminated soils were cleaned up to below PRGs and the VCA report recommended NFA at former SWMUs 16-026(p) and 16-029(u) because the SWMUs were remediated in accordance with current applicable state or federal regulations. Available data indicate that potential contaminants either are not present or are present in concentrations that pose no unacceptable risk to human health under present and projected future land use. The ER Project conducted a VCA at former SWMU 16-029(k) in 1996. Thirty-one field-screening samples were taken. Eight samples were lateral-bounding, quantitative field-screening samples and two were vertical-bounding samples. Samples were screened for HE, inorganic chemicals, organic chemicals, and radionuclides. COPC and bounding laboratory-analysis samples were biased to locations with positive field readings and to areas where visual examination suggested leakage of process water. Twenty-nine locations were above BVs for barium, two locations were above SAL for chromium, one location was above BVs for nickel, one location was above BVs for silver, one location was above BVs for lead, and one location was above SAL for uranium. One location that was above PRGs for RDX based on screening was excavated. Bounding samples were taken at locations where soil cleanup occurred. The soil containing the highest level above BVs for each COPC based on the screening was submitted for laboratory analysis. Five COPC and bounding laboratory samples were taken and analyzed for HE, inorganic chemicals, and organic chemicals. One sample also was tested for chromium(VI) because of a high-chromium screening value. Two samples were above BV for barium, one sample was above BV for chromium, and one sample was above SAL for chromium(VI) and chromium. Copper and lead were above BVs in one sample, two samples were above BV for nickel, and two samples were above BVs for zinc. No HEs were detected above SAL, and all detected organics were below SALs. Bounding samples were below SALs for all analytes. The VCA report recommended NFA at former SWMU 16-029(k) because the SWMU was characterized and remediated in accordance with applicable state and federal regulations and the available data indicate that potential contaminants either are not present or are present in concentrations that pose no unacceptable risk to human health under current and projected future land use. In 1996, the ER Project conducted a VCA at former AOC C-16-067. Sixteen samples were taken and field-screened for HE, inorganic chemicals, organic chemicals, and radionuclides. COPC and bounding laboratory-analysis samples were biased to areas where visual examination suggested leakage of process water. One location had 500 ppm to 1000 ppm of diesel fuel. Two samples were sent for laboratory analysis of inorganic chemicals, organic chemicals, and HE. HE was detected above SAL and all soil at this former AOC was excavated. After cleanup, confirmation samples showed all soils below PRGs. The VCA report recommended NFA at former AOC C-16-067 because it was characterized and remediated in accordance with current applicable state and federal regulations, and available data indicate that potential contaminants either are not present or are present in concentrations that pose no unacceptable risk to human health under the projected future land use.
16-008(b)	Administratively	

	Complete	
16-009(a)	In Progress	SWMU 16-009(a) was a burn area that was located in a level field near the western end of TA-16. The burn area was about 254 ft northwest of the World War II barium nitrate grinding facility (structure 16-54). The burn area was established in 1945 as a trash-burning site. It was not located in the old HE exclusion area and while it operated, a dedicated HE burn area existed at the MDA R burning ground. Aerial photos indicate that the burn area for SWMU 16-009(a) occupied about 100 square ft; a 6-ft-high berm surrounded the area on three sides. The east side of the burn area had an opening wide enough to allow truck access to the enclosed area. The burn area was used from the late 1940s to the 1960s. The site was decommissioned and the berm was leveled; it currently is an open vegetated field. Uranium was detected using hand-held instruments at this SWMU during an excavation in the late 1990s. Suspect contaminants at SWMU 16-009(a) are inorganic chemicals, uranium, and organic chemicals. The OU 1082 work plan proposed sampling to determine the presence or absence of suspected contaminants.
16-010(b)	In Progress	SWMU 16-010(b) was a flash pad identified as structure 16-387. It operated as a hazardous waste treatment unit under RCRA interim status and is undergoing RCRA closure. The pad was built in 1951 and was used to flash-burn HE-contaminated material. The burn area was enclosed within a 100-ft x 100-ft fenced area, and was made of a layer of sand several inches thick over a soil base. The ER Project requested a Class I permit modification to remove this SWMU from Module VIII of LANL's Hazardous Waste Facility Permit because it is a hazardous waste treatment unit that is undergoing closure in accordance with state and federal regulations. Closure activities and verification sampling for this site were completed in 2000 and 2001, in concert with the MDA P closure. Final closure approval is pending.
16-010(c)	In Progress	SWMU 16-010(c) is a former burn table that was converted to a flash pad/burn tray (structure 16-388). The burn table was used to treat HE scrap. The 100-ft x 100-ft enclosed area consisted of a concrete pad that was used to unload explosives and a 16-ft x 4-ft metal tray that was approximately 2 ft above the ground surface. Scrap HE was placed on the tray and burned. The current flash pad consists of a 22-ft x 22-ft concrete pad set on a secondary containment area and surrounded on three sides by a concrete wall. Prior to treatment, the HE-contaminated wastes are placed on steel pallets or steel trays. Propane burners are used as heat sources to treat the wastes at the flash pad, which can be covered with a movable steel roof when not in use. The current burn tray consists of a stainless-steel kettle that is 30 in. in diameter and 24 in. high. Propane burners are used to treat HE-contaminated liquid wastes at the burn tray. The entire assembly, which can be covered with a retractable cover, is provided with secondary containment. The ER Project requested a Class I permit modification for this SWMU because it is an active hazardous waste treatment unit and is managed in accordance with state and federal regulations.
16-010(d)	In Progress	SWMU 16-010(d) is a former burn slab that was converted to a burn tray (structure 16-399). The burn table is used to treat HE scrap. The 100-sq-ft enclosed area consists of a concrete pad that is used to unload explosives and a 16-ft x 4-ft metal tray on the burn table that is approximately 2 ft above the ground surface. HE is placed on the tray and burned. A metal-covered rain guard can be rolled back to expose the tray. The ER Project requested a Class I permit modification for this SWMU because it is an active hazardous waste management unit and is managed in accordance with state and federal regulations. In 1998, BMPs were installed at this site in the form of run-on

		diversion, repaving, and installation of an earthen berm and a roof covering.
16-010(e)	In Progress	SWMU 16-010(e) is a steel filter vessel (structure 16-401) that was built in 1961 to replace a filter bed. The filter vessel is 8 ft, 9 in. in diameter and 4 ft high. It is equipped with a jib crane-operated conical steel cover. About half of the vessel is above grade. The structure is conical with a surface layer of sand over layers of fine and coarse gravel. The vessel is used to filter HE/water sludge from HE sumps. The sludge, which is trucked in from sitewide HE sumps, is pumped into the structure and dried by blowing hot air across filtered residue. The residue is burned in the vessel and any residual ash and the top layer of sand are removed, characterized, and disposed of. A drainage system previously transferred the filtered water from the filter vessel to a filter/treatment unit [structure 16-363, SWMU 16-010(g)]. The filtered water is now transferred to the HEWTF's sump tank via an underground pipe. The ER Project requested a Class I permit modification to remove this SWMU from Module VIII of LANL's Hazardous Waste Facility Permit because it is an active hazardous waste treatment unit and is managed in accordance with state and federal regulations. This unit is also included in the NPDES permit for the HEWTF.
16-010(f)	In Progress	SWMU 16-010(f) is a steel filter vessel (structure 16-406). This vessel replaced filter bed 16-393 in 1965. The filter vessel is 8 ft, 4 in. in diameter and 4 ft high. It is equipped with a jib crane-operated conical steel cover. About half of the vessel is above grade. The structure is conical, with a surface layer of sand over layers of fine and coarse gravel. The vessel is used to filter HE/water sludge from HE sumps. The sludge, which is trucked in from sitewide HE sumps, is pumped into the structure and dried by blowing hot air across filtered residue. The residue is burned in the vessel and any residual ash and top layer of sand are removed, characterized, and disposed of. The ER Project requested a Class I permit modification for this SWMU because it is an active hazardous waste treatment unit and is managed in accordance with state and federal regulations. This unit is also included in the HEWTF's NPDES permit.
16-010(g)	Administratively Complete	SWMU 16-010(g) is a carbon filter/treatment unit constructed in 1988 to treat wastewater draining from pressure filter tanks. The drainage is permitted under NPDES Permit Number 05A055. SWMU 16-010(g) is appropriate for NFA under Criterion 4.
16-010(h)-99	In Progress	Consolidated SWMU 16-010(h)-99 consists of former SWMUs 16-005(g), 16-010(h), 16-010(i), 16-010(j), 16-010(k), 16-010(l), 16-010(m), and 16-010(n). The former SWMUs do not include the active hazardous waste management units that are part of the TA-16 burning ground operation. The burning ground is located in the northeast corner of TA-16. The burning ground was constructed in 1951 for HE treatment. Treated material was placed in the MDA P landfill until 1984; after 1984, the treated material was taken to TA-54 for disposal. Former SWMU 16-005(g) is the historical location of a filter bed (structure 16-393), which was decommissioned and disposed of at TA-54. The unit was built to receive HE residue wash water from the basket-wash facility [former SWMU 16-010(h)]. Structure 16-406, HE filter vessel [SWMU 16-010(f), which was not included in this consolidated unit] was built on top of the location of former structure 16-393. Former SWMU 16-005(g) was proposed for NFA in the OU 1082 work plan because it is located beneath a RCRA interim status unit, SWMU 16-010(f). Former SWMU 16-010(h), the decommissioned basket-wash facility (Building 16-390), operated from 1951 to 1966 and was used to clean filters from sitewide HE sumps and to divert residual filtered wash water to troughs [former SWMUs 16-010(k-n)], then to filter beds [former SWMUs 16-010(e,i, and j) and SWMU 16-005(g)]. The basket-wash facility and troughs have not been used as intended since 1966. The basket-wash facility currently is used for storage. Former SWMU 16-010(i) is structure 16-392, an inactive burn pad that formerly was a filter bed that received wash water from the basket-wash facility. The wash water was received through a trough (structure 16-1136). Filtered wash water from the basket-wash facility collected within perforated piping along the bottom of the filter bed and

		drained via gravity through a pipe to an adjacent outfall southeast of the filter bed. The filter bed was modified to a burn pad to burn suspected uranium-contaminated objects. The trough was dismantled when the filter bed was modified. Former SWMU 16-010(j) was a filter bed (structure 16-394) that was used from 1951 to 1966. It received wash water from the basket-wash facility. The filter bed was converted to a burn tray in 1990 and operated as a hazardous waste treatment unit under RCRA interim status. The burn tray was used to burn HE-contaminated oils, solvents, and water mixed with oils and solvents. Once materials were poured onto the tray, wood that was stacked beneath the tray was ignited remotely. Residues from burning were managed in accordance with state and federal regulations. Former SWMU 16-010(k) is a steel trough with a V-shaped cross section that carried wash water from the basket-wash facility to a filter bed [SWMU 16-010(e)]. The trough was built in 1951. It is open at the top, elevated 3 ft off the ground on a steel framework, and is about 370 ft long. The filter bed was replaced with a filter vessel (structure 16-401). Former SWMU 16-010(l) is a trough (structure 16-1134) similar in construction to former SWMU 16-010(k). It carried wash water from the basket-wash facility to a filter bed [structure 16-394, former SWMU 16-010(j)] that was converted to a burn tray. Former SWMU 16-010(m) is a trough (structure 16-1135) that carried wash water from the basket-wash facility to a filter bed (structure 16-393). In 1965, a filter vessel [structure 16-406, SWMU 16-010(f)] replaced structure 16-393. Former SWMU 16-010(n) is a trough (structure 16-1136) that carried wash water from the basket-wash facility to a filter bed (structure 16-392). The trough was dismantled in 1988. This is the only trough through which materials that were potentially contaminated with uranium were transported. The ER Project submitted a RCRA closure plan for the burn tray [SWMU 16-010(j)] after burn operations were relocated to another hazardous waste treatment unit [structure 16-388, SWMU 16-010(c)]. In 1995, the former SWMUs were sampled for HE, inorganic and organic chemicals, and in some cases, uranium. This sampling confirmed the presence of contamination. Consolidated SWMU 16-010(h)-99 will be further investigated, characterized, assessed, and potentially remediated as part of future corrective action activities at the TA-16 burning ground.
16-012(a)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012(a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These SWMUs are appropriate for NFA under Criterion 3.
16-012(a2)	Administratively Complete	PRS 16-012(a2), a container storage area, is an active unit that is currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. Typical waste stored in this area are items contaminated with beryllium, thorium, and depleted uranium. The Laboratory conducts training classes for the operation of these areas. It also inspects and has institutional controls governing the closure of these units. The

		New Mexico Environment Department (NMED) also performs annual inspections. If a release occurred at one of these areas, it would be cleaned up immediately in accordance with the Laboratory's Contingency Plan, Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, this unit does not have the potential to become a historical release site. Therefore, this area will continue to be regulated under 3004(a) of the RCRA and not 3004(u) of the Hazardous and Solid Waste Amendments.
16-012(b)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012(a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These SWMUs are appropriate for NFA under Criterion 3.
16-012(c)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012(a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These SWMUs are appropriate for NFA under Criterion 3.
16-012(d)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i)Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082

		If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
16-012(e)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012(a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These SWMUs are appropriate for NFA under Criterion 3.
16-012(f)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012(a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These SWMUs are appropriate for NFA under Criterion 3.
16-012(g)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012(a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These SWMUs are appropriate for NFA under Criterion 3.
16-012(h)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012(a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These

		SWMUs are appropriate for NFA under Criterion 3.
16-012(i)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i)Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
16-012(j)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i)Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082

		SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
16-012(k)	Administratively Complete	SWMU 16-012(k, r, and s) are storage areas often referred to as "rest houses". Rest houses are auxiliary buildings that function as intermediate storage areas for explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses are currently part of active operations, managed under rigid safety procedures. Containerized high explosive (HE) material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Recent field screening indicated that no HE contamination was present at the exterior loading docks. SWMUs 16-012 (k, r, and s) have associated sumps and drainage systems that can discharge constituents to the environment. The sumps and drainage systems for these rest houses are being investigated as SWMUs 16-029 (c, f, and e), respectively. SWMUs 16-012(k, r, and s) are appropriate for NFA under Criterion 1 because their sumps and drainage systems will be investigated as SWMUs 16-029 (c, f, and e), respectively.
16-012(l)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i)Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
16-012(m)	Administratively	The following sites are either satellite storage areas or less-than-ninety-day storage

	Complete	areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i)Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
16-012(n)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i)Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082

		If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
16-012(o)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012(a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These SWMUs are appropriate for NFA under Criterion 3.
16-012(p)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i)Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
16-012(q)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior

		drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012(a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These SWMUs are appropriate for NFA under Criterion 3.
16-012(r)	Administratively Complete	SWMUs 16-012(k, r, and s) are storage areas often referred to as "rest houses". Rest houses are auxiliary buildings that function as intermediate storage areas for explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses are currently part of active operations, managed under rigid safety procedures. Containerized high explosive (HE) material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Recent field screening indicated that no HE contamination was present at the exterior loading docks. SWMUs 16-012 (k, r, and s) have associated sumps and drainage systems that can discharge constituents to the environment. The sumps and drainage systems for these rest houses are being investigated as SWMUs 16-029 (c, f, and e), respectively. SWMUs 16-012 (k, r, and s) are appropriate for NFA under Criterion 1 because their sumps and drainage systems will be investigated as SWMUs 16-029 (c, f, and e), respectively.
16-012(s)	Administratively Complete	SWMUs 16-012(k, r, and s) are storage areas often referred to as "rest houses". Rest houses are auxiliary buildings that function as intermediate storage areas for explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses are currently part of active operations, managed under rigid safety procedures. Containerized high explosive (HE) material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Recent field screening indicated that no HE contamination was present at the exterior loading docks. SWMUs 16-012 (k, r, and s) have associated sumps and drainage systems that can discharge constituents to the environment. The sumps and drainage systems for these rest houses are being investigated as SWMUs 16-029 (c, f, and e), respectively. SWMUs 16-012 (k, r, and s) are appropriate for NFA under Criterion 1 because their sumps and drainage systems will be investigated as SWMUs 16-029 (c, f, and e), respectively.
16-012(t)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i)Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit

		1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
16-012(u)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, ,TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area,TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i), Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
16-012(v)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012 (a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These SWMUs are appropriate for NFA under Criterion 3.

16-012(w)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012 (a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These SWMUs are appropriate for NFA under Criterion 3.
16-012(x)	Administratively Complete	The following sites are either satellite storage areas or less-than-ninety-day storage areas. No historical releases are known to have occurred at these sites. Satellite accumulation areas and less-than-ninety-day storage areas are active units that are currently regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. LANL conducts training classes for the operation of these areas, inspects, and has institutional controls governing the closure of these units. The NMED also performs annual inspections. SWMU 03-001(a), Less-than-ninety-day storage area, ,TA-3, Former Operable Unit 1114 SWMU 03-001(b), Satellite Accumulation Area,TA-3, Former Operable Unit 1114 SWMU 03-001(c), Less-than-ninety-day storage area, TA-3, Former Operable Unit 1114 SWMU 03-002(b), Satellite Accumulation Area, TA-3, Former Operable Unit 1114 SWMU 14-004(b), Satellite Accumulation Area, TA- 14, Former Operable Unit 1085 SWMU 16-012(d), Sateflite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(i), Satellite Accumulation Area, TA- 16, Former Operable Unit 1082 SWMU 16-012(j), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWIM 16-012(l), Satellite Accumulation Area, TA-16, Former Operable Unit 1092 SWMU 16-012(m), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 8WMU 16-012(n), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(p), Less-than-ninety-day storage area, TA- 16, Former Operable Unit 1092 SWMU 16-012(t), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(u), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 SWMU 16-012(x), Satellite Accumulation Area, TA-16, Former Operable Unit 1082 If a release occurred at one of these areas, it would be cleaned up immediately in accordance with LANL's Spill Prevention Countermeasures and Control Plan, and/or administrative requirements. Because any releases will be cleaned up immediately, these units do not have the potential to become historical release sites. Therefore, these areas will continue to be regulated under 3004(a) of the RCRA, and not 3004(u), Hazardous and Solid Waste Amendments. These SWMUs are appropriate for NFA under Criterion 4.
16-012(y)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012(a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These

		SWMUs are appropriate for NFA under Criterion 3.
16-012(z)	Administratively Complete	Rest houses are auxiliary buildings that function as intermediate storage areas for raw explosives being delivered to process buildings, for finished products ready for transport, or for scrap being removed for disposal. The TA-16 rest houses were constructed in the late 1940s and early 1950s. These rest houses have no exterior drains. All rest houses are currently part of active operations, managed under rigid safety procedures. Containerized HE material is delivered to and from rest houses under strictly controlled operating procedures. Rest houses are cleaned and maintained on regular schedules. Then, cleaning water and all materials are collected, packaged, and transported to the TA-16 burning ground for treatment. Recent field screening indicates that no HE material has leaked or spread from any of these structures to the exterior loading docks. SWMUs 16-012(a,b,c,e,f,g,h,o,q,v,w,y,z) have no exterior drains and have no pathways by which a release to the environment could occur. These SWMUs are appropriate for NFA under Criterion 3.
16-013-99	In Progress	Consolidated SWMU 16-013-99 consists of former SWMUs 16-006(h), 16-013, 16-017(q)-99, 16-017(r)-99, 16-017(s)-99, 16-017(t)-99, 16-017(u)-99, and 16-029(g2), and AOCs C-16-074 and C-16-068. This consolidated SWMU encompasses the former location of the V-Site courtyard, which was the location of miscellaneous activities that supported HE testing and processing. In 1945, the entire V-Site area was incorporated into TA-16. The buildings and courtyard have been used for programmatic activities and storage since then. All but two buildings (the high bay assembly building [Building 16-516] and an equipment building [Building 16-517]) were destroyed in the May 2000 Cerro Grande fire. All former SWMUs in this consolidated unit were exposed to surface fires. V-Site and all its associated structures are considered a historical site. The entire site is inactive and any additional work will be deferred until the site's future as a historical site is determined. Former SWMU 16-006(h) is the former steam-heating distribution pump pit (structure 16-526) located against the berm retaining wall near an equipment building (Building 16-517). The pit was constructed in 1945 and housed a condensate pump. Condensate from radiators in the area was routed to the pump pit to be returned to the source boiler. The system served former Buildings 16-515, 16-519, and 16-520, and Building 16-516, which still is in use. Some pipes in the pit may have been insulated with asbestos. Former SWMU 16-013 is a former storage area located in the V-Site courtyard, where containers of unusable material and other items were stored. The area was once part of V-Site, constructed in 1944 for testing components of implosion devices. Suspect contaminants at former SWMU 16-013 were uranium, inorganic chemicals, and organic chemicals. Former SWMU 16-017(q)-99 is a former storage magazine associated with V-Site. Former SWMUs 16-017(r)-99 and 16-017(s)-99 are the former sites of the varnishing and assembly operations (former Buildings 16-519 and 16-520). Both buildings later were used for storage. Former SWMU 16-017(t)-99 (Building 16-516) initially housed a laboratory and later was used for equipment storage. Former SWMU 16-017(u)-99 (Building 16-516) was an HE-processing building and the site of testing activities for the Trinity device. Former SWMU 16-029(g2) was a below-grade concrete pit (structure 16-523) that was built in 1944 and taken out of service in 1945. The pit was backfilled with soil to ground level and covered with a concrete slab. The 11-ft x 16-ft x 4-ft-deep pit held a remotely controlled shaker table used in vibration tests on a Fat Man device prototype, which had an HE component. Former AOC C-16-074 sits directly atop former SWMU 16-029(g2). It is the location of a decommissioned drum storage area east of Building 16-517. Drums containing residual HE-contaminated hydraulic oil were stored on an asphalt pad. The pad was built on the surface above the concrete vault that held the shaker table after the former SWMU was backfilled. Suspect contaminants were HE, uranium, inorganic chemicals, and organic chemicals.

		Former AOC-16-068 is an area of potential soil contamination associated with former Building 16-522, which was built in 1944 and removed in 1945. The building has not been located on LANL engineering drawings or on aerial photographs; it is believed to be the unidentified building foundation west of former Building 16-519. Suspect contaminants were HE, uranium, inorganic chemicals, and organic chemicals. Addendum 1 of the OU 1082 work plan stated that action on former SWMU 16-006(h) would be deferred until D&D. The ER Project conducted a VCM at former SWMUs 16-013 and 16-029(g2) and former AOCs C-16-068 and C-16-074 in 1997 and 1998. At former SWMU 16-013, samples were collected to determine if contamination existed in the former waste storage area. Five surface-soil samples were collected from the drainage north of the V-Site courtyard. Samples were field-screened for HE and inorganic chemicals. Two samples were submitted for laboratory analysis based on field-screening results and analyzed for radiation, HE, inorganic chemicals, and organic chemicals. No elevated contaminant concentrations were found, and the VCM report recommended former SWMU 16-013 for NFA because contaminants at that site pose no unacceptable risk to human health. Former SWMU 16-029(g2) and former AOC C-16-074 were also sampled in the VCM to determine the nature and extent of detected contamination and to bound the extent of contamination, if any. Fifteen samples were screened from eight boreholes across and downgradient from the former SWMUs to check for vertical and lateral contaminant distribution. The samples were field-screened for HE and inorganic chemicals. HE screening results showed no indication of the presence of HE. Screening results for metals were close to BVs. Five of the samples were sent to an off-site laboratory for analysis for inorganic chemicals, HE, organic chemicals, and uranium. Upon evaluation of laboratory analysis results, an additional deeper sample was collected to bound the extent of contamination and was sent to an off-site laboratory for analysis for a limited suite of inorganic chemicals. Elevated levels of acetone, barium, chromium, copper, and nickel were detected at the downgradient sample location. A human health screening assessment did not identify potential contaminants because maximum concentrations either were below BVs for inorganic chemicals or below PRGs. None of the contaminants was retained in the ecological screening assessment due to incomplete exposure pathways for ecological receptors. The VCM report recommended NFA for former SWMU 16-029(g2) and former AOC C-16-074. The OU 1082 work plan proposed the following SWMUs for deferral until D&D: 16-017(q)-99, 16-017(r)-99, 16-017(s)-99, 16-017(t)-99, and 16-017(u)-99. At former AOC C-16-068, four samples were collected from the former location of Building 16-522, where a concrete, soil-filled foundation remains. Samples were collected from within the building foundation and were field-screened for HE. One sample was submitted for laboratory analysis based on screening results. Samples were analyzed for radioactivity, HE, inorganic chemicals, and organic chemicals. Elevated levels of benzo(a)pyrene were detected in the sample, and the VCM report stated that it could not be attributed to the former AOC because there was no indication that PAHs were used at the site. The VCM report proposed NFA for former AOC C-16-068.
16-015(a)	In Progress	SWMU 16-015(a) is the location of potentially contaminated surface and subsurface soils associated with a decommissioned men's locker room and laundry facility (Building 16-15), and its associated drainline. Building 16-15 was located in the southern part of the TA-16 administration area. The administration area of S-Site was used primarily for activities that did not involve HE processing. It was built in 1945 using wood-frame construction. The building was removed in April 1956. A washer in the building's equipment room discharged to a sump that led to a 6-in., cast-iron drainline. It is not known if the outfall was exposed on the surface. Building 16-15 was assessed for safety in 1956 prior to demolition. At that time, it was presumed that HE could be

		present in the drainline. The drainline was plugged and left in the ground. Suspect contaminants at this SWMU are HE and inorganic chemicals. The Addendum 1 of the OU 1082 work plan proposed surface and subsurface sampling at this SWMU.
16-015(b)	In Progress	SWMU 16-015(b) is the former location of a decommissioned steam-washing house (Building 16-18). The SWMU consists of potentially contaminated surface and subsurface soils in the area of Building 16-18 and its associated drainfield. Building 16-18 was located in the southern part of the TA-16 administration area. The administration area of S-Site was used primarily for activities that did not involve HE processing. It was built in 1945 using wood-frame construction with a concrete foundation. The building was burned in place in 1960. Building 16-18 originally was used to steam-clean machinery. Later, it was used to store containers of motor oil. An outfall was associated with a drain from the north side of the building. A concrete trough extended from the building about 23 ft to the northeast. From there, an underground drainline ran east for 188 ft. The drainline was removed in July 1966. Suspect contaminants at SWMU 16-015(b) are HE, organic chemicals, and inorganic chemicals. Addendum 1 of the OU 1082 work plan proposed surface and subsurface sampling at SWMU 16-015(b).
16-016(a)	In Progress	SWMU 16-016(a) is the location of a historical landfill located northeast of an S-Site bunker (structure 16-76). S-Site was used during World War II for the production of HE for weapons and nonweapons research and development. Operations included casting, pressing, and machining HE; assembling explosive test devices; fabricating plastic components; developing new materials; and nondestructive testing of these materials. Material storage, division, and group administration offices and machine shop facilities also were located at S-Site. In 1965, a memo reported that an unspecified amount of metal had been buried at SWMU 16-016(a) during World War II. The debris subsequently was located using a magnetometer and was excavated and removed to MDA P. Suspect contaminants are HE and inorganic chemicals. The OU 1082 work plan proposed sampling at SWMU 16-016(a) to determine if contamination is present in the surface or subsurface soils.
16-016(b)	In Progress	SWMU 16-016(b) is the site of a former surface disposal area at TA-16. The area consisted of several mounds of soil containing asphalt, concrete, and other construction debris located about 500 ft north of the TA-16 steam plant (structure 16-540). The debris was believed to have been deposited at the site between 1948 and 1958. The site was outside the HE corridor at TA-16. The ER Project conducted a VCA in 1995 that removed the debris and followed with confirmatory samples. Cleanup involved excavating the soil mounds and associated debris; 20 soil samples were field-screened for HE. Material also was screened for radionuclides before it was removed from the site. No radionuclides were found during screening. Three confirmatory samples were collected after all soil and debris were removed. Samples were analyzed for HE and inorganic chemicals. No contaminants were found in the soil. The soil mounds and associated debris were taken to the TA-16 gravel pits and staged until sample results indicated that the soil was free of contamination. Once they were determined to be clean, the soil and debris were used as construction fill at the gravel pits. The site was restored by regrading and allowing native grasses to revegetate the area. No erosion control was necessary because the site is relatively level. The VCA report recommended NFA for SWMU 16-016(b).
16-016(c)-99	In Progress	Consolidated SWMU 16-016(c)-99 consists of former SWMUs 16-006(e), 16-010(a), and 16-016(c). The former SWMUs are part of the TA-16 burning ground operations. These SWMUs are located adjacent to MDA P (SWMU 16-018). Former SWMU 16-006(e) was an approximately 100-gal., steel septic tank that was part of a septic system constructed in 1963. The system included a drainfield, outfall,

		and associated piping that served a control shelter (structure 16-389) for a burning site. The water closet, lavatory, and floor drain in the control shelter discharged to the septic tank. Structure 16-389 (control shelter) generally was occupied only during burning ground operations, which occurred one to two days a week from the 1950s to 1984. In 1987, LANL obtained a sanitary waste permit for the septic tank from Los Alamos County. The overflow outlet from the tank was sealed in 1988 and the contents subsequently were routinely pumped and disposed of through LANL's SWSC centralized sanitary treatment plant. Former SWMU 16-010(a) is a former HE flash pad (structure 16-386) that now is used for materials storage. This structure also was designated as a barium nitrate storage site. The flash pad was built in 1951 and is located approximately 150 ft west of another flash pad [structure 16-387, SWMU 16-010(b)] not included in this consolidated SWMU. The flash pad is a rectangular, fenced, level area of bare soil within a 100-ft x 100-ft fenced area. The northeastern corner of the area enclosed by the fence was used in the 1950s and 1960s as a storage site for a pile of barium nitrate [SWMU 16-016(c)]. Former SWMU 16-016(c) is a historical barium nitrate storage area/pile located next to and partially overlapping an inactive flash pad [structure 16-386, former SWMU 16-010(a)]. The footprint of the barium nitrate pile is about 0.85 acre. The site is on a steep, north-facing slope at the head of a small drainage channel into Cañon de Valle. The pile was removed in the early 1970s. The tank [former SWMU 16-006(e)] was sampled in September 1995 as part of a survey for radioactivity in LANL septic tanks. No elevated radioactivity was found in the tank. The ER Project drilled two boreholes at the proximal and distal ends of the septic system in September 1995. The locations were field-screened for HE; two locations had elevated HE. Four samples were submitted for laboratory analysis based on field-screening results. Samples were analyzed for HE, organic chemicals, and inorganic chemicals. No elevated concentrations were found by the laboratory analyses. The septic tank contents were sampled in April 1998 and the results confirmed that the wastewater would meet SWSC's WAC. The ER Project conducted an RFI at SWMU 16-010(a) in 1995. Thirty samples from thirty locations were field-screened for HE and inorganic chemicals. Samples were collected from areas with the highest barium concentrations and were submitted for laboratory analysis. Barium concentrations were highest in surface samples collected near the former location of the barium nitrate storage pile [former SWMU 16-016(c)]. The RFI recommended NFA at former SWMU 16-010(a) by attributing the barium contamination to former SWMU 16-016(c). Initial sampling was conducted at former SWMU 16-016(c) in March 1995. A field-randomized, 20-ft grid was used to collect barium, HE, and radiation field-screening data. The grid extended over the area of former SWMU 16-010(a). Using the grid, surface-soil samples from the five highest barium readings were submitted for laboratory analysis. The drainage channel was field-screened for barium, HE, and radiation at groups of 3 points every 30 ft downgradient for a distance of 210 ft. A total of 18 samples were collected from the grid and drainage transect for laboratory analysis. Analysis showed several inorganic chemicals, particularly barium and lead, at elevated concentrations. Results also showed PAHs and HE. Total uranium was elevated. In 1998, BMPs were installed at former SWMU 16-016(c) in the form of run-on diversion, a vegetative buffer strip, regrading, and straw-bale barriers to minimize contaminant migration from the site. The ER Project submitted a SAP for this consolidated SWMU in 1999 to evaluate residual contamination. A VCA plan was submitted for the consolidated SWMU as an attachment to the SAP. The VCA plan documented how former SWMUs 16-010(a) and 16-016(c) would be cleaned up. The project proposed field-screening to locate lead, barium, and HE contamination. Field-screening results would be used to direct removal

		of contaminated soils. Proposed sampling is designed to confirm that former SWMU 16-006(e) received only sanitary waste, therefore supporting a recommendation to remove former SWMU 16-006(e) from Module VIII of LANL's Hazardous Waste Facility permit. Cleanup levels at consolidated SWMU 16-016(c)-99 would be confirmed by laboratory sample analysis. The remediation of SWMU 16-016(c)-99 was performed as part of the consolidated closure of MDA P (SWMU 16-018) and the 387 Flash Pad [16-010(b)], and occurred primarily from August 2000 to March 2001. Excavation within the footprint of the barium nitrate pile [SWMU 16-016(c)] included both remote and conventional means. Because part of the boundary of the barium nitrate pile extended down the western margin of MDA P, contaminated materials in this area were excavated during the excavation of MDA P. Soils within the 386 Flash Pad [SWMU 16-010(a)] areas were excavated and staged with soils from adjacent areas of the MDA P excavation. Field-screening for barium was used to identify the extent of the excavation. Surface soils and some bedrock materials were removed from within the flash pad area. Discontinuous areas downgradient of the flash pad were removed. Barium was not found to have penetrated the bedrock. Some residual bedrock contamination was identified in the drainage along the western margin of MDA P, but it was below the operational PRG of 2,000 mg/kg. The remaining areas of exposed soil within the 386 Flash Pad fence were screened for barium. After excavation, a layer of soil and gravel was placed in the excavation within the current fence. Gravel was placed on the north side of the current fence as an erosion control measure. The septic tank [SWMU 16-016(e)] and waste line were remediated in two stages, in March 2001 and March 2002. In March 2001, the waste line (4-in.-diameter VCP) was located and excavated from the tank to its endpoint. The pipe was empty and the connection with the tank had been severed. Field-screening of the pipe interior indicated that no HE or barium contamination was present. The distal 10 ft of the waste line was crushed pipe with no defined outfall. The metal top and riser of the tank were excavated to expose the tank itself. A representative of the NMED Field Operations Division inspected the tank and the tank was backfilled with clean soil to grade and left in place. The pipe inlet was plugged with a PVC pipefitting and the water was turned off inside the building restroom to decommission the source. Soil surrounding the tank and the edges and interior portions of the tank were field-screened for HE and barium and found to be below operational PRGs for both. In March 2002, the tank and pipe were excavated, sampled, and removed completely.
16-016(d)	In Progress	SWMU 16-016(d) is a small debris disposal area at a darkroom building (Building 16-222). Items observed in the debris disposal area included a partially full can used to mix cement, segments of corrugated metal pipe, cable, and rebar. Debris appeared to consist of construction-related materials. The debris pile was field-screened for HE and radioactivity and removed to the TA-16 burning ground in March 1995 by the operating group. SWMU 16-016(d) was recommended for NFA in the rewritten Chapter 6 of the OU 1082 RFI work plan because it never was used to manage hazardous waste and/or constituents.
16-016(e)	In Progress	SWMU 16-016(e) is a white fibrous mass located among graded soil and tuff 150 ft southeast of the painting and boxing building (Building 16-360). In 1994, a sample was collected from the white fibrous mass and analyzed by x-ray diffraction. Sampling results indicated that this fibrous mass was fiberglass, not asbestos, as suggested in the 1990 SWMU report. SWMU 16-016(e) was recommended for NFA in the rewritten Chapter 6 of the OU 1082 RFI work plan because it never was used to manage hazardous waste and/or constituents.
16-016(f)	In Progress	AOC 16-016(f) is the site of a former surface disposal area that was located on a

		hillside southeast of a packaging facility (Building 16-360). The site contained a small amount of friable asbestos and construction debris. The construction material had been present at this site since about 1960. Other debris associated with this AOC included black cellular foam glass (used as roof insulation), rusted cans, and broken drainage tile. Asbestos was the only suspect contaminant at this site. The ER Project conducted a VCA at this AOC in 1995, which included sampling the asbestos and removing it and the surrounding soil. Once the asbestos and surrounding soil were removed, the remainder of the disposal area was excavated. The debris was field-screened for HE and radioactivity before it was removed from the site for disposal at the Los Alamos county landfill. Field-screening results were negative. Confirmatory samples were not collected because there is no analytical method for asbestos in soil other than visual inspection. Friable asbestos was handled in accordance with LANL's asbestos abatement program. Site restoration and erosion controls were implemented. The site was regraded but was not reseeded because it is bare tuff.
16-016(g)	In Progress	SWMU 16-016(g) is a debris area associated with a preparation building (Building 16-370). The debris includes cans and pipes that are distributed over a 20-ft-diameter area located in a drainage ditch about 60 ft south of the building. The debris appears to be construction-related. Building 16-370 is a metal-machining facility that formerly was a barium nitrate grinding facility. The ER Project screened three soil samples for inorganic chemicals from below the confluence of SWMU 16-028(b), which is the outfall area for Building 16-370, and the SWMU 16-016(g) drainage ditch. Elevated barium levels were detected, and SWMU 16-028(b) is being investigated further.
16-017(g)-99	In Progress	SWMU 16-017(g)-99 is a former storage magazine (12 ft x 24 ft x 7 ft) at TA-16. Former SWMU 16-017 consisted of a group of 23 intact structures associated with S-Site. The former storage magazine (structure 16-80) was built before 1950 and its use was discontinued in 1951. During the AUA conducted in 1999, former SWMU 16-017 was split into 23 separate SWMUs to facilitate tracking. Each former structure in the series was given an alpha-identifier at that time. The OU 1082 work plan proposed deferring further action on these structures until D&D.
16-017(i)-99	In Progress	Consolidated SWMU 16-017(i)-99 is of one of the buildings associated with former SWMU 16-017 and former AOCs C-16-025 and C-16-026. During the AUA conducted in 1999, former SWMU 16-017 was split into 23 separate SWMUs to facilitate tracking. Each former structure in the series was given an alpha-identifier at that time. SWMU 16-017(i)-99 is the location of a 200 ft x 40 ft x 20 ft former warehouse at TA-16 (Building 16-10). HE casting molds were washed out on the north end of Building 16-10. The warehouse operated from 1945 to 1998. D&D of Building 16-10 occurred in 1998. Former AOC C-16-025 was a cabinet shop (Building 16-8) that was built in 1945 and removed in March 1956. It was of wood-frame construction and was located west of Building 16-10 and south of Building 16-9. The cabinet shop was used as a carpentry shop. Former AOC C-16-026 was a plumbing shop (Building 16-17) that was built in 1945 and removed in March 1956. It was of wood-frame construction and was located south of Building 16-10. Addendum 1 of the OU 1082 work plan stated that there were indications that HE was handled in Building 16-17; however, a private contractor was allowed to remove the building in 1956. Rigorously enforced site policy required that all HE-contaminated buildings were destroyed by burning. Therefore, because moving this building was allowed, HE contamination would not have been present. Addendum 1 of the OU 1082 work plan recommended NFA for the former AOCs in this consolidated unit because there was no indication that hazardous materials were used

		at those locations.
16-017(j)-99	In Progress	SWMU 16-017(j)-99 is a 24 ft x 26 ft x 9 ft former storage magazine at TA-16 (structure 16-63), which was built before 1950 and was was no longer in use in 1951. During the 1999 AUA, former SWMU 16-017 was split into 23 separate SWMUs to facilitate tracking. Each former structure in the series was given an alpha-identifier at that time. Structure 16-63 underwent D&D in the late 1990s.
16-017(k)-99	In Progress	SWMU 16-017(k)-99 is a 12 ft x 24 ft x 7 ft former storage magazine (structure 16-78). Former PRS 16-017 consisted of a group of 23 intact structures associated with S-Site. During the 1999 AUA, former SWMU 16-017 was split into 23 separate SWMUs to facilitate tracking. Each former structure in the series was given an alpha-identifier at that time. Structure 16-78 underwent D&D in 1995.
16-017(l)-99	In Progress	SWMU 16-017(l)-99 is a 12 ft x 24 ft x 7 ft former storage magazine (structure 16-77). Former SWMU 16-017 consisted of a group of 23 intact structures associated with S-Site. Structure 16-77 has been removed. During the 1999 AUA, former SWMU 16-017 was split into 23 separate SWMUs to help facilitate tracking. Each former structure in the series was given an alpha-identifier at that time. Structure 16-77 underwent D&D in 1995.
16-017(m)-99	In Progress	SWMU 16-017(m)-99 is a 12 ft x 24 ft x 7 ft former storage magazine (structure 16-76). Former SWMU 16-017 consisted of a group of 23 intact structures associated with S-Site. Structure 16-76 underwent D&D in 1995. During the 1999 AUA, former SWMU 16-017 was split into 23 separate SWMUs to facilitate tracking. Each former structure in the series was given an alpha-identifier at that time.
16-017(n)-99	In Progress	SWMU 16-017(n)-99 is a 12 ft x 24 ft x 7 ft former storage magazine (structure 16-75). Former SWMU 16-017 consisted of a group of 23 intact structures associated with S-Site. During the 1999 AUA, former SWMU 16-017 was split into 23 separate SWMUs to facilitate tracking. Each former structure in the series was given an alpha-identifier at that time. Structure 16-75 underwent D&D in 1995.
16-017(o)-99	In Progress	SWMU 16-017(o)-99 is a 20-ft x 60-ft x 8.5-ft former storage magazine (structure 16-59). Former SWMU 16-017 consists of a group of 23 intact structures associated with S-Site. During the 1999 AUA, former SWMU 16-017 was split into 23 separate SWMUs to facilitate tracking. Each former structure in the series was given an alpha-identifier at that time. Structure 16-59 underwent D&D in 1995.
16-017(p)-99	In Progress	SWMU 16-017(p)-99 is a 20-ft x 60-ft x 8.5-ft former storage magazine (structure 16-61). Former SWMU 16-017 consists of a group of 23 intact structures associated with S-Site. During the 1999 AUA, former SWMU 16-017 was split into 23 separate SWMUs to facilitate tracking. Each former structure in the series was given an alpha-identifier at that time. Structure 16-61 underwent D&D in 1995.
16-017(w)-99	In Progress	SWMU 16-017(w)-99 was a 10.5-ft x 12.5-ft x 6-ft former storage magazine (structure 16-73). Former SWMU 16-017 consists of a group of 23 intact structures associated with S-Site. During the 1999 AUA, former SWMU 16-017 was split into 23 separate SWMUs to facilitate tracking. Each former structure in the series was given an alpha-identifier at that time. Structure 16-73 underwent D&D in 1995.
16-018	In Progress	SWMU 16-018 (known as MDA P) is located north of the TA-16 burning ground near the south rim of Cañon de Valle. The site operated from 1950 until 1984 as a disposal site for debris that resulted from burning HE and HE-contaminated material at TA-16. Concrete and construction debris was deposited directly on the slopes leading down

		the canyon. Other materials were burned at one of the nearby open-burn units and the resulting debris or residue was pushed over the mesa rim. The western area of MDA P primarily received construction debris from the demolition of World War II buildings; the eastern area received debris and residue from the open-burn units. The contaminants of primary concern at MDA P included detonable HE, HE residues in soil, barium, and asbestos. MDA P also contained low levels of uranium and metals such as lead and cadmium. The ER Project submitted a closure plan to NMED in 1995. The plan was approved in 1997 and Phase I work began on removing the waste from MDA P. The discovery of detonable HE in the MDA P landfill required the use of a remote excavator. Remote landfill excavation began in February 1999 and was completed on May 3, 2000, just before the Cerro Grande fire. Nonremote excavation of contaminated soil beneath the landfill resumed after fire recovery and was completed in March 2001. Waste disposal was completed in June 2001. Phase II confirmatory sampling and geophysical measurements began in June 2001. During the Phase II sampling, additional contamination was found and addditional excavation of localized contamination was completed. Nearly 55,000 cubic yards of soil, rock, and metal and concrete debris were excavated from MDA P. Of this quantity, 21,506 cubic yards of soil were disposed as hazardous waste. The remainder of this quantity consisted of industrial waste soils, concrete and metal debris that was recycled or managed as industrial waste, and rock that was decontaminated and then used as riprap within TA-16. Other excavated waste included 3947 lb of asbestos-containing material; 888 containers of unknown content; 95 miscellaneous metal objects; 3240 lb of low-level radioactive waste; 5389 lb of mixed waste; and various smaller quantities of HE, HE-contaminated debris, and residuals from treating HE. Scrap metal and concrete were shipped to recycling facilities. Contaminated soils and industrial wastes were shipped to off-site solid waste landfills. Solid, nonhazardous wastes were disposed of at MDA J.
16-019	In Progress	SWMU 16-019 is known as MDA R. MDA R consists of the original World War II S-Site burning ground and associated waste-disposal site. Located north of Building 16-260 and south of Cañon de Valle, MDA R was built in the mid-1940s and was used as a burning ground for waste explosives until the early 1950s. Total area of the site is estimated to be 2.27 acres. MDA R consisted of three U-shaped, 75-square-ft bermed pits. A road encircled the pits and the area was fenced. Before the pits were constructed, HE was burned in an open field. During construction of the 260 Line, the berms and surface soil at MDA R were graded northward into Cañon de Valle. The ER Project visited the site in 1992 and observed debris that had been pushed northward over the edge of the MDA R burning ground toward the canyon floor. Debris was held back by a natural barrier of wood and trees that was created by clearing the area for Building 16-260, which was built in 1951. No information is available about D&D activities at MDA R. The area was covered with grasses and pine trees before the spring 2000 Cerro Grande fire. Suspect contaminants were barium, HE, lead, asbestos, and low levels of other inorganic chemicals. The Cerro Grande fire burned over MDA R and continued to burn underground for several weeks. SWMU 16-019 underwent an accelerated action as part of the emergency response efforts associated with the fire, including fire-suppression activities and stabilization. Fire suppression involved excavating and staging about 800 cubic yards of clean soil and 1500 cubic yards of contaminated soil and debris. Stabilization efforts consisted of implementing stormwater BMPs, including constructing a run-on diversion channel and installing erosion-control materials. In September 2000, the ER Project sampled SWMU 16-019 to determine the nature and extent of potential contamination at MDA R after the area had been excavated.
16-020	In Progress	SWMU 16-020, known as the "silver outfall," is a former operational release area where untreated, spent photo-fixing bath solutions were released to the soils and stream

		sediments. Chemicals in the untreated spent photo-fixing bath solutions included silver thiosulfate, sodium thiosulfate, sulfuric acid, boric acid, and cyanide. These chemicals were process wastes from the x-ray film photo-processing laboratory in Building 16-222, built in 1952. This spent solution was discharged on the south side of the building where it flowed approximately 295 ft in a gently sloping, small stream channel down to the confluence with the main channel of Cañon de Valle. The facility discharged significant quantities of silver (more than 12 g/L) for a period of 20 yr. In 1979, the facility began to recover the silver, and around this time, the outfall became NPDES-permitted Outfall EPA 06A073. In 1995, the building became inactive and all photo-processing equipment was moved to Building 16-260. At that time, discharges from the facility ceased. On January 14, 1998, the outfall was removed from LANL's NPDES permit. The "silver outfall" was sampled in 1995 for HE and inorganic and organic chemicals. Several analytes, including silver, chromium, and PAHs were present at levels above SALs. After the Cerro Grande fire, in the summer of 2000, more than 200 cubic yards of contaminated soil were removed from the site to minimize the potential for flood-induced contaminant mobilization. Following this IA, the site was stabilized with BMPs such as check dams, straw wattles, and rock pavements. Verification samples were collected following the IA; moderate levels of contamination remained.
16-021(b)	Administratively Complete	
16-021(c)-99	In Progress	Consolidated SWMU 16-021(c)-99 consists of former SWMUs 16-003(k) and 16-021(c). The consolidated SWMU contains 13 active HE sumps and drainlines and the associated inactive outfall, which was NPDES-permitted EPA 05A056. The outfall became inactive in November 1996 and was removed from the LANL NPDES permit effective January 14, 1998. The sumps, drainlines, and outfall served an HE machining facility that was built in 1951 (Building 16-260). In 1999, former SWMUs 16-003(k) and 16-021(c) were consolidated into SWMU 16-021(c)-99. The sumps are still active. Former SWMU 16-003(k) consists of 13 active HE sumps and former drainlines that serve Building 16-260. The sumps are currently plugged so that they do not discharge to the environment. One sump measures 90 in. x 36 in. x 31 in. The other 12 measure 176 in. x 36 in. x 31 in. Machine turnings are routed to the sumps as waste. In 1966, the 10-ft-wide loading dock on the rear of Building 16-260 was removed and new sumps with watertight aluminum liners were installed adjacent to the northeast wall of the building. HE-contaminated soil under the old sumps was removed and replaced with clean compacted earth. The sumps were connected by VCP to a 4-ft-deep concrete trough that paralleled Building 16-260. The feeder trough discharged into a second concrete trough that discharged into an outfall and drainage [former SWMU 16-021(c)]. Two of the sumps (serving machining bays 22, 23, 24, and 25) receive barium precipitation treatment waste. After pH adjustment, barium is precipitated as insoluble barium sulfate by adding sodium sulfate to the sump solution. Barium residues are removed to the TA-16 burning ground when the sumps are serviced. Waste primarily consists of HE. HE charges with uranium attached periodically have been machined at the facility. Special precautions are taken to prevent uranium from entering the wastewater system. Currently, the sumps are pumped and the water is treated at the TA-16 HE wastewater treatment facility. Former SWMU 16-021(c) is an inactive outfall, a former pond, and a drainage channel associated with the 13 sumps that service Building 16-260. Historically, discharge from the sumps was routed to the outfall. At one point, discharge reportedly was as high as several million gallons per year. Currently, the former pond contains no water, although soil and sediment are wet sporadically. The drainage channel from the outfall flows about 600 ft to the bottom of Cañon de Valle. This channel contains a ponding area (about 50 ft long x 20 ft wide) immediately below the outfall. The drainage then flows about 600 ft north to the bottom of Cañon de Valle, traveling over a 15-ft cliff at a distance of about 400 ft from the outfall. Stormwater from the road on the northeast side of Building 16-260 also flowed into the pond. Stormwater flow is now diverted

		around the pond by a series of BMPs. Sediment surveys conducted from 1970 to 1985 and again in 1991 indicated the presence of HE and barium in the outfall and drainage from the surface to the soil/tuff interface. The ER Project conducted a Phase I RFI in 1995 that focused on surface materials in the drainage. The objective of sampling at former SWMU 16-003(k) was to determine whether a release had occurred beneath the HE sumps and troughs that presented a human health and/or environmental risk. Only a subset of sampling was completed at former SWMU 16-003(k) due to hazards associated with drilling in HE-contaminated areas. The objective of the sampling at former SWMU 16-021(c) was to determine the lateral and vertical extent of contamination. Surface and near-surface soil samples were analyzed for HE, inorganic chemicals, organic chemicals, and uranium. RDX, HMX, TNT, DNT, TNB, anthracene, bis(2-ethylhexyl)phthalate, and barium were detected above SALs. Non-RFI surface and groundwater sampling revealed that HE constituents and barium were present at levels greater than MCLs in springs and surface waters potentially associated with former SWMU 16-021(c). Together, the data analysis led to the decision that a CMS and CMI were required at former SWMU 16-021(c). The RFI report recommended a VCA at former SWMU 16-003(k) in conjunction with the CMS/CMI at former SWMU 16-021(c). The RFI report also recommended accelerated Phase II sampling at former SWMU 16-021(c) to prepare for a CMS. The administrative boundary for the CMS runs along State Highway 501, which coincides with the Pajarito fault to the west and follows the basin divides between Water Canyon and Cañon de Valle to the south, as far as Martin Spring Canyon and Pajarito Canyon, and Cañon de Valle to the north. The areal extent of the study includes all surface and subsurface terrain within the boundary except individual SWMUs and associated downgradient areas to the edge of Cañon de Valle and Fish Ladder Seep and its sub-basin. The primary objective of the CMS is to select the remedial technologies that will be used to achieve media cleanup standards in the components of the site conceptual model. The objectives of the investigation to support the CMS are to define the extent of contamination and to characterize the behavior of active transport pathways for the site conceptual model components. The ER Project and LANL's ESH-18 coordinated an IA in 1995 using BMPs to stabilize the soil associated with former SWMU 16-021(c) and to prevent further contaminant release. The IA consisted of three measures. First, diverting stormwater runoff reduced the volume of surface flow to the drainage channel. Sandbags were placed to divert runoff from the area into adjacent drainages. Second, the existing settling pond was covered to reduce the potential for mobilization of pond sediments. Third, installing eight straw-bale dams enhanced the capacity for sediment deposition within the drainage. Phase II RFI surface sampling, conducted by the ER Project in 1996-1997, showed that surface contamination does not extend laterally beyond the drainage. During the Phase II RFI, 209 screening samples and 57 analytical laboratory samples were collected. Samples were screened for HE and analyzed for HE, inorganic chemicals, and organic chemicals. Monitoring wells were installed in four boreholes that were determined the most likely to produce water. The Phase II investigation also included extensive sampling of TA-16 springs and the Cañon de Valle alluvial system. Data collection is ongoing. Human health and ecological screening assessments listed barium, bis(2-ethylhexyl)phthalate, HMX, RDX, and TNT as the contaminants of greatest potential concern at the consolidated SWMU, although cadmium, chromium, copper, lead, nickel, vanadium, and zinc are consistently observed above background levels in the drainage. Anthracene also was detected in several samples. A potassium bromide tracer that was deployed in April 1997 was detected in two locations at TA-16 in August 1997, suggesting that Outfall 260 is hydrogeologically connected to Cañon de Valle springs. The connection suggests that contamination found in the outfall area is a

		source of contamination in Cañon de Valle springs, seeps, surface water, and alluvium. Investigation results demonstrated the need for corrective action at consolidated SWMU 16-021(c)-99. Additional BMPs were instituted at consolidated SWMU 16-021(c)-99 in 1998 to minimize run-on over the former pond. The BMPs consisted of three controls: a concrete curb along the east end of the asphalt behind Building 16-260 to prevent run-off from flowing freely onto the SWMU boundaries; HDPE sheeting to seal the steel plates covering the troughs associated with former SWMU 16-003(k); and a 4-in. PVC diversion pipe was installed from the outfall to the drainage's confluence with Cañon de Valle. All BMPs are inspected quarterly and are maintained. The ER Project performed a major IM cleanup at SWMU 16-021(c)-99 in 2000 and 2001, removing approximately 1500 cubic yards of contaminated material from the site. HE and barium-contaminated soil were removed from the highly contaminated "pond" and outfall areas. The highly contaminated soil in the pond area was blended and excavated robotically, for safety reasons. Excavated soil was screened to remove rock that was decontaminated and later used in site restoration. The outfall was reinforced with rocks, covered with jute matting, and reseeded. The excavated soil was staged in piles (nonhazardous) or rolloffs (hazardous) before shipment to off-site permitted landfills for treatment and disposal. After soil was removed, verification samples were collected. Sample results indicated that the IM removed most of the HE. The residual contamination remaining at the outfall source area will be addressed in the Phase III report for SWMU 16-021(c)-99 and through the ongoing CMS process. A hydrogeological study is being conducted as part of the CMS at consolidated SWMU 16-021(c)-99. Activities include collecting samples from three springs and one seep. Two of the springs (SWSC and Burning Ground) are located in Cañon de Valle and one spring is in Martin Canyon. The seep is located in Cañon de Valle and is sampled biweekly. Five alluvial wells are sampled quarterly and tested biweekly for water-quality parameters (pH, conductivity, and temperature). A sixth alluvial well is part of a "well pair" and only one of the two wells is sampled. Three alluvial wells that will be located in Martin Springs Canyon will be included in the quarterly sampling. The ER Project outlines CMS activities at Outfall 260 for NMED by submitting monthly CMS progress reports. Two deep boreholes (greater than 1500 vertical ft) were drilled in 2000 and 2001, to the east and southeast of SWMU 16-021(c)-99. These boreholes will help evaluate whether groundwater contamination is migrating from TA-16. Multiscreen Westbay sampling ports were installed in the completed wells, CdV-R-15-3 and CdV-R-37-2. Sampling data collected from these wells have not indicated significant HE contamination. Quarterly sampling of these wells is ongoing.
16-022(a)	Administratively Complete	
16-022(b)	In Progress	AOC 16-022(b) is a historical 4000-gal. UST (structure 16-197) that held unleaded gasoline. During 1987, the tank tested tight, but when the tank was removed in 1990, 15 gal. to 20 gal. of residual fuel were released when scale was dislodged from the bottom of the tank. The contaminated soil was removed immediately and cleaned up in compliance with the New Mexico UST regulations in effect at the time. A 10,000-gal. tank (structure 16-1465) was installed after structure 16-197 was removed. In 1994, structure 16-1465 was discovered to have leaked that year. The site where the leak occurred, which includes the former location of structure 16-197, has been sampled and remediated; investigations continued as Addendum 2 to the OU 1082 work plan was written. Addendum 2 of the OU 1082 work plan stated that the investigation of structure 16-1465 would address potential contamination from structure 16-197. When the extent of contamination from structure 16-1465 is determined, further action will be taken in accordance with New Mexico UST regulations.
16-023(a)	Administratively	

	Complete	
16-024(a)	In Progress	AOC 16-024(a) is the location of a decommissioned and removed HE magazine (Building 16-488) on the south side of S-Site in a region that originally was called P-Site. P-Site (the historical TA-13) was built in 1944 to support the research and development of HE for the Manhattan Project. It was designed as a site for counter x-ray diagnostics of HE lens configurations. Activities supporting the operation included operation of counter x-ray equipment, HE assembly, and research on the magnetic-method program. P-Site was converted to initiator testing in 1945. Initiator assemblies consisted of HE, beryllium, polonium (an alpha-emitter), and other inorganic chemicals. Alpha-contaminated buildings were decontaminated in 1946 and 1947 and certified free of alpha contamination in 1948. The buildings in the western half of P-Site were demolished in the early 1950s to make way for construction of the grinding building (Building 16-340) and associated structures. P-Site was incorporated into S-Site in 1957. Former Building 16-488 was built in 1944 to store HE in support of x-ray diagnostics work on HE lenses. The building's construction and dimensions are unknown; its approximate location was identified from aerial photographs and evidence of the building's gravel driveway. Building 16-488 was decommissioned and removed in 1951; the method of decommissioning is unknown. Addendum 2 of the OU 1082 work plan proposed sampling in the footprint of AOC 16-024(a) to detect residual HE in the disturbed soils.
16-024(b)	In Progress	AOC 16-024(b) is the location of potentially contaminated surface soil associated with a former HE magazine (former structure 16-74), which was located in the historical GMX-3 area. Operations at GMX-3 were devoted to developing techniques to produce HE lenses, the explosives component of a nuclear weapon, with high chemical purity and accurate shapes. HE was subjected to disruptive processes like casting and machining. HE normally was held in magazines and rest houses between operations. Spillage occasionally occurred in the magazines and rest houses. Structure 16-74 was made of wood and had a concrete floor. It was 9 ft wide x 11 ft long x 7 ft high, bermed on three sides and on top, and had no plumbing. It was located north of the casting rest house (structure 16-88). Structure 16-74 was built in 1946 to store HE in transit to the machining buildings (Buildings 16-31, -32, and –33). Structure 16-74 had no sumps or drainlines that would provide a pathway to the environment; it was burned in 1960. The suspect contaminant at this site is HE. Addendum 1 of the OU 1082 work plan proposed sampling at AOC 16-024(b) to detect residual HE and HE byproducts on the disturbed surface area of AOC 16-024(b).
16-024(c)	Administratively Complete	
16-024(f)	Administratively Complete	PRS 16-024(f) is the site of a former HE magazine TA-16-493, located at T-Site. The HE magazine was located northeast of TA-16-490 and constructed in 1945. HE magazines were used to store packaged and finished HE products before and after processing. No HE processing took place in such magazines. A former site worker described an incident that occurred in 1950 in which a large chunk of baratol was dropped in the building. The building contained no sumps or plumbing. Before being abandoned in 1959 and burned in 1960, the building was found to be contaminated with HE. TA-16-493 was a magazine 6-ft. wide by 6-ft. long by 7-ft. high and of a wooden-frame construction, with a wood floor with earthen barricades on three sides and the top.
16-024(g)	Administratively Complete	
16-024(h)	In Progress	AOC 16-024(h) is the location of potentially contaminated surface soil within the footprint of a decommissioned HE magazine (former structure 16-497). Structure 16-497 was located at T-Site (the historical TA-24). T-Site was located northwest of the S-Site explosives manufacturing complex and currently is devoid of structures. T-Site was used primarily for radiographic operations. T-Site operated from 1944 to 1950, when site activities were transferred to GT-Site (TA-08). Most structures at T-Site were destroyed by burning in February 1960. Residual debris from burning and the remaining subsurface structures were cleaned up in 1966. All structures at T-Site were

		free of residual radioactivity in 1966 when they were resurveyed after they were burned. Structure 16-497 was made of wood-frame construction with earthen barricades on three sides and on top; it was 15 ft x 40 ft x 9 ft, with a concrete foundation and floor. Structure 16-497 had no sumps or drains to the external environment. A radioactive lanthanum source broke open at structure 16-497 and contaminated the building with strontium-90. The building also was found to be contaminated with HE during a building survey in 1959. Addendum 1 of the OU 1082 work plan proposed sampling to detect residual strontium-90, HE, and HE byproducts on the disturbed surface soils of AOC 16-024(h). This site was sampled in 1997.
16-024(i)	In Progress	AOC 16-024(i) is the former location of a historical magazine (structure 16-64) that was built in 1944 outside the HE exclusion zone at S-Site. The magazine had a concrete floor with soil piled against three sides of the building, but not over the top. Structure 16-64 was retired from use as a magazine after 1946, when S-Site was expanded to handle larger quantities of HE and larger receiving magazines were built to handle the larger HE quantities. Because it was not contaminated, carpenters and plumbers used the magazine to store their equipment. Structure 16-64 was removed in 1961. The area that the magazine occupied is outside the current HE exclusion zone at TA-16. The public can access the former location of structure 16-64, which is about 80 ft north of the S-Site main gate and under the asphalt driveway that serves the gate and the parking lot. Addendum 2 of the OU 1082 work plan proposed sampling in the footprint of structure 16-64 to detect residual HE contamination on the disturbed ground surface. Samples would be cored through the asphalt parking lot on top of AOC 16-024(i).
16-024(j)	In Progress	AOC 16-024(j) is the former location of a historical magazine (structure 16-65) that was built in 1944 outside the HE exclusion zone at S-Site. The magazine had a concrete floor with soil piled against three sides of the building, but not over the top. Structure 16-65 was retired from use as a magazine after 1946, when S-Site was expanded to handle larger quantities of HE and larger receiving magazines were built to handle the larger HE quantities. Because it was not contaminated, carpenters and plumbers used the magazine to store their equipment. Structure 16-65 was removed in 1951. The area that the magazine occupied is outside the current HE exclusion zone at TA-16. An administration building (Building 16-204) covers a portion of the former site of structure 16-65. Addendum 2 of the OU 1082 work plan proposed sampling in the footprint of structure 16-65 to detect residual HE contamination on the disturbed ground surface.
16-024(k)	In Progress	AOC 16-024(k) is the site of a former HE magazine (structure 16-57) in the western part of the former GMX-2 area. The magazine was 6 ft square x 7 ft high and was of wood-frame construction with a wooden floor. Earthen barricades surrounded the magazine on three sides and the top. It was on level ground south of a steam-cleaning facility (structure 16-38). HE magazines were used to store packaged HE and finished HE products before and after processing. No HE processing was done in the magazines. Little is known about this magazine; however, magazine operations may have resulted in HE spills. Structure 16-57 had no sumps or plumbing. Structure 16-57 was built in May 1946 and use was discontinued in 1959. Before it was burned in 1960, the building was found to be contaminated with HE. The ER Project conducted an RFI at AOC 16-024(k) in 1997 to determine if contaminants were present at elevated levels in soils. Four surface and near-surface samples were collected from four locations in the building footprint. Samples were field-screened for HE and beta/gamma radioactivity. Samples showed background radioactivity levels. One sample that screened positive for HE was submitted for laboratory analysis for inorganic chemicals, organic chemicals, and HE. Sample analysis data showed that no contaminants were present at AOC 16-024(k) at levels above SALs in use at that time. The RFI report recommended NFA at AOC 16-024(k) because contaminants at this site posed no unacceptable risk to human health.

16-024(l)	In Progress	AOC 16-024(l) is the former location of a decommissioned HE magazine (structure 16-72) in the GMX-2 area at S-Site. GMX-2 structures were located in the south-central and eastern part of World War II-era S-Site. Structures at GMX-2 were used primarily for experimental HE research and development. HE magazines such as AOC 16-024(l) were used to store HE between processing operations. No production-scale HE operations were conducted in the GMX-2 area, which operated from 1944 to the early 1950s. Most structures in the area were burned in February 1960. Residual debris from burning and the remaining subsurface structures were cleaned up in 1966. Structure 16-72 was 6 ft square x 7 ft high and of wood-frame construction with earth barricades on three sides and on top. Structure 16-72 had no sumps or drains to the external environment. Before it was burned in 1960, structure 16-72 was determined to be contaminated with HE. The addendum 1 to the OU 1082 work plan proposed sampling at AOC 16-024(l) to detect residual HE and other constituents on the disturbed surface of this AOC.
16-024(m)	In Progress	AOC 16-024(m) is the footprint of a former HE magazine (structure 16-66). The magazine was a 6-ft x 6-ft x 7-ft high wood-frame building with a wooden floor and earthen barricades on three sides and on top. It was located on level ground northeast of a steam-cleaning building (Building 16-37). HE magazines were used to store packaged HE and finished HE products before and after processing. No HE processing was conducted in magazines. Little is known about this specific magazine; however, magazine operations may have resulted in HE spills. The magazine had no sumps or plumbing. It was built in the mid-1940s and use was discontinued in 1959. Before it was burned in 1960, it was determined that the magazine was contaminated with HE. Historical evidence indicates that radioactive materials were not stored or used in this HE magazine. The ER Project conducted an RFI at AOC 16-024(m) in 1997 to determine if contaminants were present at elevated levels in soils. Four field-screening samples were collected from four locations in and downgradient from the building footprint. Samples were field-screened for HE and beta/gamma radioactivity. Samples were negative for radioactivity. One sample that screened positive for HE was submitted to a fixed laboratory and analyzed for inorganic chemicals, organic chemicals, and HE. HE was not detected in the laboratory sample despite the positive field reading. The kit that was used for field-screening HE has been shown to provide false positives due to interference with humic materials. Sample analysis data showed that contaminants at AOC 16-024(m) posed no unacceptable risk to human health. The RFI report recommended NFA at AOC 16-024(m).
16-024(n)	In Progress	AOC 16-024(n) is the location of a decommissioned HE magazine (structure 16-84) in the GMX-2 area at S-Site. GMX-2 structures were located in the south-central and eastern part of World War II-era S-Site. Structures at GMX-2 primarily were used for experimental HE research and development. HE magazines such as AOC 16-024(n) were used to store HE between processing operations. No production-scale HE operations were conducted in the GMX-2 area, which operated from 1944 to the early 1950s. Most structures in the area were burned in February 1960. Residual debris from burning and the remaining subsurface structures were cleaned up in 1966. Structure 16-84 was 16 ft square x 9 ft high and of wood-frame construction with earthen barricades on three sides and on top. Structure 16-84 had no sumps or drains to the external environment. Before it was burned in 1960, it was determined that structure 16-84 was contaminated with HE. Addendum 2 to the OU 1082 work plan proposed sampling at AOC 16-024(n) to detect residual HE and other constituents on the disturbed surface of this AOC.
16-024(o)	In Progress	AOC 16-024(o) is the site of a former HE magazine (structure 16-67) in the western part of the former GMX-2 area. The magazine was 6 ft square x 7 ft high and was of wood-frame construction with a wood floor. Earth barricades surrounded the magazine on three sides and on the top. It was on level ground south of a steam-cleaning facility (structure 16-37). HE magazines were used to store packaged HE and finished HE products before and after processing. HE processing was not done in magazines. Little

		is known about this specific magazine; however, magazine operations may have resulted in HE spills. Structure 16-67 had no sumps or plumbing; it was built in May 1946 and use was discontinued after 1959. Before it was burned in 1960, the structure was found to be contaminated with HE. The ER Project conducted an RFI at AOC 16-024(o) in 1997 to determine if contaminants were present at elevated levels in soils. Four surface and near-surface samples were collected from four locations in and downgradient from the building footprint. Samples were field-screened for HE and beta/gamma radioactivity. Samples showed background radioactivity levels. One sample screened positive for HE and was submitted for laboratory analysis for inorganic chemicals, organic chemicals, and HE. Sample analysis showed that no contaminants were present at AOC 16-024(o) at levels above SALs in use at that time. The RFI report recommended NFA at AOC 16-024(o) because contaminants at this site posed no unacceptable risk to human health.
16-024(p)	Administratively Complete	
16-024(q)	In Progress	AOC 16-024(q) is the site of a former HE magazine (structure 16-71) in the western part of the former GMX-2 area. The magazine was 6 ft square x 7 ft high and of wood-frame construction with a wood floor. Earth barricades surrounded the magazine on three sides and on top. It was on level ground south of a steam-cleaning facility (structure 16-37). HE magazines were used to store packaged HE and finished HE products before and after processing. No HE processing was conducted in the magazines. Little is known about this specific magazine; however, magazine operations may have resulted in HE spills. Structure 16-71 had no sumps or plumbing; it was built in May 1946 and use was discontinued in 1959. Before it was burned in 1960, the structure was found to be contaminated with HE. The ER Project conducted an RFI at AOC 16-024(q) in 1997 to determine if contaminants were present at elevated levels in soils. Four surface and near-surface samples were collected from four locations in and downgradient from the building footprint. Samples were field-screened for HE and beta/gamma radioactivity. Samples showed no detectable HE and background radioactivity levels. One sample downgradient from the former location of the magazine door was submitted for laboratory analysis for inorganic chemicals, organic chemicals, and HE. Sample analysis showed that no contaminants at AOC 16-024(q) were above SALs. The RFI report recommended NFA at AOC 16-024(q) because contaminants at that site posed no unacceptable risk to human health.
16-024(r)	Administratively Complete	
16-024(s)	In Progress	AOC 16-024(s) is the site of a former HE magazine (structure 16-60) in the western part of the former GMX-2 area. The magazine was 20 ft x 60 ft x 8.5 ft high with a concrete floor. Soil was piled against three sides of the building, which was on level ground at the south periphery of GMX-2. HE magazines were used to store packaged HE and finished HE products before and after processing. No HE processing was conducted in the magazines. Structure 16-60 had no sumps or plumbing; it was built in 1945 and removed in late 1950 due to its proximity to the Building 16-435 construction site. The ER Project conducted an RFI at AOC 16-024(s) in 1997 to determine if contaminants were present at elevated levels in soils. Eight surface and near-surface samples were collected from five locations in and adjacent to the building footprint. Samples were field-screened for HE and beta/gamma radiation. Samples showed background radioactivity levels. Two samples screened positive for HE. One of those samples was submitted for laboratory analysis for inorganic chemicals, organic chemicals, and HE. Another sample was taken from a deeper interval at the same location to confirm that HE was not found at that depth. That sample also was submitted for laboratory analysis. Sample analysis showed that no contaminants were present at AOC 16-024(s) at levels above SALs. The RFI report recommended NFA at AOC 16-024(s) because contaminants at this site posed no unacceptable risk to human

		health.
16-024(t)	In Progress	AOC 16-024(t) is potentially contaminated soil in the location of a decommissioned HE magazine (structure 16-464). Structure 16-464 was used to store HE that was brought to Building 16-460, a decommissioned analytical chemistry laboratory [see consolidated AOC 16-003(c)-99] for analysis. Structure 16-464 was built in late 1952 and used heavily until it was removed in 1966. The building's construction configuration is unknown due to a lack of engineering drawings for this magazine. Structure 16-464 likely had no sumps or drains to the external environment. The method of removal and subsequent cleanup of structure 16-464 is unknown. Addendum 2 of the OU 1082 work plan proposed sampling in the footprint of structure 16-464 to detect residual HE and other potential contaminants on the surface of this AOC.
16-024(u)	In Progress	AOC 16-024(u) is the location of a decommissioned and removed magazine (structure 16-481) located on the south side of S-Site in an area that originally was called P-Site. P-Site (the historical TA-13) was built in 1944 to support the research and development of HE for the Manhattan Project. It was designed as a site for counter x-ray diagnostics of HE lens configurations. Activities supporting the operation included operation of counter x-ray equipment, HE assembly, and research in the magnetic-method program. P-Site was converted to initiator testing in 1945. Initiator assemblies consisted of HE, beryllium, polonium (an alpha-emitter), and other inorganic chemicals. Alpha-contaminated buildings were decontaminated in 1946 and 1947 and certified free of alpha contamination in 1948. The buildings in the western half of P-Site were demolished in the early 1950s to make way for construction of the grinding building (Building 16-340) and associated structures. P-Site was incorporated into S-Site in 1957. Structure 16-481 was built in 1944 to store HE in support of x-ray diagnostics work on HE lenses. The building's method of construction is unknown. Its approximate location was identified from aerial photographs and evidence of the former building's gravel driveway. Structure 16-481 was retired from use in November 1950; it was decommissioned and removed in 1951. The method of decommissioning is unknown. Addendum 2 of the OU 1082 work plan proposed sampling in the footprint of AOC 16-024(u) to detect residual HE in the disturbed soils.
16-024(v)	In Progress	AOC 16-024(v) is the former location of a magazine (structure 16-62) that was built in 1944 outside the HE exclusion zone at S-Site. The magazine had a concrete floor with soil piled against three sides of the building, but not over the top. Structure 16-62 was retired from use as a magazine after 1946, when S-Site was expanded to handle larger quantities of HE and as a result, larger receiving magazines were built. Because it was not contaminated, carpenters and plumbers used the magazine to store their equipment. Structure 16-62 was removed in 1968. The area that the magazine occupied is outside the current HE exclusion zone at TA-16. The public can access the area once occupied by structure 16-62, which is about 100 ft east of a steam plant (Building 16-540) in a grassy field that slopes east. Addendum 2 of the OU 1082 work plan proposed sampling in the footprint of structure 16-62 to detect residual HE contamination on the disturbed ground surface.
16-025(a)	In Progress	SWMU 16-025(a) is the location of potentially contaminated surface soil associated with a former radiography building (Building 16-39) south of T-Site in the former GMX-3 area. T-Site was formerly part of TA-24. Operations at GMX-3 were devoted to developing techniques to produce HE lenses, the explosives component of a nuclear weapon with high chemical purity and accurate shapes. Building 16-39 was built in early 1945 west of the 30s Line machining buildings [see consolidated SWMU 16-007(a)-99)]. It was 16 ft sq x 9 ft high and had no sumps or drains to the external environment. Building 16-39 was a radiography building where source radiography and x-ray radiography were used to determine the quality of HE lenses during the 1940s. It is unclear from historical documents whether Building 16-39 was used for radiography or for storage of sources or both. Most GMX-3 buildings, including Building 16-39, were decommissioned, destroyed by intentional burning, and removed to MDA P (SWMU 16-018) during the early 1960s. All decommissioned buildings were surveyed for radiation,

		HE, and toxic chemicals before they were burned. Surveys in the 1950s showed Building 16-39 was contaminated with HE, cobalt-60, radium-226, and uranium-238. The building was burned in 1960. In 1966, the debris of Building 16-39 was checked for radioactivity before cleanup. No radioactivity was found. Addendum 1 of the OU 1082 work plan proposed sampling at SWMU 16-025(a) to detect residual radionuclides and other potential contaminants on the disturbed surfaces of SWMU 16-025(a).
16-025(b)	In Progress	SWMU 16-025(b) is the location of potentially contaminated surface soil associated with a radiography building (former Building 16-40) at T-Site in the former GMX-3 area. Operations at GMX-3 were devoted to developing techniques to produce HE lenses, the explosives component of a nuclear weapon with high chemical purity and accurate shapes. HE was subjected to disruptive processes like casting and machining. Building 16-40 was constructed west of Building 16-39 [SWMU 16-025(a)] in 1950 to provide gamma radiography within the GMX-3 area. It was about 20 ft square with earthen barricades on two sides. Building 16-40 contained a lead-lined pit in the floor for radioactive sources and had no sumps or drains to the external environment. Surveys in the 1950s showed Building 16-40 was contaminated with HE, cobalt-60, radium-226, and uranium-238. A survey in 1957 showed Building 16-40 was contaminated with cobalt-60 at a spot on the floor and on a source plug. The Zia Company was directed to remove the radioactively contaminated materials. Most GMX-3 buildings, including Building 16-40, were decommissioned, destroyed by intentional burning, and removed to MDA P (SWMU 16-018) in the early 1960s. All decommissioned buildings were surveyed for radiation, HE, and toxic chemicals before they were burned. In 1966 the debris of Building 16-40 was checked for radioactivity before cleanup. No radioactivity was found. Addendum 1 of the OU 1082 work plan proposed sampling at SWMU 16-025(b) to detect residual radionuclides and other potential contaminants on the disturbed surfaces of SWMU 16-025(b). This site was sampled in 1997.
16-025(c)	Administratively Complete	SWMU 16-025(c) was a utility building, TA-16-35, which supported machining buildings TA-16-31, TA-16-32, and TA-16-33. Steam heat and other utility lines came first to this building and then were distributed to the buildings it served. The building was removed after 1960, and records indicate that this building had no associated chemical or HE contamination. There is no record of any spills or releases associated with this structure. The area is currently vacant and overgrown with vegetation. There is no documentation that this building was used for the handling or storage of hazardous materials. SWMU 16-025(c) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
16-025(c2)	In Progress	SWMU 16-025(c2) is contaminated soil associated with the former location of a physical testing laboratory (structure 16-56) in the GMX-2 area at S-Site. GMX-2 structures were located in the south-central and eastern part of the World War II-era S-Site. Structures at GMX-2 were used primarily for experimental HE research and development; activities in this structure included mechanical testing of HE charges. No production-scale HE operations were conducted in the GMX-2 area, which operated from 1944 to the early 1950s. Structure 16-56 was 16 ft sq x 9 ft high. It was of wood-frame construction with earthen barricades on three sides. The building contained a soapstone sink that drained into the southernmost sump associated with Building 16-52 [SWMU 16-029(v)-99]. Before it was burned in 1960, it was determined that structure 16-56 was contaminated with HE. Most structures in the GMX-2 area were destroyed by burning in February 1960. Residual debris from the burning and the remaining subsurface structures were cleaned up in 1966. Addendum 1 of the OU 1082 work plan proposed sampling at SWMU 16-025(c2) to detect surface contamination of HE and other potential contaminants.
16-025(d2)	In Progress	SWMU 16-025(d2) is potentially contaminated surface soil at the former location of a decommissioned mockup chamber (structure 16-480). It was an octagonal structure 16

		ft in diameter that was located southwest of the entrance to a current plastic-bonded explosive fabrication facility (Building 16-340) that is in a sloped, grassy area between a walkway (structure 16-352) and the western access road to Building 16-340. Structure 16-480 was a temporary mockup chamber that was built in 1947 and removed in 1951. The mockup building simulated a chamber that would be used for explosive (probably initiator) experiments at other sites. It was built of logs on a concrete slab. Detonation never occurred in structure 16-480. No direct documentation about the use of structure 16-480 exists, but such a structure is referred to in a memo referenced in Addendum 2 of the OU 1082 work plan. In addition to radioactive components, equipment used at structure 16-480 is suspected to have contained mercury. Addendum 2 of the OU 1082 work plan proposed sampling in the footprint of structure 16-480 to detect residual radionuclides and other potential contaminants on the disturbed surface of SWMU 16-025(d2).
16-025(e2)	Pending	SWMU 16-025(e2) is an area of potential soil contamination from a former storage magazine (structure 16-106, formerly A-1) that was located at S-Site. The 6-ft x 6-ft x 7-ft-high wood-frame structure was built in May 1944 and removed in August 1949. The building had no drains to the external environment and it was used primarily to store non-HE materials such as aluminum powder, lead oxide, and barium nitrate. It also was used to store packaged HE. Upon arrival at S-Site, raw HE (in packaged form) was placed in this building while awaiting transfer to one of S-Site's HE-processing buildings for machining and shaping. Once processed, finished HE forms were placed in this building while awaiting transfer to an off-site location. No open packages or loose HE was stored in the magazine and no HE machining or shaping was ever conducted in this building. Archival evidence indicates that contaminants were never released. In August 1949, this magazine was removed in preparation for the construction of State Highway 501 (West Jemez Road). Removal was accomplished through explosive demolition or burning, both common practices for decommissioning and decontaminating buildings at S-Site during the late 1940s through the mid- to late 1960s. The former location of this structure currently lies beneath State Highway 501 and/or beneath disturbed soils adjacent to the road. Road construction activities severely disturbed surrounding soils and completely obliterated the surface footprints of this former structure. In addition, during road construction activities, several feet of excavated soils, base course, and asphalt were placed over the former structure's location. The RFI work plan recommended NFA for SWMU 16-025(e2). Consequently, there has been no additional investigation at this site.
16-025(f2)	Pending	SWMU 16-025(f2) is an area of potential soil contamination from a former storage magazine (structure 16-107, formerly A-2) that was located at S-Site. The 6-ft x 6-ft x 7-ft-high storage magazine was of wood-frame construction, built in May 1944, and removed in August 1949. The structure had no drains to the external environment; it primarily was used to store non-HE materials such as aluminum powder, lead oxide, and barium nitrate. It also was used to store packaged HE. Upon arrival at S-Site, raw HE (in packaged form) was placed in this structure while awaiting transfer to one of S-Site's HE-processing buildings for machining and shaping. Once processed, finished HE forms were placed in this building while awaiting transfer to an off-site location. No open packages or loose HE was stored in the magazine and no HE machining or shaping was ever conducted in this structure. Archival evidence indicates that contaminants were never released. In August 1949, this magazine was removed in preparation for the construction of State Highway 501 (West Jemez Road). Building removal most likely was accomplished through explosive demolition or burning, both common practices for decommissioning and decontaminating buildings at S-Site during the late 1940s through the mid- to late 1960s. The former location of this building currently lies beneath State Highway 501 and/or beneath disturbed soils adjacent to the road. Road construction activities severely disturbed surrounding soils and completely obliterated the surface footprints of this former structure. In addition, during road construction activities, several feet of excavated soils, base course, and asphalt were placed over the former structure's location.

		The RFI work plan recommended NFA for SWMU 16-025(f2). Consequently, there has been no additional investigation at this site.
16-025(g2)	Administratively Complete	TA-16-108 was a 6-square-ft. storage building built in mid-1944 on the western edge of S-Site. According to a former site worker, the building was used for the storage of non-HE materials such as aluminum powder, lead oxide, and barium nitrate, but he did not rule out the storage of small quantities of containerized HE. The building was destroyed in 1950 for the construction of State Road 501. If HE were stored at this location, it would have been in some type of containerized or packaged form. No machining or shaping was ever done at this location, and there were never any documented cases of a release to the environment. Based on a review of aerial photographs, TA-16-108 is now under or in the immediate vicinity of the disturbed soil area associated with the construction of State Road 501. Because it is unlikely that any release to the environment has occurred at this site, SWMU 16-025(g2) is appropriate for NFA under Criterion 3.
16-025(h2)	Pending	SWMU 16-025(h2) is an area of potential soil contamination from a former storage magazine (structure 16-109, formerly A-4) that was located at S-Site. The 6-ft x 6-ft x 7-ft-high structure was of wood-frame construction, built in May 1944, and removed in November 1950; it was used primarily to store non-HE materials such as aluminum powder, lead oxide, and barium nitrate. It also was used to store packaged HE. Upon arrival at S-Site, raw HE (in packaged form) was placed in this structure while awaiting transfer to one of S-Site's HE-processing buildings for machining and shaping. Once processed, finished HE forms were placed in this building while awaiting transfer to an off-site location. No open packages or loose HE was stored in the magazine and no machining or shaping of HE was ever conducted in this building. Archival evidence indicates that contaminants were never released. In August 1949, this magazine was removed in preparation for the construction of State Highway 501 (West Jemez Road). Removal was accomplished through explosive demolition or burning, both common practices for decommissioning and decontaminating buildings at S-Site during the late 1940s through the mid- to late 1960s. The former location of this building currently lies beneath State Highway 501 and/or beneath disturbed soils adjacent to the road. Road construction activities severely disturbed surrounding soils and completely obliterated the surface footprints of this former structure. In addition, during road construction activities, several feet of excavated soils, base course, and asphalt were placed over the former location of the structure. The RFI work plan recommended SWMU 16-025(h2) for NFA; consequently, there has been no additional investigation at this site.
16-025(w)	In Progress	SWMU 16-025(w) is soil contamination associated with a nitrocellulose drying facility (structure 16-81) at the GMX-2 area. GMX-2 structures were located in the south-central and eastern part of World War II-era S-Site. Structures at GMX-2 were used primarily for experimental HE research and development. No production-scale HE operations were conducted in the GMX-2 area, which operated from 1944 to the early 1950s. Structure 16-81 was 8.5 ft square x 8 ft high and was located southeast of a former processing building (Building 16-45). Structure 16-81 consisted of a primary building and a smaller fan room connected to the main structure by a 17-ft-long air duct. Structure 16-81 had no sumps or external drains to the environment. Nitrocellulose was shipped in alcohol to avoid spontaneous combustion, but the alcohol evaporated before its use in HE castings. Other solvents may have been used in the building. Before it was burned in 1960, it was determined that structure 16-81 was contaminated with HE. Residual debris from burning and the remaining subsurface structures were cleaned up in 1966. An addendum to the OU 1082 work plan proposed sampling at SWMU 16-025(w) to detect residual organic compounds and other potential contaminants in the subsurface soil.
16-025(y)-99	In Progress	Consolidated SWMU 16-025(y)-99 consists of former SWMUs 16-025(y) and 16-029(a2). Former SWMU 16-025(y) is the footprint of the former barium nitrate grinding facility (structure 16-55) in the GMX-2 area. Former SWMU 16-029(a2) is potential

		contamination from sumps and drainlines at structure 16-55. Building 16-55 was located south of a former processing building (Building 16-45). Building 16-55 consisted of three structures: a processing building that was connected to an equipment room and a storage room. The building was of wood-frame construction with a concrete floor. Building 16-55 was the first barium nitrate grinding facility constructed at S-Site, in March 1945. It was used for that purpose until structure 16-54 was built later in 1945. After 1945, Building 16-55 was used for several purposes, including lead storage. The building was considered a storage building when it was surveyed in 1959. Use of Building 16-55 was discontinued in December 1959 and it was burned in February 1960. Before it was burned, the building was determined to be contaminated with HE. Suspect contaminants were inorganic chemicals, organic chemicals, and HE. Former SWMU 16-029(a2) is potentially contaminated surface and subsurface soil associated with structure 16-55 and its associated drainline and sumps. The sumps were located east of structure 16-55 and discharged to a drainline that flowed into the main S-Site drainage. The sump drained to a secondary sump and then to an outfall. The ER Project conducted an RFI at former SWMU 16-025(y) in summer 1997 to determine if contaminants were present in soils at unacceptable levels. Biased sampling was designed to detect barium and HE in the surface and near-surface soil in the building footprint. Ten samples were field-screened from five locations in and adjacent to the building footprint. Samples were screened for HE, barium, and radionuclides. HE screening samples were positive. Screening sample results for barium were less than two times BV for all samples. Four of the screened samples were submitted for laboratory analysis. Samples submitted to the analytical laboratory were analyzed for inorganic chemicals, organic chemicals, and HE. Slightly elevated levels of barium and mercury were detected. The RFI report recommended NFA at former SWMU 16-025(y) because contamination at the site posed no unacceptable risk to human health. Addendum 1 to the OU 1082 work plan proposed sampling at former SWMU 16-029(a2) to detect surface HE contamination.
16-026(a2)	Pending	SWMU 16-026(a2) is an active storm drainline and associated outfall from the roof drains of an administration building (Building 16-200) that is outside the fenced TA-16 HE-processing area. The outfall is active periodically, intermittently discharging rainwater collected from the roof of the building. Building 16-200 was constructed from July 2, 1951, through December 22, 1952, and became operational in early 1953. It was constructed to house administrative offices only and has been used as an administrative office building from the time of its construction. The 1990 SWMU report describes SWMU 16-026(a2) as an inactive outfall with an unknown waste stream from a drainline located on the southeast side of Building 16-200. As-built engineering drawings show that this drainline and associated outfall were built exclusively to collect and disperse stormwater from the roof of Building 16-200. The engineering drawings show that all roof drains tie into the building's storm drainline and that all floor drains tie into the building's sanitary sewer line. Engineering drawings show that the rainwater is channeled through a line that runs beneath most of the length of the concrete basement floor of Building 16-200, initiating as a 4-in.-diameter pipe at the north end of the building. The 4-in. pipe connects to a 6-in. pipe at a juncture near the basement stairwell. The 6-in. line exits at the south end of the building where it connects to an 8-in. line that runs southeast (underground) to a point of discharge (at daylight) approximately 175 ft southeast of the building. The point of discharge is through a 12-in. corrugated culvert. The RFI work plan recommended NFA for SWMU 16-026(a2); consequently, there has been no additional investigation at this site.
16-026(b)-99	In Progress	Consolidated SWMU 16-026(b)-99 consists of former SWMUs 16-026(b), 16-026(c), 16-026(d), 16-026(e), 16-029(a), 16-029(b), 16-029(c), and 16-029(d). The

		consolidated SWMU contains inactive HE sumps, drainlines, and outfalls associated with inactive rest houses on the west side of the 300 Line. The line was built in 1951 and 1952 for casting HE. The buildings were converted to other uses when cast explosives were replaced by plastic-bonded explosives (except for Building 16-302, which remained a casting facility). The rest houses are located south of the processing buildings, and each rest house has a pair of HE sumps. Effluent from each sump drained into the gutter along the road in front of the rest houses. According to the OU 1082 work plan, none of the sump outfalls required EPA permits, and all the sumps have been plugged. None of the buildings currently is used to store explosives. The sumps are rectangular concrete tanks with removable 0.25-in. aluminum lids. Outside dimensions are about 12 ft long x 4 ft wide x 5 ft high. Initially, HE fines were collected in a cloth filter bag secured inside a metal filter basket. The baskets and filter bags periodically were collected and cleaned at the basket-washing facility (Building 16-390). HE fines too small to be collected by the filter bags settled to the bottom of the sump. To help separate the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to an outfall. HE in the bottom of the sump periodically was removed and burned. The sumps were modified in 1966 to improve their effectiveness and to reduce HE handling. Watertight aluminum tanks were installed in the sumps, eliminating the filter baskets and cloth bags. Each tank has two baffle and weir separation stages on the long axis of the sump. Waste products in the sumps periodically were removed and burned in the sand beds at the TA-16 burning ground. Soil and sediment studies of HE in the S-Site drainage system were conducted from 1970 to 1985, and in the water from HE sumps and outfalls in 1988. For samples related to the former SWMUs in this consolidated unit, samples taken from a rest house (structure 16-307) [former SWMUs 16-026(b) and 16-029(a)] showed residual explosives at 13 percent by weight in 1975. Concentrations had dissipated to 0.4% by 1984. Inorganic chemical concentrations were above BVs in water and soils associated with the sump drainages from the 300 Line. A 1989 DOE investigation of the 300 Line outfalls showed low levels of cesium-137 and uranium-235. Organic chemicals were present in several drainages below SALs and were present above SALs in sump water. Former SWMUs 16-026(b) and 16-029(a) are the outfall and sumps, respectively, associated with an inactive rest house (structure 16-307). Structure 16-307 served Building 16-306 [consolidated SWMU 16-003(d)-99], the plastics-production facility. The rest house was used to store molds and other materials used in the plastics-development facilities. The building previously housed a solvent disassembly tank used for removing HE from test devices. According to the OU 1082 work plan, test devices were the principal cause of HE contamination in the outfall drainage channel. Former SWMUs 16-026(c) and 16-029(b) are the outfall and sumps, respectively, that served an inactive rest house (structure 16-305). Structure 16-305 served the plastics-development and production facility [Buildings 16-304 and 16-306 [consolidated SWMU 16-003(d)-99)]. The rest house was used to store raw materials used in the plastics-fabrication process, finished plastic products, and for filament winding of developmental components. Suspect contaminants were HE, inorganic chemicals, and organic chemicals associated with plastics manufacturing. One soil sample was taken from the outfall at structure 16-305 in 1970. Analytical results showed no TNT, RDX, or HMX, although some unknown HE decomposition products may have been present at low levels. Former SWMUs 16-026(d) and 16-029(c) are the outfall and sumps, respectively, that served an inactive rest house (structure 16-303). Structure 16-303 was built in 1953 and served Building 16-302 [consolidated SWMU 16-003(d)-99], an HE casting facility. The rest house stored raw materials used in the casting process and HE castings produced in the casting building. Suspect contaminants were HE, inorganic chemicals, and organic chemicals. Two samples were taken at the former SWMU 16-026(d) outfall in 1970. Samples showed elevated levels of HMX and/or RDX and TNT.

		Former SWMUs 16-026(e) and 16-029(d) are the outfall and sumps, respectively, that served an inactive rest house (structure 16-301). Structure 16-301 served Building 16-300 [consolidated SWMU 16-003(d)-99], the mock HE-processing facility. The rest house was used to store raw materials that were used to prepare mock HE. The ER Project conducted RFIs at these former SWMUs in 1995 to determine if releases had occurred from the drain outfalls and if the releases caused contamination. Only SWMUs 16-026(c) and 16-026(d) were proposed for NFA. At former SWMU 16-026(c), the ER Project sampled 14 locations: all locations were field-screened for HE, radiation, and organic chemicals. All samples were negative. Boreholes were drilled at the outfall and at the next downstream sediment trap. Three samples were collected from each borehole. In addition, five surface samples were collected. Eleven samples were submitted for fixed-laboratory analysis for organic chemicals, inorganic chemicals, and HE. Elevated PAH levels were found in the laboratory samples. The locations where PAHs were detected also receive stormwater runoff from asphalt-paved areas. The RFI report attributed the presence of PAHs to general industrial activities and recommended former SWMU 16-026(c) for NFA because contaminants at that site pose no unacceptable risk to human health. At former SWMU 16-026(d), 18 locations were field-screened for HE, inorganic chemicals, and organic chemicals. All samples screened negative. Boreholes were drilled at the outfall and about 25 ft downstream at the next sediment trap. Eleven samples were collected from six of the screened locations (including boreholes) and submitted for fixed-laboratory analysis. Samples were analyzed for inorganic chemicals, organic chemicals, and HE. Several inorganic chemicals (arsenic, barium, chromium, lead, vanadium, and zinc) were detected at elevated levels. One organic chemical, benzo(a)pyrene (a PAH), was detected at elevated levels, and its presence was attributed to runoff from an asphalt-paved roadway. The RFI report attributed the presence of benzo(a)pyrene to general industrial activities. Elevated levels of RDX were present in one sample. The RFI report recommended NFA at former SWMU 16-026(d) because contaminants at that site posed no unacceptable risk to human health under an industrial-use scenario. The other former SWMUs in the consolidated unit will be investigated in future field campaigns.
16-026(b2)-00	In Progress	Consolidated SWMU 16-026(b2)-00 consists of former SWMUs 16-026(b2) and 16-028(d). SWMU 16-026(b2) is the site of potential soil contamination from an overflow drain and associated drainline and outfall from a former oil/water separator in a decommissioned machine shop (a shops building, Building 16-202). SWMU 16-028(d) is potentially contaminated soil from a former NPDES-permitted outfall and drainlines that received discharges from drains throughout Building 16-202. The outfall areas for the former SWMUs overlap. Suspect contaminants are organic chemicals and inorganic chemicals. Former SWMU 16-026(b2) is located in the current S-Site administration area. It was built in 1952 when Building 16-202 was built. The oil/water separator remains in place but has been decommissioned. The decommissioning date is unknown, but by 1977, the room that contained the oil/water separator was no longer used. The oil/water separator is a cement pit that is below floor level with a volume of 3 cubic ft. The pit is in a wastewater line that receives only oily water. It was designed to receive up to 100 gal./minute of oily water. The oil/water separator removed oil from water to protect the sewer system from being overloaded with large volumes of oil. The oil floated to the top of the pit to allow water to flow out a drain to the bottom of the pit into the sewer system. The oil layer flowed into an overflow drain. The overflow lines are 2-in. cast-iron pipes that ordinarily drained onto the ground. A wood plank now covers the oil/water separator and the room is used as an office. The oil overflow line runs about 135 ft southeast from Building 16-202 and daylights near the bottom of a drainage ditch that runs along a road. Former SWMU 16-028(d) served Building 16-202 from 1952 to 1993. The building was used as a secure machine shop and provided electrical, mechanical, pipefitting, milling,

		and other machining services. The building currently is used for office space. The outfall, included on LANL's NPDES permit as Outfall 04A083, received noncontact cooling water and wash water from two floor drains, effluent from two non-HE sumps, discharge from two sink drains, and rainwater from 16 roof drains. It was removed from the LANL NPDES permit effective September 19, 1997. The drainline is 8-in. VCP that daylights 80 ft southeast of Building 16-202. Addendum 2 of the OU 1082 work plan proposed sampling at these former SWMUs to detect contamination from organic chemicals.
16-026(c2)	In Progress	SWMU 16-026(c2) is the outfall from a chemical storage building (Building 16-462) located in the southwest quadrant of TA-16. Building 16-462 was built in 1952 to store chemicals that were used in an analytical and process-control laboratory (Building 16-460). Building 16-462 is a single-story building with two rooms. One room contains an inventory of solvents and oils; the other stores organic and inorganic compounds. The rooms have troughs in the floor that drain to separate drainlines outside the building. The drainlines that comprise SWMU 16-026(c2) are 6-in. VCP. They exit from the southeast side of the building and travel southeast for about 32 ft before they daylight next to one another in a grassy area that slopes to the southeast. Engineering drawings show a square collection pit where the lines daylight. On a site visit, the pit was observed but was filled with sediment. Effluent flows southeast to a drainage ditch. The ditch leads to a corrugated metal culvert that drains northeast. Drains at Building 16-462 were plugged in 1991. Historical spill records at Building 16-462 are unknown. Archival information from the 1970s states that effluent from Building 16-462 is "effectively negligible." Addendum 2 of the OU work plan proposed sampling at SWMU 16-026(c2) to detect organic chemicals.
16-026(d2)	Pending	SWMU 16-026(d2) is an outfall (and associated drainline) that served a single floor drain located in the utility room of an HE rest house (structure 16-435). From the early 1950s to the present, this rest house has functioned as a temporary storage area for packaged raw explosives being delivered to HE-processing buildings, for finished HE products ready for transport, or for scrap explosives being removed for disposal. The rest house contains an attached 4-ft x 8-ft utility room equipped with one steam pump and one small compressor used to heat and ventilate the building. The utility room has a single floor drain, which, until 1992, discharged low volumes of steam condensate through a 4-in. VCP to an outfall located approximately 90 ft from the rest house. Since 1992, the practice at TA-16 has been to collect steam condensate in a 2.5- or 5-gal. bucket placed at the end of the condensate pipe and to allow the condensate to evaporate from the bucket. Before 1992, the outfall received only steam condensate from the heating and ventilating equipment located in the utility room of the rest house (structure 16-435). The steam condensate was composed of condensed water containing amine, an ammonia derivative commonly added to water to control pH and to prevent corrosion and mineral buildup within piping. The current practice (starting in January 1997) is not to use additives of any kind in the steam used to heat the TA-16 buildings. There is no access to the utility room from the area of structure 16-435 used for storing HE components, because each utility room can be accessed only from outside the structure. The floor of the utility room shows rust and mineral stains as typically result from the evaporation of condensed water. From the normal operation and maintenance of the compressor, small amounts of lubricating oil have been known to leak, and some oil staining is visible on the utility room floor. The total capacity of lubricating oil (20-weight) for the compressor is approximately 0.5 quart or less. Employee intervews indicate that since at least 1981, there have been no releases to the environment involving a utility room drain from a rest house. This SWMU was recommended for NFA in the RFI work plan, and there has been no additional investigation at this site.
16-026(e2)	Pending	SWMU 16-026(e2) is an outfall (and associated drainline) that served a single floor drain located in the utility room of an HE rest house (structure 16-415). From the early

		1950s to the present, this rest house has functioned as a temporary storage area for packaged raw explosives being delivered to HE-processing buildings, for finished HE products ready for transport, or for scrap explosives being removed for disposal. The rest house contains an attached 4-ft x 8-ft utility room equipped with one steam pump and one small compressor, which are used to heat and ventilate the building. The utility room has a single floor drain, which, until 1992, discharged low volumes of steam condensate through a 4-in. VCP to an outfall located approximately 90 ft from the rest house. Since 1992, the practice at TA-16 has been to collect steam condensate in a 2.5- or 5-gal. bucket placed at the end of the condensate pipe and to allow the condensate to evaporate from the bucket. Before 1992, the outfall received only steam condensate from the heating and ventilating equipment located in the utility room of the rest house (structure 16-415). The steam condensate was composed of condensed water containing amine, an ammonia derivative commonly added to water to control pH and to prevent corrosion and mineral buildup within piping. The current practice (starting in January 1997) is not to use additives of any kind in the steam used to heat the TA-16 buildings. There is no access to the utility room from the area of structure 16-415 used for storing HE components, because each utility room can be accessed only from outside the structure. The floor of the utility room shows rust and mineral stains as typically result from the evaporation of condensed water. From the normal operation and maintenance of the compressor, small amounts of lubricating oil have been known to leak, and some oil staining is visible on the utility room floor. The total capacity of lubricating oil (20-weight) for the compressor is approximately 0.5 quart or less. Employee interviews indicate that since at least 1981, there have been no releases to the environment involving a utility room drain from a rest house. The mechanical heating and ventilating equipment (condensate pump and compressor) has been removed from the utility room of structure 16-415 and replaced by an electric heating and ventilating unit. The utility room floor drain of this rest house is plugged and no longer used. This SWMU was recommended for NFA in the RFI work plan, and there has been no additional investigation at this site.
16-026(f)	Pending	SWMU 16-026(f) is soil associated with two outfalls from an HE-processing building (Building 16-308). Building 16-308 was built in 1953 and initially was used as a drying building for nitrocellulose explosives. After the 1960s, the building was used to store detonators and squibs (HE initiators). Building 16-308 has a utility basement that houses compressors and condensate pumps. Activities in the basement have no direct link to other building activities. There are no floor drains on the first floor. The first floor and the basement are not connected to each other and have separate entrances. The basement is accessible only by ladder. The only water lines into the building are for the sprinkler system. The outfall on the northeast corner of the building drains rainwater from the roof, and the 4-in. VCP daylights about 20 ft northeast of the building. The outfall on the southeast corner of the building receives effluent from two basement floor drains that carry condensate from steam lines and pumps. A shallow trench that extends southeast from Building 16-308 is believed to be this outfall's drainage. The rewritten Chapter 6 of the OU 1082 work plan recommended NFA for SWMU 16-026(f) because no hazardous waste and/or hazardous constituents are present at the site now, nor has the site ever been used to manage hazardous waste and/or constituents.
16-026(f2)	Pending	SWMU 16-026(f2) is an outfall (and associated drainline) that served a single floor drain located in the utility room of an HE rest house (structure 16-413). From the late 1940s/early 1950s to the present, this rest house has functioned as a temporary storage area for packaged raw explosives being delivered to HE-processing buildings, for finished HE products ready for transport, or for scrap explosives being removed for disposal. The rest house contains an attached 4-ft x 8-ft utility room equipped with one steam pump and one small compressor, which are used to heat and ventilate the

		building. The utility room has a single floor drain, which, until 1992, discharged low volumes of steam condensate through a 4-in. VCP to an outfall located approximately 90 ft from the rest house. Since 1992, the practice at TA-16 has been to collect steam condensate in a 2.5- or 5-gal. bucket placed at the end of the condensate pipe and to allow the condensate to evaporate from the bucket. Before 1992, the outfall received only steam condensate from the heating and ventilating equipment located in the utility room of structure 16-413. The steam condensate was composed of condensed water containing amine, an ammonia derivative commonly added to water to control pH and to prevent corrosion and mineral buildup within piping. The current practice (starting in January 1997) is not to use additives of any kind in the steam used to heat the TA-16 buildings. There is no access to the utility room from the area of structure 16-413 used for storing HE components, because each utility room can be accessed only from outside the structure. The floor of the utility room shows rust and mineral stains as typically result from the evaporation of condensed water. From the normal operation and maintenance of the compressor, small amounts of lubricating oil have been known to leak, and some oil staining is visible on the utility room floor. The total capacity of lubricating oil (20-weight) for the compressor is approximately 0.5 quart or less. Employee interviews indicate that since at least 1981, there have been no releases to the environment involving a utility room drain from a rest house. This SWMU was recommended for NFA in the RFI work plan, and there has been no additional investigation at this site.
16-026(g)	In Progress	SWMU 16-026(g) is soil associated with an outfall from an inspection building (Building 16-280). Building 16-280 was built in 1951 and is an HE physical inspection building. HE and natural and depleted uranium components are handled and inspected on the first floor of this facility. The outfall received effluent from four equipment drains and five floor drains in the basement. The drains are plugged. The basement has always been used as a utility room for pumps and compressors, and the first floor and the basement are not connected to each other and have separate entrances. No hazardous materials are stored in the basement. There is no record of oil spills from the basement drain. The 6-in. VCP outfall daylights 300 ft northeast of Building 16-280. The rewritten Chapter 6 of the OU 1082 work plan recommended NFA at SWMU 16-026(g) because no hazardous waste and/or hazardous constituents are currently present, nor have they historically been present at the site of the SWMU.
16-026(g2)	Pending	SWMU 16-026(g2) is an outfall (and associated drainline) that served a single floor drain located in the utility room of an HE rest house (structure 16-285). From the early 1950s to the present, this rest house has functioned as a temporary storage area for packaged raw explosives being delivered to HE-processing buildings, for finished HE products ready for transport, or for scrap explosives being removed for disposal. The rest house contains an attached 4-ft x 8-ft utility room equipped with one steam pump and one small compressor, which are used to heat and ventilate the building. The utility room has a single floor drain, which, until 1992, discharged low volumes of steam condensate through a 4-in. VCP to an outfall located approximately 30 ft from the rest house. Since 1992, the practice at TA-16 has been to collect steam condensate in a 2.5- or 5-gal. bucket placed at the end of the condensate pipe and to allow the condensate to evaporate from the bucket. Before 1992, the outfall received only steam condensate from the heating and ventilating equipment located in the utility room of structure 16-285. The steam condensate was composed of condensed water containing amine, an ammonia derivative commonly added to water to control pH and to prevent corrosion and mineral buildup within piping. The current practice (starting in January 1997) is not to use additives of any kind in the steam used to heat the TA-16 buildings. There is no access to the utility room from the area of structure 16-285 used for storing HE components, because each utility room can be accessed only from outside the structure. The floor of the utility room shows rust and mineral stains as typically result

		from the evaporation of condensed water. From the normal operation and maintenance of the compressor, small amounts of lubricating oil have been known to leak, and some oil staining is visible on the utility room floor. The total capacity of lubricating oil (20-weight) for the compressor is approximately 0.5 quart or less. Employee interviews indicate that since at least 1981, there have been no releases to the environment involving a utility room drain from a rest house. This SWMU was recommended for NFA in the RFI work plan, and there has been no additional investigation at this site.
16-026(h)	Pending	SWMU 16-026(h) is an outfall (and associated drainline) that served a single floor drain located in the utility room of an HE rest house (structure 16-281). From the early 1950s to the present, this rest house has functioned as a temporary storage area for packaged raw explosives being delivered to HE-processing buildings, for finished HE products ready for transport, or for scrap explosives being removed for disposal. The rest house contains an attached 4-ft x 8-ft utility room equipped with one steam pump and one small compressor, which are used to heat and ventilate the building. The utility room has a single floor drain, which, until 1992, discharged low volumes of steam condensate through a 4-in. VCP to an outfall located approximately 45 ft from the rest house. Since 1992, the practice at TA-16 has been to collect steam condensate in a 2.5- or 5-gal. bucket placed at the end of the condensate pipe and to allow the condensate to evaporate from the bucket. Before 1992, the outfall received only steam condensate from the heating and ventilating equipment located in the utility room of structure 16-281. The steam condensate was composed of condensed water containing amine, an ammonia derivative commonly added to water to control pH and to prevent corrosion and mineral buildup within piping. The current practice (starting in January 1997) is not to use additives of any kind in the steam used to heat the TA-16 buildings. There is no access to the utility room from the area of structure 16-281 used for storing HE components, because each utility room can be accessed only from outside the structure. The floor of the utility room shows rust and mineral stains as typically result from the evaporation of condensed water. From the normal operation and maintenance of the compressor, small amounts of lubricating oil have been known to leak, and some oil staining is visible on the utility room floor. The total capacity of lubricating oil (20-weight) for the compressor is approximately 0.5 quart or less. Employee interviews indicate that since at least 1981, there have been no releases to the environment involving a utility room drain from a rest house. This SWMU was recommended for NFA in the RFI work plan, and there has been no additional investigation at this site.
16-026(i)	In Progress	SWMU 16-026(i) is soil contamination associated with an outfall from an x-ray building (Building 16-224) located on the north side of S-Site. The radiography area of S-Site was built in 1952 and consists of seven buildings: three rest houses, three x-ray buildings, and a centrally located photo processing building. The buildings are connected by enclosed walkways. Building 16-224 is 58 ft x 44 ft x 10 ft high. The rest houses store finished, packaged HE components before and after they are radiographed. The components are transported between the rest houses and the x-ray buildings on the enclosed walkways. When components arrive at the x-ray buildings, they are removed from their packaging, x-rayed, and repackaged. The floor drains that discharged to this SWMU are located in the northeast and northwest corners of Building 16-224. The drainline daylights northeast of Building 16-224. Site workers stated that HE dust and small chips would break off during the x-ray process and could enter the floor drains. Because this SWMU is associated with floor drains in the x-ray building, HE contamination could be present at the outfall. Small HE chips have historically been observed in the drains. The drains were plugged in 1991. The outfall is characterized by low flow onto a shallow, grassy slope. Addendum 2 of the OU 1082 work plan proposed sampling at SWMU 16-026(i) to detect barium and HE.

16-026(i2)	Administratively Complete	SWMU 16-026(i2) is identified in the SWMU Report (LANL 1990) as an inactive outfall from the building drains associated with TA-16-54. Based on a review of engineering drawings and conversations with former site workers, it has been determined that the drains in Building TA-16-54 emptied to interior sumps and discharged from the sumps to a septic tank system. This septic tank system will be sampled as part of the investigation of SWMU 16-006(a) as outlined in the RFI Work Plan for Operable Unit 1082. SWMU 16-026(i2) is appropriate for NFA because it will be investigated as part of SWMU 16-006(a).
16-026(j)	In Progress	SWMU 16-026(j) is soil contamination associated with an outfall from an inactive x-ray building (Building 16-226) located on the north side of S-Site. The radiography area of S-Site was built in 1952 and consists of seven buildings: three rest houses, three x-ray buildings, and a centrally located photo processing building. The buildings are connected by enclosed walkways. Building 16-226 is 58 ft x 44 ft x 10 ft high. The rest houses store finished, packaged HE components before and after they are radiographed. The components are transported between the rest houses and the x-ray buildings on the enclosed walkways. When components arrive at the x-ray buildings, they are removed from their packaging, x-rayed, and repackaged. The floor drains that discharged to SWMU 16-026(j) are located in the southeast and southwest corners of Building 16-226. The corner floor drains join and form one 6-in. VCP line out of the building, draining into a grassy, gradually sloping area. Although during several site visits the location of the drain outfall from Building 16-226 could not be located, an engineering drawing shows the drain flowing southeast. Site workers stated that HE dust and small chips would break off during the x-ray process and could enter the floor drains. Because this SWMU is associated with floor drains in the x-ray building, HE contamination could be present at the outfall. Small HE chips historically have been observed in the drains. The drains were plugged in 1991. Addendum 2 of the OU 1082 work plan proposed sampling at SWMU 16-026(j) to detect barium and HE.
16-026(j2)	In Progress	SWMU 16-026(j2) is the outfall from an HE sump [SWMU 16-029(f)] associated with a rest house (structure 16-345). The rest house is located on the 340 Line. The line was built in 1951 and 1952 and was used to prepare plastic-bonded explosive powders. In the 1980s to 1990s, solvents were containerized to prevent their reaching the sumps. Structure 16-345 serves as an HE storage facility for Building 16-340. It has a single sump and associated drainlines. The sump received wash-down water generated during cleaning activities. HE is the only known material that was stored in the building. The outfall is located southeast of structure 16-345 and received effluent from the sump, but the exact discharge point is unknown. Rest house 16-345 is currently inactive. This site was sampled in 1995. Six samples were collected from five locations and submitted to an analytical laboratory for inorganic and organic chemicals, and HE analyses. Sampling results indicate that organic chemicals were detected and inorganic chemicals were present at levels exceeding SALs. In 1997, an additional eight samples were collected from two locations and submitted to an analytical laboratory for similar analyses. The additional sampling conducted in 1997 did not provide a bounding on the contamination.
16-026(k)	Pending	SWMU 16-026(k) is an outfall (and associated drainline) that served a single floor drain located in the utility room of an HE rest house (Building 16-221). From the late 1940s/early 1950s to the present, this rest house has functioned as a temporary storage area for packaged raw explosives being delivered to HE-processing buildings, for finished HE products ready for transport, or for scrap explosives being removed for disposal. The rest house contains an attached 4-ft x 8-ft utility room equipped with one steam pump and one small compressor, which are used to heat and ventilate the building. The utility room has a single floor drain, which, until 1992, discharged low volumes of steam condensate through a 4-in. VCP to an outfall located approximately 45 ft from the rest house. Since 1992, the practice at TA-16 has been to collect steam condensate in a 2.5- or 5-

		gal. bucket placed at the end of the condensate pipe and to allow the condensate to evaporate from the bucket. Before 1992, the outfall received only steam condensate from the heating and ventilating equipment located in the utility room of structure 16-221. The steam condensate was composed of condensed water containing amine, an ammonia derivative commonly added to water to control pH and to prevent corrosion and mineral buildup within piping. The current practice (starting in January 1997) is not to use additives of any kind in the steam used to heat the TA-16 buildings. There is no access to the utility room from the area of structure 16-221 used for storing HE components, because each utility room can be accessed only from outside the structure. The floor of the utility room shows rust and mineral stains as typically result from the evaporation of condensed water. From the normal operation and maintenance of the compressor, small amounts of lubricating oil have been known to leak, and some oil staining is visible on the utility room floor. The total capacity of lubricating oil (20-weight) for the compressor is approximately 0.5 quart or less. Employee interviews indicate that since at least 1981, there have been no releases to the environment involving a utility room drain from a rest house. NOTE: Structure 16-221 is no longer used, and steam is no longer pumped to its utility room. This rest house is slated for D&D. This SWMU was recommended for NFA in the RFI work plan, and there has been no additional investigation at this site.
16-026(l)-00	In Progress	Consolidated SWMU 16-026(l)-00 consists of former SWMUs 16-026(l) and 16-028(c). The former SWMUs are drainlines and outfalls from drains throughout an x-ray building (Building 16-220). The outfalls discharged from similar processes in Building 16-220 to an area where the outfalls overlap; suspect contaminants are commingled here. Building 16-220 (41 ft x 68 ft x 20 ft high) was the low-energy x-ray facility for HE components, located on the north side of S-Site. The radiography area of S-Site was built in 1952 and consists of seven buildings: three rest houses, three x-ray buildings, and a centrally located photo processing building. The buildings are connected by enclosed walkways. The rest houses store finished, packaged HE components before and after they are radiographed. The components are transported between the rest houses and the x-ray buildings on the enclosed walkways. When components arrive at the x-ray buildings, they are removed from their packaging, x-rayed, and repackaged. Former SWMU 16-026(l) is potentially contaminated soil associated with outfalls from Building 16-220. The area where the outfall daylights could not be located, even after several site visits. Former SWMU 16-028(c) is a former NPDES-permitted outfall (Outfall 04A070, removed from LANL's NPDES permit effective September 19, 1997) and drainlines that received discharges from eight floor drains in Building 16-220. The effluent contained noncontact cooling water, chiller condensate, and periodic discharge from an HE vacuum pump and floor washings. The 6-in. VCP daylights in a rocky ditch near the building. The ditch flows to a relatively flat, grassy field. The floor drains at Building 16-220 were plugged in 1991. The rewritten Chapter 6 for the OU 1082 work plan recommended NFA for former SWMU 16-026(l) because it could not be located during site visits. Addendum 2 of the OU 1082 work plan proposed sampling at former SWMU 16-028(c) to detect barium and HE.
16-026(q)-99	In Progress	Consolidated SWMU 16-026(q)-99 consists of former SWMUs 16-005(d), 16-017(h)-99, 16-017(x)-99, 16-025(k), 16-025(l), 16-026(q), 16-029(f2), 16-029(r), 16-031(d), 16-032(c), and 16-034(a), and AOCs C-16-006 and C-16-065. The consolidated SWMU consists of potentially contaminated surface and subsurface soil in the footprints of former HE-processing buildings and associated structures in the 20s Line of HE-processing buildings at S-Site. All the former structures are related to and located along or near the 20s Line of HE-processing buildings. The 20s Line contained several HE production facilities in a single line of buildings that were connected by enclosed walkways. Most buildings in the 20s Line were burned in 1968. The residual debris from burning and the subsurface structures were cleaned up in 1969. Former SWMU 16-005(d) is the footprint of a former septic tank (structure 16-177) and

		its 6-in. drainline that served lavatories in the southwest wing of former Building 16-27. Primary drainage in the area where the tank was located was to a tributary of Water Canyon, about 0.25 mi south. Former SWMU 16-017(h)-99 is the footprint of a former HE-casting building (Building 16-27). Operations were conducted at the building from 1945 to 1970. The building was removed in 1995. It was a 150-ft x 50-ft building of wooden-frame construction with a concrete foundation, concrete floor, and a basement that housed vacuum pumps and other equipment. The building consisted of a 39-ft x 89-ft central casting room and several smaller rooms that were used as laboratories and offices. An associated equipment room south of the main building also was considered part of Building 16-27. Former Building 16-27 was the main production casting facility at TA-16 until approximately 1953. Full-scale lenses for nuclear devices were cast in the building. After casting operations were moved into the 300 Line in the early 1950s, Building 16-27 was used as a warehouse. The building was removed during 1998 D&D activities . Former SWMU 16-017(x)-99 is a former storage magazine at S-Site (structure 16-79). This site is 1 of the 23 structures originally designated as SWMU 16-017, but later redesignated by adding an alpha-identifier for each structure. Former SWMU 16-025(k) is the footprint of a former HE powder inspection building (Building 16-25). The former building was made of wooden-frame construction and measured 20 ft long x 30 ft wide x 15 ft high and had a concrete foundation and floor, plus an addition that was 6 ft x 10 ft x 15 ft high. Building 16-25 was built in 1944 and had no sump. Activities in the building consisted of spreading HE powder on tables to remove foreign objects to prepare the HE for casting. The building was closed in 1959 and was shown to be contaminated with HE before it was burned in 1968. Suspect contaminants at this former SWMU were inorganic chemicals, organic chemicals, and HE. Former SWMU 16-025(l) is the footprint of a former HE-casting building (Building 16-26) that was built in 1944. The building was 40 ft x 45 ft x 18 ft high. The building had a basement (12 ft x 40 ft) that served as a utility room. A wood ceiling in the basement formed the floor beneath the casting kettles and provided access to the kettles. The basement had a 4-ft-deep sump. The portion of the main floor that was not above the basement was a concrete slab slightly elevated above ground level. The floor had a lead-lined trough that led to a sump, former SWMU 16-032(c). After former Building 16-27 was constructed in 1945, Building 16-26 was used for inspecting raw HE. Building 16-26 was burned in 1968. Industrial sumps and drainlines were disposed of at TA-54; noncombustible material was flashed and disposed of at MDA P (SWMU 16-018). Former SWMU 16-026(q) consists of footprints of nine removed sumps and associated drains and outfalls for former Building 16-27. Drainlines flowed eastward in rock-lined ditches to a ditch that flowed south along the road and into the main drainage for S-Site. The sumps and drainlines were removed in 1968 and disposed of at MDA L. Former SWMU 16-029(f2) is the footprint of the decommissioned sump, drainline, and outfall from former Building 16-24. Effluent exited from the southwest corner of Building 16-24, flowed into a sump located about 15 ft northwest of the building's west corner, and drained into a rock-lined ditch that flowed into the main drainage for S-Site. The sump and drainline were removed in 1968 and disposed of at TA-54, and noncombustible debris was disposed of at MDA P. Former SWMU 16-029(r) is the footprint of the drainage system for the former drainline that served former Building 16-25. A drainage ditch is evident at the location of the former drainline and was determined to be contaminated with HE in 1970. A drainline is believed to have exited Building 16-25 from its southeast corner and to have emptied into a pond located southeast of former Building 16-26, an HE-casting building [former SWMU 16-025(l)]. A drainage ditch heads east from the historical location of the pond

		and turns south to the sumps at former Building 16-55. Former SWMU 16-031(d) is the location of a decommissioned cooling tower (former structure 16-28). The tower stored water used in cooling jackets for the casting operations in former Building 16-27. The tower was built concurrently with Building 16-27 in 1945 and was located about 70 ft south of Building 16-27. The tower was of wooden-frame construction and measured 28 ft square x 46 ft high. It was demolished in 1968. There is no record of a sump or chromate use. Former SWMU 16-032(c) is the footprint of former sumps, drainlines, and outfalls that served Building 16-26. The building was renovated in 1945, and an HE sump was added. This sump discharged to a secondary sump that discharged to a drainline and the outfall. The rock-lined ditch that served as the outfall is still present. The outfall drained into the main drainage for S-Site. Building 16-26 was destroyed in 1968, and the drains and sumps were removed and disposed of at TA-54; noncombustible debris was disposed of at MDA P. Former SWMU 16-034(a) is the building footprint for the former analytical laboratory for the 20s Line (Building 16-24). The building was constructed in 1946, measured 20 ft long x 36 ft wide x 11 ft high, and had a concrete floor. Activities in the building were to determine properties of production castings, which included HE density, composition, and particle size. The building had lead-lined ducts and a lead-lined trough in the floor. The trough surrounded a hood in the northwest corner of the building. Building 16-24 was destroyed by burning in 1968. Former AOC C-16-006 was described in the 1990 SWMU report as the former location of an equipment building (Building 16-148) constructed in 1950 and removed in 1968. The designation of Building 16-148 was used for two different buildings at different times. One of the two buildings designated as Building 16-148 was a small (6-ft x 6-ft) solvent storage building located west of former Building 16-24, an analytical laboratory. The other building designated as Building 16-148 was a 6-ft x 12-ft x 6-ft equipment storage room adjacent to the passage to Building 16-24. AOC C-16-006 is the unit associated with potential contamination from the solvent storage building. The equipment storage room has been assigned to SWMU 16-032(b). Former AOC C-16-065 was a 14-ft x 9-ft x 5-ft-high concrete platform (structure 16-185) that was used to store containers of HE-contaminated waste from nearby HE-processing buildings. AOC C-16-065 was built in 1948 and removed from service in 1960. According to the VCM report (see below), the platform probably was removed in 1968 concurrently with the D&D of nearby buildings. The former AOC was located about 50 ft east of former Building 16-27. Suspect contaminants at former AOC C-16-065 were HE and inorganic chemicals. The ER Project conducted a VCM at former SWMU 16-005(d) in 1997 and 1998 to characterize the SWMU and to implement an accelerated cleanup in conjunction with D&D activities at the former SWMU. The septic tank had been removed prior to D&D, and D&D activities were limited to removal of the drainline. After the drainline was removed, the ER Project field-screened 27 samples from 8 locations, with preferential samples taken from locations beneath noted joints or breaks in the drainline. Samples were screened for HE, radioactivity, inorganic chemicals, and organic chemicals. Based on screening results that indicated the potential presence of HE and silver, eight samples were submitted for laboratory analysis of HE, inorganic chemicals, organic chemicals, and uranium. Elevated levels of amino-2,6-dinitrotoluene[4-], amino-4,6-dinitrotoluene[2-], HMX, RDX, and trinitrotoluene[2,4,6-] were detected. After analytical results were received, two additional samples were collected upgradient from the tank and from the tank discharge to bound the detected contamination. Contaminated soil within the boundary was removed. Following cleanup, confirmation sampling and analyses were conducted. Elevated levels of both organic chemicals and inorganic chemicals were detected in the confirmation samples; the nature and extent of this

		contamination have been determined. Both the human health and ecological screening assessment support NFA at this former SWMU. The OU 1082 work plan proposed SWMU 16-017, which included the storage magazine redesignated as SWMU 16-017(x)-99, for deferral until D&D. The ER Project conducted an RFI at former SWMU 16-025(k) in 1997 to determine if contaminants were present in soils at levels of concern. A total of 12 screening samples were taken from 6 locations in the building's footprint. Samples were screened for HE and radioactivity. Three samples that screened positive for HE were submitted for laboratory analysis. The samples were analyzed for inorganic chemicals, organic chemicals, and HE. Slightly elevated levels of lead, copper, and zinc were found but were determined not to present a human health risk. The RFI report recommended former SWMU 16-025(k) for a human health NFA because contaminants were not present at the site at levels that present a potential risk to human health. Addendum 1 of the OU 1082 work plan proposed sampling at former SWMUs 16-026(q), 16-029(f2), 16-029(l), and 16-029(r) to detect residual subsurface HE contamination. The ER Project conducted a VCM at former SWMU 16-031(d) in 1997. Five screening samples were collected and screened for HE and inorganic chemicals. One sample was submitted for laboratory analysis for inorganic chemicals. Copper was detected at a slightly elevated concentration. The VCM report recommended NFA at former SWMU 16-031(d) because contaminants at this site posed no unacceptable potential risk to human health. Addendum 1 of the OU 1082 work plan proposed surface and subsurface sampling at former SWMU 16-032(c) to detect residual HE contamination. Addendum 1 of the OU 1082 work plan proposed sampling to detect surface HE contamination at former SWMU 16-034(a). Addendum 1 of the OU 1082 work plan proposed sampling at AOC C-16-006 to detect residual subsurface solvents. The ER Project conducted a VCM at former AOC C-16-065 in May 1997. Five samples were collected from the footprint of the former container storage platform. Samples were field-screened for HE and BTEX; no HE was detected, and one sample screened positive for BTEX. One sample was submitted for laboratory analysis. The sample was analyzed for inorganic chemicals, organic chemicals, and HE, and the analysis detected several PAHs. There was no indication that PAHs were used at this site, and the VCM report recommended NFA for former AOC C-16-065 because contaminants at this site posed no unacceptable potential risk to human health.
16-026(r)	In Progress	SWMU 16-026(r) is potential soil contamination from oil overflow lines associated with the oil-water separator at fire station Number 5 (Building 16-180) at TA-16. The fire station was built in 1952. The oil-water separator is located in the middle of the south wall of Building 16-180 and received discharge from six floor drains. The oil-water separator remains in place but is no longer used. It is a 3-cubic-foot cement pit below floor level in a wastewater line that receives only oily wastewater. The pit removed oil from the water to protect the sewer system from being overloaded with large volumes of oil. Oil was separated from water: the oil layer, which floated to the top of the pit, flowed to an oil overflow drainline, a 2-in. cast-iron pipe, located at the top of the pit. The water sank to the bottom of the pit and flowed out of a drain at the pit bottom. Currently, rags are used to mop up oil stains, and the interceptor drain is inactive. The oil overflow line is believed to daylight approximately 70 ft south of the building, but the pipe is not visible. No oil stains were visible where the pipe is believed to daylight. The water in the bottom of the oil-water separator drained into a field approximately 200 ft south of Building 16-180.

		Addendum 2 of the OU 1082 work plan proposed sampling at the outfall for SWMU 16-026(r) to detect organic chemicals.
16-026(s)	In Progress	SWMU 16-026(s) is potential surface soil contamination from the inactive outfall at a former instrument shop (Building 16-5). The outfall originated from the east corner of the former building and drained about 100 ft to the southeast. The end of the outfall shows two 4-in. VCPs emptying into the drainage; the source of one of the pipes is unknown. Building 16-5 was removed in 1956. Oils and solvents were used in the instrument shop, which operated from 1945-1956. Suspect contaminants are organic chemicals. Addendum 1 of the OU 1082 work plan proposed sampling to detect residual oil and solvents.
16-026(t)	Pending	SWMU 16-026(t) is an active storm drainline and associated outfall from the roof drains of Building 16-207, a warehouse. The 1990 SWMU report describes SWMU 16-026(t) as an inactive outfall from a drainline located on the eastern side of Building 16-207. Engineering drawings and site visits (conducted as recently as the summer of 2000) demonstrate that the outfall is periodically active, intermittently discharging rainwater collected from the roof of the building. Building 16-207 is located outside of the fenced TA-16 HE-processing area. The SWMU 16-026(t) storm drainline periodically collects rainwater from the building roof only. Rainwater from 10 roof drains is channeled from the roof to a line that runs through the interior of the building and connects to a drainline beneath the concrete floor of Building 16-207. The drainline exits the building at the northwest and the northeast corners of the building as 6-in. pipes that connect to an 8-in. storm drainline that runs southeast (underground) to its point of discharge (at daylight) approximately 80 ft southeast of the building. The point of discharge is through an 8-in. VCP. Within the building, the drainline is an entirely closed system suspended from the ceiling. Building 16-207 was constructed from November 5, 1951, through November 10, 1952, and became operational in early 1953. Building 16-207 functioned as a warehouse from the time of its construction in 1951 until 1992. During that period, the building stored a variety of items, including small amounts of depleted uranium (stored in a locked, controlled area of the building). From 1992 to the present, Building 16-207 has been occupied by the Environmental Testing Team of the Engineering Sciences and Applications Division Measurement Technology Group. The ESA-MT, ET laboratory housed in Building 16-207 conducts mechanical test simulations (i.e., noninvasive and nondestructive) on weapons components. Testing includes static testing, such as static loads, pressure, and material characterization tests. This SWMU was recommended for NFA in the RFI work plan, and there has been no additional investigation at this site.
16-026(u)	In Progress	SWMU 16-026(u) is potential soil contamination from overflow lines at the oil-water separator in the tire and grease room at the TA-16 service station (Building 16-195). Building 16-195 was built in 1952. In addition to receiving wash-down water from the oil and grease room, the oil-water separator received floor washings from the wash area, the ambulance room, and the grease and repair room. The oil-water separator remains in place but is no longer used. It is a 3-cubic-foot cement pit below floor level in a wastewater line that receives only oily wastewater. The pit removed oil from the water to protect the sewer system from being overloaded with large volumes of oil. Oil was separated from water, and the oil layer, which floated to the top of the pit, flowed to an oil overflow drainline, a 2-in. cast-iron pipe, located at the top of the pit. The water sank to the bottom of the pit and flowed out of a drain at the pit bottom. The overflow drainline runs about 90 ft southeast of Building 16-195. Although the pipe is not visible, a magnetic survey of the area confirmed the location of the pipe. Addendum 2 of the OU 1082 work plan proposed sampling at the outfall for SWMU 16-026(u) to detect organic chemicals.

16-026(x)	Pending	SWMU 16-026(x) is an outfall (and associated drainline) that serves a single floor drain located in the utility room of an HE rest house (Building 16-437). From the late 1940s/early 1950s to the present, this rest house has functioned as a temporary storage area for packaged raw explosives being delivered to HE-processing buildings, for finished HE products ready for transport, or for scrap explosives being removed for disposal. The rest house contains an attached 4-ft x 8-ft utility room equipped with one steam pump and one small compressor, which are used to heat and ventilate the building. The utility room has a single floor drain, which until 1992, discharged low volumes of steam condensate through a 4-in. VCP to an outfall located approximately 90 ft from the resthouse. Since 1992, the practice at TA-16 has been to collect steam condensate in a 2.5- or 5-gal. bucket placed at the end of the condensate pipe and to allow the condensate to evaporate from the bucket. Before 1992, the outfall received only steam condensate from the heating and ventilating equipment located in the utility room of Building 16-437. The steam condensate was composed of condensed water containing amine, an ammonia derivative commonly added to water to control pH and to prevent corrosion and mineral buildup within piping. The current practice (starting in January 1997) is not to use additives of any kind in the steam used to heat the TA-16 buildings. There is no access to the utility room from the area of Building 16-437 used for storing HE components, because each utility room can be accessed only from outside the structure. The floor of the utility room shows rust and mineral stains as typically result from the evaporation of condensed water. From the normal operation and maintenance of the compressor, small amounts of lubricating oil have been known to leak, and some oil staining is visible on the utility room floor. The total capacity of lubricating oil (20-weight) for the compressor is approximately 0.5 quart or less. Employee interviews indicate that since at least 1981, there have been no releases to the environment involving a utility room drain from a rest house. This SWMU was recommended for NFA in the RFI work plan, and there has been no additional investigation at this site.
16-026(y)	In Progress	SWMU 16-026(y) is soil associated with an outfall on the east side of a rest house (Building 16-411). Building 16-411 was built in 1951 and is used as an assembly building for finished HE components. Components to be assembled arrived at the building in finished condition. The outfall has several sources. A utility room with pumps and compressors has a floor drain that receives condensate and discharges to the outfall. The pumps and compressors contain less than one gallon of oil. Within the building, an eyewash station, drinking fountain, and sink drain contribute effluent to the line. Externally, two roof drains and a steam pit connect to the outfall. The 4-in. VCP daylights 2 ft south of a double security fence, about 100 ft south of Building 16-411. The effluent drains down a steep canyon edge into Water Canyon. Effluent volume averages 600 gal./month, 500 gal. from precipitation. The rewritten Chapter 6 of the OU 1082 work plan recommended SWMU 16-026(y) for NFA because no hazardous waste and/or constituents are present nor has the SWMU ever been used to manage, generate, treat, store, or dispose of hazardous waste.
16-026(z)	In Progress	SWMU 16-026(z) is soil associated with an outfall from a plastics component development facility (Building 16-306) that has operated since 1953. The outfall flows from a roof-drain downspout near the southeast side of Building 16-306. The outfall leads into a paved drainage ditch that carries rainwater to a culvert and eventually into Water Canyon. The rewritten of Chapter 6 of the OU 1082 work plan recommended SWMU 16-026(z) for NFA because no hazardous waste and/or constituents are present at the site. In addition, the roof drains were never used to manage, generate, treat, store, or dispose of hazardous waste.
16-027(a)	Administratively Complete	
16-027(b)	Administratively	

	Complete	
16-027(c)	Administratively Complete	
16-027(d)	Administratively Complete	
16-028(a)	In Progress	SWMU 16-028(a) is the south drainage channel from the burning ground at TA-16. The channel runs between a water treatment shed (Building 16-363) and the liquid impoundment, SWMU 16-008(b), which has undergone RCRA closure. Suspect contaminants in the drainage were HE, inorganic chemicals, and laboratory chemicals such as solvents. Soil samples were collected for analysis from the south drainage in 1987 to detect soluble barium, inorganic chemicals, and organic chemicals. Elevated levels of barium and cadmium were detected. In 1992, a metals scoping study was performed in the burning ground drainages. Elevated barium levels were detected. The ER Project conducted an RFI at SWMU 16-028(a) in 1995 and resampled some locations in 1997. In 1995, ten surface soil samples from ten sediment-trap locations were screened for inorganic chemicals, HE, and radiation. Five of the samples were submitted for laboratory analysis and were analyzed for organic chemicals, inorganic chemicals, HE, and uranium. Elevated levels of barium, lead, zinc, benzo(a)pyrene, and HE (RDX) were detected. In 1997, four subsurface soil samples were taken from four of the ten 1995 locations to vertically bound contamination that was detected in the 1995 sampling. The four samples were submitted for laboratory analysis and were analyzed for organic chemicals, inorganic chemicals, HE, and uranium. Elevated levels of arsenic, barium, copper, nickel, silver, total uranium, and zinc were detected. The drainage receives run-on from an upgradient asphalt-paved road, suggesting that the PAHs are derived from a continuing source. The RFI report stated that contaminant concentration drops off quickly downgradient from the source, and that contamination was bounded in the downgradient and vertical directions. Because contaminants were found to pose no unacceptable potential risk to human health, the RFI report recommended SWMU 16-028(a) for NFA. In 1997, straw bale barriers were installed at this site to minimize contaminant migration from the site. In 2000, additional BMPs were installed in the form of straw wattles and permanent seeding.
16-028(b)	In Progress	SWMU 16-028(b) is potentially contaminated soil from formerly permitted NPDES Outfall 004A092 at a metal-forming building (Building 16-370). Building 16-370 was built in 1953 as a barium nitrate grinding facility. In the late 1950s, it was converted to a metal-forming shop for steel and aluminum and continues to operate in that capacity. The outfall was eliminated from LANL's NPDES permit effective January 14, 1998. The outfall flowed to Water Canyon from the west side of Building 16-370 through a 6-in. VCP that daylights about 50 ft south of the building. The outfall received effluent from 29 floor drains in the building and an eyewash, a drinking fountain, and a sink. At the time Addendum 2 of the OU 1082 work plan was written, many of the drains were in the process of being plugged. Effluent volumes historically were as much as 4000 gal. per day. Suspect contaminants in the outfall drainage are metal chips, oils, solvents, and barium. Addendum 2 of the OU 1082 work plan proposed sampling at SWMU 16-028(b) to detect organic chemicals and metals. In 1998, an investigative sample was collected from this site and submitted for to a off-site laboratory for HE and inorganic and organic chemical analyses. In 2000, as part of the post Cerro Grande fire recovery, debris removal, mulching, and permanent seeding were conducted at this site as a BMP. Straw wattles were also installed to stabilize the site and to prevent any potential contaminant migration.
16-029(b2)-99	In Progress	Consolidated SWMU 16-029(b2)-99 consists of former SWMU 16-029(b2) and former AOC C-16-005. The former units are potentially contaminated surface and subsurface soil in the footprints of former HE-processing buildings, former materials storage buildings, sumps, drainlines, and outfall systems associated with the GMX-2 HE-processing buildings. All the former structures are related to and located along or near the GMX-2 HE-processing buildings. Most structures in this consolidated SWMU were constructed in the 1940s primarily for experimental HE research and development

		activities. No production-scale HE volumes were processed in this area. The GMX-2 area ceased to be used as an active site in the early 1950s. Most of the structures in the GMX-2 area were intentionally destroyed by burning in 1960. Residual debris from burning and the remaining subsurface structures were cleaned up in 1966. Former AOC-16-005 is the footprint of a decommissioned HE-processing facility (Building 16-53). The former building housed a hydraulic press for HE processing. HE machining and casting may also have been carried out in this building. Additionally, the building may have been used as an optical equipment storage facility. It was built in 1945 and was 39 ft long x 16 ft wide x 14 ft high and had an addition that was 6 ft long x 17 ft wide x 8 ft high. Building 16-53 was of wood-frame construction with a concrete foundation and floor. It was surrounded on three sides by an earthen barricade. Suspect contaminants were metals, organic chemicals, and HE. Former SWMU 16-029(b2) is the footprint of two sumps and associated drainlines and outfalls that served Building 16-53. The primary sump was on the south side of the building's southern barricade, and a secondary sump was located 100 ft southwest of the building. A drainline exited the secondary sump to the south, eventually flowing into the main drainage ditch for the GMX-2 area. Addendum 1 of the OU 1082 work plan proposed sampling at former SWMU 16-029(b2) to detect surface and subsurface residual HE contamination. The ER Project conducted an RFI at former AOC C-16-005 in August 1997. Twelve surface and near-surface samples from six locations were screened for HE and radioactivity. Two samples were submitted to a laboratory for analysis of inorganic chemicals, organic chemicals, and HE. Elevated mercury levels were detected in the laboratory samples but were determined not to present an unacceptable human health risk. The RFI report recommended NFA at AOC C-16-005 because contamination is not present at levels that pose an unacceptable potential risk to human health.
16-029(c2)-99	In Progress	Consolidated SWMU 16-029(c2)-99 consists of former SWMUs 16-005(e), 16-025(z), and 16-029(c2), and AOC 16-015(c). The consolidated SWMU is the location of footprints of former HE-processing buildings, former materials storage buildings, sumps, drainlines, and outfall systems associated with the GMX-2 HE process lines at S-Site. GMX-2 structures were located in the south-central and eastern part of S-Site. Structures at GMX-2 were used primarily for experimental HE research and development. No production-scale HE operations were conducted in the GMX-2 area. The GMX-2 area operated from 1944 to the early 1950s. Most structures in the area were destroyed by burning in February 1960. Residual debris from burning and the remaining subsurface structures were cleaned up in 1966. All the former structures in the consolidated SWMU are related to and located along or near the GMX-2 HE process lines. Former SWMU 16-005(e) is the location of the former septic system (structure 16-179) that served the lavatories and darkrooms in the former explosives-testing facility (Building 16-37). It was located about 110 ft northwest of Building 16-37 and was connected to it by a 6-in. VCP. Former SWMU 16-025(z) is the former location of Building 16-37 and its associated sumps and drainlines. Initially, Building 16-37 was designated as an explosives-testing facility. Small castings were made during the spring of 1945, at which time the building was turned over to Section X-3B to investigate problems associated with cavitation in the inner charges for the implosion device. Casting operations to address this problem were conducted at this time. The building was equipped with an elaborate plumbing system designed to facilitate HE development and vacuum-overcasting operations. Vacuum overcasting was a method of cooling HE castings designed to minimize bubbles by putting a vacuum on the casting riser during charge cooling. The former building's dimensions were 20 ft x 75 ft x 13 ft high. It was of wood-frame construction with concrete floors. Before its removal in 1960, Building 16-37 was shown to be

		contaminated with HE. A memo also indicated that it was contaminated with carbon-14. Former SWMU 16-029(c2) is the former location of three sumps, drainlines, and outfalls that served former Building 16-37. The drainlines and sumps were on the east side of the building. The plumbing system included an acid waste line, a propane tank and line, and a lavatory. Little information exists about use of the acid waste line. An older primary sump was located on the southeast corner of the building, and a newer primary sump was on the building's northeast corner. Both primary sumps drained southeast into a secondary sump that was located 75 ft from the building; this secondary sump drained another 250 ft to the southeast. Former AOC 16-015(c) is the former location of a decommissioned HE steam-cleaning building (Building 16-36). The building was 8 ft square x 10 ft high. Building 16-36 was located 10 ft southeast of Building 16-37. It was of wood-frame construction on a concrete foundation. Effluent drained to the primary sump located on the southeast corner of Building 16-37. Before its removal in 1960, Building 16-36 was determined to be contaminated with HE. Addendum 1 of the OU 1082 work plan proposed sampling at former AOC 16-015(c) and SWMU 16-025(z) to detect surface HE contamination. At former SWMU 16-005(e), the work plan proposed sampling to detect subsurface HE contamination, and at former SWMU 16-029(c2), the work plan proposed sampling to detect surface and subsurface HE contamination. RFI sampling for AOC 16-015(c) was completed in 1997; minimal contamination was found.
16-029(e)-99	In Progress	Consolidated SWMU 16-029(e)-99 consists of former SWMUs 16-026(h2) and 16-029(e). The former SWMUs are an inactive outfall and HE sump, respectively, associated with a rest house (structure 16-360). The outfall was permitted under NPDES as Outfall 05A159. The outfall was removed from LANL's NPDES permit effective August 16, 1995. The sump was installed in the early 1950s and modified in 1966 to improve its effectiveness and to reduce HE handling. It is a rectangular tank with a removable 0.25-in.-thick aluminum lid. The sump is 12 ft long x 4 ft wide x 5 ft high (outside dimensions), and the walls and bottom are 8-in.-thick steel-reinforced concrete. The sump operated to remove suspended solids from process water before discharge to the outfall. HE fines (scrap) were collected in a cloth filter bag secured inside a metal filter basket. The baskets and filter bags were periodically collected and cleaned at the basket-washing facility (structure 16-390) located at the burning ground [SWMU 16-010(h)-99]. HE fines that were too small to be collected in the filter bags settled to the bottom of the sump. To help separate the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to the outfall. HE in the bottom of the sump was periodically removed and burned. Water was filtered and tested before it was discharged to the outfall. According to the OU 1082 work plan, the sump most likely received wash water from historical cleaning activities. The former SWMUs in this consolidated SWMU were proposed in the OU 1082 work plan to be included in a generic TA-16 sump sampling plan. Sampling was completed in 1995. Low levels of contamination were found. In 1998, straw bale barriers were installed at former SWMU 16-026(h2) to minimize potential contaminant migration from the site. In 2000, additional BMPs were installed in the form of permanent seeding, mulching, and straw wattles.
16-029(f)	In Progress	SWMU 16-029(f) is an inactive HE sump associated with a rest house (structure 16-345). Structure 16-345 serves as an HE storage facility for Building 16-340. It has a single sump and associated drainlines. The sump was installed in the early 1950s and modified in 1966 to improve its effectiveness and to reduce HE handling. It is a rectangular tank with a removable 0.25-in.-thick aluminum lid. The sump is 12 ft long x 4 ft wide x 5 ft high (outside dimensions), and the walls and bottom are 8-in.-thick steel-reinforced concrete. The sump operated to remove suspended solids from process water before discharge to the outfall. HE fines (scrap) were collected in a cloth filter bag

		secured inside a metal filter basket. The baskets and filter bags were periodically collected and cleaned at the basket-washing facility (Building 16-390) located at the burning ground [SWMU 16-010(h)-99]. HE fines that were too small to be collected in the filter bags settled to the bottom of the sump. To help separate the suspended solids, the water flowed under an aluminum baffle and over a concrete weir before it discharged to the outfall, SWMU 16-026(j2). HE in the bottom of the sump was periodically removed and burned. Water was filtered and tested before it was discharged to the outfall. The sump has received wash-down water generated during cleaning activities. HE was stored in containers in the rest house and is the only known material stored in the rest house. The OU 1082 work plan proposed including SWMU 16-029(f) in a generic TA-16 sump sampling plan. The drainage [SWMU 16-026(j2)] associated with the sump [16-029(f)] was sampled in 1995. Minimal levels of contamination were found.
16-029(g)-99	In Progress	Consolidated SWMU 16-029(g)-99 consists of former SWMUs 16-021(a), 16-028(e), and 16-029(g). The consolidated SWMU includes the former location of an HE sump [former SWMU 16-029(g)], drainline, and outfall [former SWMU 16-021(a)] associated with a materials-testing laboratory (Building 16-450). Building 16-450 was constructed in 1953 to house electroplating operations, although those plans were later revised. The building may have been used as a chemical engineering laboratory and a paint shop, and more recently the building functioned as a materials-testing laboratory. The sump received wash-down water from floor trenches and discharged to NPDES-permitted Outfall 04A091, which was removed from LANL's NPDES permit effective September 19, 1997. The outfall discharged to Water Canyon. Discharges may have included metals, cyanide, acids, paints, solvents, and oils. The sump was removed by another LANL group in 1997. Suspect contaminants at the outfall were identified as HE, inorganic chemicals, and organic chemicals. Former SWMU 16-028(e) is potentially contaminated soil associated with the outfall. The ER Project conducted an RFI at former SWMU 16-021(a) in 1997 to confirm the location of the outfall and to determine if a release had occurred from the drainline, resulting in contamination. The location of the outfall was confirmed by the presence of broken pieces of VCP. Two sample holes were dug: one at the mouth of the outfall and one 5 ft downgradient from the outfall. Two samples were taken from each hole. In all, five laboratory samples (including a collocated QA/QC sample) were collected from the two locations. Samples were field-screened for organic chemicals, and all samples screened positive. Samples sent to the fixed laboratory were analyzed for organic and inorganic chemicals. Low concentrations of benzoic acid, p-isopropyltoluene, and trichloroethene were detected. Also, arsenic, copper, mercury, and zinc were detected. Because of the very low levels of compounds found during analysis, the RFI report recommended former SWMU 16-021(a) for NFA. The ER Project performed an institutional interim measure at former SWMU 16-029(g) in 1997. In association with construction required for a project located at a process building (Building 16-450), a LANL group, ESA-TSE, removed the sump that was former SWMU 16-029(g), and the ER Project sampled the soil around and below the sump. In 2000, the site was permanently seeded and mulched, and straw wattles were installed as a BMP. Former SWMU 16-028(e)was recommended for NFA in Addendum 2 of the OU 1082 work plan because it was addressed under former SWMU 16-029(g) in the 1993 OU 1082 work plan.
16-029(h)-99	In Progress	Consolidated SWMU 16-029(h)-99 consists of former SWMU 16-029(h) and former AOC 16-003(p). Former AOC 16-003(p) is an inactive HE sump, and former SWMU 16-029(h) is the associated drainline and outfall from Building 16-478. The sump measures 15 ft long x 5 ft wide x 4 ft deep. Building 16-478 is U-shaped and consists of a 15-ft x 17-ft x 10-ft machining room, a 12-ft-long x 16-ft-wide x 8-ft-high utility room, and a 34-

		ft-long x 13-ft-wide x 6.5-ft-high control room. The building was constructed in 1944, with additions in 1949. The sump and outfall are plugged. The outfall flowed into Cañon de Valle. Building 16-478 is a battleship bunker on the eastern end of TA-16 in an area formerly known as P-Site. P-Site was built to study implosions using x-rays and later was used to study initiators. Because of its remote location, P-Site also was used to machine experimental explosives. After a 1959 HE machining accident at Building 16-260 [consolidated SWMU 16-021(c)-99], Building 16-478 was used for remote HE-machining tests, specifically high-speed machining tests on experimental HE compounds for characterization purposes. The laminates were machined at Building 16-478 because their toxicity, radioactivity, and pyrophoric nature required a remote location. Such tests were performed approximately 15 times per year in the 1970s and 1980s. The sump is perpendicular to the south wall of the building. Two drainlines may be present. One drainline exits the southeast corner of the sump and was plugged in July 1987. It runs 80 ft east of the sump, where the 6-in. VCP daylights on the canyon rim. The other drain was reportedly a French drain that may have existed until the late 1960s. The drainline was believed to be an 8-in. cast-iron soil pipe connected to an 8-in. VCP. The drain was believed to extend about 125 ft to the south of Building 16-478 and to intersect an off-site drainage channel. Suspect contaminants at both former SWMUs are HE and uranium chips. When Addendum 2 of the OU 1082 work plan was written, Building 16-478 was used rarely and was scheduled for decommissioning. The building had been deactivated by turning off water and power to the structure. A limited sampling program conducted from 1970 to 1986 indicated potential HE contamination at the outfall. Addendum 2 of the OU 1082 work plan proposed investigating the former SWMU and AOC in this consolidated unit to locate each drainline, determine its terminus, and sample the lines and termini. In addition, the work plan proposed sampling to determine the potential extent of contamination from historical releases.
16-029(h2)-99	In Progress	Consolidated SWMU 16-029(h2)-99 consists of potential soil contamination at former SWMUs 16-025(d), 16-025(g), 16-025(h), 16-025(i), 16-025(j), and 16-029(h2), 16-029(m), 16-029(n), 16-029(o), and 16-029(p). The consolidated SWMU includes the footprints of former HE-machining buildings (Buildings 16-95, -96, -97, and –98), including their sumps and drainlines, at the GMX-3 area. Operations within the GMX-3 area were devoted to developing techniques to produce HE lenses, the explosives components of a nuclear weapon, with high chemical purity and with accurate shapes. The HE-machining buildings in this consolidated SWMU are respectively known as "West," "North," "East," and "South," and they were located east of the 30s Line. They were of wood-frame construction on a concrete slab. Each building was 20 ft x 12 ft with a 20-ft x 6-ft porch and was equipped with garbage cans to collect HE pieces for disposal at the burning ground. Former SWMU 16-025(d) is former Building 16-94, the footprint of the decommissioned equipment control building, which sat in the center of the west-north-east-south configuration. Wooden-walled earthen barricades separated the other buildings from Building 16-94. The buildings were all built in 1948 and closed in 1959. Intentional burning in 1960 destroyed the buildings. Explosive residues were removed to TA-54, and noncombustibles were disposed of at MDA P (SWMU 16-018). The sumps and drainlines were removed in 1967. Former SWMU 16-025(d) is the footprint of a decommissioned equipment control building (former Building 16-94). The 30-ft-square building with a 10-ft-square extension was almost identical in structure and removed at the same time as the other structures in this consolidated SWMU. The former building had no sump or plumbing. Former SWMU 16-025(g) is the footprint of an HE-machining building (former Building 16-95). It was the western building in the consolidated SWMU configuration. Former SWMU 16-025(h) is the footprint of an HE-machining building (former Building 16-96). Building 16-96 was the northern building in the consolidated SWMU configuration. The building was used for HE machining until Building 16-260, another machining building, was completed in the early 1950s.

		Former SWMU 16-025(i) is the footprint of an HE-machining building (former Building 16-97), the eastern building in the consolidated SWMU configuration. Former SWMU 16-025(j) is the footprint of an HE-machining building (former Building 16-98). Building 16-98 was the southern building in the consolidated SWMU configuration and stored containers for disposal of pieces of HE at the burning ground. The building was decommissioned as a machining building and converted to a coffee and smoking room. Former SWMU 16-029(m) is the footprint of the sump, drainline, and outfall that served Building 16-95. Former SWMU 16-029(n) is the footprint of the sump, drainline, and outfall that served Building 16-96. Former SWMU 16-029(o) is the footprint of the sump, drainline, and outfall that served Building 16-97. Former SWMU 16-029(p) is the footprint of the sump, drainline, and outfall that served Building 16-98. Former SWMU 16-029(h2) is the footprint of the drainage system that connected many of the drainlines described above. A drainline flowed from the Building 16-98 sump to the sump for Building 16-97, then to the sump for Building 16-96, and finally to a manhole (structure 16-801). A second drainline exited the sump for Building 16-95 and flowed into the manhole (structure 16-801) and trended north beneath the 90s Line. The drainlines eventually discharged north of the site. Suspect contaminants are HE, inorganic chemicals, and organic chemicals. The ER Project conducted an RFI at former SWMU 16-025(d) in 1997. Eight surface and near-surface soil samples were screened for HE and radiation from four locations in the building footprint. One sample screened positive for HE, and all samples contained only background radiation activity. The sample with the highest concentration of HE was submitted for laboratory analysis of inorganic chemicals, organic chemicals, and HE. No elevated contaminant concentrations were detected. The RFI report recommended NFA at former SWMU 16-025(d) because contamination is not present at levels that present an unacceptable potential risk to human health. The ER Project conducted an RFI at former SWMU 16-025(g) in 1997. Twelve surface and near-surface soil samples were screened for HE and radioactivity from six locations in and adjacent to the building footprint. One sample screened positive for HE, and all samples contained only background radiation activity. Three samples, including the sample that screened positive for HE, were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and HE. Copper was detected at slightly above BV. The RFI report recommended NFA at former SWMU 16-025(g) because contamination is not present at levels that present an unacceptable potential risk to human health. The ER Project conducted an RFI at former SWMU 16-025(h) in 1997. Eleven surface and near-surface soil samples were screened from six locations in and adjacent to the building footprint. One sample screened positive for HE, and all samples contained only background radiation activity. Three samples, including the sample that screened positive for HE, were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and HE. Lead and zinc were detected above BVs. Ten PAH compounds were detected in two samples; however, the levels were less than PRGs for industrial soils. Knowledge of operations suggests that PAHs were not used in processes at Building 16-96. The PAHs that were detected are frequently associated with asphalt and industrial operations; field notes from the RFI indicate that buried asphalt was present at this site and may have been in the collected samples. The RFI report recommended NFA at former SWMU 16-025(h) because contamination is not present at levels that present an unacceptable potential risk to human health. Addendum 1 of the OU 1082 work plan proposed sampling at former SWMU 16-025(i) to detect surface HE contamination.

		The ER Project conducted an RFI at former SWMU 16-025(j) in 1997. Ten surface and near-surface soil samples were screened for HE and radiation from five locations in the building footprint. All samples screened negative for HE and contained background radioactivity. Three samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and HE. Lead and zinc were detected above background values. The RFI report recommended NFA at former SWMU 16-025(j) because contamination is not present at levels that present an unacceptable potential risk to human health. Addendum 1 of the OU 1082 work plan and the VCM plan proposed sampling the sumps and the soils within the boundary of former SWMU 16-029(h2) to locate residual HE in the subsurface soil.
16-029(j)-99	In Progress	Consolidated SWMU 16-029(j)-99 consists of former SWMUs 16-026(k2) and 16-029(j). The former SWMUs are areas of potentially contaminated soil associated with outfalls from inactive sumps and drainlines that serviced Bay 25 at Building 16-260, an HE-machining building located in the northeast quadrant of historical S-Site. S-Site was used for HE processing from 1944 to the early 1950s. In a 1971 sampling effort, barium contamination was found 200 ft northeast of Building 16-260. Suspect contaminants at these former SWMUs are HE, organic chemicals, and inorganic chemicals. Former SWMU 16-026(k2) was an outfall that received wash-down water contaminated with HE from a floor drain and associated drainline in the hallway between the machining room in Bay 25 and the control room for Bay 25 in the southern portion of Building 16-260. The floor drain is located directly below a water hose that is used to wash down the bays. No other drains are located near bays in Building 16-260. The drain has not been plugged. The drainline, made of 4-in. VCP, daylights in a drainage ditch about 15 ft south of Building 16-260. The drainage ditch is connected by two culverts to the drainage ditches on the north side of a walkway (structure 16-271) and to the drainage ditch on the east side of the road. The ditches drain rainwater away from Building 16-260, but the drainage ditch is heavily silted and the corrugated metal culvert is barely visible. Former SWMU 16-029(j) was an outfall that received wash-down water from cleaning activities in the control cubicle of machining Bay 25. The wash-down water was discharged from a concrete sump that was added to Building 16-260 in 1961. The sump measured 4 cubic feet and contained a 1-cubic-foot filter basket for collecting HE. The drain from the sump is a 2-in. cast-iron pipe. The drainline extends about 10 ft south from Building 16-260 and daylights into a grassy ditch 15 ft south of Building 16-260, the same ditch into which the drainline from former SWMU 16-026(k2) discharges. Use of the sump was discontinued in 1970. Although the drainline is not plugged, the cubicle is no longer used for HE patching operations. Addendum 2 of the OU 1082 work plan proposed sampling at these former SWMUs to detect potential HE contamination.
16-029(q)-99	In Progress	Consolidated SWMU 16-029(q)-99 consists of former SWMUs 16-017(f)-99, 16-029(q), and AOC C-16-064. The consolidated unit was part of the 90s Line. Operations in the buildings at this site initially were part of HE-processing operations in the post-World War II era S-Site complex that involved large quantities of HE. Former SWMU 16-017(f)-99 is a former HE-machining building (Building 16-99). The 892-sq-ft building was made of wood on a concrete slab and was surrounded on three sides by an earthen berm that was packed against steel pilings. The building was completed in 1948, and riser-cutting activities were at maximum levels until mid-1951 when the modern HE-machining building (Building 16-260) was finished. Sometime during the late 1950s or early 1960s, Building 16-99 was converted to a storage facility. The building was taken out of service by 1991 and removed in 1996. Former SWMU 16-029(q) consists of the location of an HE sump, drainlines, and an outfall associated with former Building 16-99. The sump was approximately 15 ft long x

		5 ft wide x 5 ft deep. The drainlines were buried VCP leading from the sumps to the road, to depressions next to the road where the pipes daylighted, and to an open-air drainage channel. In the mid- to late 1960s, the sump was filled with gravel. Building 16-99, the sump, drainlines, and berms around Building 16-99 were removed during D&D operations in 1996. Former AOC C-16-064 is the former location of a drum storage platform 50 ft southwest of a former HE-machining building (Building 16-99). The platform (structure 16-183) was built in April 1945. It was an 8-ft-square wooden structure elevated a few feet above ground surface on steel legs. The platform was used to store containers of HE scrap from the riser-cutting in Building 16-99. Structure 16-183 was decommissioned and flashed at the burning ground in 1968. In April 1996, following removal of surface and subsurface structures and contaminated soils within 2 ft of the sumps and drainlines by D&D (using the HE spot test to guide soil removal), the ER Project field-screened 35 samples within the building and drainage area footprint associated with former SWMU 16-029(q). Six samples were lateral bounding and six were vertical bounding. All samples were field-screened for HE, inorganic chemicals, organic chemicals, and radionuclides. Seven samples were submitted for laboratory analysis. HE and lead were detected at elevated levels, and the ER Project conducted a VCA to excavate contaminated soil. After the soil was excavated, eight confirmation samples were collected. Samples were analyzed for HE and organic chemicals. One sample was also tested for chromium(VI). Confirmation sampling results indicated that the VCA was successful. After the confirmation sampling analysis results were received, trenches from the excavated drainlines and sumps and the cleanup sites were backfilled with clean soil, compacted, and contoured to blend with the surrounding topography. The area was reseeded with native grasses. The VCA report proposed NFA for former SWMU 16-029(q) because the site has been remediated in accordance with applicable state and federal regulations. The ER Project conducted a VCA at former AOC C-16-064 in August 1996. Eight field-screening samples were taken and screened for RDX/TNT, HE, organic chemicals, and radionuclides. Because elevated levels of HE were detected, two samples were taken for laboratory analysis. Those samples were analyzed for inorganic chemicals, organic chemicals, and HE. RDX was found at elevated levels, and the contaminated soil was excavated. Two confirmation samples were taken following the VCA. Samples were analyzed for inorganic chemicals, organic chemicals, and HE. Analysis indicated that the VCA was successful. The former AOC was backfilled with clean soil, compacted, and contoured to blend with surrounding topography. The area was reseeded with native grasses. The VCA report proposed NFA for former AOC C-16-064 because the site has been remediated in accordance with applicable state and federal regulations.
16-029(v)-99	In Progress	Consolidated SWMU 16-029(v)-99 consists of former SWMUs 16-025(a2), 16-025(b2), 16-029(d2), 16-029(e2), 16-029(v), and 16-034(o) and former AOC 16-015(d). The consolidated SWMU encompasses building footprints of former HE-processing buildings, sumps, and drainlines associated with the GMX-2 HE-processing buildings. The former structures are related to and located along or in close proximity to the GMX-2 HE-processing buildings. The structures in this consolidated SWMU were constructed in 1944 primarily for experimental HE research and development activities. No production-scale HE volumes were processed in this area. The GMX-2 area ceased to be used as an active site in the early 1950s. The structures were determined to be contaminated with HE before burning in 1960. Residual debris from burning and the remaining subsurface structures were cleaned up in 1966. Suspect contaminants at this consolidated SWMU are HE, inorganic chemicals, and organic chemicals. Former SWMU 16-034(o) is an area of potentially contaminated soil associated with the former location of an experimental laboratory used to determine the properties of HE (Building 16-49). The building was L-shaped, and the dimensions of the two wings of the building were 30 ft x 33 ft x 12 ft high and 40 ft x 20 ft x 12 ft high. It was of wooden-frame construction with a concrete floor. A wide range of solvents was used in the

		experiments. The facility was cleaned each day, and wash-down water, including solvents and HE, was discharged to the sump. Former SWMU 16-029(v) is an area of potentially contaminated soil associated with the former location of the sump, drainline, and outfall that served former Building 16-49. Lead-lined troughs were located along laboratory benches that drained into the sump. The sump was located southeast of the building, and the drainline ran along the south and east sides of the building to the sump. The sump discharged to the main GMX-2 drainage, which was located east of the southern GMX-2 area. A second drainline, with no sump, exited the building from the northeast corner. According to Addendum 1 of the OU 1082 work plan, the second drainline may have served a lavatory. Former SWMU 16-025(a2) is an area of potentially contaminated soil associated with the former location of an experimental HE-casting building (Building 16-50). The building had two rooms that were separated by an earthen bunker; each room was 21 ft x 13 ft x 9 ft high. Building 16-50 was of wooden-frame construction with a concrete floor and had an earthen barricade on the west, north, and south sides. Former SWMU 16-029(d2) is an area of potentially contaminated soil associated with the former location of two HE sumps, drainlines, and outfalls that served former Building 16-50. The sumps were located approximately 75 ft southeast of the building. The facility was routinely cleaned using high-pressure steam cleaning. Wash water was discharged to the sumps. Drainlines from the sump discharged to the main drainage that was east of the GMX-2 area. Former AOC 16-015(d) is an area of potentially contaminated soil associated with the former location of a 7-cubic-foot decommissioned HE steam-cleaning building (Building 16-51) that was located about 100 ft east of Building 16-49. It was made of wooden-frame construction on a concrete foundation. Former SWMU 16-025(b2) is an area of potentially contaminated soil associated with the former location of an experimental casting facility (Building 16-52). The building had three sections that measured 15 ft square x 9 ft high, 11 ft x 15 ft x 9 ft high, and 23 ft x 15 ft x 9 ft high. The building was made of wooden-frame construction with a concrete floor and had a reinforced concrete divider in its southern portion. The southern portion of the building was separated from the rest of the structure by an earthen barricade. The entire building had an earthen barricade on the west, north, and south sides. Former SWMU 16-029(e2) is an area of potentially contaminated soil associated with the former location of three sumps, drainlines, and outfalls that served former Building 16-52. The sumps were located about 75 ft southeast of the building. Drainlines from the sumps discharged to the main drainage east of the GMX-2 area. Addendum 1 of the OU 1082 work plan proposed sampling at former SWMU 16-025(a) and former SWMU 16-029(d2) to detect surface and subsurface HE contamination, respectively. The ER Project conducted an RFI at former SWMU 16-025(a2) in 1997. Minimal contamination was found. Addendum 1 of the OU 1082 work plan proposed sampling at former SWMU 16-025(b2) and former SWMU 16-029(e2) to detect surface and subsurface HE contamination, respectively. The ER Project conducted an RFI at former SWMU 16-025(b2) in 1997. Twelve surface and near-surface samples were screened for HE and radiation from the door locations, building center, and quadrants of the former building. Two samples were submitted for laboratory analysis based on positive HE screening results. The samples were analyzed for inorganic chemicals, organic chemicals, and HE. No elevated chemical concentrations were found, and the RFI report recommended NFA at former SWMU 16-025(b2) because contamination is not present

		at this site at levels that present a potential human health risk. The work plan proposed sampling at former SWMU 16-034(o) and former SWMU 16-029(v) to detect surface and subsurface HE contamination, respectively. Addendum 1 of the OU 1082 work plan proposed sampling at former AOC 16-015(d) to detect surface HE contamination. The ER Project conducted an RFI at former AOC 16-015(d) in 1997. Minimal contamination was found.
16-029(x)-99	In Progress	Consolidated SWMU 16-029(x)-99 consists of former SWMUs 16-006(g), 16-017(v)-99, 16-025(x), 16-029(w), 16-029(x), and 16-031(c). The consolidated SWMU is associated with former Building 16-515, an HE-processing building at V-Site (originally TA-25), and former SWMUs associated with a former electroplating laboratory (Building 16-100). The Building 16-100 sump drained to the sump system for Building 16-515, which was located at V-Site; hence the Building 16-100 sump is considered with the V-Site SWMUs. V-Site was built in 1944 to conduct tests involving handling, loading, shake-testing, and cold-testing mockups of the atomic bomb. V-Site was altered in 1945 to allow process work on explosive charges. TA-25 was absorbed into TA-16 at an unknown date. All active work at V-Site ceased by 1980. Structures at V-Site include an assembly bay, laboratory buildings, an equipment building, and a warehouse. All but two buildings at V-Site, Building 16-516, a high-bay assembly building, and Building 16-517, an equipment building (see consolidated SWMU 16-013-99), were destroyed in the May 2000 Cerro Grande fire. All former SWMUs in this consolidated unit were exposed to surface fires. Former SWMU 16-017(v)-99 is potentially contaminated soil in the footprint of a former HE-processing building (Building 16-515) built in 1944 as part of TA-25. It was built as a warehouse but also housed a shop and a small office. The former building was remodeled in 1945 into a laboratory, inspection room, and repair area for HE parts. The laboratory had an x-ray machine and a darkroom. Parts of the walls near the x-ray machine were lead covered. The inspection and repair room floors were fitted on three sides with lead-lined troughs leading outside to the trough under the porch. The troughs were used to capture HE-bearing wastes from the casting room. Lead lining was used in the early days of TA-16 because lead does not react with TNT, the principal cast explosive used. HE residues within the building were washed out, and the wash water was directed into the troughs. The floor had a one-percent slope that drained effluent toward the troughs. Lead was removed from the troughs in 1950. HE casting occurred in the eastern end of the former building during the 1950s and 1960s. In 1963, the laboratory area was remodeled to include a temperature-cycling chamber. The building later was used as a warehouse. Suspect contaminants are photo-processing chemicals, metals associated with plating operations and other World War II-era V-Site operations, organic chemicals, HE, and uranium-238. Former SWMU 16-006(g) is a decommissioned septic tank (structure 16-527) and its associated drainline and potentially contaminated subsurface soil. The tank was 6 ft long x 10 ft wide x 4.5 ft deep, had a capacity of 1500 gal., and was made of reinforced concrete with a wooden cover. The 4-in. drainline and the tank received effluent from the sinks and toilets in the southeast corner of former Building 16-515. The drainline discharged at a manhole (structure 16-795) to an outfall line that is described in the text of former SWMU 16-029(x). The septic tank, drainline, and the manhole (structure 16-795) were removed from service in 1970. The septic tank and drainline underwent D&D in 1997 and 1998. Former SWMU 16-025(x) is potentially contaminated soil in the former location of an electroplating laboratory (Building 16-100), a 25-ft-long x 33-ft-wide wooden-frame building. Building 16-100 was relocated from TA-03 (where it was designated as structure 03-3) to TA-16 in 1949. It was set on concrete piers and had a utility room and a workroom. The building was located about 400 ft southwest of V-Site. In this building, HE charges were directly electroplated. Building 16-100 underwent D&D and was burned in 1960. Suspect contaminants were HE, inorganic chemicals, and organic

		chemicals. Former SWMU 16-029(w) is potentially contaminated soil associated with the former HE sump, drainline, and outfall in Building 16-100, a former electroplating laboratory. The HE sump was 6 ft long x 14 ft wide and was located on the east side of the laboratory. The sump drained via a 4-in. pipe to a manhole (structure 16-796) and then to the V-Site outfall through former SWMU 16-029(x). The sump and drainline were removed in 1960. Former SWMU 16-029(x) is potentially contaminated soil associated with the inactive HE sump and drainage system from former Buildings 16-515 and 16-100. Effluent flowed from two work areas into a trough to the drainline and on to the sump, which was located west of Building 16-515. Drainlines from the darkroom and utility room also discharged to the sump. The sump measured 4 ft long x 11 ft wide x 4 ft deep and had three chambers. The first chamber was fitted with a wire catch basket. Outflow from the final chamber discharged through a standpipe inlet 2 ft above the bottom of the sump, and then to a 6-in. VCP. During operations, the sump was routinely emptied, and the HE residues were burned at the TA-16 burning grounds. Drains from the darkroom and utility room in Building 16-515 entered the system within 50 ft of the sump. From the sump, a 6-in. VCP led through seven manholes (structures 16-793, 16-794, 16-795, 16-796, 16-797, 16-798, and 16-799). The drainline daylighted about 800 ft southeast of V-Site. Branch lines from a septic tank (structure 16-527) [former SWMU 16-006(g)] and Building 16-100 [former SWMU 16-025(x)] entered the system at structure 16-795, a manhole. The entire system drained into a low, level swale, then into a drainage ditch beside K-Site Road. The sump and drainage system, including manholes, was scheduled to be demolished in 1970, but the demolition was never performed. Past employees reported that the boracitol casting, which was performed in former Building 16-515, caused dead trees in the outfall area of the drain system. A 1970 survey for hazardous material in the drainline found no toxic substances or radioactive contamination, but did find HE contamination. Suspect contaminants are photo-processing chemicals, metals associated with plating operations and other World War II-era V-Site operations, organic chemicals, HE, and uranium-238. Former SWMU 16-031(c) is listed in the 1990 SWMU report as a drainline that received both sanitary and industrial waste from a former HE-processing building (Building 16-515). Engineering drawings indicate that all effluent from this structure entered the drain system described for former SWMU 16-029(x) above. Concurrently with the D&D of the former structures in 1997 and 1998, an ER Project field team conducted a VCM at the site of former SWMU 16-006(g) and former SWMU 16-029(x). The objective of the VCM was to implement an accelerated cleanup in conjunction with D&D of the septic tank and drainline. The cleanup strategy for the site included sampling in appropriate locations to detect the presence of any contamination, to remove contamination if present at levels greater than PRGs, and to bound the spatial extent of contamination by determining decreasing trends in remaining contaminant concentrations. ER Project personnel documented the D&D activities and noted locations of cracks and broken joints along the drainline. These locations were flagged and sampled by the ER Project immediately following D&D in 1997, 1998, and 1999. Nine samples were taken from locations based on noted joints or breaks in the drainline. Samples were screened for HE, radioactivity, inorganic chemicals, and organic chemicals. Elevated levels of HE, silver, barium, chromium, and copper were detected. Radioactivity levels were less than two times background levels. Organic chemicals were not detected. On the basis of screening results, three samples were submitted for laboratory analysis for HE, boron, inorganic chemicals, organic chemicals, and uranium (analyses for boron were run because of the potential use of boracitol, a boron-containing explosive, at former Building 16-515). No inorganic chemicals were carried forward to the screening assessments because none was above LANL BVs and/or they were in the range of LANL BVs. Uranium results were higher than LANL's site-wide uranium BV but were below the proposed TA-16 local BV.

		Upon receipt of analytical results, two additional bounding samples were collected in March 1999 from beneath the former septic tank location and from 5 ft down drainage from that location to define a decreasing trend in contaminant concentration of uranium, HE, and organic chemicals. Samples were sent for laboratory analysis of uranium, HE, boron, and organic chemicals. Organic chemicals that were carried forward to the screening assessments include methylene chloride, HMX, RDX, tetrachloroethene, trichloroethene, and acetone. In the human health screening assessment, contaminants above BVs or EQLs were compared with EPA Region 9 PRGs for industrial workers. All potential contaminants were below PRGs; therefore, a human health risk assessment was not performed. An ecological screening assessment was conducted in which constituents whose maximum concentrations exceeded BVs or were detected below EQLs in samples collected at less than 5-ft depth were identified as potential contaminants. The potential contaminants were compared with a set of ESLs for nine ecological receptors at V-Site. All potential contaminants were eliminated as chemicals of potential ecological concern because a likely receptor exposure pathway could not be identified. On the basis of the human health and ecological screening assessments, the VCM report recommended NFA at SWMU 16-006(g). Low levels of organic contaminants remaining in the soil were bounded; that is, sampling data indicate that maximum concentrations at the source of contamination were removed and remaining contaminant concentrations diminish with distance from the removed source. Addendum 1 of the OU 1082 work plan proposed subsurface sampling at former SWMU 16-029(x) at the sump and at two of the seven manholes to detect suspect contaminants. Data collected for this former SWMU during the V-Site D&D and VCM (1997 to 1998) showed that the cleanup achieved the V-Site cleanup levels but did not achieve full nature and extent of contamination characterization, and did not pass the ecological screening assessment for all constituents; hence, this former SWMU was not included in the VCM report. The ER Project conducted a VCM at former SWMU 16-025(x) in May 1997. Eight samples were collected and screened for HE and inorganic chemicals. RDX, barium, copper, and lead were detected in the screening samples. On the basis of screening results, three samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, HE, and organic chemicals. Elevated concentrations of uranium, lead, and the PAHs anthracene, dibenzofuran, 2-methyl-naphthalene, fluorene, naphthalene, and phenanthrene were detected. None of the detected chemicals was present at a level that posed a human health risk, and the VCM report recommended former SWMU 16-025(x) for NFA. Addendum 1 of the OU 1082 work plan proposed subsurface sampling at former SWMU 16-029(w) to detect residual metals and cyanide.
16-029(y)-99	In Progress	Consolidated SWMU 16-029(y)-99 consists of former SWMUs 16-025(t) and 16-029(y). The consolidated SWMU encompasses the building footprint of a former HE-processing building (Building 16-38), sumps, and drainlines associated with the GMX-2 HE-processing buildings. The former structures are related to and located along or in close proximity to the GMX-2 HE-processing buildings. The structures in GMX-2 were primarily built in the 1940s for experimental HE research and development activities. No production-scale HE volumes were processed in this area. The GMX-2 area ceased to be used as an active site in the early 1950s. Most of the structures in the GMX-2 area were intentionally destroyed by burning in 1960. Residual debris from burning and the remaining subsurface structures were cleaned up in 1966. Former SWMU 16-025(t) is an area of potentially contaminated soil associated with the former location of a decommissioned HE milling, machining, and experimental casting facility (Building 16-38). It was reported that uncommon types of HE, including plumbatol and boracitol, were processed in this building. The rectangular building, built in 1944, was divided into four sections. Dimensions of the four sections were 30 ft x 32 ft x 12 ft high, 10 ft x 24 ft x 9 ft high, 10 ft x 15 ft x 10 ft high, and 10 ft x 15 ft x 12 ft high. A concrete two-bay partition was located in the south corner of the building. The building was of wooden-frame construction with a concrete foundation and a concrete

		floor. In a survey done in the 1950s, the building was determined to be contaminated with HE. It was destroyed by intentional burning in 1960. Former SWMU 16-029(y) is an area of potentially contaminated soil associated with the former location of three sumps, drainlines, and outfalls that served former Building 16-38. Two outlets fed two sumps located on the southeast side of the building. The sumps fed a third sump that was located about 50 ft southeast of former Building 16-38. A drainline from this sump led southeast and daylighted beyond the road to former Building 16-57. According to a former site worker cited in Addendum 1 of the OU 1082 work plan, the sump had a French drain system downstream from the HE sump. More than 700 lb of HE were removed from the sump when it was decommissioned in the 1960s. Addendum 1 of the OU 1082 work plan proposed sampling at former SWMU 16-029(y) to detect residual subsurface HE contamination. Addendum 1 of the OU 1082 work plan proposed sampling at former SWMU 16-025(t) to detect surface HE contamination.
16-029(z)-99	In Progress	Consolidated SWMU 16-029(z)-99 consists of former SWMUs 16-005(c), 16-025(p), 16-025(q), 16-025(r), 16-025(s), 16-025(u), 16-025(v), 16-026(w), 16-029(z), 16-032(a), 16-034(l), 16-034(p) and AOCs 16-011 and 16-023(b). The consolidated SWMU encompasses the footprints of some of the former 40s Line HE-processing buildings and their associated sumps, septic tank, drainlines, and outfall systems; two former trash incinerators; one former equipment building; and a former radium source building. All of the former structures are related to and located along or in close proximity to the 40s Line of HE-processing buildings at GMX-3. Operations at GMX-3 were devoted to developing techniques to produce HE lenses, the explosives component of a nuclear weapon, with high chemical purity and with accurate shapes. The 40s Line contained several HE production facilities in a single line of buildings that were connected by enclosed walkways. The GMX-3 area is located in the central portion of the current S-Site complex. The structure footprints in this consolidated SWMU are bounded on the north by the 90s Line [consolidated SWMU 16-008(a)-99], on the east by a northeast-southwest road east of Building 16-27, on the west by the administration area, and on the south by the east-west road separating the GMX-2 and GMX-3 areas. All of the buildings in this consolidated SWMU had floor troughs that discharged to sumps and, except for Building 16-46, these fed a common outfall. Primary drainage in this region is eastward to a north-south ditch that empties into Water Canyon about 0.25 mi south of S-Site. In 1960, most of the 40s Line buildings were decommissioned, destroyed by intentional burning, and removed to the MDA P landfill. Sumps and drainlines were removed, and associated HE-contaminated soil was cleaned up to a residual level of 3 percent HE. All of the decommissioned structures in the 40s Line were surveyed for radiation, HE, and toxic chemicals before being burned. The survey results were negative unless otherwise noted below. Decommissioning of the buildings may have resulted in a layer of soil overlaying contaminated structure footprints. Former SWMU 16-005(c) is a decommissioned 8-ft x 6-ft x 4-ft-deep septic tank (structure 16-176) and its drainlines that served lavatories in former Building 16-41 [see former SWMU 16-034(p) described below]. Building 16-41 contained an office and two lavatories but was physically separated from the HE-processing buildings of the 40s Line that it served. The tank was made of reinforced concrete and had a wooden cover. The tank discharged to a 4-in. VCP line leading to a leach field. Former AOC 16-011 is a former incinerator (structure 16-412). The incinerator was placed over the utility basement at former Building former 16-41 in 1960 when the aboveground structure was removed, and the incinerator began operations in 1962. The utility basement is former SWMU 16-034(p), described below. The site at former AOC 16-011 included a steel incinerator cage, metal debris, ash, and soil. Paper and cloth suspected of being HE contaminated were burned in the incinerator. Suspect contaminants were HE, PAHs, inorganic chemicals, and ash debris.

		Former AOC 16-023(b) is potentially contaminated soil associated with a decommissioned incinerator (structure 16-403). The incinerator burned paper and cloth that may have been HE contaminated. The incinerator was built in 1961 and was located in the partially enclosed portion of the F-shaped concrete blast shield that was originally part of former Building 16-43. The incinerator was used for approximately one year, at which time another incinerator (structure 16-412, former SWMU 16-011) was built as its replacement. The old incinerator (structure 16-403) was removed in 1966 or 1967. Suspect contaminants are PAHs, HE, and radionuclides. Former SWMU 16-025(p) is potentially contaminated surface and subsurface soil associated with a HE-processing building (former Building 16-44). Building 16-44 was used to physically inspect completed charges and sift raw HE materials, removing metallic contaminants. It measured 20 ft x 60 ft and had a wooden floor. The floor was built on pillars and had troughs along the longer walls, which discharged to a sump [former SWMU 16-029(z) described below]. The sumps discharged to a common outfall. Building 16-44 was designated as HE contaminated in a 1959 survey. Former SWMU 16-025(q) is potentially contaminated surface and subsurface soil associated with a former HE-processing building (Building 16-45). Building 16-45 was used for x-ray examination of HE lenses. It was a 20-ft x 60-ft wooden building with wooden floors on pillars. Building 16-45 had floor troughs along the longer walls, and those troughs discharged to a sump [former SWMU 16-029(z) described below]. The sump discharged to a common outfall. Building 16-45 was designated as HE contaminated in a 1959 survey. Former SWMU 16-025(r) is potentially contaminated surface and subsurface soil associated with the footprints of a former rest house (structure 16-46) and the associated sump. Structure 16-46 was used to temporarily store HE products awaiting radiography in Building 16-45. Structure 16-46 was a 20-ft x 60-ft wooden rest house with wooden floors on pillars and had floor troughs along the longer walls, which discharged to a sump. The rest house was offset from the rest of the 40s Line and had an outfall that is included within the boundary of former SWMU 16-025(n), which is included in consolidated SWMU 16-034(b)-99. Former SWMU 16-025(s) is potentially contaminated surface soil associated with a former radium source building (Building 16-48). The building measured 20 ft square x 14 ft high and was of wooden-frame construction with concrete floors. The source pit was in the floor. The building was found to be contaminated with HE and uranium-238 in the late 1950s. Former SWMU 16-025(u) is potentially contaminated soil associated with the footprint of an HE-processing building (former Building 16-42). Building 16-42 housed HE casting operations and had a partial basement for utility service. In 1949, a control room was added on the east side and a new casting kettle was added on the west side. Building 16-42 had a concrete floor on pillars and measured 40 ft x 90 ft. The building had a lead-lined trough across three sides of the structure. The troughs discharged to a sump, which discharged to a common outfall. Building 16-42 was designated as HE contaminated in a 1959 survey. Former SWMU 16-025(v) is potentially contaminated soil associated with an HE-processing building (former Building 16-43). The building housed experimental HE casting and/or machining operations. The building was 20 ft x 60 ft with a wooden floor that was built on pillars. The building had a cement partition in its north corner that was used as a blast shield for the building's machine tools. The building had a lead-lined trough across three sides of the structure. The troughs discharged to a sump, which discharged to a common outfall. Building 16-43 was designated as HE contaminated in a 1959 survey. Former SWMU 16-026(w) consists of a drainline and outfall from the darkroom at

		former Building 16-45, a photo-processing laboratory. The drainline exited the building from its eastern wall. The location of the discharge point is uncertain. Building 16-45 was designated as HE contaminated in a 1959 survey. Former SWMU 16-029(z) is potentially contaminated soil associated with the decommissioned sumps and drainlines exiting to the decommissioned secondary sumps that were located in former HE-Processing Buildings 16-42, 16-43, 16-44, and 16-45. This represents the principal HE drainage system for the 40s Line. [The secondary sumps are addressed under former SWMU 16-032(a) in this consolidated SWMU.] Suspect contaminants are HE, inorganic chemicals, and organic chemicals. Former SWMU 16-032(a) is potentially contaminated soil associated with the secondary sumps for former Buildings 16-42, 16-43, 16-44, and 16-45 and the common drainline linking them. The sumps are located about 60 ft from the building footprints. Former SWMU 16-034(l) is the footprint of former equipment and control building (Building 16-47). Building 16-47 was built in 1945 of wooden-frame construction with a concrete foundation and floor. It was 11 ft square x 8.5 ft high and was located about 10 ft south of former Building 16-46. The structure may have stored HE or HE-contaminated materials. Former SWMU 16-034(p) was the foundation of former Building 16-41, a building that measured 17 ft x 30 ft x 14 ft high. Building 16-41 provided lavatories and office space on its ground floor. Utilities in the basement served other buildings in the area. Building 16-41 also served as a laboratory and may have been used to store compressors. In 1962, the building was removed, and a trash incinerator (former AOC 16-011 described above in this consolidated SWMU) was built in the basement. Former SWMU 16-034(p) includes the former basement foundation and associated soil. The incinerator was removed during a 1995 VCA. Addendum 1 of the OU 1082 work plan proposed subsurface sampling at former SWMUs 16-005(c), 16-025(r), 16-025(u), and 16-025(v) to determine if HE contamination is present in the surface soils. The ER Project conducted a VCA at former AOC 16-011 in 1995 to dismantle and dispose of the metal incinerator cage and remaining ash and soil debris. Two samples were collected from each of five locations at various depths in the incinerator pit. Samples were screened for HE and radioactivity; the screens were negative. Samples were analyzed for inorganic and organic chemicals. Lead was detected above regulatory action levels in the incinerator contents, which were disposed of off-site as D008 hazardous waste. Confirmation samples were not collected because all the soil, ash, and metal debris were removed, and the basement floor was intact. The VCA report requested DOE concurrence for NFA at former AOC 16-011. Addendum 1 of the OU 1082 work plan proposed sampling to detect surface HE contamination within the building footprint of former SWMU 16-025(p) and the RFI sampling was completed in 1997. Minimal contamination was found. Addendum 1 of the OU 1082 work plan proposed sampling to detect surface HE contamination within the building footprint, and RFI sampling at former SWMU 16-025(q) was completed in 1997. Minimal contamination was found. The OU 1082 work plan proposed surface soil screening to detect HE and sampling to detect residual radionuclides. RFI sampling at former SWMU 16-025(s) was completed in 1997. Minimal contamination was found. Addendum 1 of the OU 1082 work plan proposed sampling to detect residual silver in the subsurface in the outfall and drainage associated with former SWMU 16-026(w).

		Addendum 1 of the OU 1082 work plan proposed sampling the primary sumps and adjacent drainlines to detect residual subsurface HE within the boundary of former SWMU 16-029(z). Addendum 1 of the OU 1082 work plan proposed sampling the secondary sumps and adjacent drainlines to detect residual subsurface HE contamination at former SWMU 16-032(a). The ER Project conducted an RFI at former SWMU 16-034(l) in 1997 to determine if contaminants were present in soils at levels of concern. Eight surface and near-surface soil samples from quadrants of the former building were collected and screened for HE and beta/gamma radioactivity. All samples screened positive for HE and showed only background radioactivity levels. The sample that contained the highest concentrations of TNT and RDX per the D-Tech kit was submitted for laboratory analysis of inorganic chemicals, organic chemicals, and HE. No contamination was detected above SALs. The RFI report recommended NFA at former SWMU 16-034(l) because contamination is not present at levels that present a potential human health risk. The ER Project conducted a VCM at former SWMU 16-034(p) in 1998 and 1999 to investigate the former SWMU and to implement an accelerated cleanup in conjunction with D&D activities. Suspect contaminants were organic chemicals, inorganic chemicals (specifically barium and silver), and HE. D&D activities were conducted by ER Project personnel and consisted of removing and disposing of the concrete foundation of the former structure. Because of the anticipated difficulty of removing the foundation footings, which appeared to have been poured into trenches within the tuff, the field team determined that the footings would remain in place. Reinforcing metal and other metal items encountered during removal were placed in a roll-off container for recycling. Approximately 20 cubic yards of asphalt paving were removed. The asphalt was screened for HE and radioactivity, and three asphalt samples were submitted for waste characterization analysis. An exploratory trench was dug perpendicular to the foundation to investigate the extent of fill material. The team determined that the fill material had been used as part of the construction of the basement structure. A total of 22 samples were collected from 15 locations in a grid system from beneath the foundation of the former building and incinerator and along the entire extent of the building footprint. The samples underwent in situ and XRF screening. Thirteen of the samples were further screened for HE. Ten samples were further screened for PAHs. A total of 17 laboratory samples (excluding waste characterization samples) were collected and submitted for off-site laboratory analysis. Fourteen of the samples were selected from the screening samples based on screening results. Three of the laboratory samples were collected as vertical- and lateral-bounding samples on the basis of analytical results from the initial 13 laboratory samples. The samples were analyzed for HE, inorganic chemicals, organic chemicals, cyanide, and radionuclides. Samples collected in fill material immediately below the incinerator floor contained inorganic chemicals slightly above BVs: arsenic, cobalt, copper, lead, silver, zinc, calcium, barium, cadmium, manganese, mercury, selenium. Of the inorganic chemicals detected above BVs, calcium is not a hazardous constituent. The two bounding samples, which were collected below and beside the original sampling locations, did not contain inorganic chemicals above BVs; thus, all detected inorganic contaminants were bounded. HE and HE-degradation products were not detected in any samples. One organic chemical, pyrene, was detected but subsequent sampling at that location did not detect the presence of pyrene, thereby effectively bounding the pyrene contamination. No other organic chemicals were detected at former SWMU 16-034(p). In the human health screening assessment, contaminants above BVs or EQLs were compared with EPA Region 9 PRGs for industrial workers. It was determined that all contaminants were below the PRGs except for aluminum and arsenic. The original excavation for the basement floor was filled with select backfill to the ground surface, and the surface was revegetated. Exposure to a human receptor at this depth (10.3 ft to 10.8 ft) is improbable; therefore, a human health risk assessment was not performed. None of the potential contaminants were retained as potential ecological contaminants

		because no complete exposure pathway exists for the ecological receptors at former SWMU 16-034(p). Thus, the VCM report recommended NFA at former SWMU 16-034(p).
16-030(a)	In Progress	SWMU 16-030(a) is potentially contaminated soil associated with the outfall from a chemical storage building (Building 16-344). Building 16-344 was built in 1951 and is located in the southeast corner of P-Site. P-Site (historic TA-13) was decommissioned and incorporated into TA-16 in the 1950s. P-Site was constructed in 1944 to conduct flash x-ray studies of the implosion of HE test devices. Building 16-344 has three 5-ft-long x 2-ft-wide cement drain troughs that project through the south wall to a grassy, semicircular bermed area about 45 ft in diameter. The building consists of two rooms with floors that are sloped toward the troughs to direct floor drainage. The east room has container rack storage for solvents. The west room stores containerized inorganic chemicals, plastics, and inert materials such as barium nitrate. Secondary containment was installed in 1991 to block the cement troughs and to restrict chemical spills. Suspect contaminants at the outfall are inorganic and organic chemicals. Addendum 2 of the OU 1082 work plan proposed sampling at the outfall for inorganic and organic chemicals.
16-030(b)	Pending	SWMU 16-030(b) is an outfall and associated drainline that serves a single floor drain located in the utility room of an HE rest house (structure 16-343). From the late 1940s/early 1950s to the present, this rest house has functioned as a temporary storage area for packaged raw explosives being delivered to HE-processing buildings, for finished HE products ready for transport, or for scrap explosives being removed for disposal. The rest house contains an attached 4-ft by 8-ft utility room equipped with one steam pump and one small compressor, which are used to heat and ventilate the structure. The utility room has a single floor drain, which, until 1992, discharged low volumes of steam condensate through a 4-in. VCP to an outfall located approximately 90 ft from the rest house. Structure 16-343 is no longer used, and steam is no longer pumped to its utility room. This rest house is slated for D&D. Since 1992, the practice at TA-16 has been to collect steam condensate in a 2.5- or 5-gal. bucket placed at the end of the condensate pipe and to allow the condensate to evaporate from the bucket. Before 1992, the outfall received only steam condensate from the heating and ventilating equipment located in the utility room of structure 16-343. The steam condensate was composed of condensed water containing amine, an ammonia derivative commonly added to water to control pH and to prevent corrosion and mineral buildup within piping. The current practice (starting in January 1997) is not to use additives of any kind in the steam that heats the TA-16 buildings. There is no access to the utility room from the area of structure 16-343 used for storing HE components, because each utility room can be accessed only from outside the structure. The floor of the utility room shows rust and mineral stains as typically result from the evaporation of condensed water. From the normal operation and maintenance of the compressor, small amounts of lubricating oil have been known to leak, and some oil staining is visible on the utility room floor. The total capacity of lubricating oil (20-weight) for the compressor is approximately 0.5 quart or less. Employee interviews indicate that since at least 1981, there have been no releases to the environment involving a utility room drain from a rest house. This SWMU was recommended for NFA in the RFI work plan, and there has been no additional investigation at this site.
16-030(c)	Pending	SWMU 16-030(c) is potentially contaminated soil associated with an outfall from an x-ray film-processing laboratory (Building 16-222) located in the center of the radiography area at TA-16. Building 16-222 was built in 1953. The only outfall that could be located in the vicinity of Building 16-222 originates from a roof drain downspout on the northwest side of the building, and four roof drains discharge to the downspout. The outfall associated with the x-ray film laboratory could not be located during a site visit. The rewrite of Chapter 6 of the RFI work plan for OU 1082 recommended NFA at SWMU 16-030(c) because the outfall could not be located.

16-030(e)	Pending	SWMU 16-030(e) is an outfall (and associated drainline) that serves a single floor drain located in the utility room of an HE rest house (structure 16-225). From the late 1940s/early 1950s to the present, this rest house has functioned as a temporary storage area for packaged raw explosives being delivered to HE-processing buildings, for finished HE products ready for transport, or for scrap explosives being removed for disposal. The rest house contains an attached 4-ft by 8-ft utility room equipped with one steam pump and one small compressor, which are used to heat and ventilate the structure. The utility room has a single floor drain, which, until 1992, discharged low volumes of steam condensate through a 4-in. VCP to an outfall located approximately 90 ft from the rest house. Since 1992, the practice at TA-16 has been to collect steam condensate in a 2.5- or 5-gal. bucket placed at the end of the condensate pipe and to allow the condensate to evaporate from the bucket. Before 1992, the outfall received only steam condensate from the heating and ventilating equipment located in the utility room of structure 16-225. The steam condensate was composed of condensed water containing amine, an ammonia derivative commonly added to water to control pH and to prevent corrosion and mineral buildup within piping. The current practice (starting in January 1997) is not to use additives of any kind in the steam used to heat the TA-16 buildings. There is no access to the utility room from the area of structure 16-225 used for storing HE components, because each utility room can be accessed only from outside the structure. The floor of the utility room shows rust and mineral stains as typically result from the evaporation of condensed water. From the normal operation and maintenance of the compressor, small amounts of lubricating oil have been known to leak, and some oil staining is visible on the utility room floor. The total capacity of lubricating oil (20-weight) for the compressor is approximately 0.5 quart or less. Employee interviews indicate that since at least 1981, there have been no releases to the environment involving a utility room drain from a rest house. SWMU 16-030(e) was proposed for NFA in 2001 because no solid or hazardous waste or constituents were ever managed in the utility room of this building.
16-030(f)	Pending	SWMU 16-030(f) is an outfall (and associated drainline) that serves a single floor drain located in the utility room of an HE rest house (structure 16-223). From the late 1940s/early 1950s to 1992, this rest house has functioned as a temporary storage area for packaged raw explosives being delivered to process buildings, for finished HE products ready for transport, or for scrap explosives being removed for disposal. The rest house contains an attached 4-ft by 8-ft utility room equipped with one steam pump and one small compressor, which are used to heat and ventilate the structure. The utility room has a single floor drain, which, until 1992, discharged low volumes of steam condensate through a 4-in. VCP to an outfall located approximately 90 ft from the rest house. Before 1992, the outfall received only steam condensate from the heating and ventilating equipment located in the utility room of structure 16-223. The steam condensate was composed of condensed water containing amine, an ammonia derivative commonly added to water to control pH and to prevent corrosion and mineral buildup within piping. The current practice (starting in January 1997) is not to use additives of any kind in the steam used to heat the buildings at TA-16. There is no access to the utility room from the area of structure 16-223 used for storing HE components, because each utility room can be accessed only from outside the structure. The floor of the utility room shows rust and mineral stains as typically result from the evaporation of condensed water. From the normal operation and maintenance of the compressor, small amounts of lubricating oil have been known to leak, and some oil staining is visible on the utility room floor. The total capacity of lubricating oil (20-weight) for the compressor is approximately 0.5 quart or less. Employee interviews indicate that since at least 1981, there have been no releases to the environment involving a utility room drain from a rest house. Since 1992, structure 16-223 has no longer been used, and steam is no longer pumped to its utility room. This rest house is slated for D&D.

		This SWMU was recommended for NFA in the RFI work plan, and there has been no additional investigation at this site.
16-031(a)	In Progress	SWMU 16-031(a) is potentially contaminated soil below the outfall associated with a decommissioned cooling tower (structure 16-372), which served Building 16-370, a barium nitrate grinding facility and metal-forming shop [consolidated SWMU 16-006(c)-00]. The cooling tower, built in 1953, was made of wood and was located about 125 ft west of Building 16-370 on K-Site Road. The decommissioning date is not known; the cooling tower burned during the Cerro Grande fire in 2000. Chilled water from the cooling tower cycled through pumps and machinery located on the ground floor of Building 16-370. The 6-in. VCP originates from a drain inside the southeast corner of former structure 16-372 and runs approximately 150 ft south to the edge of Water Canyon where it daylights. Suspect contaminants are chromates, given the age and nature of the unit (e.g., cooling tower), although no documentation exists stating that chromates were used. Addendum 2 of the OU 1082 work plan proposed sampling sediment traps between the outfall and the canyon wall to detect chromium contamination at SWMU 16-031(a). One sample was collected at this site in 1998 and submitted to the analytical laboratory for analysis of HE, organic and inorganic chemicals.
16-031(b)	In Progress	SWMU 16-031(b) is potentially contaminated soil associated with the drain from a cooling tower (structure 16-262), which served an HE-machining building (Building 16-260). The cooling tower, built in 1946 at Building 16-42 and relocated to Building 16-260 in 1951, was located about 50 ft north of a walkway (structure 16-269) and 12 ft west of Building 16-260. It was made of wood and sat on a 3-ft-high concrete base. It was removed in 1957. The cooling tower's purpose is not known. Remains of the tower include a pile of rubble and two 2-in. cast-iron pipes that discharge into a drainage ditch. Suspect contaminants are chromates, given the age and nature of the unit (e.g., cooling tower), although no documentation exists stating that chromates were used. Addendum 2 of the OU 1082 work plan proposed sampling to detect chromate contamination at the outfall drainage.
16-031(e)	In Progress	SWMU 16-031(e) is potential soil contamination associated with an outfall at the chlorination station for TA-16 (structure 16-560). It was built in 1952 in Water Canyon and was subsequently moved to its current site on West Jemez Road near the entrance to TA-16. The chlorination station is 11 ft long x 17 ft wide x 9 ft high. A concrete trench and floor drain on the structure's southwest corner discharge to the outfall. The trench is designed to drain leakage from water inlet and outlet lines. The chlorinator adds chlorine to the water as a gas, making any releases to the environment airborne. Water that might leak into the trench would be chlorinated drinking water or pump condensate. The outfall also receives drainage from a beam scale sump used to measure the amount of chlorine gas added to the water. The cast-iron drainline daylights approximately 40 ft southeast in the drainage ditch along West Jemez Road. No known historical releases are associated with structure 16-560. The rewrite of Chapter 6 of the RFI work plan for OU 1082 recommended NFA at SWMU 16-031(e) because no hazardous waste and/or constituents are present at this site now, nor has the site ever been used to manage, generate, treat, store, or dispose of hazardous waste and/or constituents.
16-031(f)	In Progress	SWMU 16-031(f) is soil associated with an outfall from a decommissioned chlorination station (Building 16-21). Former building 16-21 was a wooden building built in 1944. It was 18 ft square and 10 ft high and was located in the old administration area of S-Site, approximately 30 ft southeast of the old cafeteria, Building 16-16. Building 16-21 was stripped of usable equipment in 1953 when the new chlorination station [Building 16-560, SWMU 16-031(e)] came online. Building 16-21 was removed in 1992 to make room for a telephone equipment building (Building 16-1374). The outfall received effluent from a line draining from the southeast corner of Building 16-21. Previously, the 4-in. VCP daylighted 26 ft southwest of former Building 16-21. There is now a parking lot covering the area of the former outfall.

		The rewrite of Chapter 6 of RFI work plan for OU 1082 recommended NFA at SWMU 16-031(f) because no hazardous waste and/or constituents are present at this site now, nor was the site ever used to manage, generate, treat, store, or dispose of hazardous waste and/or constituents.
16-031(g)	Administratively Complete	SWMU 16-031(g) was the site of a cooling tower used to provide non-contact cooling water for casting molds from 1946 to 1960; the cooling tower was removed in 1960. Documentation shows that only tap water was used in the non-contact cooling water. SWMU 16-031(g) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
16-031(h)	In Progress	SWMU 16-031(h) is soil associated with an outfall from a utility room in Building 16-478, a machine shop. The utility room was added to the building in 1950 when the building was modified to be used to test the effects of machining on HE products. The outfall receives effluent from a floor drain and sink in the utility room. Effluent from the floor drain includes wash-down water and discharge from a water-sealed/water-cooled vacuum pump. The drain, which consists of a 4-in. VCP, daylights approximately 30 ft from the building. Interviews with past site workers indicate that the utility room is not contaminated with HE because it was located adjacent to the control room, which employees were careful not to contaminate. In addition, the hot water boiler that was installed in 1949 was natural gas powered, with an automatic pilot and push-button electric ignition. The open flame associated with the natural gas system supports this presumption. The vacuum system was used to hold HE pieces for machining. HE dust and chip production during machining was minimized by using liberal amounts of water, which drained into a sump. A water filter is incorporated into the vacuum line to prevent HE from traveling down the line. The rewrite of Chapter 6 of the RFI work plan for OU 1082 recommended NFA at SWMU 16-031(h) because no hazardous waste and/or constituents are present at the site now, nor has the site been used to manage, generate, treat, store, or dispose of hazardous waste and/or constituents.
16-032(b)	Administratively Complete	
16-032(d)	Administratively Complete	SWMU 16-032(d) is identified as a decommissioned HE sump associated with TA-16-24. As indicated in the SWMU Report (LANL 1990), this SWMU was duplicated as SWMU 16-029(f2). SWMU numbers 16-032(d) and 16-029(f2) were both assigned to this structure. The LANL Environmental Restoration Project opted to retain the designation 16-029(f2) for addressing the sump. The descriptions of both SWMUs as outlined in the SWMU Report indicate verification of the error. SWMU 16-032(d) is appropriate for NFA under Criterion 1 because it is a duplicate of SWMU 16-029(f2).
16-032(e)	Administratively Complete	SWMU 16-032(e) was listed in the 1990 SWMU Report as a decommissioned HE sump, but the designated unit was actually water pump pit TA-16-20. The pit was constructed of reinforced concrete with a double wooden cover and was removed in 1953. A service manhole associated with the pump pit still remains. The pit was associated with TA-16-21, a pump house, and was used to pump water from a tank located on Jemez Road. A 1983 memo indicates that HE may have been associated with TA-16-20, but given its function and its location outside of the HE exclusion area, this does not seem plausible. SWMU 16-032(e) is misidentified in the SWMU Report as a decommissioned HE sump. It is actually a water pump pit that would not have come into contact with HE. SWMU 16-032(e) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
16-033(a)	In Progress	AOC 16-033(a) is a 1000-gal. underground diesel fuel tank that was located east of Building 16-16 in the old S-Site administration area. The tank was rectangular and attached to a larger cylindrical tank. According to the 1990 SWMU report, this tank had a documented release. Before the tank was removed in 1987, it was surveyed for gross alpha, -beta, and -gamma and tritium; no activity was detected. During removal, about 15 cubic yards of contaminated soil were excavated and taken to TA-54 for land farming. The excavation was backfilled with clean soil.

		Addendum 2 of the OU 1082 work plan proposed NFA at AOC 16-033(a) because historical information does not suggest that it presents an unacceptable human health or environmental risk. In addition, hazardous waste was never managed in the tank. Closure of USTs before 1988 consisted of removing obviously contaminated soil and collecting samples for analysis of lead, benzene, toluene, and xylene, with TCLP analysis, before regrading the excavation.
16-033(b)	In Progress	AOC 16-033(b) was a 4000-gal. underground leaded-gasoline tank (structure 16-196) once located next to structure 16-197, a tank on the east side of the TA-16 service station (Building 16-195). Before removal of structure 16-196 in 1987, attempts were made to remove soil contaminated by structure 16-196, but further excavation was impeded by the adjacent tank (structure 16-197) and by the service station. Addendum 2 of the OU 1082 work plan proposed NFA at AOC 16-033(b) because historical information does not suggest that it presents an unacceptable potential risk to human health or the environment. In addition, hazardous waste was never managed in the tank. Closure of USTs before 1988 consisted of removing obviously contaminated soil and collecting samples for analysis of lead, benzene, toluene, and xylene, with TCLP analysis, before regrading the excavation.
16-033(c)	Administratively Complete	
16-033(d)	Administratively Complete	
16-033(e)	In Progress	AOC 16-033(e) consists of two underground fuel tanks, associated fuel lines, and pump base located northwest of former Building 16-10. Building 16-10 was a former warehouse at TA-16 [see consolidated PRS 16-017(i)-99]. The warehouse operated from 1945 to 1998. There is no existing information about the installation, construction, capacity, or removal of the two underground fuel tanks. Despite the preliminary surveys conducted at this site, these tanks have not been accurately located. Suspect contaminants at AOC 16-033(e) are benzene, toluene, ethylbenzene, xylene, and possibly lead. Addendum 2 of the OU 1082 work plan proposed performing geophysical surveys to determine if the tanks remain at the site. If they were removed, the work plan stated that they would be recommended for NFA. If they remain in place, the tanks and associated lines will be removed under LANL's UST program.
16-033(f)	Administratively Complete	
16-033(g)	Administratively Complete	
16-033(h)	Administratively Complete	
16-033(i)	Administratively Complete	
16-033(j)	Administratively Complete	
16-033(k)	In Progress	AOC 16-033(k) is an inactive 200-gal. underground gasoline storage tank located immediately south of a hutment (structure 16-500). The tank is made of steel, was installed in 1952, and served an emergency generator system. It is not known when the tank was removed from service. When NMED was notified about the existence of this tank, which was discovered during construction activities in 1996, the ER Project proposed the tank be pumped of its contents, investigated, and remediated in accordance with regulatory requirements.
16-034(b)-99	In Progress	Consolidated SWMU 16-034(b)-99 consists of former SWMUs 16-005(j), 16-005(m), 16-025(m), 16-025(n), 16-025(o), 16-034(b), 16-034(c), 16-034(d), 16-034(e), and 16-034(f). The consolidated SWMU encompasses an area that was the former location of the T-Site (TA-24) HE-related magazines, hutments, warehouses, shops, laboratories, and septic system. T-Site is located in the northwest part of TA-16, northwest of the S-Site explosives manufacturing complex. TA-24 was used primarily for radiography of

		HE charges. Construction of T-Site structures began in 1944 and continued until the fall of 1950, when activities were transferred to the newly constructed GT-Site located at the old Anchor East site (TA-9). Intentional burning in 1960 destroyed most of the structures, and residual debris and subsurface structures were removed in 1966. All structures were surveyed for radiation, HE, and toxic chemicals before being burned. Unless otherwise noted, the survey results were negative. HE was reported to have been removed to better than 3 percent wt, and radionuclides were cleaned up to background levels. No structures remain on the site, and it has been overgrown with trees. Former SWMU 16-005(j) is potentially contaminated subsurface soil associated with the footprint of a former septic tank (structure 16-504) that served the lavatories and darkrooms in Building 16-490. It was located about 75 ft east of the building and was connected by a 4-in. VCP. Former SWMU 16-005(m) is potentially contaminated subsurface soil adjacent to a decommissioned concrete HE sump, (former structure 16-507). The sump was located north of former Building 16-490 and received effluent from the large room in the central section of the building. The sump drained east of Building 16-490 through a 6-in. VCP and was shown to be contaminated with HE before its removal in 1960. Former SWMU 16-025(m) is potentially contaminated surface soil associated with a former x-ray and gamma-ray facility (Building 16-495) built in 1947. It was a wooden-frame structure with a concrete floor. Building 16-495 was a source building that contained either radium-226 or cobalt-60 gamma sources. The former building had no plumbing or sumps. Before being burned, it was determined that the building was contaminated with HE and uranium-238. Suspect contaminants were inorganic chemicals, organic chemicals, HE, and radionuclides. Former SWMU 16-025(n) is potentially contaminated surface soil associated with a decommissioned source hutment (structure 16-499) that was built in 1945. It was made of wooden-frame construction with a concrete floor and measured 16 ft square x 9 ft high. The concrete floor had a pit in its center that was 2 ft long x 4 ft wide x 2.5 ft deep. The structure had no sumps or plumbing. Radium-226 was used in the hutment to produce gamma rays that could be used to examine the dense baratol charges and uranium-238 parts that were used in the implosion device. By 1950, the hutment contained a cobalt-60 source. Before being burned in 1960, a shelf in structure 16-499 was found to be contaminated with alpha activity. The structure was also found to be contaminated with HE before it was burned. Suspect contaminants were inorganic chemicals, organic chemicals, HE, and radionuclides. Former SWMU 16-025(o) is potentially contaminated surface soil associated with a decommissioned source hutment (structure 16-500) that was identical to former structure 16-499. Structure 16-500 was built in 1947. It was made of wooden-frame construction with a concrete floor and was 16 ft square x 9 ft high. The concrete floor had a pit in its center that was 2 ft long x 4 ft wide x 2.5 ft deep. The former structure had no sumps or plumbing. HE and radioactive contamination was found in structure 16-500 before it was burned, and the concrete floor was sent to the landfill at TA-54. Suspect contaminants were inorganic chemicals, organic chemicals, HE, and radionuclides. Former SWMU 16-034(b) is potentially contaminated surface soil associated with the footprint of a decommissioned primary laboratory and office building (Building 16-490). Former Building 16-490 was a wooden-frame L-shaped building with a transecting internal radiation/explosion barrier. Two drainage troughs exited from the south side of the building. The building housed x-ray radiography of HE, photo processing, electron microscopy, and storage. The building was found to be contaminated with HE before it was burned in 1960.

		Former SWMU 16-034(c) is potentially contaminated surface soil associated with the footprint of a decommissioned warehouse hut (structure 16-491) that was built in 1945. The hut, a 6-ft-wide x 24 ft-long x 9-ft-high wooden-frame structure with a wooden floor, was used to store equipment during World War II. By 1950, structure 16-491 was the site of x-ray exposure experiments on rabbits and rats. The structure had no sumps or plumbing. Before being burned in 1960, structure 16-491 was determined to be contaminated with HE. Suspect contaminants were inorganic chemicals, organic chemicals, and HE. Former SWMU 16-034(d) is potentially contaminated surface soil associated with the footprint of a decommissioned wooden-frame machine shop (Building 16-492) that was built in 1945. It measured 16 ft square x 9 ft high and had a wooden floor. The building had no sumps or plumbing, and operations there ceased in December 1959. The shop was shown to be HE contaminated before being burned in 1960. Suspect contaminants were inorganic chemicals, organic chemicals, and HE. Former SWMU 16-034(e) is potentially contaminated surface soil associated with the footprint of a former storage building (Building 16-496). The building was a 16-ft x 32-ft x 9-ft wooden-frame building with a wooden floor. The building was shown to be contaminated with HE during the pre-burning inspection in 1959. Suspect contaminants were inorganic chemicals, organic chemicals, and HE. Former SWMU 16-034(f) is the footprint of a decommissioned laboratory (Building 16-498) that was built in 1945. It measured 16 ft x 42 ft x 9 ft high and was of wooden-frame construction with wooden floors. Initially, the laboratory was used for storage and as an eating area. By 1950, it was used by draftsmen in the western end, by site photographers in its center, and for plutonium autoradiography experiments in its eastern end. Small-scale photo processing was conducted in the building in addition to plutonium autoradiography experiments. Former Building 16-498 had no sumps, and it was not in use after December 1959. It was found to be contaminated with HE during the survey that preceded demolition by burning in 1960. Suspect contaminants were inorganic chemicals, organic chemicals, HE, and radionuclides. Addendum 1 of the OU 1082 work plan proposed subsurface sampling at former SWMU 16-005(j) to detect the presence of silver associated with the septic system. Addendum 1 of the OU 1082 work plan also proposed subsurface sampling at former SWMU 16-005(m) to detect HE. The ER Project conducted an RFI at former SWMU 16-025(m) in 1997 to determine if contaminants were present in soils at levels of concern. Ten surface and near-surface soil samples were collected from five locations in and adjacent to the building footprint and were screened for HE and radioactivity. HE spot test results indicated that the samples were negative for HE, and radiation screening results indicated the samples contained only background levels of radioactivity. D-Tech kit results indicated that one sample screened positive for HE. That sample and another from the center of the building footprint were submitted for laboratory analysis for inorganic chemicals, organic chemicals, isotopic uranium, radium-226, strontium-90, cobalt-60, radionuclides by gamma spectroscopy, and HE. No contamination above SALs was detected, and the RFI report recommended NFA at former SWMU 16-025(m) because contamination is not present at levels that present a potential unacceptable risk to human health. The ER Project conducted an RFI at former SWMU 16-025(n) in 1997 to determine if contaminants were present in soils at levels of concern. Ten surface and near-surface soil samples were collected from five locations and were field-screened for HE and radioactivity. HE spot test kit results indicated that all samples screened negative for HE, and radiation screening results indicated all samples had only background levels of radioactivity. D-Tech kit results indicated that all samples were positive for HE. Two samples, one of which had the highest HE concentrations and one of which was

		selected at random, were submitted for laboratory analysis for inorganic chemicals, organic chemicals, isotopic uranium, radium-226, strontium-90, cobalt-60, radionuclides by gamma spectroscopy, and HE. No contamination above SALs was detected, and the RFI report recommended NFA at former SWMU 16-025(n) because contamination is not present at levels that present a potential unacceptable risk to human health. The ER Project conducted an RFI at former SWMU 16-025(o) in 1997 to determine if contaminants were present in soils at levels of concern. Ten surface and near-surface soil samples were collected from five locations in and adjacent to the structure's footprint and were field-screened for HE and radioactivity. HE-spot test results indicated that all samples screened negative for HE, and radiation screening results indicated that all samples had only background levels of radioactivity. D-Tech kit results indicated that three samples screened positive for HE. Two samples, one of which had the highest HE concentrations and one of which was selected at random, were submitted for laboratory analysis of inorganic chemicals, organic chemicals, isotopic uranium, radium-226, strontium-90, cobalt-60, radionuclides by gamma spectroscopy, and HE. No contamination above SALs was detected, and the RFI report recommended NFA at former SWMU 16-025(o) because contamination is not present at levels that present a potential unacceptable risk to human health. The OU 1082 work plan addendum proposed surface-soil sampling at former SWMU 16-034(b) to detect residual HE on or near the disturbed surface of the former SWMU. The ER Project conducted an RFI at former SWMU 16-034(c) in 1997 to determine if contaminants were present in soils at levels of concern. Five surface and near-surface soil samples were collected from five locations in the building footprint and were field-screened for HE and radioactivity. HE spot test kit results indicated that all samples screened negative for HE, and radiation screening results indicated that all samples contained only background levels of radioactivity. D-Tech kit results indicated that two samples screened positive for HE. Those two samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and HE. Analyses were not run for radionuclides at former SWMU 16-034(c) because historical evidence indicated that radioactive material was not stored or used in the warehouse hut. Additionally, field screening did not indicate the presence of radioactive constituents. No contamination was detected above SALs. The RFI report recommended NFA at former SWMU 16-034(c) because contamination is not present at levels that present a potential unacceptable risk to human health. The ER Project conducted an RFI at former SWMU 16-034(d) in 1997 to determine if contaminants were present in soils at levels of concern. Five surface and near-surface soil samples were collected from five locations in and adjacent to the building footprint and were field-screened for HE and radioactivity. HE spot test kit results indicated that all samples screened negative for HE, and radiation screening results indicated that all samples contained only background levels of radioactivity. D-Tech kit results indicated that four samples screened positive for HE. Two samples that screened positive for HE were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and HE. Analyses were not run for radionuclides because historical evidence indicated that radioactive material was not stored or used in the machine shop. Additionally, field screening did not indicate the presence of radioactive constituents. No contamination was detected above SALs. The RFI report recommended NFA at former SWMU 16-034(d) because contamination is not present at levels that present a potential unacceptable risk to human health. The ER Project conducted an RFI at former SWMU 16-034(e) in 1997 to determine if contaminants were present in soils at levels of concern. Five surface and near-surface soil samples were collected from five locations in the building footprint and were field-screened for HE and radioactivity. HE spot test kit results indicated that all samples screened negative for HE; radiation screening results indicated that all samples contained only background levels of radioactivity. D-Tech kit results indicated that three

		samples screened positive for HE. The sample with the highest HE concentrations and a randomly selected sample that also screened positive for HE were submitted for laboratory analysis of inorganic chemicals, organic chemicals, total uranium, and HE. No contamination was detected above SALs. The RFI report recommended NFA at former SWMU 16-034(e) because contamination is not present at levels that present a potential unacceptable risk to human health. The ER Project conducted an RFI at former SWMU 16-034(f) in 1997 to determine if contaminants were present in soils at levels of concern. Five surface and near-surface soil samples were collected from five locations in the building footprint and were field-screened for HE and radioactivity. HE spot test kit results indicated that all samples screened negative for HE, and radiation screening results indicated that all samples contained only background levels of radioactivity. D-Tech kit results indicated that three samples screened positive for HE. The two samples with the highest HE concentrations were submitted for laboratory analysis for inorganic chemicals, organic chemicals, isotopic uranium, isotopic plutonium, cyanide, and HE. No contamination was detected above SALs. The RFI report recommended NFA at former SWMU 16-034(f) because contamination is not present at levels that present a potential unacceptable risk to human health.
16-034(g)	Administratively Complete	In the SWMU Report (LANL 1990), SWMU 16-034(g) is inaccurately identified as soil contamination associated with the operation and decommissioning of Building TA-16-517. The report goes on to state that the building was flash-burned prior to demolition, which implies that the building was removed. However, Building TA-16-517 is still intact and is identified as SWMU 16-017. SWMU 16-034(g) is appropriate for NFA under Criterion 1 because it is a duplicate of SWMU 16-017.
16-034(h)	In Progress	SWMU 16-034(h) is potentially contaminated soil associated with the footprint of a former plumbing and electrical shop (Building 16-137). Building 16-137 was part of a Zia Company satellite maintenance area used for upkeep on S-Site buildings. The maintenance area was built in 1944 and 1945 and was removed by 1955. It was located west of West Road, which was the only entry to S-Site before 1951 and formed the boundary of the HE exclusion zone. The maintenance area included the fire station. Suspect contaminants are HE. Addendum 2 of the OU 1082 work plan proposed sampling at SWMU 16-034(h) to detect residual organic chemicals on the disturbed surface of the site.
16-034(i)	In Progress	SWMU 16-034(i) is soil contamination in the footprint of a portable wooden structure (structure 16-141) that was 16 ft square and 9 ft high and was used for storage at the Zia satellite maintenance station at S-Site. Structure 16-141 was part of a Zia Company satellite maintenance area used for upkeep on S-Site buildings. The maintenance area was built in 1944 and 1945 and was removed by 1955. It was located west of West Road, which was the only entry to S-Site before 1951 and formed the boundary of the HE exclusion zone. Structure 16-141 was subsequently relocated to TA-35 for use as a construction shack. The rewrite of Chapter 2 of the OU 1082 RFI work plan recommended NFA at SWMU 16-034(i) because no hazardous waste and/or constituents are present at the site now, nor was the site ever used to manage, generate, treat, store, or dispose of hazardous waste and/or constituents. Information from past site workers familiar with the Zia satellite maintenance area indicates that there is no HE contamination at the site. Structure 16-141 was considered clean enough to be relocated to another TA.
16-034(j)	In Progress	SWMU 16-034(j) is potentially contaminated soil associated with a decommissioned container storage rack (structure 16-190) in the Zia Company satellite maintenance area at S-Site. Former structure 16-190 was located north of a wooden storage building (former Building 16-139). The rack held fifteen 55-gal. containers that provided lubricants and solvents by gravity feed. It is possible that other chemicals were stored on the rack. The rack was in place by 1950 and was removed by 1955. The maintenance area was located west of West Road, which was the only entry to S-Site before 1951 and formed the boundary of the HE exclusion zone.

		Addendum 2 of the OU 1082 work plan proposed sampling at SWMU 16-034(j) to detect residual organic chemicals on the disturbed surface of the site.
16-034(k)	In Progress	SWMU 16-034(k) is soil contamination in the footprint of a portable wooden structure (structure 16-140) that was 16 ft square x 9 ft high and was used for storage at the Zia satellite maintenance station at S-Site. It is not known what was stored in the former structure, and its exact location has not been determined. Structure 16-140 was part of a Zia Company satellite maintenance area used for upkeep on S-Site buildings. The maintenance area was built in 1944 and 1945 and was removed by 1955. It was located west of West Road, which was the only entry to S-Site before 1951 and formed the boundary of the HE exclusion zone. The rewrite of Chapter 2 of the OU 1082 RFI work plan recommended NFA at SWMU 16-034(k) because no hazardous waste and/or constituents are present at the site now, nor was the site ever used to manage, generate, treat, store, or dispose of hazardous waste and/or constituents. Information from past site workers familiar with the Zia satellite maintenance area indicates that there is no HE contamination at the site.
16-034(m)	In Progress	SWMU 16-034(m) is the footprint of a former laboratory building (Building 16-86). The SWMU is located in the historic GMX-2 area at S-Site. GMX-2 structures were located in the south-central and eastern part of S-Site and were used primarily for experimental HE research and development. No production-scale HE operations were conducted in the GMX-2 area. The GMX-2 area operated from 1944 to the early 1950s. Building 16-86 was constructed in 1945; it had wooden floors, had no plumbing fixtures or sumps, and contained temperature-controlled curing ovens. The former building also may have been used as a magazine. Building 16-86, used until 1959, was listed as being HE contaminated before its destruction by burning in 1960. Suspect contaminants were inorganic chemicals, organic chemicals, and HE. The ER Project conducted an RFI at SWMU 16-034(m) in 1997 to determine if contaminants were present in soil at levels of concern. Five surface and near-surface soil samples from five locations in the building footprint were screened for HE and radiation. One sample screened positive for HE; all samples had only background radioactivity. Two samples, one of which had screened positive for HE, were submitted for laboratory analysis for organic chemicals, inorganic chemicals, and HE. Slightly elevated levels of copper, lead, silver, zinc, benzoic acid, and phenol were detected. No HE was detected in the laboratory sample despite the positive reading in the field. The kit that was used for field screening HE has been shown to provide false positives due to interference with humic materials. The RFI report recommended NFA at SWMU 16-034(m) because contamination is not present at levels that present a potential unacceptable risk to human health.
16-034(n)	In Progress	SWMU 16-034(n) is the footprint of a laboratory building (Building 16-83). The SWMU is located in the historic GMX-2 area at S-Site. Structures at GMX-2 were located in the south-central and eastern part of S-Site and were used primarily for experimental HE research and development. No production-scale HE operations were conducted in the GMX-2 area. The GMX-2 area operated from 1944 to the early 1950s. Building 16-83 was constructed in 1945; it had wooden floors, had no plumbing fixtures or sumps, and contained temperature-controlled curing ovens. The former building also may have been used as a magazine. Building 16-83, removed from service in 1959, was listed as being HE contaminated before its destruction by burning in 1960. Residual debris from burning was cleaned up in 1966. Suspect contaminants were inorganic chemicals, organic chemicals, and HE. Addendum 1 of the OU 1082 work plan proposed sampling at SWMU 16-034(n) to detect surface HE contamination in the building footprint.
16-037	Administratively Complete	
18-001(a)-00	In Progress	Consolidated SWMU 18-001(a)-00 consists of former SWMUs 18-001(a) and 18-001(b). The former SWMUs comprised the sanitary wastewater system for the central

		part of TA-18 (excluding CASAs 1, 2, and 3) from before 1969 until 1992, when a new sewage treatment plant at TA-46 went into service. Liquid waste that discharged into this consolidated SWMU consisted of sanitary sewage, wash water from laboratory industrial drains and sinks, and photochemical wastes. Former SWMU 18-001(a) is the location of two historic sanitary sewage lagoons, the associated sewer line, and outfall. The lagoons were located on the south side of Pajarito Road, approximately 1 mi east of TA-18. Each lagoon was 60 ft wide x 120 ft long. The lagoon sidewalls were concrete-lined from the floor of the lagoons to about one-third up the wall height; the other two-thirds was lined with an asphalt-aggregate mixture. The lagoons were enclosed with an 8-ft-high chain-link fence. They were separated by a berm that contained two concrete distribution boxes that directed sewage flow into the lagoons. A portion of the former sewer system used plumbing that was connected to a now-inactive septic tank [structure 18-40 [SWMU 18-003(e)]. Operations in the buildings served by the septic tank historically used radioactive materials and chemicals. Former SWMU 18-001(b) consists of the drainlines that carried sanitary wastewater from TA-18 buildings to the lagoons and drainlines that discharged the wastewater from the lagoons to NPDES-permitted Outfall 04S in Pajarito Canyon; Outfall 04S was removed from LANL's permit prior to 1994. The outlet portion of the line was plugged with concrete when the lagoons were removed from service. The system consisted of an estimated 5000 ft of 4-in.-diameter VCP interconnected by 11 concrete manholes. The associated sewer line included manholes (structures 160 through 161 and 169 through 177); it ran from TA-18 along the south side of Pajarito Road to the lagoons. The ER Project conducted an RFI at former SWMUs 18-001(a) and 18-001(b) in 1993 to support a decision about how best to decommission the system. Samples were collected from the lagoons, the sewer line, and a wetland area within the shallow pond that received effluent from the sewage lagoons. Five locations in each lagoon were sampled; sludge samples were collected because no water was present. In the sewer line, either sediment or water samples were taken from seven of the manholes. Because four other manholes contained neither sediment nor water, swipe samples were taken from the interior surfaces. Filter swipes were taken at four locations around the inside perimeter of each manhole and analyzed for gross alpha, beta, and gamma radioactivity. The information from the filter swipe analysis was to be used to assess disposal requirements when the sewer line was decommissioned. In the outfall area, water and sediment samples were collected. The samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and radionuclides. Samples collected from the outfall area also were sampled for HE because the sample locations were within an area potentially affected by former explosive testing at TA-27. Inorganic chemicals in concentrations above BVs were detected in the samples collected from the waste lines and lagoons. One inorganic chemical was detected above BVs in the outfall area. No chemicals or radionuclides exceeded SALs in the lagoon or outfall area; however, inorganic chemicals and organic chemicals exceeded SALs in four manholes in the sewer line samples. Risk calculations showed that the risk presented by the sludge falls within EPA's acceptable range. The volume of sludge in each manhole was estimated to be less than 0.5 L; the RFI report stated that this small volume would not pose a significant risk if appropriate decommissioning measures were taken. The RFI report recommended decommissioning the lagoons and manholes to ensure that the low risk posed by sediments in the sewer line would be reduced further. The ER Project conducted a VCA at former SWMU 18-001(a) in 1995 to perform an accelerated cleanup at the lagoons. Although no RCRA-regulated potential contaminants presented a health risk, the VCA was performed to eliminate any health or safety hazard from non-RCRA constituents in the lagoons. Due to uncertainty about groundwater quality near the lagoons, verification sampling was conducted using a VCA-installed temporary monitoring well at the northeast corner of the lagoons. An

		unfiltered water sample from the well was analyzed for inorganic chemicals, organic chemicals, radionuclides, nitrites/nitrates, chlorides, and TSSs. All detected chemicals except manganese were below SALs. Because the New Mexico water quality standards stipulate that water samples should be filtered, two additional water samples were collected from the monitoring well and were analyzed for manganese. One of the samples was filtered and the other was not. Analytical results indicated the manganese concentration in the filtered sample was substantially below SAL, indicating that the high manganese in the unfiltered samples was the result of suspended sediment in the well bore. The concrete distribution boxes were removed from the lagoons, as was the 8-in., cast-iron pipes associated with them. The concrete portion of the berms was left intact and the asphalt portion was bulldozed into the lagoons as fill material. Clean fill dirt was brought from another location to complete filling the lagoons. The area was graded to match the surrounding area and was seeded with native grasses. The VCA report recommended NFA for the site. The ER Project conducted an expedited cleanup at former SWMU 18-001(b) in 1995. In response to an NOD from EPA about groundwater quality in the vicinity of the sewer line, a temporary monitoring well was installed at a manhole (structure 18-170) for water sampling. Two nonfiltered samples were collected from the temporary well and one was collected from within the manhole. Subsequently, a filtered water sample was collected from the temporary well. A nonfiltered sample also was collected from a background well located about one mile west of the temporary well to provide data about groundwater quality upgradient from all TA-18 activities. Water samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, radionuclides, nitrites/nitrates, chlorides, and TSSs. Several inorganic chemicals exceeded SALs in the nonfiltered samples; however, the samples were relatively high in TSSs. Subsequently, a filtered water sample was collected from the temporary well. In the filtered sample, the same inorganic chemical concentrations were well below SAL. The higher concentrations in the nonfiltered samples were attributed to the combination of the naturally high occurrence of those substances in the native soils and the high TSSs in those samples. Cleanup consisted of pouring about 1 cubic yard of concrete into the bottom of each manhole to plug the inlet and outlet portions of the sewer line at each manhole. The top portion of each manhole was removed, checked for radionuclides, and disposed of following appropriate regulations. Open excavations were backfilled with soil and graded to blend the backfill with the surrounding terrain. The areas were reseeded with native grasses. The expedited cleanup report noted that groundwater quality was not significantly affected by the presence of the sewer line, and NFA at former SWMU 18-001(b) was requested.
18-001(c)-00	In Progress	Consolidated SWMU 18-001(c)-00 consists of former SWMUs 18-001(c) and 18-012(b). The units in this consolidated SWMU are a sump, drainlines, and an outfall that served the main building (Building 18-30) and the utility building (Building 18-31). Former SWMU 18-001(c) is a sump with two sump pumps located in the basement of Building 18-30. Building 18-30 houses control systems for remote nuclear criticality research areas. The sump primarily collected groundwater from drains outside the basement walls. Historically, some sinks and floor drains in the building discharged to the sump. By summer of 1994, all drains were redirected to the sanitary sewer line and the sump was removed from service in 1996. The sump historically discharged to an outfall [former SWMU 18-012(b)]. Former SWMU 18-012(b) is an outfall that receives discharge from floor drains, sinks, and a welding quench tank in Building 18-30 and floor drains and stormwater from the roof of Building 18-31. The outfall, located south of Building 18-30, began operation 1950. The ER Project conducted an RFI at former SWMU 18-001(c) in 1993 to determine if contaminants were present. Two samples were collected from the sump and submitted

		for laboratory analysis for inorganic chemicals, organic chemicals, and radionuclides. One inorganic chemical was detected at levels above its BV but was below its SAL; one organic chemical was detected at concentrations greater than the New Mexico groundwater quality standard. The RFI report recommended NFA for this site. Former SWMU 18-001(c) was proposed for NFA in the September 1996 permit modification request. The NFA request subsequently was withdrawn. The ER Project conducted an RFI at former SWMU 18-012(b) in 1993 and 1994 to determine the presence or absence of contamination. Four surface sediment samples were collected in the outfall area and were field-screened for inorganic chemicals, organic chemicals, and radiation. Two of the locations with elevated levels of those analytes were submitted for laboratory analysis for inorganic chemicals, organic chemicals, and total uranium. Eight inorganic chemicals were detected in the sediments at concentrations greater than their BVs, but none was detected at concentrations greater than its SAL. Organic chemicals were detected; seven of these were detected at concentrations greater than SALs. In addition, two detected organic chemicals did not have SALs, and were retained as potential contaminants. PAHs were the detected organic chemicals; their presence was attributed to runoff from the asphalt and tar roofs of Buildings 18-30 and 18-31. Because they originate from ongoing nonsite-related activity, the PAHs were eliminated from further consideration. Following multiple chemical analyses, four inorganic chemicals were retained as inorganic potential contaminants and were compared to nonintrusive industrial and recreational PRGs. Because results of the PRG comparison fell below the acceptable hazard estimate for risk, the four inorganic chemicals were eliminated as potential contaminants. An ecotoxicological assessment also was performed using the analytical results. Six inorganic and three organic analytes were present at concentrations greater than ESALs and were retained as potential contaminants. The organic analytes were assumed to result from runoff and/or drainage from the asphalt roofs and were eliminated as potential contaminants. The RFI report stated that the ecotoxicological assessment potential contaminants might be carried forward to an ecological risk screening process. The RFI report recommended provisional NFA for former SWMU 18-012(b), pending complete review of radiological data. After a review was conducted of the radionuclide data, the RFI report addendum recommended NFA for this site based on a human health risk assessment.
18-002(a)	Pending	SWMU 18-002(a) is the location of a former HE firing site in Pajarito Canyon near the present location of CASA 1 (Building 18-23). The site consisted of a small firing chamber (structure 18-3) made from 1-in.-thick steel that was 2 ft wide x 2 ft long x 2.2 ft high, and an aboveground armored bunker (structure 18-2) commonly called a "battleship," which was used to protect shot instrumentation. The firing chamber was open on the top and set flush with the ground a few feet west of the "prow" of structure 18-2. Structure 18-2 was designated as "source storage" in a historical TA-18 structure log. The firing chamber (structure 18-3) was removed in 1945, but structure 18-2 remains, locked and unused. The ground surface in the vicinity of the firing chamber was regraded and partially paved in association with the construction of CASA 1. The ER Project conducted an RFI at SWMU 18-002(a) in 1993 and 1994 to determine whether releases of hazardous wastes or hazardous constituents had occurred and if so, to determine the need for corrective action. Because the ground surface at the site has been substantially disturbed since the firing site operated, sampling was conducted farther away in a less-disturbed area. Any particulates from the firing site were expected to be primarily within a 500-ft radius of the site. Fourteen samples were collected from eleven locations within three concentric zones around the firing site. The samples were field-screened for radioactivity, HE, inorganic chemicals, and organic chemicals. All tests (except one for inorganic chemicals) were negative or below uncertainty limits. Laboratory analysis samples were composites of two or four grab samples collected from four analytical sampling locations. The samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, and radionuclides. Some locations had elevated levels of inorganic chemicals, but no inorganic chemicals were detected at concentrations above BVs. Two HE constituents were detected, and

		one (nitrobenzene) was detected at concentrations greater than SAL. Nitrobenzene was determined to pose no unacceptable risk to human health at this site because the detected concentration was more than 1 order of magnitude less than its PRG for an industrial or recreational scenario. The screening process identified three organic analytes as ecotoxicological potential contaminants. The RFI report stated that these potential contaminants may be carried forward to an ecological risk screening process. The RFI report recommended NFA for this site, based on a human health risk assessment. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. SWMU 18-002(a) was included in the submission because possible contamination at the SWMU is exempt from RCRA regulations under the military munitions definition (40 CFR 260.10 and 40 CFR 266). The sole purpose of activities at SWMU 18-002(a) was to perform activities including research, development, testing, and evaluation of military munitions, weapons, or weapons systems. Therefore, hazardous wastes as defined by RCRA were never managed at this site.
18-002(b)	Pending	SWMU 18-002(b) is an inactive firing site in Threemile Canyon, near the present location of CASA 2 (Building 18-32). The site consisted of a small firing chamber (structure 18-4) and an armored bunker used to protect shot instrumentation (structure 18-5) that was called a "battleship." Structure 18-4 was a 1-in.-thick steel box, measuring 2 ft wide x 2 ft long x 2 ft high that was open on top and flush with the ground. It was located a few feet west of the armored "prow" of structure 18-5. A ground-level wooden structure (structure 18-16) located east of structure 18-5 was the battery building for the firing site cable conduit system. It contained racks of lead-acid batteries. Structure 18-4 was removed in 1945 and structure 18-16 was dismantled in 1951; structure 18-5 remains. Three firing pads further up-canyon have been identified. Firing Point C (now beneath Building 18-32) was 51 ft west of structure 18-5 and on its midline. Firing Point G [at the southeast corner of the current storage building (Building 18-122)] was 145 ft west of structure 18-5 on its midline. The third, Medium Firing Point, was built to handle HE charges of up to 2 tons. It was located 478 ft west of structure 18-5 and 15 ft south of its midline. The flat, graded area west of Building 18-32 marks the former location of this firing site. The firing pads were removed sometime before the construction of CASA 2, which was in the late 1940s. Underground cables, some of which may remain in place, connected each pad to former structure 18-16. The ER Project conducted an RFI at SWMU 18-002(b) in 1993 and 1994 to determine whether releases of hazardous wastes or hazardous constituents had occurred and if so, to determine the need for corrective action. Surface sampling locations were arranged in patterns centered on both the Medium Firing Point and on Firing Point C to check for surface contamination on the canyon floor from 500 ft west of the westernmost site to 500 ft east of the easternmost site. The sampling locations surrounding Firing Point C also addressed possible contamination from structure 18-4 and Firing Point G. Samples were collected from 11 locations within three concentric zones around the firing sites. A sample for laboratory analysis consisted of a composite of two or four grab samples collected from four analytical sampling locations. In 1994, subsurface soil was collected from five boreholes at Medium Firing Point; the drill rig could not access the other firing points, which were located under existing buildings. All samples were field-screened for HE and radiation; the samples tested negative for HE and radiation levels were below background screening levels. The samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected at concentrations above BVs but below SALs, and were submitted for MCA. None was retained as a potential contaminant following the MCA. Two organic chemicals (RDX and 2,4,6-trinitrotoluene) were detected at concentrations less than their SALs, and one organic chemical (4-

		amino-2,6-dinitrotoluene) was detected but does not have a SAL. Two organic chemicals (2,4,6-trinitrotoluene and 4-amino-2,6-dinitrotoluene) were subjected to the MCA but were not retained as potential contaminants following MCA results. Because RDX was the only carcinogenic potential contaminant, an MCA was not conducted for RDX. The screening process identified one inorganic analyte and three organic analytes as ecotoxicological potential contaminants. The RFI report stated that these potential contaminants may be carried forward to an ecological risk screening process. The RFI report recommended NFA for this site, based on a human health risk assessment. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. SWMU 18-002(b) was included in the submission because possible contamination at the SWMU is exempt from RCRA regulations under the military munitions definition (40 CFR 260.10 and 40 CFR 266). The sole purpose of activities at SWMU 18-002(a) was to perform activities including research, development, testing, and evaluation of military munitions, weapons, or weapons systems. Therefore, hazardous wastes as defined by RCRA were never managed at this site.
18-002(c)	In Progress	AOC 18-002(c) is the location of a former drop tower in Threemile Canyon that was used in tests involving inert mockups and ballistic objects. The tower probably was west of a structure called a "battleship" (structure 18-5) at one of the three firing pads identified in SWMU 18-002(b). The firing pads were removed sometime before the construction of CASA 2, which was in the late 1940s. The ER Project conducted an RFI at AOC 18-002(c) in 1993 and 1994 to determine whether releases of hazardous wastes or hazardous constituents had occurred and if so, to determine the need for corrective action. Because the effects of this AOC are indistinguishable from those of the firing points identified in SWMU 18-002(b), sampling results from the investigation of SWMU 18-002(b) were used to characterize contamination at AOC 18-002(c). Surface sampling locations were arranged in patterns centered on both the Medium Firing Point and on Firing Point C to check for surface contamination on the canyon floor from 500 ft west of the westernmost site to 500 ft east of the easternmost site. The sampling locations surrounding Firing Point C also addressed possible contamination from the firing chamber and Firing Point G. Samples were collected from 11 locations within three concentric zones around the firing sites. A sample for laboratory analysis consisted of a composite of two or four grab samples collected from four analytical sampling locations. In 1994, subsurface soil was collected from five boreholes at Medium Firing Point; the drill rig could not access the other firing points, which were located under existing buildings. All samples were field-screened for HE and radiation. The samples tested negative for HE; radiation levels were below background screening levels. The samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected at concentrations above BVs but below SALs, and were submitted for MCA. None was retained as a potential contaminant following the MCA. Two organic chemicals (RDX and 2,4,6-trinitrotoluene) were detected at concentrations less than their SALs, and one organic chemical (4-amino-2,6-dinitrotoluene) was detected but does not have a SAL. Two organic chemicals (2,4,6-trinitrotoluene and 4-amino-2,6-dinitrotoluene) were subjected to MCA but were not retained as potential contaminants following MCA results. Because RDX was the only carcinogenic potential contaminant, an MCA was not conducted for RDX. One inorganic analyte and three organic analytes were retained as ecotoxicological potential contaminants by the screening process. The RFI report stated that these potential contaminants may be carried forward to an ecological risk screening process. The RFI report recommended NFA for this site, based on a human health risk assessment.
18-003(a)-00	In Progress	Consolidated SWMU 18-003(a)-00 consists of former SWMUs 18-003(a) and 18-003(b). The former SWMUs are a settling pit and a septic system, respectively, that

		served CASA 1 (Building 18-23) from 1947 to 1995. Former SWMU 18-003(a) was a reinforced concrete vault (structure 18-105) that historically received radioactive liquids from sinks and floor drains in Building 18-23. The vault's dimensions were 5.3 ft long x 5.3 ft wide x 12 ft high, had a capacity of 2500 gal, and was open to the environment on the bottom. The vault had a removable steel settling tank that measured 2 ft in diameter and 5 ft high. The tank was periodically emptied. Any overflow from the settling tank would enter the CASA 1 sanitary sewer system downstream from a septic tank [structure 18-39, former SWMU 18-003(b)] and continue to its drain field. No records of overflows to the vault were found. The discharge line from the settling tank to the drain field has been plugged. The vault was located about 15 ft east of the Los Alamos Critical Experiment Facility (Building 18-168). Former SWMU 18-003(a) served CASA 1 from 1947 until 1991. After 1991, it had been used to contain emergency decontamination water from a nearby experimental facility. In 1997 the influent line was plugged, the settling tank removed, and the vault grouted with flowcrete. Former SWMU 18-003(b) is an inactive septic tank (structure 18-39), associated drainlines, and drain field. The septic tank, which served the CASA 1 restrooms, is made of reinforced concrete and measures 4 ft wide x 7 ft long x 5.5 ft high and has a 524-gal. capacity. Effluent from the tank emptied into the drain field, which lies south of the septic tank. The septic tank is about 50 ft south of structure 18-105. Former SWMU 18-003(b) served CASA 1 from 1947 until 1995. A 1990 environmental investigation in support of a safety analysis report for Building 18-168 provided data on potential environmental contamination for the former SWMUs in this consolidated unit. The objective of the investigation was to define baseline levels of uranium and/or fission product contamination in the soil and groundwater near the facility. During the investigation, four shallow monitoring wells were drilled near Building 18-168, all of which are downgradient from the drain field that serves structure 18-39. Soil samples were collected and analyzed for radionuclides; groundwater samples were also collected. With one exception, the data indicated that no significant differences in soil or water radionuclide concentration existed between these samples and background samples collected at Otowi Bridge, 10 mi east of Los Alamos. During well construction, soil samples were collected at intervals to 20 ft, with the exception of one sample from a borehole that inadvertently penetrated the overflow drainline from former SWMU 18-003(a). Uranium was found in concentrations slightly above BVs/FVs, indicating that former SWMU 18-003(a) could have discharged through this line to the drain field in former SWMU 18-003(b), to which it is connected. To rule out the possible presence of contamination from off-site sources, alluvial groundwater monitoring began in the TA-18 area in 1990. Three boreholes were drilled into the Pajarito Canyon alluvium upgradient (west) of TA-18; two were completed as wells. Soil samples from all three boreholes and water samples from two wells were collected to measure the BVs of potential contaminants in groundwater that had not yet entered TA-18. Seven wells constructed before the RFI were also included in the sampling. Surface water and sediment samples from wetlands in the bottom of Threemile Canyon southwest of TA-18 provided similar BVs for wetland sites. Thirteen wells, both within and west of TA-18, were constructed by drilling through alluvium to various depths. Seven of these, including one of the two background wells, were filled and sealed after sampling was completed. Six were made permanent wells to allow more complete monitoring coverage of the aquifer in TA-18. The ER Project conducted an RFI at the former SWMUs in this consolidated unit in 1993 and 1994 to determine the presence or absence of contamination. At former SWMU 18-003(a), samples were field-screened for inorganic chemicals, organic chemicals, and radioactivity. Samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, and radionuclides. Thirty-eight analytes were retained as human health potential contaminants at this site. The RFI report

		recommended an interim action to remove and dispose of the settling tank contents and to pressure-rinse the settling tank. The RFI report stated that this site would be included in an ecological risk assessment when the regulators have approved an ecological risk assessment approach. At former SWMU 18-003(b), samples were field-screened for inorganic chemicals, organic chemicals, and radioactivity. Locations with slightly elevated radioactivity levels were selected for laboratory-analysis samples. Variations in inorganic chemical concentrations were not sufficient to be used for selecting laboratory-analysis samples, and no organic chemicals were detected during screening. Almost all screening locations had slightly elevated beta radiation levels. Nine human health potential contaminants were retained as a result of sample analysis. The RFI report recommended performing an interim action at this site, and stated that this site would be included in the ecological risk assessment when the regulators have approved an ecological risk assessment approach. The ER Project conducted an interim action at former SWMU 18-003(a) in 1996. The interim action consisted of removing the liquid and sludge in the settling tank, pressure rinsing the interior, and disposing of the contents of the settling tank and associated decontamination water. The settling tank was to remain open temporarily to receive discharge of emergency decontamination water from a nearby experimental facility. To further mitigate any future release of contaminants, the sanitary facilities served by the basin were disconnected from the associated buildings by the site operating group. During the interim action, two samples were collected from the bottom of the vault and were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and radionuclides. Analytical results showed that the settling tank's liquid and sludge, as well as the decontamination water, contained organic chemicals and radionuclides. The ER Project conducted an IA at former SWMU 18-003(b) in 1996. The IA consisted of removing the liquid and sludge in the septic tank, pressure rinsing the interior, and disposing of the contents of the septic tank and associated decontamination water in accordance with the IA Plan. To further mitigate any future release of contaminants, the sanitary facilities served by the tank were disconnected from the associated buildings by the site operating group. The former SWMU was sampled again in 1997, soil samples were collected from beneath the inlet and outlet, and also adjacent to the tank, both at the approximate depth of the tank floor and 2 ft deeper. The ER Project conducted a BMP at former SWMU 18-003(a) in 1997 to eliminate a potential pathway to alluvial groundwater. The BMP included removing and disposing of the steel settling tank, plugging the inlet and outlet lines as they entered the vault, and then grouting the interior of the vault with flowcrete to provent any potential releases to alluvial groundwater. Additional samples were collected adjacent to the vault near the inlet and outlet lines at approximately the same depth as the vault floor to characterize soils at that level. The ER Project submitted a VCM plan for the former SWMUs in this consolidated unit. The objectives of the VCM are to collect supplemental surface and subsurface soil samples at each former SWMU; determine the nature and extent of soil contamination using the supplemental data; assess the potential human health risk and the ecological risk to the environment from each former SWMU; and remediate the former SWMUs (by excavation) as necessary. The VCM plan was approved in 2000 but the execution of this work was interrupted by the Cerro Grande Fire and the approved plan has not been implemented.
18-003(c)	In Progress	SWMU 18-003(c) is an inactive septic system (structure 18-42) that served CASA 2 (Building 18-32) from 1952 to 1995. The system, located near the northeast corner of CASA 2, has a reinforced concrete septic tank, an inlet line, discharge line, drain field, and outfall. The outfall was located at the distal end of the drain field and discharged into an ephemeral stream in Threemile Canyon. The tank measures 6 ft in diameter x 5 ft high and has a capacity of 650 gal. The drain field has four drainlines, each of which

		is approximately 75 ft long and spaced approximately 10 ft apart. The inlet line leading to the tank is approximately 130 ft long, and the outlet line is approximately 115 ft long. The total length of drain-field lines is approximately 300 ft. To rule out the possible presence of contamination from off-site sources, alluvial groundwater monitoring began in the TA-18 area in 1990. Three boreholes were drilled into the Pajarito Canyon alluvium upgradient (west) of TA-18; two were completed as wells. Soil samples from all three boreholes and water samples from two wells were collected to measure the BVs of potential contaminants in groundwater that had not yet entered TA-18. Seven wells constructed before the RFI were also included in the sampling. Surface water and sediment samples from wetlands in the bottom of Threemile Canyon southwest of TA-18 provided similar BVs for wetland sites. Thirteen wells, both within and west of TA-18, were constructed by drilling through alluvium to various depths. Seven of these, including one of the two background wells, were filled and sealed after sampling was completed. Six were made permanent wells to allow more complete monitoring coverage of the aquifer in TA-18. The ER Project conducted an RFI at SWMU 18-003(c) in 1993 and 1994 to determine the presence or absence of contamination. Samples were collected from the tank contents and from surface and subsurface soils adjacent to the tank and in the drain field. Alluvial groundwater grab samples were collected from temporary wells. Samples were field-screened for inorganic chemicals, organic chemicals (organic vapors in the septic tank), and radioactivity. Samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, and radionuclides. No inorganic chemicals were detected at concentrations above BVs in the drain-field soils or outfall sediments. One inorganic chemical was detected at concentrations above its SAL in the septic tank. Several organic chemicals were detected in the soil and groundwater adjacent to the septic tank; five were detected at concentrations greater than their SALs in the drain-field soil, and one in the groundwater; three detected in the groundwater had no SALs for comparison. Two radionuclides were detected in the septic tank sludge at concentrations greater than SALs. In all, 14 analytes were retained as human health potential contaminants at this SWMU. The RFI report recommended conducting an interim action to remove and dispose of the tank's contents. The ER Project conducted an interim action in 1996 consisting of removing the liquid and sludge in the septic tank, pressure rinsing the interior, and disposing of the contents of the septic tank and associated decontamination water. To further mitigate any future release of contaminants, the sanitary facilities served by the tank were disconnected from the associated buildings by the site operating group. The ER Project submitted a VCM plan for this SWMU. The objectives of the VCM are to collect supplemental surface and subsurface soil samples at the septic system; determine the nature and extent of soil contamination (if present) using the supplemental data; assess the potential human health and ecological risks from the septic system; and remediate the septic system (by excavation) as necessary. The VCM plan was approved in 2000 but the execution of this work was interrupted by the Cerro Grande Fire and the approved plan has not been implemented.
18-003(d)	In Progress	SWMU 18-003(d) is an inactive septic tank (structure 18-120) that served the sanitary sewer system in CASA 3 (Building 18-116) from 1960 to 1995. Dimensions of the cylindrical septic tank are 4 ft in diameter x 6 ft high, and its capacity is approximately 500 gal. Wastewater flowed from the septic tank to a distribution box (structure 18-35) and then to a drain field. The drain field consists of four drainlines, each approximately 59 ft long, spaced 10 ft apart. The inlet line is approximately 275 ft, and the outlet line is approximately 10 ft long. The total length of the drainlines is approximately 235 ft. The manhole for this sanitary sewer system, structure 18-21, is located at the southwest corner of CASA 3 and is largely obscured by pavement. In 1995, all floor drains were plugged, and the sinks and toilets were removed from CASA 3. To rule out the possible presence of contamination from off-site sources, alluvial

		groundwater monitoring began in the TA-18 area in 1990. Three boreholes were drilled into the Pajarito Canyon alluvium upgradient (west) of TA-18; two were completed as wells. Soil samples from all three boreholes and water samples from two wells were collected to measure the BVs of potential contaminants in groundwater that had not yet entered TA-18. Seven wells constructed before the RFI were included in the sampling. Surface water and sediment samples from wetlands in the bottom of Threemile Canyon southwest of TA-18 provided similar BVs for wetland sites. Thirteen wells, both within and west of TA-18, were constructed by drilling through alluvium to various depths. Seven of these, including one of the two background wells, were filled and sealed after sampling was completed. Six were made permanent wells to allow more complete monitoring coverage of the aquifer in TA-18. The ER Project conducted an RFI at this site in 1993 and 1994 to determine the presence or absence of contamination. The septic tank sludge was screened for organic vapors and radioactivity; radiation was at BVs, and organic vapors were detected. Samples were collected from surface locations surrounding the septic tank, subsurface locations downstream from the tank exit-line connections, subsurface drain-field locations, and from groundwater below the drainfield. Screening results indicating surface soil with slightly elevated levels of organic chemicals were used to determine analytical sampling locations. Four inorganic chemicals were detected in surface and subsurface soils at concentrations above BVs. With the exception of one inorganic chemical, no inorganic chemicals were detected in any of the media in concentrations greater than their SALs. The SAL for the one detected inorganic chemical is lower than the site-specific BV, however, and the inorganic chemical was eliminated as a potential contaminant. One inorganic chemical with no associated SAL was detected in the septic tank sludge, and because it has no SAL, it was retained as a potential contaminant. Several organic chemicals were detected in the sludge and water samples taken from the septic tank. In addition, organic chemicals were detected in the subsurface soil and in the groundwater. Five organic chemicals were detected at concentrations greater than their SALs (four in the septic tank samples and one in groundwater). Two organic chemicals did not have SALs and therefore were retained as potential contaminants. Six radionuclides were detected at concentrations above FVs. All but one were present at levels below SAL and therefore were dismissed as potential contaminants. One radionuclide was detected in the soil and has no SAL. It was eliminated as a potential contaminant because there is no exposure pathway, it was detected in only one sample at a depth of 10 to 15 ft, and it is an extremely short-lived radioisotope. One radionuclide, which was detected in the septic tank sludge at a concentration exceeding its SAL, was retained as a potential human health contaminant at this site. The RFI report stated that SWMU 18-003(d) would be included in an ecological risk assessment when the regulators approve an ecological risk assessment approach. The RFI report recommended conducting an IA to remove and dispose of the septic tank's contents. The ER Project conducted an IA at SWMU 18-003(d) in 1996. The IA consisted of removing the liquid and sludge in the septic tank, pressure rinsing the interior, and disposing of the contents of the septic tank and associated decontamination water in accordance with the procedures outlined in the IA Plan. In late 1996, corrective action groundwater monitoring was initiated based on an analytical result from an unfiltered groundwater sample collected from an undeveloped alluvial groundwater monitoring well in the SWMU 18-003(d) drain field. The analytical result from the sample indicated one organic chemical was present at a concentration greater than the NMWQCC standard for protection of human health. Five permanent alluvial monitoring wells were installed as part of the corrective action in and around the drain field. The wells were sampled for radionuclides, organic chemicals, and inorganic chemicals for eight quarters (1996 to 1999), and the final quarterly report was issued to NMED in February 1999. Results for the eight quarters did not identify any organic chemicals of potential concern (including the one organic chemical previously detected) above their respective NMWQCC standards.

		The ER Project submitted a VCM plan for this SWMU. The objectives of the VCM are to collect supplemental surface and subsurface soil samples at the septic system; determine the nature and extent of soil contamination (if present) using the supplemental data; assess the potential human health risk and ecological risk from the septic system; and remediate the septic system (by excavation) as necessary. The VCM plan was approved in 2000 but the execution of this work was interrupted by the Cerro Grande Fire and the approved plan has not been implemented.
18-003(e)	In Progress	SWMU 18-003(e) is an inactive septic tank (structure 18-40) that served a warehouse (Building 18-28), a utility building (Building 18-31), Guard Station #205 (Building 18-37), and a reactor subassembly building (Building 18-129) from 1951 to 1969. The septic tank is located south of the main area at TA-18. Effluent from two other septic tanks (structures 18-43 and 18-152) also may have discharged to this tank. The septic tank received primarily sanitary waste, although it also received water from a sink in a small machine shop added to Building 18-28 in 1964. Structure 18-40 measures 6 ft in diameter x 6 ft high and is made of reinforced concrete. Effluent from this tank originally discharged into a drain field that discharged to an outfall. Sanitary wastes from these buildings were rerouted to the main sewer line when it was installed in 1969. At that time, the septic tank was backfilled with sand. To rule out the possible presence of contamination from off-site sources, alluvial groundwater monitoring began in the TA-18 area in 1990. Three boreholes were drilled into the Pajarito Canyon alluvium upgradient (west) of TA-18; two were completed as wells. Soil samples from all three boreholes and water samples from two wells were collected to measure the BVs of potential contaminants in groundwater that had not yet entered TA-18. Seven wells constructed before the RFI were also included in the sampling. Surface water and sediment samples from wetlands in the bottom of Threemile Canyon southwest of TA-18 provided similar BVs for wetland sites. Thirteen wells, both within and west of TA-18, were constructed by drilling through alluvium to various depths. Seven of these, including one of the two background wells, were filled and sealed after sampling was completed. Six were made permanent wells to allow more complete monitoring coverage of the aquifer in TA-18. The ER Project conducted an RFI at SWMU 18-003(e) in 1993 and 1994 to determine the presence or absence of contamination. Sampling results, reported in the expedited cleanup plan for the SWMU, indicated that no radionuclides were detected in the septic tank at concentrations above BVs. No inorganic chemicals were detected in the septic tank at concentrations above SALs. Five organic chemicals were detected at slightly elevated concentrations in the septic tank, and one organic chemical was detected at low concentrations in the associated drain field. No organic chemicals were detected in the soils surrounding the septic tank. In 1995 the ER Project, in an expedited cleanup, removed the septic tank contents. After the tank contents were removed, the tank was backfilled with flowable fill concrete to ensure that the inlet and outlet ports were properly plugged. The ER Project submitted a VCM plan for this SWMU. The objectives of the VCM are to collect supplemental surface and subsurface soil samples at the septic system; determine the nature and extent of soil contamination (if present) using the supplemental data; assess the potential human health and ecological risks from the septic system; and remediate the septic system (by excavation) as necessary. The VCM plan was approved in 2000 but the execution of this work was interrupted by the Cerro Grande Fire and the approved plan has not been implemented.
18-003(f)	In Progress	SWMU 18-003(f) is an inactive septic tank (structure 18-41) that received waste from the main building at TA-18 (Building 18-30) from 1952 to 1969. The tank is made of reinforced concrete and has a 1000-gal. capacity. It is located beneath and west of the paved area west of Building 18-30. The septic tank drained west to a distribution box (structure 18-113) and its drain field, which discharged south to an outfall. According to the 1990 SWMU report, a manhole (structure 18-93) served as a settling pit for this

		SWMU. The settling pit received photochemical wastes from Building 18-30. Any overflow from the pit discharged to the drain field downstream from structure 18-41. The manhole was backfilled after the septic tank was taken out of service, and use of the chemical waste line was discontinued and the line was capped off. The settling pit and outfall could not be located during the 1993 and 1994 RFI investigation. To rule out the possible presence of contamination from off-site sources, alluvial groundwater monitoring began in the TA-18 area in 1990. Three boreholes were drilled into the Pajarito Canyon alluvium upgradient (west) of TA-18; two were completed as wells. Soil samples from all three boreholes and water samples from two wells were collected to measure the BVs of potential contaminants in groundwater that had not yet entered TA-18. Seven wells constructed before the RFI were also included in the sampling. Surface water and sediment samples from wetlands in the bottom of Threemile Canyon southwest of TA-18 provided similar BVs for wetland sites. Thirteen wells, both within and west of TA-18, were constructed by drilling through alluvium to various depths. Seven of these, including one of the two background wells, were filled and sealed after sampling was completed. Six were made permanent wells to allow more complete monitoring coverage of the aquifer in TA-18. The ER Project conducted an RFI at SWMU 18-003(f) in 1993 and 1994 to determine the presence or absence of contamination. Samples were collected from the septic tank, from subsurface locations at the inlet and outlet pipe connections to the tank, and from subsurface locations in soil and groundwater in and downgradient from the drain field. The samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, and radionuclides. No inorganic chemicals were detected in groundwater at concentrations above BVs. One inorganic chemical was detected in soil at above BVs but less than SAL and was eliminated as a potential contaminant. One inorganic chemical was detected in the filtered groundwater samples at a concentration greater than SAL but less than its site-specific BV, and was eliminated as a potential contaminant. One organic chemical was detected in the subsurface soil at a concentration less than its SAL and was eliminated as a potential contaminant. One radionuclide was detected in one filtered groundwater sample at a concentration above its site-specific BV and in soil at concentrations greater than the UTL BV. It was detected at a concentration greater than its SAL in one soil sample. It was not retained as a potential contaminant because of the depth at which it was detected (90 to 108 in.). A shallower sample from the same location contained the same radionuclide at BVs. One inorganic chemical was retained as an ecotoxicological potential contaminant. The RFI report addendum proposed NFA for this site. The RFI report stated that this site would be included in the ecological risk assessment when the regulators approve an ecological risk assessment approach. The ER Project submitted a VCM plan for this SWMU. The objectives of the VCM are to collect supplemental surface and subsurface soil samples at the septic system; determine the nature and extent of soil contamination (if present) using the supplemental data; assess the potential human health and ecological risks from the septic system; and remediate the septic system (by excavation) as necessary. The VCM plan was approved in 2000 but the execution of this work was interrupted by the Cerro Grande Fire and the approved plan has not been implemented.
18-003(g)	In Progress	SWMU 18-003(g) is a septic tank (structure 18-43) that has served a staging area (Building 18-1) since 1944. The reinforced-concrete septic tank is 3 ft wide x 5 ft long x 5 ft high. The original configuration of Building 18-1 included a photochemical laboratory that drained to this septic tank. The outlet line from the tank now connects to the main sewer system for TA-18, changing the function of the tank to a settling pit. To rule out the possible presence of contamination from off-site sources, alluvial groundwater monitoring began in the TA-18 area in 1990. Three boreholes were drilled into the Pajarito Canyon alluvium upgradient (west) of TA-18; two were completed as wells. Soil samples from all three boreholes and water samples from two wells were collected to measure the BVs of potential contaminants in groundwater that had not yet

		entered TA-18. Seven wells constructed before the RFI were also included in the sampling. Surface water and sediment samples from wetlands in the bottom of Threemile Canyon southwest of TA-18 provided similar BVs for wetland sites. Thirteen wells, both within and west of TA-18, were constructed by drilling through alluvium to various depths. Seven of these, including one of the two background wells, were filled and sealed after sampling was completed. Six were made permanent wells to allow more complete monitoring coverage of the aquifer in TA-18. The ER Project conducted an RFI at SWMU 18-003(g) in 1993 and 1994 to determine the presence or absence of contamination. Two samples of water and one of sludge were collected from the tank. Surface radiation levels around the septic tank were at BVs, so no surface soil samples were collected from beneath the asphalt pavement. Subsurface soil and groundwater were sampled from a borehole placed 10 ft downgradient from the septic tank, and the samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, and radionuclides. One inorganic chemical was detected in the surrounding soil at a slightly elevated concentration but at less than the site-specific BV. Five organic chemicals were detected in the septic tank at concentrations greater than their SALs and were retained as potential contaminants. In addition, one organic chemical was reported at a concentration slightly above the reported detection limit in one subsurface soil sample from the 84-in. to 120-in. depth interval, the result may be a false positive. The most recent PRG tables include a residential PRG for this chemical of 5600 mg/kg, several orders of magnitude greater than the detected concentration. This organic chemical was eliminated as a potential contaminant because it was less than SAL. One radionuclide was present at concentrations less than its SAL in the septic tank. The RFI report recommended an interim action at SWMU 18-003(g) to remove and dispose of the tank contents. The RFI report stated that this site would be included in the ecological risk assessment when the regulators approve an ecological risk assessment approach. The ER Project conducted an IA at SWMU 18-003(g) in 1996. The IA consisted of removing the liquid and sludge in the septic tank, pressure rinsing the interior, and disposing of the contents of the septic tank and associated decontamination water in accordance with the IA Plan. The ER Project submitted a VCM plan for this SWMU. The objectives of the VCM are to collect supplemental surface and subsurface soil samples at the septic system; determine the nature and extent of soil contamination (if present) using the supplemental data; assess the potential human health and ecological risks from the septic system; and remediate the septic system (by excavation) as necessary. The VCM plan was approved in 2000 but the execution of this work was interrupted by the Cerro Grande Fire and the approved plan has not been implemented.
18-003(h)	In Progress	SWMU 18-003(h) is an active septic tank (structure 18-152) that has served an office building (Building 18-147) since 1967. The tank is made of steel, measures 4.3 ft in diameter x 5 ft high, and has a 500-gal. capacity. It drained into a sanitary sewer heading south to an outfall at the creek next to a manhole (structure 18-157), part of the present sewer system. Sanitary waste from a sink in a warehouse (Building 18-28) entered the same line and discharged through the outfall. The line also serviced a sink in the machine shop in Building 18-28. The tank outlet line now connects with the outlet line for SWMU 18-003(g) and discharges to the sanitary sewer. The connection changes the function of the septic tank to that of a settling pit. To rule out the possible presence of contamination from off-site sources, alluvial groundwater monitoring began in the TA-18 area in 1990. Three boreholes were drilled into the Pajarito Canyon alluvium upgradient (west) of TA-18; two were completed as wells. Soil samples from all three boreholes and water samples from two wells were collected to measure the BVs of potential contaminants in groundwater that had not yet entered TA-18. Seven wells constructed before the RFI were also included in the sampling. Surface water and sediment samples from wetlands in the bottom of Threemile Canyon southwest of TA-18 provided similar BVs for wetland sites. Thirteen

		wells, both within and west of TA-18, were constructed by drilling through alluvium to various depths. Seven of these, including one of the two background wells, were filled and sealed after sampling was completed. Six were made permanent wells to allow more complete monitoring coverage of the aquifer in TA-18. The ER Project conducted an RFI at SWMU 18-003(h) in 1993 and 1994 to determine the presence or absence of contamination. Two water samples were collected from the tank; no sludge was present. The paved area around the septic tank was checked for radiation. Surface readings were at BVs, so no surface soil samples were collected from beneath the asphalt pavement. Subsurface soil was sampled from a borehole located in a shallow, paved stormwater ditch approximately 10 ft downgradient from the septic tank. Inaccessibility, overhead utility lines, and an adjacent storm sewer opening limited the available area for drilling. Groundwater could not be sampled because the auger inadvertently punctured the active sanitary sewer line from structure 18-152 (the septic tank), but the borehole could not be repositioned because of a lack of space. Collected samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and radionuclides. No inorganic chemicals were detected in the soil at concentrations greater than BVs. Four inorganic chemicals were detected in the septic tank samples at levels less than SALs. Three organic chemicals were detected only in the septic tank, and at levels below SALs. One radionuclide was detected in the septic tank at concentrations above its BV/FV but less than SAL. No human health or ecological potential contaminants were retained as a result of the screening assessment. The RFI report recommended NFA at SWMU 18-003(h). The ER Project submitted a VCM plan that included this SWMU. The objectives of the VCM are to collect supplemental surface and subsurface soil samples at the septic system; determine the nature and extent of soil contamination (if present) using the supplemental data; assess the potential human health and ecological risks from the septic system; and remediate the septic system (by excavation) as necessary. The VCM plan was approved in 2000 but the execution of this work was interrupted by the Cerro Grande Fire and the approved plan has not been implemented.
18-004(a)-00	In Progress	Consolidated SWMU 18-004(a)-00 consists of former SWMUs 18-004(a) and 18-004(b). Former SWMU 18-004(a) is a 3-in. stainless-steel industrial line that connected the sinks on the west side of the main building at TA-18 (Building 18-30) to the tanks in former SWMU 18-004(b). Former SWMU 18-004(b) was a subsurface concrete containment pit (structure 18-38) that measured 4 ft wide x 9 ft long x 8 ft high. A sump measuring 9 in. wide x 9 in. long x 6 in. high was built into the floor of the pit. The pit contained two stainless steel tanks designed to receive radioactively contaminated liquid waste from Building 18-30 through a 3-in. stainless-steel industrial line [former SWMU 18-004(a)]. When the tanks became full, they were removed for waste disposal, cleaned, and returned. The tanks were used from the 1950s until 1977, when they were decommissioned. At decommissioning, they were removed, the inflow line was capped, the floor of the concrete pit was left in place, the walls of the pit were razed, and the area was backfilled to grade. The containment pit was located on the west side of Building 18-30. In 1994, the ER Project conducted an RFI at the former SWMUs in this consolidated unit. Geophysical tests could not locate the concrete bottom of the pit that had supported the stainless steel tanks. Risk to underground electrical conduits critical to Building 18-23 (CASA 1) outweighed the benefits of drilling in the area to locate the concrete bottom. Instead, the industrial drainline inside Building 18-30 was sampled. The line was uncapped and the inside of the pipe was swiped and analyzed for radioactivity. All results were below uncertainty limits. Field instruments held at the opening of the pipe detected no radioactivity or organic vapors above BVs. The RFI report recommended NFA at former SWMU 18-004(a) because no potential contaminants were present and at former SWMU 18-004(b) because it could not be

		located.
18-005(a)	In Progress	SWMU 18-005(a) is potentially contaminated soil associated with an HE magazine (structure 18-15) that was used from 1945 until it was demolished in 1977. The magazine originally supported the firing site east of an aboveground armored bunker, known as a "battleship" bunker [structure 18-2, SWMU 18-002(a)]. The magazine was a small, round, dirt-bermed wooden bunker. When TA-18 was later used for nuclear criticality studies, materials stored in the building included uranium and beryllium oxide rather than HE. Structure 18-15 was located east of CASA 1 (Building 18-23). The former location of structure 18-15 is not visibly evident now. The ER Project conducted an RFI at SWMU 18-005(a) in 1994 and conducted surface sampling to determine the presence or absence of contaminants. Five locations around the estimated perimeter of the dirt berm were surface-sampled, but the locations were not field-screened. Samples were submitted for laboratory analysis for inorganic chemicals, HE, and radionuclides. No inorganic chemicals were detected at concentrations above BVs. No HE was detected. No radionuclides were detected at concentrations above BVs/FVs. The RFI report recommended NFA baed on a human health risk assessment at this site.
18-005(b)	Administratively Complete	
18-005(c)	Administratively Complete	
18-006	Administratively Complete	
18-007	Administratively Complete	PRS 18-007 is an armored vehicle that was reportedly buried west of TA-18-32. Field investigations, including an extensive electromagnetic survey, and archival information were unable to verify the burial of the armored vehicle at the suspected locations. SWMU 18-007 is appropriate for NFA under Criterion 1 because it cannot be located.
18-008	Administratively Complete	
18-009(a)	Administratively Complete	AOC 18-009(a) is a former PCB transformer that was located at a unit substation (structure 18-136) and that leaked PCB-contaminated oil in 1982. About 50 cubic yards of PCB-contaminated soil was removed from the site in the same year. The OU 1093 work plan proposed NFA for AOC 18-009(a) because the area was cleaned up and the transformer was removed. The concrete pad on which the transformer sat, as well as the contaminated soil, have also been removed. This site was submitted for NFA in the March 1995 permit modification request.
18-009(b)	Administratively Complete	
18-009(c)	Administratively Complete	
18-009(d)	Administratively Complete	
18-009(e)	Administratively Complete	
18-010(a)	Administratively Complete	
18-010(b)	In Progress	AOC 18-010(b) consists of an active outfall that receives stormwater from a drainage ditch running southward along the west side of the paved area west of the main laboratory and office building at TA-18 (Building 18-30). The outfall discharges to a flat, grassy area at the fence southwest of Building 18-30. This discharge point is approximately 25 ft north of the stream channel in Pajarito Canyon. The stormwater discharged to this area from AOC 18-010(b) generally infiltrates into the ground a short distance from the outfall, although heavy flow may reach the stream channel. The date this outfall became operational is unknown, but Building 18-30 was constructed in 1951. Stormwater discharged from AOC 18-010(b) may potentially be contaminated with materials stored on the asphalt area west of Building 18-30. The RFI work plan

		describes a 1988 photograph that noted spillage from a refueling platform at structure 18-110 into the drainage ditch. Structure 18-110, located adjacent to the head of the ditch, is presently a flammable-storage locker. No previous environmental investigations have been conducted at AOC 18-010(b). The ER Project conducted a Phase I RFI at AOC 18-010(b) during 1994 to characterize potential contamination associated with stormwater discharges. A surface soil sample was collected at the outfall and approximately 12 ft downstream from the outfall. These samples were screened in the field for radioactivity and submitted for laboratory analysis for inorganic chemicals, uranium, and organic chemicals. In addition, surface samples were collected from ten locations in the drainage ditch upstream from the outfall. These upstream samples were screened in the field for inorganic chemicals and organic chemicals, using a mobile laboratory. On the basis of the screening analysis results, five locations were selected for additional sampling. Six surface samples were collected from these five locations and submitted for laboratory analysis for inorganic chemicals, uranium, and organic chemicals. Zinc was the only inorganic chemical detected above its BV, but it did not exceed its SAL. Total uranium was detected above its BV but below its SAL. Five organic chemicals [bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, di-n-butyl phthalate, fluoranthene, and phenanthrene] were detected. None of these organic chemicals was present above its SAL. The results of the Phase I sample analyses were used to perform a human health risk-based screening assessment. On the basis of the assessment results, the RFI report recommended NFA for AOC 18-010(b). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health. The RFI report also indicated that this site would be included in an ecological risk assessment to be conducted once a risk assessment approach has been approved.
18-010(c)	In Progress	AOC 18-010(c) consists of an active outfall that receives stormwater from a paved area east of the main laboratory and office building at TA-18 (Building 18-30). The outfall discharges to a grassy depression south of a utility building (Building 18-31). This discharge point is approximately 100 ft north of the stream channel in Pajarito Canyon. The stormwater discharged to this area from AOC 18-010(c) infiltrates into the ground a short distance from the outfall. The date that this outfall became operational is unknown, but construction of Buildings 18-30 and 18-31 was completed by 1951. Stormwater discharged from AOC 18-010(c) may potentially be contaminated with materials stored on the asphalt area between Buildings 18-30 and 18-31. No previous environmental investigations have been conducted at AOC 18-010(c). The ER Project conducted a Phase I RFI at AOC 18-010(c) during 1994 to characterize potential contamination associated with stormwater discharges. A surface soil sample was collected at the outfall and at three additional locations in the drainage channel below the outfall. These samples were screened in the field for inorganic chemicals and organic chemicals, using a mobile laboratory. On the basis of the screening analysis results, two locations were selected for additional sampling. A surface sample was collected at each of these two locations and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Four inorganic chemicals were detected above BV. None of these inorganic chemicals was present above its SAL. Radionucliddes were not detected above BVs. Three organic chemicals were detected, but none was present above its SAL. The results of the Phase I sample analyses were used to perform a human health risk-based screening assessment. On the basis of the assessment results, the RFI report recommended NFA for AOC 18-010(c). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health. The RFI report also indicated that this site would be included in an ecological risk assessment to be conducted once a risk assessment approach has been approved.
18-010(d)	In Progress	AOC 18-010(d) consists of an active outfall that receives stormwater from a paved area east of a guard station (Building 18-37). The outfall discharges to a flat, grassy area west of a temporary office trailer (Building 18-258). The stormwater discharged to this

		area from AOC 18-010(d) is expected to rapidly infiltrate into the ground because of the flat topography and gravelly soil. The date this outfall became operational is unknown, but construction of Building 18-37 was completed by 1951. Stormwater discharged from AOC 18-010(d) may potentially be contaminated with any materials stored on the asphalt area near Building 18-37. No previous environmental investigations have been conducted at AOC 18-010(d). The ER Project conducted a Phase I RFI at AOC 18-010(d) during 1994 to characterize potential contamination associated with stormwater discharges. A surface soil sample was collected at the outfall and at three additional locations in the drainage channel below the outfall. These samples were screened in the field for inorganic chemicals and organic chemicals, using a mobile laboratory. On the basis of the results of screening analyses, two locations were selected for additional sampling. A surface sample was collected at each of these two locations and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Two inorganic chemicals were detected above BVs, but neither of these inorganic chemicals was present above SALs. No radionuclides were detected above BVs/FVs. Eight organic chemicals were detected. One of these organic chemicals was present above its SAL. The results of the Phase I sample analyses were used to perform a human health risk-based screening assessment. On the basis of the assessment results, the RFI report recommended NFA for AOC 18-010(d). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health. The RFI report also indicated that this site would be included in an ecological risk assessment to be conducted once a risk assessment approach has been approved.
18-010(e)	In Progress	AOC 18-010(e) consists of an active outfall for a paved ditch that collects stormwater from the area between a warehouse (Building 18-28) and an office building (Building 18-147). The outfall is located south of the main entrance driveway to TA-18 and discharges to a small, grassy gully that leads to the stream channel in Pajarito Canyon. The outfall is located approximately 200 ft north of the stream channel. Water discharged from the outfall is expected to infiltrate into the ground. The date this outfall became operational is unknown, but construction of Building 18-28 was completed by 1951. Stormwater discharged from AOC 18-010(e) may potentially be contaminated with any materials stored on the asphalt area in the vicinity of Building 18-28. No previous environmental investigations have been conducted at AOC 18-010(e). The ER Project conducted a Phase I RFI at AOC 18-010(e) during 1994 to characterize potential contamination associated with stormwater discharges. A surface soil sample was collected at the outfall, at 5 locations in the drainage channel between the outfall and the Pajarito Canyon stream channel, and at 8 locations in the stream channel downstream of the drainage channel, for a total of 14 samples. These samples were screened in the field for inorganic chemicals and organic chemicals, using a mobile laboratory. Based on the results of screening analyses, seven locations were selected for additional sampling. A surface sample was collected at each of these seven locations and submitted for laboratory analysis for inorganic chemicals, radionuclide, and organic chemicals. Five inorganic chemicals were detected above BVs. None of these inorganic chemicals was present above its SAL. Total uranium was not detected above its BV. Ten organic chemicals were detected, and two of these organic chemicals were present above SALs. The results of the Phase I sample analyses were used to perform a human health risk-based screening assessment. On the basis of the assessment results, the RFI report recommended NFA for AOC 18-010(e). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health. The RFI report also indicated that this site would be included in an ecological risk assessment to be conducted once a risk assessment approach has been approved.
18-010(f)	In Progress	AOC 18-010(f) consists of an active outfall for roof drains and floor drains at a critical assembly building (Building 18-32), also known as CASA 2. The outfall is located on a

		sandy, grassy bank on the south side of the stream channel in Threemile Canyon. Because of the sandy nature of the soil at this site, the water discharged from the outfall is expected to infiltrate immediately. The date this outfall became operational is unknown, but construction of Building 18-32 was completed in 1951. Water discharged from AOC 18-010(f) may potentially be contaminated with materials used in Building 18-32. No previous environmental investigations have been conducted at AOC 18-010(f). The ER Project conducted a Phase I RFI at AOC 18-010(f) during 1994 to characterize potential contamination associated with discharges from this outfall. A surface soil sample was collected at the outfall and at three additional locations in the drainage channel between the outfall and the stream channel in Threemile Canyon. These samples were screened in the field for inorganic chemicals and organic chemicals, using a mobile laboratory. On the basis of the screening analysis results, two locations were selected for additional sampling. A surface sample was collected at both of these locations and submitted for laboratory analysis for inorganic chemicals, radionuclide, and organic chemicals. No inorganic chemicals were detected above BVs, and the radionuclide was not detected above its BV. No organic chemicals were detected. On the basis of the Phase I sample analysis results, the RFI report recommended NFA for AOC 18-010(f). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health. The RFI report also indicated that this site would be included in an ecological risk assessment to be conducted once a risk assessment approach has been approved.
18-011	In Progress	AOC 18-011 consists of soil beneath a former generator building (former Building 18-22) that was potentially contaminated by a spill in the building. Building 18-22 was located at the north end of the central TA-18 area and housed an electrical generator. The building was operated from 1946 to 1950. The building structure was removed in 1950, but the concrete floor pad was left in place and is covered with approximately 2 ft of fill. Mercury switches were reportedly used in the building, and on one occasion a switch broke, spilling 1 or 2 mL of mercury on the floor and possibly contaminating the surrounding soil. This spill was reportedly cleaned up using sulfur powder, but no historical documentation of the cleanup was available. No previous environmental investigations have been conducted at AOC 18-011. The ER Project conducted a Phase I RFI at AOC 18-011 during 1994 to characterize potential contamination associated with the mercury spill. A surface soil sample was collected 2 ft from the perimeter of each side of the pad, and another surface sample was collected at the center of the pad, for a total of five samples. These samples were screened in the field for radioactivity and submitted for laboratory analysis for mercury. Mercury was not detected above its BV in any of the samples. On the basis of the Phase I sample analysis results, the RFI report recommended NFA for AOC 18-011. The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health or the environment.
18-012(a)	In Progress	SWMU 18-012(a) consists of an active outfall for a combined industrial drain and storm sewer that serves a critical assembly building (Building 18-116) known as CASA 3. Drainlines discharging to this outfall are connected to Building 18-116 roof drains, floor drains, and sinks. The outfall discharges onto the ground approximately 120 ft northeast of Building 18-116. This discharge point is approximately 150 ft from the stream channel in Pajarito Canyon. The date this outfall became operational is unknown, but construction of Building 18-116 was completed in 1960. Stormwater discharged from SWMU 18-012(a) may potentially be contaminated with materials used in Building 18-116. No previous environmental investigations have been conducted at SWMU 18-012(a). The ER Project conducted a Phase I RFI at SWMU 18-012(a) during 1994 to characterize potential contamination associated with discharges from this outfall. A surface soil sample was collected at the outfall and at three additional locations in the

		drainage channel below the outfall. These samples were screened in the field for radioactivity, inorganic chemicals, and organic chemicals, using a mobile laboratory. On the basis of screening analysis results, two locations were selected for additional sampling. A surface sample was collected at both of these locations and submitted for laboratory analysis for inorganic chemicals, radionuclide, and organic chemicals. No inorganic chemicals were detected above BVs, and the radionuclide was not detected above its BV. No organic chemicals were detected. On the basis of the Phase I sample analysis results, the RFI report recommended NFA for SWMU 18-012(a). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health. The RFI report also indicated that this site would not need to be included in an ecological risk assessment.
18-012(c)	In Progress	AOC 18-012(c) consists of an inactive sump, drainlines, and outfall from Building 18-141, which housed ultrasonic cleaning operations. The ultrasonic cleaner used ethanol and benzene and was located in a pit below the floor of the building. A drainline from this pit leads to an outfall east of the building. Material spilled in the pit would have been discharged to this outfall, which is located adjacent to a drainage ditch approximately 80 ft east of Building 18-141. The ultrasonic cleaner was used for cleaning beryllium parts and may also have been used for cleaning radioactive materials. The time period during which the ultrasonic cleaner was used is unknown. The 1990 SWMU report indicated that there were no known releases from the sump. The 1990 SWMU report also identified a second drainline from Building 18-141 that discharged to a dry well east of the building. The only material apparently discharged to this drainline was potable water backflow from a chilled-water cooling system. No previous environmental investigations have been conducted at AOC 18-012(c). The ER Project conducted a Phase I RFI at AOC 18-012(c) during 1994 to characterize potential contamination associated with discharges from the outfall associated with the ultrasonic cleaner. The discharge area of the second drainline was not sampled because the drainline apparently received only potable water. A surface sample and duplicate were collected at the location of the outfall. These samples were screened in the field for radioactivity and submitted for laboratory analysis for inorganic chemicals, radionuclide, and organic chemicals. No inorganic chemicals were detected above BVs, and the radionuclide was not detected above its BV. No organic chemicals were detected. On the basis of the Phase I sample analysis results, the RFI report recommended NFA for AOC 18-012(c). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health. The RFI report also indicated that this site would not need to be included in an ecological risk assessment.
18-012(d)	Administratively Complete	
18-013	In Progress	AOC 18-013 is a small, inactive, buried concrete-walled pit beneath the asphalt pavement on the north side of a critical assembly building (Building 18-23), referred to as CASA 1. The pit contains a catch tank that reportedly received industrial wastes from a pipe from inside the building. This AOC was not included in the 1990 SWMU report but was identified from engineering drawings reviewed during RFI work plan preparation. These engineering drawings indicated a subsurface structure with a catch tank that may have received industrial waste or radioactive liquids. A 1992 site inspection inside Building 18-23 found a capped drainpipe, which was shown on the drawing as leading to the pit. This information led to the designation of this site as an AOC. Discussions with site personnel and former employees could not establish the purpose of the drainpipe and catch tank or whether this system was ever used. The date of construction of the tank is unknown, but Building 18-23 was constructed in 1947. No previous environmental investigations have been conducted at AOC 18-013. The ER Project conducted a Phase I RFI at AOC 18-013 during 1994 to characterize potential contamination associated with use of the tank. Initial investigation activities included excavation to determine whether the pit and tank were present. Excavation

		through the asphalt pavement verified that the concrete-walled pit, containing an 18-in.-diameter x 2.6-ft-high metal catch tank, was still in place. Both the pit and the tank were entirely backfilled with soil. The bottom of the concrete pit, 4.8 ft below grade, was covered with gravel and open to the soil below. This open bottom would have allowed any overflow from the catch tank to filter through the gravel to the soil surface. Five samples of the backfill in the pit and catch tank were collected. Two of these samples were collected from the bottom of the catch tank, two from the fill beneath the drainline, and one from the bottom of the pit. These samples were screened in the field for radioactivity and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Two inorganic chemicals were detected above BVs, both of which were present below their respective SALs. Two radionuclides were detected above BVs/FVs, but neither of these radionuclides was present above its SAL. Nine organic chemicals were detected, but only one organic chemical was detected above its SAL. The results of the Phase I sampling and analysis were used to conduct a human health risk-based screening assessment. On the basis of the assessment results, the RFI report recommended NFA for AOC 18-013. The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health. The RFI report also indicated that this site would not need to be included in an ecological risk assessment.
19-001-99	In Progress	Consolidated SWMU 19-001-99 consists of former SWMUs 19-001, 19-002, 19-003, and former AOC C-19-001. TA-19, formerly known as the East Gate laboratory, is now part of TA-72 and is located in Santa Fe County. It is on Los Alamos Mesa east of the Los Alamos airport and East Gate industrial park. It is bounded by Pueblo Canyon on the north and by a small branch of Pueblo Canyon on the south. The East Gate laboratory was built in 1944 for a scientist who needed an isolated location for experimental work on small sources. In 1947 the site consisted of a storage hutment and laboratory building, which was used for a variety of experiments, some of which used radioactive sources and chemicals. More buildings were added until the site consisted of laboratory, battery, guard, retreat, and shelter buildings and a latrine and septic tank. Several buildings were removed in 1956. The remaining buildings at TA-19 were removed in 1974. Suspect contaminants are radionuclides and organic and inorganic chemicals. Former SWMU 19-001 is a former septic system. It consists of a tank (structure 19-6), piping, and an outfall that reportedly handled sanitary waste from the former retreat building (Building 19-05). The tank was about 7 ft long x 4 ft wide x 5 ft deep and made of reinforced concrete. The piping was made of asphaltic composition fiber known as orangeburg pipe. East Gate personnel used the retreat area for breaks and meals. The septic system operated from 1957 to 1974 when all buildings were removed. Former SWMU 19-002 is a former surface disposal area located on DOE property along the north-facing wall of Pueblo Canyon. The area is about 10 ft wide x 100 ft long. Several structures, including a battery building, were located at TA-19. The battery building and several other structures were decommissioned in 1956; the remaining buildings were removed in 1974. Batteries and concrete debris from the decommissioned TA-19 structures were disposed of at former SWMU 19-002. Battery-related waste includes two sizes of dry-cell batteries, batteries consisting of vertical plates, and a tar-like substance derived primarily from the interior of batteries. All batteries found on the site were carbon-type batteries, akin to flashlight batteries. Former SWMU 19-003 is the former sewer drainline and outfall that reportedly handled sanitary waste from the retreat building. The drainline was about 90 ft long and was made of orangeburg pipe. Wastes discharged through the sewer drainline to an outfall in Pueblo Canyon. The system probably was used from 1944 until the building was decommissioned in 1974. The building operated from 1944 to 1962 when it was transferred to the Zia Company and assigned to DOE-LAAO's municipal activities branch and used for civil defense purposes. It later was leased to the Los Alamos radio club, which used the site until 1974. The outfall area of former SWMU 19-003 is

		contained within the battery disposal area identified for former SWMU 19-002. Former AOC C-19-001 is potentially contaminated soil beneath the former laboratory, battery, guard, retreat, and shelter buildings and the latrine at TA-19. The laboratory was built in 1944 and the other buildings were added by the early 1950s. The battery building, guard building, and latrine were removed in 1956. Other structures were transferred to the Zia Company in 1957 and 1962. In 1974, building and property surveys were conducted at TA-19 to identify any potential contamination. Survey results indicated that the structures were free of HE, radioactive, chemical, and toxic contamination. Soil samples collected in the vicinity of two effluent discharge points in 1974 were analyzed for radionuclides. Soil sample results indicated that no radioactivity had been released. The ER Project conducted a VCA in 1995 at former SWMU 19-002 to remove the solid waste. The VCA report was written in lieu of preparing a separate RFI report. In June 1995, a site reconnaissance was completed to assess the extent of the concrete and battery debris before removing the materials. Three samples (two surface soil and one that consisted of materials from each of the three battery types at the site) were collected. Samples were screened for radioactivity and submitted for laboratory analysis for inorganic and organic chemicals, and gamma spectroscopy. No elevated contaminant levels were detected. In August 1995, former SWMU 19-002 was sampled as part of the RFI. Nineteen surface soil and drainage sediment samples were collected from areas immediately surrounding battery piles and from first-order drainages around the former SWMU. Sample analysis indicated no residual chemical or radiological contaminants were present above SALs. About 2 cubic yd of concrete debris and 1.5 cubic yd of old batteries and associated debris were removed from the site and disposed of at the Los Alamos County landfill. Site restoration was not required because no excavation was performed. The VCA report requested regulator concurrence to remove former SWMU 19-002 from Module VIII of LANL's Hazardous Waste Facility Permit. The ER Project conducted an RFI at former SWMUs 19-001, 19-003, and AOC C-19-001 in 1997 to determine if residual contamination was present from historic operations. A geodetic survey was conducted to establish the original locations of the septic tank, drainlines, outfalls, building corners, and fences. The septic tank, associated inlet and outlet lines (former SWMU 19-001), and drainline (former SWMU 19-003) were removed. After the drainline was removed, a sump pump was lowered into the septic tank and about 300 gal. of liquid was pumped into containers. Samples were grouped into three types by location: from former SWMU 19-001, from the mesa slope at former SWMU 19-003, and from the mesa top at former SWMU 19-003. Fifteen surface and subsurface soil samples and two replicates from fifteen locations were collected, field-screened for organic chemicals and gross alpha and gross beta/gamma radiation, and submitted for laboratory analysis for organic and inorganic chemicals and gamma spectroscopy. Screening results for all samples were negative for organic chemicals and below BVs for radioactivity. At former SWMU 19-001, two samples were collected in the outfall area on the mesa slope and eight were collected from the mesa top. Acetone, aluminum, anthracene, barium, bis(2-ethylhexyl) phthalate, benzo(g,h,i)perylene, calcium, carbazole, cesium-137, chromium, cobalt, copper, dibenzofuran, lead, manganese-54, magnesium, methylene chloride, 2-methylnaphthalene, nickel, phenanthrene, toluene, vanadium, zinc, and 12 PAHs were detected above BVs. Cesium-137 and the following PAHs were detected at concentrations greater than SAL: benzo(a)anthracene; benzo(b)fluoranthene; benzo(a)pyrene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene. Calcium and magnesium have no SALs and are essential nutrients; the RFI report compared them to their RDAs. Because intake associated with incidental soil ingestion would be much less than the RDAs, calcium and magnesium were eliminated from further consideration. Some PAHs have no SALs. Those chemicals used surrogate toxicity values that were based on similar chemical structure to other PAHs. Two soil samples

		were collected from the outfall area (mesa slope) at former SWMU 19-003. Sample locations were within the boundaries of former SWMU 19-002. Acetone, cadmium, calcium, cesium-137, copper, lead, manganese, mercury, methylene chloride, toluene, zinc, and two PAHs were detected above BVs. Manganese was detected at concentrations greater than SAL. At the mesa top location for former SWMU 19-003, five samples were collected. Acetone, aluminum, arsenic, barium, benzo(g,h,i)perylene, calcium, carbazole, cesium-137, chromium, cobalt, copper, dibenzofuran, magnesium, mercury, methylene chloride, 2-methylnaphthalene, nickel, phenanthrene, selenium, vanadium, and 13 PAHs were detected above BVs. Arsenic and the following PAHs were detected at concentrations greater than SAL: benzo(a)anthracene; benzo(b)fluoranthene; benzo(a)pyrene; dibenzo(a,h)anthracene; and indeno(1,2,3-cd)pyrene. Because land transfer is planned for former SWMUs 19-001 and 19-003, future land use on the mesa top was assumed to be residential for the purposes of the human health risk assessment. The outfall drainage area is steeply sloped; future use for that land was assumed to be recreational. The RFI report concluded that risk associated with both use scenarios at former SWMU 19-001 and the mesa-top portion of former SWMU 19-003 fell into EPA's acceptable range. The RFI report stated that contamination detected at the mesa-slope portion of former SWMU 19-003 is associated with historic battery disposal at former SWMU 19-002. PAHs, which would be associated with former SWMU 19-003, were not detected at levels greater than 0.1 times SAL in the outfall. The RFI report stated that soil contamination associated with the battery disposal area at former SWMU 19-002 will be revisited, as will the outfall area of former SWMU 19-003 because the outfall contamination is associated with batteries and not with the drainline. The RFI report recommended NFA at former SWMUs 19-001 and 19-003 because the sites were characterized in accordance with applicable state and federal regulations and available data indicate that contaminants are present in concentrations that pose no unacceptable human health risk under projected future land use. Contaminants identified in the outfall area at former SWMU 19-003 were not related to the drainline of the former SWMU. Former SWMU 19-002 will be revisited and battery-related contaminants that were detected in the outfall samples of former SWMU 19-003 will be evaluated. The ER Project conducted an RFI at former AOC C-19-001 in 1997 to determine whether residual contamination was present in the surface drainages south of the former laboratory. A geodetic survey was performed to establish the original locations of the corners of buildings and fences. Seven surface-soil samples were collected. Samples were field-screened for organic chemicals and radionuclides. They were submitted for laboratory analysis for inorganic and organic chemicals and gamma spectroscopy. Radionuclides were detected but none above its BV. Acetone, calcium, dibenzofuran, lead, methylene chloride, 2-methylnaphthalene, phenanthrene, sodium, toluene, and four PAHs were detected above BVs. No chemicals were detected at concentrations greater than SALs. Calcium has no SAL and is an essential nutrient; the RFI report compared calcium to its RDA. Because intake associated with incidental soil ingestion would be considerably less than the RDA, calcium was eliminated from further consideration. The RFI report recommended NFA at former AOC C-19-001 because the site was characterized in accordance with applicable state and federal regulations and available data indicate that contaminants are present in concentrations that pose no unacceptable human health risk under projected future land use.
20-001(a)	In Progress	SWMU 20-001(a) was a small landfill site located in Sandia Canyon in the former TA-20 (which lies within the current boundaries of TA-72 and TA-53) that was used to bury scrap metal, some of which may have been contaminated from past firing site activities. This SWMU is adjacent to East Jemez road. The former landfill reportedly was removed in 1948 before East Jemez road was constructed. Little is known about the actual dimensions of the landfill; however, based on archival data, the landfill was only 5 ft deep. HE, inorganic chemicals, uranium-238, and strontium-90 were listed as possible contaminants at this site.

		In 1995, the site was gridded (200 ft x 300 ft) and a geophysical survey was conducted at the landfill. A backhoe was used to excavate portions (2 trenches) of the site that showed anomalies in the geophysical survey. The north trench excavation exposed small pieces of wood debris, a 3-ft-long section of a pole, and a metal power-pole anchor. Excavation of the south trench produced no evidence of previous disturbance, as would be expected at a former landfill. Seven soil samples were collected from the north trench at a depth of 10 ft to 11 ft and one sample was collected (10-ft to 11-ft depth) from the southern trench. Following data analysis, this SWMU was recommended for NFA in the RFI report.
20-001(b)-00	In Progress	SWMU 20-001(b)-00 consists of former SWMUs 20-001(b) and 20-002(c) and former AOC 20-003(c). Potential contaminants at this site include HE, inorganic chemicals, strontium-90, and uranium. Former SWMU 20-001(b) is a small landfill known as Sandia Canyon Area 2. Debris from the adjoining firing site [former SWMU 20-002(c)], the US Navy gun site [former AOC 20-003(c)], and the decommissioned control building and berm were disposed of in the landfill. This site was excavated and the contents were removed in a 1948 cleanup. Former SWMU 20-002(c) is the site of a historical firing point used for charges of up to 50 lb. The firing site is shown on an engineering drawing as a pad bordered on three sides by an earth berm. No historical data could be found concerning site contamination. Any visible contamination is assumed to have been cleaned up during the 1948 cleanup before East Jemez Road was constructed. The south side of this site is now covered by the road embankment. Former AOC 20-003(c) was the site of a Navy gun mount used between 1945 and 1948. The gun was fired into steel plates set along the nearby canyon walls. The concrete pad that held the gun originally was thought to measure approximately 20 ft by 20 ft by 1 ft thick. In 1995, former SWMU 20-001(b) was gridded (150 ft x 200 ft) and a geophysical survey was conducted at the landfill. A backhoe was used to excavate portions (3 trenches) of the site that showed anomalies in the geophysical survey. The east trench excavation exposed a 4-ft-long piece of electrical conduit and some rope. Excavation of the northern trench exposed structural steel shapes (channels and angles), the foundation for the Navy gun (an 8-ft-thick concrete pad with 2-in., steel-plate cover), and wood debris. Excavation of the southern trench exposed abandoned utility lines and a 6-ft-long chain-type pipe wrench. Soil samples (7) were collected from each trench at depths varying from 1 ft to 10 ft. The RFI report recommended this site for NFA because no contaminants posed an unacceptable risk to human health. During the RFI investigation of former SWMU 20-002(c), a 200-ft by 200-ft grid was established and a radiological survey was conducted. Radiation levels recorded in the field showed little variation across the site with the exception of somewhat higher readings along the drainage that cuts across the site. During the RFI investigation, 25 samples were collected from 11 locations. The RFI report recommended this site for NFA because no contaminants posed an unacceptable risk to human health. At the time of the RFI investigation of former AOC 20-003(c), the site contained what appeared to be a concrete pad with anchor bolts covered by soil, and debris consisting of conduit and electrical wires. The site is approximately 90 ft north of East Jemez Road in Sandia Canyon. Eight soil samples were collected from this site during the investigation. Former AOC 20-003(c) was the subject of a 1995 LANL VCA. Four feet of the concrete pad and the manholes were removed. The remaining pieces of the concrete pad were buried under 5 ft to 6 ft of backfill. Approximately 21.5 cubic yards of concrete debris were hauled to the Los Alamos County landfill. No samples were collected during the VCA conducted at this site.

20-001(c)-00	In Progress	Consolidated SWMU 20-001(c)-00 is a small landfill area consisting of former SWMUs 20-001(c), 20-002(a), and 20-002(b). Potential contaminants at this site include HE, inorganic chemicals, and uranium. Former SWMU 20-001(c) is a small landfill known as Sandia Canyon Area 3. Debris from the adjoining firing sites [SWMU 20-002(a) and (b)], and from the decommissioned control building and berm were disposed of in the landfill. The blast radii of the two firing sites overlapped each other and all associated structures. Former SWMU 20-002(a) was the site of a firing pit used from 1945 to 1948 to conduct initiator tests. The tests conducted at this site were contained within a vessel located in the pit. The inside dimensions of the vessel were 14 ft, 8 in. x 14 ft, 8 in. x 12 ft deep. The walls and floor consisted of 0.75-in.-thick steel plate backed by 12-in. x 12-in. timbers. A steel framework covered the pit, overlain by a mat of 0.25-in.-diameter steel rods spaced 1 in. apart. According to a 1947 memo, the framework and mat, presumably installed to contain debris from the shots, failed after the first few shots. Former SWMU 20-002(b) was a cylindrical steel tank known as "Dumbo" that was used to contain an explosive test so that shot fragments could be recovered. Dumbo was mounted on a firing pad at one end of a platform near the west end of TA-20. Dumbo was used only once due to the difficulty of opening the tank after the shot was fired within the tank. A second Dumbo, built and installed on the firing pad at the other end of the concrete platform, never was used. The two Dumbos were constructed in 1945 and were removed in 1948. During the 1995 RFI investigation of these sites, former SWMUs 20-002(a) and 20-002(b) were gridded and surveyed for radiological contamination as a guide to soil sampling. Twenty-three soil samples were collected from these two SWMUs. Former SWMUs 20-002(a) and 20-002(b) were proposed for NFA in the RFI report. Former SWMU 20-001(c) was sampled in 1995 but because of the extent of the SWMU bound, additional sampling will be required at this SWMU.
20-002(d)	Pending	SWMU 20-002(d), located near a manhole (structure 20-3), was identified as a firing site on the basis of descriptions of TA-20 activities. Historical data for TA-20 indicate the group M-4 conducted several implosion tests near structure 20-3. This firing site apparently was used for fewer than 10 shots; however, there is a report of one shot (containing 500 lb. of Composition B) that underwent a low-order explosion (i.e., did not detonate completely). A 1962 LANL memo describes two cleanup efforts related to this incident: one conducted immediately after the incident and a second that was part of the 1948 Sandia Canyon cleanup before the construction of East Jemez Road. Periodic inspections of SWMU 20-002(d) (seven documented inspections) were conducted in the area from 1964 to 1975. The final three inspections (1971, 1973, and 1975) found no explosives at SWMU 20-002(d). This site was inspected again in 1985 under the Los Alamos Characterization Program and two soil samples were collected from the site. The results of the samples, which were analyzed for uranium, indicated the soils surrounding 20-002(d) were contaminated with uranium. SWMU 20-002(d) was sampled during the 1995 RFI investigation. Sample results indicated the presence of inorganic and radionuclide contamination. Based on sampling results, the RFI report recommended this SWMU for a VCA; however, no VCA plan was written or implemented. This SWMU was petitioned for NFA in September 2001 under the "munitions rule."
20-003(a)	Pending	SWMU 20-003(a) was identified in the 1990 SWMU report as structure 20-2, located near the center of former TA-20. Engineering drawings show structure 20-2 as a one-room control building with interior dimensions of 20 ft x 10 ft x 7.5 ft and shows the structure covered with an earth berm. The walls were lined with shelves and a bench was at one end. Electrical conduit is shown running from this building to the firing site at 20-9 [former SWMU 20-002(c)], and to a manhole located at the gun mount [structure 20-16, former SWMU 20-003(c)]. A 1947 LANL memo mentions a control building adjacent to a firing point; the building appears to be structure 20-2.

		Based on information gathered during the RFI investigation, SWMU 20-003(a) was recommended for NFA in the RFI work plan. The structure was used as a control building rather than as a test facility. Numerous historical records were reviewed that discuss the cleanup of potentially contaminated facilities at the former TA-20 before Sandia Canyon was opened to the public. None of the existing information indicates structure 20-2 was ever contaminated. This SWMU was again proposed for NFA in 2001.
20-003(b)	Pending	AOC 20-003(b), a 20-mm gun-firing site, consisted of two structures associated with the firing of the gun. Structure 20-44 was a 16-ft by 16-ft by 8-ft-high wood-frame building that was equipped with concrete gun mounts. An adjacent control building (structure 20-13) had approximately the same dimensions. Potential contaminants at this site include inorganic chemicals and radionuclides. In the 1993 RFI investigation of AOC 20-003(b), no structures were standing although several concrete foundations remained. An 80-ft by 14-ft grid was established at the site and surface radiation readings were measured to help guide sampling locations. Radiological readings were consistent across the site. Soil samples (surface and subsurface) were collected from six locations in the drainage that traverses the site. Based on data collected during the investigation, this site was recommended for NFA in the 1996 RFI report.
20-003(d)	Administratively Complete	
20-004	In Progress	AOC 20-004 was a septic system constructed in 1952 to serve the guardhouse at TA-72. The septic tank was a single-tank chamber made of 6-in.-thick reinforced concrete with inside dimensions of 6 ft by 6 ft by 5 ft. The tank had a capacity of 540 gal. and a flow capacity of 200 gal. per day. The 1990 SWMU report indicated a possible drainline/drainfield associated with this septic tank. The septic tank was no longer used after 1957. The tank was returned to service in 1966 when the firing range was opened at TA-72. A 1985 memo indicated that the septic tank was still active at that time and was used by the LANL security force. The RFI work plan states that in 1989 the tank reportedly was collapsed and filled in by Pan Am World Services; however, interviews with site personnel indicated the tank and associated drainlines were removed during a construction project in the early 1990s. During the RFI investigation, a geophysical survey was conducted at AOC 20-004 to help establish the presence or absence of the tank. The data from the survey indicated none of the subsurface anomalies typically associated with buried objects. Based on the interviews with site personnel and the geophysical survey results, the septic tank is believed to have been removed. Nine samples were collected from three locations at the former location of the septic tank. Based on the results of the sampling, AOC 20-004 was recommended for NFA in the 1996 RFI report.
20-005	In Progress	SWMU 20-005 was a septic system that served Building 20-1. The septic system was constructed in 1945 and abandoned in 1948. Plumbing drawings for this building indicate this system served a toilet, restroom sink, and a darkroom sink. The septic system reportedly was removed. However, the tank was not located during a 1985 LANL investigation. Excavation of the area turned up no evidence of the tank or waste lines. The septic tank was shown in engineering drawings as having 6-in.-thick concrete walls with interior dimensions of 3 ft x 6 ft x 5 ft high and a capacity of 540-gal. The discharge point of the tank is not known. During the RFI investigation, a geophysical survey was conducted at SWMU 20-005 to help establish the presence or absence of the tank. Data from the survey indicated no subsurface anomalies typically associated with buried objects. Based on interviews with site personnel and the geophysical survey results, the septic tank is believed to have been removed. Nine samples were collected from nine locations at the area drainage downgradient from the septic system. Based the results of the sampling, SWMU 20-005 was recommended for NFA.
21-002(a)	In Progress	SWMU 21-002(a) represents any and all additional unidentified inactive container

		storage areas at TA-21, except SWMU 21-002(b). Containers, gas cylinders, and drums were reportedly stored in several locations throughout TA-21, and some were reported to have leaked. Each of the alleged storage areas would have been associated with operations at a specific TA-21 facility, and D&D protocol for those facilities would have included removing contamination from any spills that might have occurred in the areas. It has been determined that no additional unidentified container storage areas exist at TA-21 and that these sites should not have been listed as a SWMU. The OU 1106 work plan recommended this SWMU for NFA.
21-002(b)	In Progress	AOC 21-002(b) is a former drum storage structure (structure 21-38) located southeast of a former shop (Building 21-31). The structure was built in 1945 and was equipped with three walls with tin siding and a roof, and a concrete floor. The north side of the structure was open; 55-gal. drums were stored upright within the structure and on the ground immediately outside the building. The structure was decommissioned in 1966. Contents of the drums stored in this structure are not known and there are no documented spills or leaks from the drums. Phase I RFI activities, which consisted of geodetic surveying and soil sampling and analysis were conducted at AOC 21-002(b) in 1994. Nine surface samples were collected within the footprint of the inactive storage area. RFI screening assessment results indicated that the site did not pose an unacceptable risk. Therefore, the Phase Report 1A recommended NFA for AOC 21-002(b).
21-003-99	In Progress	Consolidated SWMU 21-003-99 consists of former SWMU 21-003 and former AOC 21-013(f). Former SWMU 21-003 was a PCB-container storage area inside a former laboratory (Building 21-61) including the area immediately outside and east of the building. Former AOC 21-013(f) was a possible surface disposal area, based on a 1949 aerial photograph, and exists within the boundaries of former SWMU 21-003. Because SWMU 21-003-99 encompasses the area of former AOC 21-013(f), sampling proposed for SWMU 21-003-99 will be sufficient to identify any potential contamination from the mounds identified for former AOC 21-013(f). Former SWMU 21-003 was the PCB-container storage area associated with Building 21-61. The building was constructed in 1950 to support classified plutonium research; therefore, no documentation is available describing the work conducted in the building from 1950 to 1956. In 1956, the building was remodeled to support the space propulsion project known as Project Rover. Operations included the use of an electric furnace to coat reactor parts and fuel rods with niobium pentachloride to improve heat resistance and to prolong the life of reactor components. No leaks or releases are known to have occurred from these operations. During the early 1960s, the coating operation was suspended, and the building was not used until the late 1960s and early 1970s, when the building was used as a metal fabrication shop to support TA-21 remodeling efforts. Starting in 1978, Building 21-61 and the unpaved area directly east of the building were used to store capacitors and transformers containing PCB oil, PCB-contaminated pumps, and drums of PCB-contaminated oil, solvents, and trash. Kerosene and petroleum-based solvents were used in the storage area to rinse the transformers and capacitors after the PCB oil had been drained. PCB-contaminated materials were stored in the unpaved area until 1981, when the northern two-thirds of the yard east of the building was paved with asphalt. Near the center of the fenced yard, a rectangular berm approximately 40 ft wide x 60 ft long surrounds part of the asphalt pad; an outlet valve is in the southeast corner. Soil was not excavated before the asphalt pad was emplaced. After 1981, drums containing less than 500 ppm PCBs were stored on the asphalt pad, and drums containing greater than 500 ppm PCBs were stored inside Building 21-61 in accordance with TSCA 40 CFR 761. Storage of PCB-contaminated materials at Building 21-61 was discontinued in 1989 when PCB storage for the entire Laboratory was moved to the PCB waste storage facility at TA-54. In 1988, 29 grab samples were collected from areas on or near the paved portion of the site. Analytical results indicated PCB concentrations ranged from 1.17 ppm to 94,700

		ppm. The interior of Building 21-61 was decontaminated in 1989 in accordance with TSCA requirements (40 CFR 761), and PCB levels were reduced; however, some contamination remained. Former AOC 21-013(f) was a surface disposal area, based on a 1949 aerial photograph that showed a series of mounds (assumed to be soil) on the mesa top in the approximate location where Building 21-61 was to be constructed. A 1950 photograph shows that the mounds were no longer present and Building 21-61 had been constructed in the approximate location of the mounds. The source of the soil mounds is not known; therefore, the potential contaminant source is not known. During the 1994 Phase I RFI, 49 surface samples were collected outside the fenced storage area at former SWMU 21-003, to define the lateral extent of surface contamination, using a 10-ppm PCB limit. Six surface samples were also collected within 5 ft of the perimeter of Building 21-61. All samples were field-screened for PCBs and VOCs. Twenty-one samples were submitted to an off-site laboratory for analysis. Analytical results indicate that the area downgradient from the storage area is contaminated with gradually decreasing PCB concentrations. Toluene also was detected in all 21 fixed-laboratory samples. Inorganic chemicals, including antimony, cadmium, copper, lead, mercury, thallium, and zinc, were reported above BVs. Radionuclides, including americium-241, plutonium-238, plutonium-239, radium-226, and uranium-235, were reported above BVs. No subsurface characterization was completed for this site. In 1998, LANL conducted a RCRA closure at the indoor storage area. In 1998, the ER Project submitted a SAP to NMED to define the extent of soil contamination in the storage yard east of Building 21-61. Additional sampling beneath the building will be conducted after the building is decommissioned, decontaminated and demolished.
21-004(b)-99	In Progress	Consolidated SWMU 21-004(b)-99 consists of former SWMUs 21-004(b), 21-004(c), and former AOC 21-004(d). Former SWMUs 21-004(b) and 21-004(c) were two aboveground stainless steel tanks that are located within an asphalt berm about 110 ft north of a sump pump (structure 21-223). Former SWMU 21-004(d) was the drainline from sump pump 21-223 to an outfall area in DP Canyon. Between 1964 and 1979, former SWMU 21-004(d), a 6-inch drainline, was connected to sump pump 21-223 and discharged overflow from the sump pump directly to DP Canyon. During this period of time, the sump was not equipped with an overflow alarm system and discharges were not documented. The initial release point for the drainline was located just north of the perimeter road at a concrete bulkhead. In later years, the outfall drainline was extended approximately 60 ft from the bulkhead northwest and downgradient into DP Canyon. In 1979, the two stainless steel tanks (structure 21-346) were moved from TA-53 and connected to the outfall drainline from sump pump 21-223 to catch wastewater overflow from sump pump 21-223. Each tank is 9 ft high and 8 ft in diameter and has a capacity of 9600 gal. The sump pump is connected to the TA-21 acid waste line, which carries wastewater produced at DP East to the TA-21 wastewater treatment plant (Building 21-257). Former SWMUs 21-004(b) and 21-004(c) reportedly were pumped out on two occasions between 1979 and 1991. The wastewater was sent back into the sump pump 21-223. No leaks from the tanks or releases to the bermed area or the environment have occurred. No chemical or radiological analyses have been performed on the wastewater in the tanks (structure 21-346). Waste potentially reaching this SWMU is industrial wastewater, which consists of diluted laboratory waste and liquids from chilled-water systems originating with DP East operations. Historically, wastes may have been contaminated with tritium, polonium, actinium, plutonium, uranium, thorium, and mercury. Other chemical contaminants that may have historically been released to

		the tanks were not documented. Phase I RFI activities were conducted at former AOC 21-004(d) in 1992. A radiological field survey was performed, and six locations were sampled. The radiological field survey indicated background screening levels of alpha, gamma, and low-energy gamma emitters. No inorganic or organic chemicals were detected above SALs. Analytical results for all radionuclides were reported below SALs. The extent of contamination was defined, and NFA was proposed for former AOC 21-004(d). Phase I RFI activities were conducted at former SWMUs 21-004(b) and 21-004(c) in 1994, consisting of a field radiological survey and soil sampling. Two 5-ft boreholes were drilled adjacent to the asphalt berm. Samples were collected from each 2.5-ft interval for a total of four samples. The radiological field survey indicates that no elevated radiation levels were detected at the tanks. Elevated alpha radiation was detected in the fill-dirt staging area southeast of the tanks and in the areas west and northwest of the tanks. Gamma radiation was also elevated in these areas. No potential contaminants were retained from the screening assessment. Therefore, former SWMUs 21-004(b) and 21-004(c) were recommended for NFA.
21-005	Administratively Complete	SWMU 21-005 is the former location of a nitric acid pit used to destroy classified documents. The pit was removed in 1967. ER Project RFI activities at this SWMU involved characterization of the site in accordance with applicable state and federal regulations. RFI sampling verified that the nature and extent of contamination was defined. Screening assessment results indicate that potential releases from the pit do not pose adverse impacts to human health or the environment under current and projected future land use. Therefore, SWMU 21-005 is appropriate for NFA under Criterion 5.
21-006(c)-99	In Progress	Consolidated SWMU 21-006(c)-99 consists of former SWMUs 21-006(a), 21-006(b), 21-006(c), and 21-006(d). These former SWMUs are inactive underground seepage pits. In addition to a seepage pit, former SWMU 21-006(b) also denotes the drainline and outfall from its seepage pit. Former SWMU 21-006(b) is the only seepage pit with known drainlines. Former SWMU 21-006(a) is an unmarked underground seepage pit of about 0.1 acre, located between Building 21-2 and former Building 21-3. The pit was used to dispose of liquids from the Hanford radioactive materials container-washing operation. The liquids contained ethylene glycol, phosphoric acid, and plutonium. It is not known if the seepage pit is located on the north or south side of the corridor that connected the buildings. If it is on the south side, the pit may be a duplicate of former SWMUs 21-006(c) and 21-006(d). If it is on the north side, it may a duplicate of former SWMU 21-023(d). Former SWMU 21-006(b), structure 21-118, the only pit with a known drainline, was used to dispose of ether wastes from Building 21-2 where a plutonium purification process used a double ether extraction. The pit may have been installed in 1945 as part of the new plutonium-extraction facilities at TA-21. The inlet line (structure 21-134) originated from the east side of Building 21-2 and ran southward to the pit. The outlet line (structure 21-135) ran southward to an outfall above Los Alamos Canyon. The outfall location was investigated in 1988 and 1992, and elevated levels of americium, cesium, and plutonium isotopes were found. Former SWMUs 21-006(c) and 21-006(d) are thought to be the same site. Former SWMU 21-006(c) is a seepage pit located 15 ft outside the door to the bomb-cleaning room (Room 322) at former Building 21-3. The pit reportedly received bomb electrolytic decontamination solution from a drain in Room 322. The room may have been contaminated with plutonium. Former SWMU 21-006(c) is beneath Rooms 3131 and 3133 of the addition to former Building 21-3. Former SWMU 21-006(d) may be associated with a concrete pad and French drain system called the 21-272 dock. Waste

		from a second-story chemical makeup room was reportedly dumped or pumped into a stone-filled seepage pit, most likely former SWMU 21-006(c). A Phase I RFI was conducted at a portion of former SWMU 21-006(b) in 1992. The Phase Report 1C stated that a decision regarding disposition of former SWMU 21-006(b) would be deferred until the seepage pit investigation had been completed.
21-006(e)-99	In Progress	Consolidated SWMU 21-006(e)-99 consists of former SWMU 21-006(e) and former AOC 21-006(f). This former SWMU and AOC are inactive underground seepage pits. According to the OU 1106 RFI work plan, they may be duplicates. The length of time during which the seepage pits operated is unknown. Former SWMU 21-006(e) may be located south of former Building 21-4; there is no other information about this SWMU. Former AOC 21-006(f) has been described as a gravel seepage pit located on the south side of the DP West complex. The seepage pit may have received up to 4000 liters per day of hydrogen fluoride wastewater from a hydrofluorination process located in Room 413 of former Building 21-4. Wastewater from the seepage pit may have discharged to Los Alamos Canyon, although how this may have occurred is unknown. Assays performed on the effluent source yielded approximately 0.18 micrograms of plutonium per liter of effluent. If present, former AOC 21-006(f) has been paved over. Visual inspection of Building 21-4 before and following demolition of the building, did not indicate the presence of any lines or foundation penetrations in the vicinity of the area where the SWMUs are described to have existed. The OU 1106 RFI work plan stated that investigations of former SWMU 21-006(e) and former AOC 21-006(f) would be performed in conjunction with the TA-21 D&D program. Locations of the former SWMU and former AOC will be determined during the future D&D characterization process or during site D&D when waste lines and residual contamination are addressed. RRES-R activities will be coordinated with future D&D activities when the former SWMU and former AOC are accessible.
21-008	Administratively Complete	AOC 21-008 consists of two historical incinerators: a scrap incinerator located in former Building 21-2 and a rag incinerator located in Room 313 of former Building 21-3. This AOC was investigated as part of a larger group of AOCs and SWMUs representing potential surface soil contamination from historical airborne releases from incinerators, stacks, and filter buildings within TA-21. No data exist about contamination associated with the incinerators. The ER Project conducted an TA-wide RFI to characterize the airborne release-related AOCs and SWMUs in 1992. AOCs 21-007, 21-008, 21-019 (a-m), 21-020(a,b) and SWMU 21-021 were included in the investigation. The investigation had three components: analyzing surface soil samples to identify TA-wide surface soil background values; analyzing deposition-layer surface samples to evaluate airborne emissions; and investigating the potentially contaminated former locations of two air filter buildings. The soil characterization data for AOC 21-008-related potential contamination showed slightly elevated TA-wide radionuclide levels; however, the levels were lower than SALs and could not be attributed to any specific subset of airborne-emission sources. The surface-soil sampling data is presented under SWMU 21-021-99. Based on the characterization data, the RFI Phase Report 1B recommended NFA for AOC 21-008.
21-009	In Progress	AOC 21-009 is a former waste treatment laboratory (Building 21-33) that was built in 1948 and operated until 1965. It was a wooden-frame structure with a wooden floor built on concrete pillars. The laboratory building was 16 ft x 48 ft with a 12-ft ceiling. Building components and laboratory furniture were contaminated with plutonium dust. Perchloric acid was used and may have contaminated the exhaust hoods. Wastewater from the laboratory was discharged to weptic tank 21-33, which discharged to to an outfall at the Los Alamos Canyon rim. The tank was removed during demolition of Building 21-33, however, the drainline from the laboratory to the septic tank (21-33) may remain in place. The outfall and tank associated with this waste line were

		designated as AOC 21-023(c). The AOC will be investigated in conjunction with the investigation of SWMU 21-018(a)-99 (MDA V).
21-011(b)	In Progress	SWMU 21-011(b) is a sump (structure 21-223) located approximately 400 ft east of the TA-21 wastewater treatment plant (Building 21-257). The sump was installed in 1965 and transports wastewater from DP East to Building 21-257 through a 3-in. cast-iron line. The waste is stored in two tanks (structures 21-110 and -111) located immediately west of Building 21-257 and is subsequently transported by truck either to TA-43 or TA-50, depending on waste composition. Before Building 21-257 was built in 1967, the 3-in. line connected the sump to the former TA-21 liquid waste treatment facility (former Building 21-35). The sump receives wastewater from Buildings 21-152, -155, and –209 through 6-in. cast-iron drainlines. The sump occasionally may have discharged to DP Canyon through a drainpipe before the installation of two 3000-gal. holding tanks [structure 21-346, former SWMUs 21-004(b) and 21-004(c)] that serve as emergency storage if the sump became inoperative or overflowed. Before the holding tanks were installed, overflows drained to an outfall near the edge of DP Canyon. The holding tanks and outfall are designated as SWMU 21-004(b)-99. The RFI of SWMU 21-011(b) will be conducted when the sump and Building 21-257 are taken out of service.
21-011(k)	In Progress	SWMU 21-011(k) consists of the outfall discharge line that carried industrial wastewater from the new industrial waste treatment plant (Building 21-257) through two holding tanks to a discharge point on the south slope of DP Canyon. The outfall is no longer active. The wastes were liquids remaining after treatment of plutonium extraction process effluents and potentially contained a variety of radioactive and chemical constituents. Untreated wastes from the former industrial waste treatment plant (former Building 21-35) were also discharged in the area of the outfall. The discharge point is the end of a 4-in. cast-iron pipe located approximately 55 ft north of the TA-21 perimeter road. A gently sloping, rocky surface extends from the outfall pipe approximately 30 ft north to the canyon rim, where there is a steep drop down into DP Canyon. SWMU 21-011(k) was sampled as part of the DOE Headquarters Environmental Survey at LANL in 1988. Three surface samples were collected between the outfall pipe and the DP Canyon stream channel. Analytical results indicated that cadmium, copper, nickel; uranium-235, uranium-238, plutonium-238, plutonium-239/-240, thorium-230/-232, americium-241, strontium-90, potassium-40, cesium-137, and protactinium-233 were reported at concentrations greater than regional background. RFI activities were conducted in 1992 and 1993. The 1992 investigation consisted of a radiological field survey and collection of seven samples from three locations. The radiological survey indicated beta-gamma, gamma, and low-energy gamma readings were greater than background. An additional survey with an alpha instrument indicated that alpha contamination was slightly below the surface. Analytical data for inorganic analytes indicated that no concentrations were reported above SALs. Analytical results for radionuclides indicated that americium-241, plutonium-238, plutonium-239/-240, and strontium-90 concentrations were greater than SALs. The 1993 investigation consisted of a radiological field survey, collection of 14 samples from 8 locations, installation of a temporary fence around the outfall area to restrict access, and resampling the 1992 sample locations for VOC analysis because the holding times were missed in 1992. Analytical results indicated that americium-241, cesium-137, plutonium-239, and strontium-90 concentrations exceeded SALs. The Phase Report 1C stated that the nonradioactive constituents have been adequately characterized. However, the radiological data indicate that the radiological extent of contamination has not been adequately characterized and must be investigated further. During 1996 and 1997, an IA was conducted in order to remove a portion of the

		radionuclide source term from the outfall area and to install stormwater control measures as a BMP. Approximately 390 cubic yards of soil was excavated, characterized, and transported to Area G for disposal as LLW. Post-excavation radiation survey and soil sampling showed a reduction in gross gamma count levels from greater than 500,000 cpm to 100,000 cpm. Finally, the IA Report called for the development of a voluntary corrective measure (VCM) to effect a final remedy at the site (LANL 1997, 55648.2). Stormwater controls were installed in 1997 and upgraded in 1999. In November 2000, an extensive in situ gamma spectrometry survey was conducted over the entire site, followed by the collection of 48 surface and subsurface soil, tuff and/or sediment samples from eleven locations in March 2001. Twenty-six of the samples were analyzed for waste characterization purposes. The entire data set was used to confirm the location of remaining areas within the boundary of SWMU 21-011(k) with activity above the target cleanup level of 150 pCi/g cesium-137 for the VCM, and establish a correlation between cesium-137 concentrations, the primary radionuclide at the site, and the concentrations of other radionuclides present at the site. Review of the data from the November 2000 and March 2001 sampling events indicate the following: (1) based on the average concentration of radionuclides present, the site meets dose criterion protective of anyone using the area for recreational trail use. However, there are areas where the target cleanup level described in this plan of 150 pCi/g cesium-137 is exceeded. Only a site-worker could have access to the restricted site. (2)the potential chemicals of concern (COPCs) are radionuclides with relatively short half-lives, primarily cesium-137 (half-life 30 yrs.) and americium-241 (half-life 432 yrs.); (3)none of the contaminated material at the site would be considered hazardous waste upon generation; (4) several inorganic chemicals were detected just above background values and will be included in human health and ecological screening assessments to be performed as part of a VCM Completion Report; and (5) completion of a VCM will result in a dose less than the dose that will satisfy DOE's "As Low As Reasonably Achievable" (ALARA) requirement for corrective measures. LANL implemented a VCM in late 2002 and early 2003 to: control the radionuclide contamination remaining on the hillside; reduce the potential dose associated with the remaining contaminated material; and prevent future contaminant migration. Activities completed to date include the excavation and disposal of the outfall drainline and contaminated soil, tuff and sediment from areas at the site with cesium-137 concentrations above 150 pCi/g; disposal of the drainline and contaminated material at Area G at TA-54, site restoration; and installation of stormwater run on and runoff controls. A VCM completion report will be prepared documenting all VCM activities and results of human health and ecological risk screening assessments.
21-012(a)	Administratively Complete	In the SWMU Report (LANL 1990), SWMU 21-012(a) is identified as a dry well inside Building TA-21-357, the new TA-21 steam plant. The SWMU Report also identified another dry well [SWMU 21-012(b)] that was associated with the former steam plant, Building TA-21-9. The former steam plant at TA-21 was torn down in 1985 and replaced with a new steam plant that went on-line in 1985. During two site visits, on May 11, 1990, and on August 8, 1990, investigating personnel found no indications of a dry well anywhere within the interior of the new steam plant. The discrepancy is

		probably a result of assuming that the new plant had a similar system as the old plant, which did have a dry well [SWMU 21-012(b)] associated with it. SWMU 21-012(b) is currently under investigation. SWMU 21-012(a) is appropriate for NFA under Criterion 1 because it has been shown not to exist.
21-012(b)	In Progress	SWMU 21-012(b) is an inactive dry well, constructed in 1980 to receive boiler blowdown from the former TA-21 steam plant (Building 21-9). The 4-ft x 4-ft-square x 54-ft-deep well was installed south of the 2500-gal. blowdown tank to replace a seepage pit. A 3-in. perforated pipe was suspended vertically into the dry well to a depth of 49-ft. The space surrounding the perforated pipe was filled with large gravel. Underground piping connected the well and the blowdown tank. When the old steam plant was removed and replaced by the new steam plant (Building 21-357), the area was regraded. There is no visible evidence of the former steam plant or the concrete manhole cover for the dry well. At the time the OU 1106 RFI work plan was written, it was unclear whether underground piping from the 2500-gal. tank had been removed during the demolition of Building 21-9. The dry well may have remained, as evidenced by an area of pavement that remains frost- and ice-free except after heavy snows or very cold temperatures. Although no data exist about potential contamination in the area of the former steam plant dry well, common constituents in boiler blowdown include sulfite, copper salts, and chromates. No contaminant releases from the dry well and related structures have been documented. To date, no RFI activities have been conducted at this SWMU.
21-013(c)	In Progress	SWMU 21-013(c) is an inactive surface disposal area located northeast of the high-temperature chemistry building (Building 21-209) at the eastern end of DP Mesa. This SWMU was identified during a 1988 site visit. The site consisted of mounds of earth; an excavated trench; and an earthen berm that contained scattered concrete, asphalt, and metal debris. Four large concrete pylons and several piles of soil, asphalt, and concrete also were located at the site. Other surface debris included glass, scrap metal, wood, cans, paper, and plastic. The SWMU had been disturbed in the past and appeared to contain only building materials. It was not known when the materials were disposed of at this site. During the 1994 Phase I RFI at this SWMU, 40 surface and subsurface soil samples were collected to confirm the presence or absence of contamination. Because source terms were unknown, samples were field-screened for radioactivity and were submitted for a full-suite of analyses. Although no elevated contaminant levels were identified, a VCA was conducted in August 1995 to remove the soil and debris from the site. Trenches were excavated into the berm to verify contents and allow for field screening and visual inspection. Following debris removal, portions of the berm were recontoured to preserve the established vegetation. Exploratory trenches were excavated into the soil piles to allow for field screening and visual inspection. Debris was removed if the piles contained debris. If piles did not contain debris, they were not recontoured. The asphalt, concrete, and remainder of debris were removed from the site. Confirmation sampling was conducted to verify site cleanup. Two samples were collected from areas where debris had been removed. The site was restored and reseeded with native grasses. A VCA completion report was submitted in lieu of an RFI report. The VCA report requested concurrence of NFA for SWMU 21-013(c). Additional investigation may be required to complete the determination of nature and extent of any residual contamination.
21-013(d)-99	In Progress	Consolidated SWMU 21-013(d)-99 consists of former SWMUs 21-013(d) and 21-013(e), two inactive surface disposal areas. SWMU 21-013(d) is the former disposal site referred to as the "cold dump" used by construction contractors for the disposal of construction-related debris. SWMU 21-013(e) is the former disposal site for building debris including excess concrete, demolished foundations, fill, and asphalt removed from parking lots, etc. According a former supervisor responsible for maintaining these disposal areas from 1947 until 1983, no materials containing or contaminated with radionuclides, high explosives, or

		chemicals were disposed of at either location. The ER Project conducted an RFI at former SWMUs 21-013(d) and 21-013(e) in 1994 to confirm the presence or absence of contamination. The Phase I RFI was conducted simultaneously for both SWMUs, because the boundary for both sites was indiscernible. Twenty-six grid sections were laid out over both SWMUs with each grid section measuring 20 m x 20 m. A radiation survey was conducted over the entire grid area. Detected radiation levels were slightly elevated above background levels. Surface, near-surface and subsurface samples were collected from nine grid sections within each SWMU resulting in the collection of 36 surface and near-surface soil samples from each SWMU. The samples were field screened for VOCs and alpha, beta/gamma, and gamma radiation. Detected radiation levels were slightly elevated above site wide background levels. Ten samples from SWMU 21-013(d) and nine samples from SWMU 21-013(e) were submitted to an offsite fixed laboratory for analysis of volatile organic chemicals, inorganic chemicals, PCBs, isotopic uranium, isotopic plutonium, americium-241, and strontium-90. Based on the sampling results, the SWMUs were selected for VCAs. The ER Project conducted the VCAs in 1995. Exploratory trenches were dug into soil piles to allow for field screening and visual inspection. Debris was removed if the piles contained debris, and the piles were recontoured. If piles did not contain debris, they were not recontoured. The asphalt, concrete, and remainder of debris were excavated. Confirmation sampling was conducted to verify site cleanup. Two samples were collected at each former SWMU from areas where debris had been removed. The sites were restored and reseeded with native grasses. The VCA report requested concurrence of NFA for former SWMUs 21-013(d) and 21-013(e). However, because the location of SWMU 21-013(d)-99 is slated for transfer to Los Alamos County in 2003, the RRES-R Project conducted additional investigation activities in 2003 to complete the determination of the nature and extent of any residual contamination and subsequent human health and ecological risk sceening assessments. The data will be presented in a revised VCA completion report in 2003.
21-014	In Progress	SWMU 21-014 (MDA A) is an inactive MDA located 0.25-mi east of the intersection of DP Road and the north perimeter road of TA-21. MDA A is a 1.25-acre site that was used intermittently from 1945 to 1949 and 1969 to 1977 to dispose of radioactively contaminated solid waste, debris from D&D activities, and radioactive liquids generated at TA-21. The area contains two buried storage tanks, two rectangular disposal pits on the east side of the SWMU, and a large central pit. Surface drainage is to the north into DP Canyon. The earliest disposals at MDA A were into the two pits constructed in 1944 and 1945 in the eastern portion of the SWMU. Dimensions of each pit are 18 ft wide x 12.5 ft long x 12.5 ft deep. The pits received laboratory equipment, building construction material, paper, rubber gloves, filters from air-cleaning systems, and contaminated or toxic chemicals. Suspect contaminants in the pits are plutonium, polonium, uranium, americium, curium, radium-lanthanum, actinium, and waste products from the "water boiler." During the early 1950s, several hundred 55-gal. containers of "iodide waste" were stored on the east end of MDA A. The containers held a sodium hydroxide solution and stable iodine, which were used to scrub ventilation exhaust air containing plutonium and perhaps uranium. The containers corroded, and liquid releases to the surface soil occurred. The containers were removed in 1960, and the storage area was paved to immobilize contaminants that leaked to the soil. The estimated quantity of waste present in the pits is 4000 cubic yards. The "General’s Tanks” (structures 21-107 and 21-108), in the western part of the SWMU, were built in 1945 and were filled shortly after the pits in the mid-1940s. The tanks are 50,000-gal. cylindrical steel storage tanks 12 ft in diameter and 62.8 ft long. They were placed 20 ft apart on four concrete piers in pits 12 ft deep x 15 ft wide x approximately 86 ft long. Each pier was 4.8 ft high with the bottom 2 ft below the bottom of the pit. Each tank rested 1 ft above the bottom of the pit, and sand was placed in the

		bottom of the pit up to the top of the piers. The area between the tank and most of the rest of the pit was filled with packed earth. A concrete slab 8 in thick x 56 ft wide x 68.8 ft long was poured 1.5 ft above the tanks, and about 5 ft of earth fill was placed above the concrete slab. The final earth fill formed a mound above grade. Each tank is equipped with vent pipes on the north end of each tank that extend 15 ft above the mound covering the tanks. The tank fill pipes are on the south end of each tank and are enclosed in a concrete box. The box extends 1 ft above the soil mound. Tank contents are liquids from plutonium-processing operations; the liquids are contaminated with plutonium and americium. The intent was to store the liquids until improved chemical recovery methods could be used to extract the plutonium-239/-240, but the plutonium was never recovered. From 1975 to 1983, the liquid phase of the tank contents were decanted and processed at Building 21-257, the TA-21 industrial wastewater treatment facility. However, an unknown volume of sludge remains in the tanks. A 1973 memo suggested that less than 1% of the radioactivity in the tanks was contained in the liquids, which implies that most of radioactivity still remains in the sludge in each tank. Evidence of rainwater entry into the tanks led to sealing the openings in the tops of the tanks in 1985. The RRES-R Project is currently developing plans to characterize the sludge in both tanks. The central and largest pit was excavated in 1969 for the deposition of building debris from TA-21 D&D activities contaminated with plutonium-238, plutonium-239, uranium-235, depleted uranium, decay products, and other radioactive isotopes. Asphalt is also a component of the waste disposed in the pits at MDA A. Approximate dimensions of the pit are 172 ft long x 134 ft wide x 22 ft deep. The capacity of the largest pit is approximately 18,000 cubic yards. As of March 1974, it was estimated to be two-thirds full. MDA A was decommissioned in 1978, when a soil cover was installed over the top. Improvement of the site cover was completed in 1985 and 1987. In 1994, the RRES-R Project collected Phase I RFI samples downgradient of MDA A to determine if potential contaminants were migrating from MDA A in stormwater runoff. Surface and subsurface samples were collected and submitted for laboratory analysis for organic chemicals, inorganic chemicals, and radionuclides. Organic chemicals were detected but none above SALs. Inorganic chemicals were detected above BVs, but only arsenic was detected above its SAL. Radionuclides were detected above FVs, but only thorium-228 was detected above its SAL. The RRES-R Project is preparing a supplemental RFI work plan to complete the characterization of MDA A.
21-015	In Progress	SWMU 21-015, MDA B, is an inactive 6.03-acre disposal site. It was the first common disposal area for radioactive waste at generated at LANL and operated from 1945 until 1952. The site runs along the fence line on DP Road and is located about 1600 ft east of the intersection of DP Road and Trinity Drive. The SWMU drains south into BV Canyon, a small tributary of Los Alamos Canyon. Although comprehensive information is not available, the site is believed to have at least five burial pits. Except for the hazardous materials pit, which was described as a trench 2 ft wide x 40 ft long x 3 ft deep, pits are believed to be about 300 ft long x 15 ft wide x 12 ft deep. The large pits run parallel to the DP Road fence line; the hazardous materials pit is at the easternmost end of MDA B. In 1948, a fire in one pit spurred the closure of Area B, and another site for disposal (SWMU 50-009, MDA C) was selected at TA-50 on the north side of Pajarito Road and east of Pecos Drive. The practice of filling the depth and width of the pits before covering the waste with fill dirt led to subsidence, which occurred shortly after MDA B closed. Uncontaminated concrete and soil from construction sites were used to abate the subsidence. In 1966, the western two-thirds of the SWMU was fenced, compacted, paved, and then leased to Los Alamos County for trailer storage (the county was asked to vacate the site by September 30, 1990). About 90% of the wastes received at MDA B consisted of radioactively contaminated paper, rags, rubber gloves, glassware, and small metal apparatus contained in cardboard boxes. The remainder of waste included hazardous chemicals, waste products from a water boiler, wood from temporary storage cabinets, and at least one truck contaminated with fission products from the Trinity test. The remaining one-third of MDA B was used for studies to evaluate the performance of different types of covers. Potential contaminants include

		radionuclides and organic chemicals. Potential radionuclide contaminants include plutonium, polonium, uranium, americium, curium, actinium, lanthanum, and possibly strontium. Potential organic chemical contaminants include perchlorates, ethers, solvents, and corrosive gases. The OU 1106 RFI work plan describes the historical surface sampling data obtained at this SWMU prior to 1990. In 1990, MDA B was sampled for surface radionuclide contamination as part of LANL's environmental surveillance of low-level radioactive waste sites. In 1994, the ER Project conducted a Phase I RFI of the surface of MDA B and adjacent drainages to identify areas of surface contamination between the southern fence at MDA B and the edge of BV Canyon and to determine if contaminants were migrating from the area through or into the drainage. During the 1994 Phase I RFI, 100 samples from 75 locations, which were determined using a grid method. Samples were collected from the 0- to 6-in. depth at MDA B and from depths of 0- to 3-in., 3- to 6-in., and 6- to 12-in. in sediment in the main drainage from the south side of MDA B (to ensure that potentially contaminated soil at the surface was not diluted by deeper uncontaminated soil). All samples were field-screened for radiation and analyzed for radionuclides, inorganic chemicals, and SVOCs. For the southern MDA B drainage, the channel was identified and sediment pockets were determined using geomorphic maps prepared in 1992 and included in the TA-21 RFI Phase Report 1A. Three samples were collected from each of five locations; samples were screened in the field for radioactivity using field instruments and a mobile laboratory. All drainage samples were analyzed for radionuclides, inorganic chemicals, and SVOCs. Environmental surveillance data from 1990 and data from the 1994 RFI indicate radionuclides at elevated concentrations at MDA B. The 1990 data also indicate higher concentrations of some radionuclides on the north side of the MDA B paved area than those present on the south side of the paved area, where the 1994 surface soil samples were collected. To further investigate the potential for human contact with radionuclide contamination on the north side of MDA B, where potential for exposure is greater due to the proximity of DP Road, a radiological survey of the north side was competed in 1995. No activity above background screening levels was detected during that survey. The ER Project submitted a SAP for MDA B to NMED in 1998 to complete the definition of the nature and extent of potential contamination beneath MDA B and to further define the nature and extent of surface contamination. The ER Project proposed sampling to confirm the presence or absence of contaminants beneath the MDA B trenches and to evaluate whether contamination was migrating from MDA B to surface soil and drainages. Seven angled boreholes were drilled beneath the trenches, and subsurface samples were analyzed for radionuclides, organic chemicals, and inorganic chemicals. Pore-gas samples were collected from the boreholes and analyzed for VOCs. Additional surface soil samples were collected on the north side of the paved area of MDA B and analyzed for radionuclides and organic and inorganic chemicals. A geophysical survey confirmed the location, length, and depth of the disposal trenches. A decision peer review of all existing analytical data conducted in September 2001 determined that a surface VOC flux survey was required to define the lateral extent of a potential VOC plume and that additional surface samples were required directly north and west of MDA B to define the extent of plutonium contamination. The VOC flux study was performed in September 2001, and the additional surface samples were collected in November 2001. Recent information not previously available indicates that chemical carboys were placed in disposal pits at the eastern end of MDA B and that these containders may still be intact. The RRES-R Project is currently preparing a supplemental RFI work plan and draft IA plan to confirm this information, potentially remove any intact containers, and to complete the nature and extent of contamination associated with MDA B.
21-016(a)-99	In Progress	SWMU 21-016(a)-99 consists of former SWMUs 21-007, 21-010(a, b, c, d, e, f, g, h), 21-011(a), 21-011(c, d, e, f, g, i, j), and 21-016(a, b, c) and former AOCs 21-001, 21-

		011(h), 21-028(a), C-21-009, and C-21-012. These former SWMUs and AOCs were associated with decommissioned waste treatment facilities and various storage areas adjacent to or within the SWMU boundary of MDA T. MDA T, an area of about 2.2 acres, consists of four inactive absorption beds, a distribution box, a subsurface retrievable waste storage area disposal shafts, the former waste treatment plant (21-35), and cement paste spills on the surface and within the retrievable waste storage area. Former SWMU 21-016(a) consists of the four inactive absorption beds at MDA T that were operational between 1945 and 1967. Bed dimensions are approximately 120 x 20 x 6-ft. deep. Untreated waste from uranium- and plutonium-processing laboratories and the filter building (Building 21-12) was released to the absorption beds from 1945-1952. In 1952, a waste treatment facility (Building 21-35) was constructed to remove the plutonium and other radionuclides from the liquid waste because the tuff beneath the absorption beds had become clogged with suspended solids. After 1952, effluent from Building 21-35 discharged to an outfall, SWMU 21-011(k), in DP Canyon north of MDA T; however, a few hundred gallons of treated wastes from Building 21-35 were still released to the absorption beds infrequently until 1967. Approximately 18.3 million gallons of wastewater were discharged to the MDA T absorption beds between 1945 and 1967. In 1967, a new industrial waste treatment facility (Building 21-257) came online and discharges to MDA T were discontinued. Former SWMU 21-011(c) is the former acid holding tank (21-120) and acid sump (21-121) located between absorption beds 1 and 2. Former SWMU 21-011(c) served as a distribution box that received liquid waste through subsurface pipelines and discharged the effluent first to Bed 1 and then to Bed 2. Former SWMU 21-016(b) is the MDA T retrievable waste storage area that was excavated in 1974 between absorption beds 1 and 3. Former SWMU 21-016(b) was a pit measuring 60 x 30 x 20-ft. deep. Beginning in 1975, treated wastes from Building 21-257 with concentrations greater than 10 nCi/g of plutonium-239/240 and americium-241 were mixed with cement and pumped into corrugated metal pipes. The pipes were stored on end in the retrievable waste storage area. The pipes were excavated and disposed of at TA-54 Area G in 1984 and 1986, and the retrievable waste storage area at MDA T was subsequently backfilled. Former SWMU 21-016(c) consists of 62 asphalt-lined disposal shafts located between absorption beds 2 and 4 at MDA T. The shafts are 6 to 8-ft. in diameter and 15 to 69-ft. deep and were operational between 1968 and 1983. The shafts received treated liquid wastes that contained americium-241 and other wastes mixed with cement. Five of the shafts have bathyspheres that contain plutonium-239/240 and other mixed fission products. In addition, some shafts received unspecified volumes of wash water. AOCs C-21-009 and C-21-012 are the locations of two spills of americium-241/cement paste in 1978 and 1976, respectively. The paste was removed and the areas were decontaminated. Former SWMU 21-007 represents airborne releases from “salamanders,” which were incinerators used to burn waste oils and organics after testing to reduce their volumes and convert them to a form that would mix with cement. The incinerators were used between 1964 and 1972 and were located on top of MDA T. Wastes contained hazardous and radioactive constituents. Oil spills from the incinerators are known to have occurred. Former AOC 21-028(a) is a former SAA within the fence at MDA T. Small quantities of alcohol, acetone and freon were temporarily stored in the SAA pending disposal off site. Former SWMU 21-010(a) is the historical location of Building 21-35, the industrial liquid waste treatment facility that operated from 1952-1967; it was decontaminated and

		decommissioned in 1967 and the building and some associated tanks and piping were removed and disposed of at TA-54 Area G (tanks 21-110, 21-111 and 21–256 were relocated to Building 21-257). Building 21-35 was constructed as a facility for treating and disposing of contaminated liquid waste from plutonium and uranium-processing laboratories at DP site. Former SWMUs 21-010(b-h) were components of Building 21-35. All structures described in this paragraph were removed during the decommissioning of Building 21-35 in 1968. Former SWMU 21-010(b), Structure 21-93, and former SWMU 21-010(h), Structure 21-271, were acid valve pit manholes on the southwest corner of the building. Former SWMUs 21-010(c), Structure 21-145, and former SWMU 21-010(d), Structure 21-147, were adjacent 500-gal. underground steel tanks installed in 1957. The tanks held acid. Former SWMU 21-010(e), Structure 21-185, was a 390-gal. septic tank that was installed in 1956 at the northeast corner of Building 21-35. The tank received industrial waste. Overflow from the tank discharged to a drain field located east of the septic tank. The tank was removed, but it is not known whether the drain field was removed. Former SWMU 21-010(f), Structure 21-192, was an 8 x 3 x 7-ft. grit chamber that was located at the northeast corner of Building 21-35; it was made of reinforced concrete with an insulated built-up cover. The grit chamber was a settling tank for solids in the influent. Former SWMU 21-010(g), Structure 21-255, was a 2,000-gal. above-ground acid storage tank located at the southwest corner of Building 21-35. Former SWMU 21-011(a) is Building 21-257. Building 21-257 treated liquid waste from plutonium processing operations associated with DP site. The treatment plant was used to treat and prepare waste for disposal at MDA T and discharged through an outfall [SWMU 21-011(k)] to DP Canyon. The treatment plant housed a clarifier/flocculator, above-ground storage tanks and pumps, in addition to a cement silo. Former SWMU 21-011(d) was a 13,500-gal. acid holding tank (21-110) that received acid waste from DP East. This tank was a 13,500-gal. acid holding tank (Structure 21-111) that received acid waste from DP West and from the “General’s Tanks” (two 50,000 gallon tanks used to store highly enriched plutonium solutions; the tanks received wastes in 1945-1946) and are buried at MDA A. Acid holding tanks (Structures 21-110 and 21-111) were previously located at Building 21-35, where they served the same function. Former SWMUs 21-011(f), Structure 21-112, and former SWMU 21-011(g), Structure 21-113, were 12,700-gal. effluent holding tanks. The tanks were connected to Building 21-35 by underground piping prior to 1967; after 1967, underground piping was rerouted to Building 21-257. Before 1982, the treated effluent was retained in the tanks for three to five days and discharged to the outfall. After 1982 the effluent was pumped to TA-50 for disposal. The tanks are plumbed together to allow effluent to be transferred between them, to prevent overflows. Former AOC 21-011(h) was a 2,000-gal. acid storage tank (Structure 21-256) that was known as the Pug Mill Tank. The operation involving the Pug Mill tank lasted from 1968 until 1983; the tank was removed in 1986 (the tank itself was relocated from 21-35). Former SWMU 21-011(i) was a 1,000-gal. sodium hydroxide storage tank installed in 1967 (Structure 21-288). Former SWMU 21-011(j) was a 1,000-gal. americium raffinate storage tank (Structure 21-289) installed in 1967. The surrounding area was not originally asphalted, and spills occurring during tanker-truck transfer operations were reported. The exact date the tank was taken out of operation is not known. Former AOC 21-001 was a storage area located outside at the southwest corner of Building 21-257 that was used to hold containerized radioactive sludge prior to transfer of the sludge to TA-54. This sludge may have contained hazardous constituents.

		Previous investigations at MDA T include the advancement of a borehole through absorption bed 3 in 1974 and a single borehole through absorption beds 1 and 2 and surface and near surface radiation surveys on the original surface of MDA T in 1984 and 1986. The 1993 Phase I RFI involved the collection of surface soil samples on a 20-meter grid directly north of MDA T. Miscellaneous geological investigations including geologic mapping, geomorphic characterization, fracture mapping, deep drilling to determine site stratigraphy and identify potential transport pathways, etc. were conducted at MDA during 1992 and 1993. A sampling and analysis plan that addressed former SWMUs 21-016(a,b,c), 21-011(c), 21-028(a), C-21-009, C-21-012 was submitted to US EPA Region 6 in March 1996 and subsequently to NMED. The SAP was implemented in 1996 and 1997 as the Phase I subsurface RFI of MDA T and included a geophysical survey to locate the paleochannel and absorption beds, and the collection and analysis of subsurface samples from eight vertical boreholes.Data from these investigations was evaluated and assessed in 2001/2002, remaining data gaps were identified, and an investigation work plan is being developed to complete the characterization of MDA T.
21-017(a)-99	In Progress	Consolidated SWMU 21-017(a)-99 consists of former SWMUs 21-017(a), 21-017(b), 21-017(c), and 21-022(f). These former SWMUs are associated with MDA U, which operated from 1948 to 1968 as a subsurface disposal site for radioactively contaminated liquid wastes. These former SWMUs also received process cooling water effluent until sometime after 1976. MDA U consists of two absorption beds [former SWMUs 21-017(a) and 21-017(b)]; an associated distribution box [former SWMU 21-017(c)] located between the absorption beds; and a sump [former SWMU 21-022(f)] used to collect wastewater discharged to MDA U. SWMUs 21-017(a) and 21-017(b), are two former absorption beds that were used to dispose of process sewage discharged from a laboratory building (Building 21-152) and a former filter building (Building 21-153). These former SWMUs also received process cooling water effluent until sometime after 1976. The surface area of the absorption beds is approximately 1800 square feet, and the beds had an estimated volume of 18,000 cubic feet. Documentation suggests that waste liquids may have overflowed from the beds into DP Canyon. Surface stabilization activities at MDA U occurred in 1985, 1987, and 1990. As part of these activities, a trench along the length of the beds was dug and lined, then backfilled with clean tuff. Some actinium-contaminated soil was excavated and removed to MDA G. The excavation was covered with topsoil, and surface stabilization was conducted to address drainage problems. In 1987, additional site stabilization included placing ditches to prevent run-on to the beds, adding topsoil and gravel mulch, reseeding inside the fence, and placing markers at the corners of the site. Additional runoff collection drainage ditches were added at MDA U in 1990 to prevent runoff from surrounding areas from flowing across the MDA. The absorption beds have been sampled several times since 1946. Sample results indicate that tritium, plutonium, and low-level uranium contamination extend beyond the MDA U fence. The contamination source is unknown, but the TSTA is suspected. The uranium could be occurring naturally. Former SWMU 21-017(c) was a distribution box (structure 21-164) located between the absorption beds [former SWMUs 21-017(a) and 21-017(b)]. Stabilization activities in 1985 included removing the distribution box and distribution lines from the absorption beds, along with a drainline that apparently originated with the TSTA cooling tower. Former SWMU 21-022(f), a sump (structure 21-173) located off the northeast corner of Building 21-152, is approximately 5.5 ft in diameter x 6 ft deep. Liquid effluent, from Buildings 21-152, 21-153, and the TSTA facility, was conveyed from the sump to MDA U through a 6-in.-diameter cast-iron drainline. The amount of waste discharged to the absorption beds is not known; however, the primary contaminant released was

		polonium-210, and records indicate that actinium-227 was discharged to the beds in 1953. In 1994, the ER Project conducted an RFI of surface soil at SWMUs 21-017(a, b and c) to determine if contaminants in surface and near-surface soils were migrating from the area through or into the MDA U drainage. The subcontractor reported RFI results to LANL in September 1997. A SAP for these SWMUs, submitted to NMED in September 1998, proposed subsurface soil investigation to determine the nature and extent of contamination beneath MDA U. A decision peer review of all existing analytical data conducted in August 2001 determined that (1) surface soil samples would be recollected and analyzed for mercury because samples collected in 1994 exceeded holding times for mercury; (2) surface soil samples would be collected between the TSTA and MDA U and analyzed for tritium; and (3) a trench would be dug across each absorption bed and samples would be collected to determine the level of radionuclides remaining in the material not removed from the absorption beds in 1985. Former SWMU 21-022(f) was consolidated with 21-017(a)-99, however, subsequent inspection of the subsurface concrete vault housing the sump and drainline indicated that it will be more feasible to address this SWMU during the D&D of Building 21-152. Therefore, former SWMU 21-022(f) will be addressed separately from consolidated SWMU 21-017(a)-99.
21-018(a)-99	In Progress	Consolidated SWMU 21-018(a)-99 consists of former SWMUs 21-013(b), 21-018(a), 21-018(b), and 21-023(c) and former AOC 21-013(g). These units are associated with MDA V, which is located on the west end of TA-21 on an 0.88-acre site. MDA V consists of three absorption beds that were used to dispose of liquid waste from the former laundry operation (Building 21-20 [former SWMU 21-018(b)]) and for a short time waste from a waste disposal laboratory [Building 21-45, former SWMU 21-024(f)]. Former SWMU 21-013(b) is a surface disposal area located on the southern edge of DP Mesa, southwest of MDA V. This area contains concrete building debris from the 1965 demolition of a waste treatment laboratory (Building 21-33). A contamination survey of the building interior showed various surfaces were contaminated with plutonium dust; other surfaces may have been contaminated with perchloric acid. It is not known if other materials were disposed of at former SWMU 21-013(b). Former SWMU 21-018(a) contains three cobble- and gravel-filled absorption beds that were 25 ft wide x 220 ft long x 5 ft to 6 ft deep. The absorption beds were in continuous use from 1945 to 1961. Discharged wastewater flowed into pit 1, which overflowed into pit 2 and then into pit 3. The volume of water that reached pits 2 and 3 is unknown. The average discharge rate to MDA V was 6000 gal. to 8000 gal. per day. Historical evidence shows the beds were under-designed for the volume of wastewater discharged, resulting in overflows into adjacent drainages and BV Canyon, a tributary of Los Alamos Canyon. Liquid waste discharge to MDA V stopped in 1961. A soil cover was placed over the site to repair erosion damage in 1985. Historical data from MDA V suggest low-level contamination of soils/tuff and vegetation with tritium, uranium, and plutonium. Historical data were not collected to determine if contaminants other than radionuclides exist in the absorption beds. The presence of hazardous constituents cannot be eliminated because absorption bed 1 was designed to act as a grease pit. This suggests that the waste stream may not have been purely radioactive. Historical documents indicate that 3 curies of strontium-89, barium-140, and lanthanum-140 (now decayed to undetectable levels); 0.1 curie of plutonium; and 0.034 curie of strontium-90 were released to the absorption beds. The amount of uranium released to the absorption beds is unknown. It is also unknown if organic or inorganic chemicals were part of the waste stream. Former SWMU 21-018(b) was a former laundry facility (in Building 21-20) for

		radioactive clothing. The building was a wood-frame structure with both concrete slab floors and wood framing on pier floors. The eastern portion of the building was used to sort, mend, fold, radiation-screen, and store clean laundry, as well as for offices and general storage. The western portion of the building was used for receiving, washing, and drying laundry, and included a boiler room and a storage room. The western portion of the laundry had several floor drains in the washing, drying, storage, and boiler rooms. In the wet-laundry room (Room 2002), concrete troughs carried wastewater from the laundry machines to a concrete well. This well was drained by a 6-in. cast-iron pipe leading to the MDA V absorption beds. Floor drains in Rooms 2014, 2015, and 2016 also were connected to the 6-in. cast-iron drain that leads to the MDA V absorption beds. The boiler room contained equipment that generated hot water for washing and drying machines and for space-heating in the laundry. The boiler equipment and floor drains in the boiler room were connected to a blowdown sump located outside the south wall of the boiler room. The blowdown sump was connected to a drainpipe that ran south approximately 50 ft to the surface of DP Mesa north of MDA V. Anecdotal evidence suggests that the boiler equipment was not used extensively because steam supply lines from the main steam plant were connected to the laundry after 1945. During razing activities of Building 21-20, a memorandum indicated widespread radioactive contamination on the interior of the building. The building was decommissioned and decontaminated in 1965 and taken to MDA G, where it was burned. Former SWMU 21-023(c) was the septic system (tank, drainline, and outfall) that served the waste treatment laboratory (Building 21-33, SWMU 21-009). This former SWMU was included in the consolidated unit because it is located west of MDA V, has identical suspect contaminants, and may have been impacted by overflow from the absorption beds at MDA V. Sewage was pumped from a sump in Building 21-33 through the septic tank (structure 21-62) and was discharged about 30 ft from the canyon edge above BV Canyon, a tributary to Los Alamos Canyon. The septic system included a concrete tank (3.5 ft wide x 7 ft long x 5.8 ft deep) and a 4-in. VCP drainline. Wastewater discharged from the septic tank flowed downslope to BV Canyon. The septic tank went into operation in 1948 and was decommissioned in 1965 when it was removed and taken to the disposal facility at MDA G. Former AOC 21-013(g) consists of two drainlines and other building debris immediately south of MDA V. The two drainlines are not associated with MDA V. The origins of the drainlines, other building debris, and contaminant source term are not known. RFI Phase I activities were conducted at former SWMU 21-018(a)(the absorption beds) and its drainages to determine the extent of source-term migration from the site during two sampling events in 1994 and one sampling event in 1996. In 1994, radiation and organic vapor surveys were performed at MDA V. Six boreholes were advanced and sampled during 1994. In addition, one deep borehole was drilled and sampled. In 1996, a geophysical survey was performed, and additional samples were collected near the borehole located outside the absorption beds. Also, two trenches were excavated and sampled within absorption bed 1. Analytical results showed elevated concentrations of the inorganic chemicals antimony, cadmium, copper, lead, mercury, and uranium, and radionuclides americium-241, cesium-137, plutonium-238, plutonium-239/-240, strontium-90, tritium, uranium-234, uranium-235, and uranium-238. The Phase Report Addendum 1B and 1C concluded that the extent of inorganic potential contaminants is limited to the area around the drainline from Buildings 21-20 and 21-45 into absorption bed 1. The extent of radiological constituents was not defined, and additional RFI activities were recommended to fill the data gaps. An RFI Phase II SAP for completion of characterization activities will be prepared for completion of RFI activities at this consolidated SWMU. In 1998, DOE EM-50 made funding available for a demonstration of NTISV and identified MDA V at TA-21 as the location for the demonstration. An agreement was reached between NMED, DOE, and LANL to conduct the NTISV demonstration to

		obtain data on the effectiveness of the technology. The demonstration was divided into two phases: a cold demonstration in an area with no radioactive contamination and a hot demonstration at MDA V within an area that contains radioactive contamination. The cold demonstration was conducted northwest of MDA V at SWMU 21-027(d)-99 in 1999. NMED, DOE, and LANL agreed that the hot demonstration would be most effectively regulated as an IM. LANL submitted an IM plan in February 2000, which described the objectives for the hot demonstration at MDA V. The NTISV hot demonstration was conducted in absorption bed 1 adjacent to the location where the drainline from Building 21-20 entered absorption bed 1. Prior to the hot demonstration, six premelt characterization samples were collected from within absorption bed 1 and three boreholes were advanced and sampled. The hot demonstration was completed in April 2000. Postmelt samples were collected from three boreholes, which were advanced adjacent to the three premelt boreholes. Collection of vitrified glass samples to evaluate the effectiveness of the NTISV technology is pending. RFI activities were conducted at former SWMU 21-023(c) in 1992 and 1993. In 1992, a radiological field survey was conducted, and six locations were sampled in the outfall area. The 1992 radiological survey indicated background screening levels of alpha and gamma emitters and slightly elevated levels of low-energy gamma emitters. Contaminant levels appeared to decrease downgradient from the pooling area below the mesa rim. All inorganic chemical concentrations were below SALs and BVs. Americium-241 and plutonium-239 concentrations exceeded SALs. No VOCs were detected and only one SVOC (benzoic acid) was detected. Because elevated radionuclide concentrations were identified in the 1992 data, additional sampling was proposed to define the extent of contamination. In 1993, eight additional locations were sampled in the outfall area, and a radiological field survey was performed. In addition, one 20-ft borehole was advanced and sampled downgradient from the former septic tank location to determine if leakage occurred from the septic tank. Analytical results indicated that americium-241 and plutonium-239 exceeded SALs. Analytical results also indicated that the extent of nonradioactive constituents was defined, but the extent of radiological constituents had not been defined. Former SWMU 21-023(c) was recommended for NFA for hazardous constituents. Additional sampling activities were proposed for radiological constituents (americium-241 and plutonium-239). In 1996, an IA plan was proposed for limiting access to the contaminated outfall area of former SWMU 21-023(c). These interim activities included posting signs around the area of contamination and installing a fence between the southeast corner of MDA B and the northwest corner of MDA V.
21-021-99	In Progress	Consolidated SWMU 21-021-99 consists of former SWMU 21-021 and AOCs 21-019(a, b, c, d, e, f, g, h, i, j, k, l, m), 21-020(a), and 21-020(b). This consolidated SWMU was investigated as part of a larger group of SWMUs that represent potential surface soil contamination from historical airborne releases from incinerators, stacks, and filter houses at TA-21. TA-21 (DP Mesa) has had air emissions from incinerators, filter houses, buildings, and exhaust stacks since the beginning of technical operations in the mid-1940s. Radionuclides were the predominant emission and the amount fluctuated greatly with time. Although a few of these stacks remain active, only the potential surface soil contamination resulting from historical stack emissions is addressed by these SWMUs. Present stack emissions are monitored as part of LANL's routine environmental surveillance program. The ER Project conducted an RFI at the airborne release-related SWMUs in 1992. SWMUs included in the investigation were 21-007, 21-008, 21-021 and former AOCs 21-019(a, b, c, d, e, f, g, h, i, j, k, l, m), 21-020(a), and 21-020(b). The investigation had three components: identifying TA-21-wide surface soil backgrounds by analyzing surface soil samples; evaluating airborne emissions by analyzing deposition-layer surface samples; and investigating the potentially contaminated former locations of two air-filter buildings, former AOCs 21-020(a) and 21-020(b). A total of 363 locations were sampled for the investigation. Soil characterization data for former AOCs 21-019(a, b, c, d, e, f, g, h, i, j, k, l, m) and for potential contamination related to former SWMU 21-021 showed slightly elevated radionuclide levels TA-wide. However, the levels were

		lower than action levels and could not be attributed to any specific subset of airborne-emission SWMUs. Based on characterization data, the RFI report recommended NFA at former AOCs 21-019(a, b, c, d, e, f, g, h, i, j, k, l, m) and former SWMU 21-021. The RFI for the former filter buildings [former AOC 21-020(a), which was Building 21-12, and former AOC 21-020(b), which was Building 21-153] addressed the former locations (footprints) of the buildings. The buildings filtered particulates from glove box and laboratory room air from the TA-21 radiological facilities. Building 21-12 was removed in 1973; Building 21-153 was removed in 1978. Records documenting the buildings' demolition indicate that residual radioactive contamination from plutonium-239/-240 remained at low levels in the building footprints. The primary objectives of the RFI were to confirm the presence or absence of residual contamination in the filter buildings' footprints, identify specific suspect contaminants, and assess the depth of contaminant dispersal in footprint soil. The ER Project collected 140 samples from 36 locations; 78 soil samples were collected from 21 locations in or near the Building 21-12 footprint and 62 soil samples were collected from 15 locations at or near the footprint of Building 21-153. The RFI report recommended NFA at former AOCs 21-020(a) and 21-020(b) because hazardous constituents were not detected and detected radiological constituents were present below action levels at these AOCs. Former AOCs 21-019(a, b, c, d, e, f, g, h, i, j, k, l, m), 21-020(a), and 21-020(b) were requested for removal from Module VIII of LANL's Hazardous Waste Facility Permit.
21-022(b)-99	In Progress	Consolidated SWMU 21-022(b)-99 consists of former SWMUs 21-022(b), 21-022(c), 21-022(d), 21-022(e), and 21-022(g). These former SWMUs are waste lines and their underground, plutonium-bearing, liquid waste sumps: structure 21-82 [SWMU 21-022(b)], structure 21-84 [SWMU 21-022(c)], structure 21-87 [SWMU 21-022(d)], structure 21-89 [SWMU 21-022(e)] and structure 21-189 [SWMU 21-022(g)]. The sumps were built in 1945 and were located along the north side of the TA-21 plutonium-processing complex. Former SWMUs 21-022(b), 21-022(c), 21-022(d), and 21-022(e) were constructed of brick and were designed to receive liquid wastes before disposal and to provide a sample collection point. The sumps received all liquid waste discharges from Buildings 21-2, -3, -4, and –5. Each sump was about 5 ft in diameter and 10 ft deep. Plastic liners were grouted to the inside walls of each sump in 1963. Between 1945 and 1952, a 6-in. iron pipe carried waste from these sumps to MDA T [SWMU 21-016(a)-99]. When Building 21-35 was built in 1952, a 4-in., extra-heavy cast-iron waste line was installed parallel to and about 20 ft north of the old pipe, which was left in place. In addition, three 1.5-in. stainless steel lines were installed 1 ft above the new 4-in. line in the same trench. One of these lines originated from the northeast corner of Building 21-2 and carried special waste directly to Building 21-35; the remaining two lines carried raffinate from Building 21-3 and Building 21–5 to holding tanks and then to Building 21-35. Former sump (structure 21-189), SWMU 21-022(g), was located off the northeast corner of the plutonium fuel service building (Building 21-150). Built from 1961 to 1962, the sump was constructed of concrete and was 4 ft wide x 11 ft long. The drainline that carried waste from structure 21-189 was a 4-in.-diameter cast-iron pipe. It connected to the 4-in. waste line that connected the other four sumps to Building 21-35. The 4-in. and 1.5-in. waste lines were rerouted in 1967 when Building 21-35 was removed and a new waste treatment plant (Building 21-257) began operating. Line segments from the new portion of the lines to Building 21-35 were removed and the sumps were removed (1979-1980). Following removal, the waste line entering each sump was reconnected to the line that had exited the sump, forming a direct connection. During the 1979-1980 sump removal, contamination around and beneath the sumps was documented. Contaminated soil around the sumps was removed until further excavation jeopardized the buildings' integrity. Removal of additional soil is delayed until the buildings or waste lines undergo D&D. Excavation pit walls were sprayed with asphalt to alert future excavators to the extent of the remediation and the pits were backfilled with clean soil. The RFI work plan proposed limited site investigation to determine the depth of contaminant penetration beneath the sump footprints; however, site characterization and remediation would need to be coordinated with the LANL D&D

		program. The RFI work plan addresses the sumps and lines separately because the lines will not be investigated before D&D. The area where the acid lines are buried contains numerous utility lines that remain in use, making investigation of the lines difficult and dangerous. During D&D, all lines connected to the building will be removed and samples will be collected. Suspect contaminants are nitrates, chlorides, fluorides and plutonium. Other contaminants found during sump removal are arsenic, boron, cobalt, molybdenum, niobium, nickel, lead, antimony, uranium, and zinc.
21-022(h)-99	In Progress	Consolidated SWMU 21-022(h)-99 consists of former SWMUs 21-022(h), 21-022(i), and 21-022(j). Former SWMU 21-022(h) is a sump (structure 21-202), its drainline, and a former NPDES-permitted outfall (EPA 03A032, discontinued July 31,1996). Structure 21-202 is an acid industrial-waste manhole built from 1961 to 1962 from 36-in. corrugated metal pipe. It received industrial wastewater and drainage from basement floor drains and roof drains in the plutonium fuel service building (Building 21-150). The drainline from the sump is a 24-in.-diameter pipe that discharges to Los Alamos Canyon. As of May 1991, the outfall discharged only treated cooling water. Quantitative information about effluent discharged through structure 21-202 is not available. Contaminants that may have been discharged are plutonium, uranium, mercury, lead, organic chemicals, and various acids associated with plutonium purification. Structure 21-202 and its drainline will be removed during D&D of Building 21-150. Former SWMU 21-022(i) was a sump pump in the equipment room at the southeast corner of Building 21-2. The bottom of the sump is estimated to have been 14 ft bgs and had an estimated capacity of 1000-gal. per hr. It is 18 in. x 18 in. x 24-in. with a 4-in. berm. The discharge point for effluent from this sump is not clear and no drainlines south of the equipment room have been identified. Former SWMU 21-022(i) was removed during D&D of Building 21-3. Former SWMU 21-022(j) was a sump pump at the south end of Building 21-3 that was removed during 1994-1995 D&D activities. The bottom of the sump was 14 ft bgs. Former SWMU 21-022(j) was 18 in. x 18 in. x 8-in. deep and received drainage from the equipment room. The ER Project conducted an RFI at the outfall portion of former SWMU 21-022(h) in 1992. Eight surface and subsurface soil samples were taken from three locations in the outfall channel. The RFI report recommended deferring a decision about former SWMU 21-022(h) until the associated sump has been characterized. No additional work has been done at SWMU 21-022(i). The ER Project conducted a VCA at former SWMU 21-022(j) in 1994 and 1995 in conjunction with D&D activities at Building 21-3. The VCA consisted of sampling beneath the sump to characterize potential contamination. Three confirmatory samples were taken from one location in the center of the footprint of the former sump. Samples were field-screened for radiation and sent to a fixed laboratory to be analyzed for radionuclides, organic chemicals, and inorganic chemicals. Based on analytical results from confirmation samples, the VCA report recommended NFA for former SWMU 21-022(j).
21-023(a)-99	In Progress	Consolidated SWMU 21-023(a)-99 consists of former SWMUs 21-023(a), 21-023(b), and 21-023(d). These SWMUs are the former locations of septic tanks and associated inlet and outlet lines beneath the footprint of a former plutonium processing building (Building 21-3N). Except for some of the lines, these septic systems underwent D&D in 1966 to make way for additions to Building 21-3N and reroute sewage to a new treatment plant built to serve TA-21 [former SWMUs 21-026(a, b, c, d)]. Only former PRS 21-023(d) is reported to have received industrial wastes; the other two septic tanks reportedly received only wastewater from mop sinks, decontamination showers, and lavatories. Former SWMU 21-023(a) was a sanitary waste system. The septic tank (structure 21-225) was located between two additions to Building 21-3N, and reportedly served a

		janitor's mop sink in the CMB-4 laboratory. Structure 21-225 was made of steel-reinforced concrete and was 5 ft x 9 ft x 6 ft deep. It is not known when the structure 21-225 was installed, but it and the associated sewer line were removed in July 1966. Former SWMU 21-023(b) was a sanitary waste system. It was installed in 1945 and included a 500-gal. circular steel tank (structure 21-142, which was 6.5 ft in diameter and 2 ft deep) and associated sewer lines. The system received wastewater from the shower room in Building 21-3N and drained into an acid sump [structure 21-84, the former SWMU 21-022(c)]. Structure 21-142 and associated lines were removed in February 1966 to make way for an addition to Building 21-3N. Former SWMU 21-023(d) was septic system. It included a steel-reinforced concrete septic tank (structure 21-187) that was installed in June 1960. Structure 21-187 was 5 ft x 3 ft x 5.5 ft deep, with 100 ft of outlet line. The tank collected industrial waste and sewage from Building 21-3N. Waste from SWMU 21-023(d) presumably drained north to a 4-in., extra-heavy, cast-iron acid waste line. This tank was removed and disposed of without restriction in October 1966. It was located beneath a new addition to Building 21-3N. Based on the material that was handled in the buildings the septic systems served, the RFI work plan stated that the septic systems could contain radioactive contamination and/or hazardous materials. Contaminant quantities are unknown. The RFI work plan proposed investigating these SWMUs in conjunction with the TA-21 D&D program. The ER Project submitted a SAP to DOE in April 1997; sampling would be conducted to confirm the presence or absence of contaminants by collecting data needed to determine the extent of contamination. The ER Project proposed conducting field surveys, collecting samples in coordination with the TA-21 D&D program, and analyzing samples for radionuclides and organic and inorganic chemicals as appropriate, based on D&D sample analysis results. Although Building 21-3N has been demolished, the main corridor connecting the buildings that comprise DP West still exists, and several active and inactive utilities remain underground in this area. In a 1998-1999 D&D characterization study at 21-023(a)-99, the locations of the removed septic tanks were determined as accurately as possible. The locations of former SWMUs 21-023(a) and (b) were determined using engineering drawings and triangulation from existing steel beams in Building 21-3. The location of former SWMU 21-023(d) was evident from the location of the tank cleanout, which remained in the building footprint following removal of the tank. The D&D characterization study also was designed to include sampling in the former tank area to determine the presence or absence of contamination. However, due to construction rubble over the tanks' former locations, sampling with a motorized hand auger was impossible and no samples were collected. Direct surveys of alpha and beta activity were conducted during the auguring attempts; however, virtually no penetration was achieved in the areas of former SWMUs 21-023(a) or (b). At former SWMU 21-023(d), the auger penetrated to the approximate maximum depth of the former septic system location. No beta or alpha activity was detected in the former locations of any of the tanks during the D&D characterization study. A 2001 geophysical survey in the area of the Building 21-3N footprint confirmed that the three septic tanks and the inlet and outlet lines associated with former SWMUs 21-023(a) and 21-023(b) have been removed. The lines associated with former SWMU 21-023(d) were shown to remain in the ground. The RFI work plan stated that removal and verification sampling may be conducted in lieu of SWMU characterization. A VCA/VCM has been proposed that would involve (1) removing remaining lines and (2) confirmation sampling in the area of all former septic system components.
21-024(a)	In Progress	SWMU 21-024(a) is a septic system that routed sewage from the old steam plant (Building 21-9) through a septic tank (structure 21-53, which was abandoned in place in 1966), to the surface on the south rim of DP Mesa above Los Alamos Canyon. The 8-ft-wide x 16-ft-long x 7-ft,9-in.-deep septic tank is made of reinforced concrete; drainlines

		are 6-in. VCP. Based on the building's operations as a steam plant, suspect contaminants are fuel oil and boiler blowdown constituents such as sulfites and copper salts. Releases from the blowdown lines, which are not part of SWMU 21-024(a), may have commingled with SWMU 21-024(a) wastewater discharge. RFI sampling activities were conducted in 1992 and 1993. A radiation survey was performed between the suspected outfall release point and the edge of DP Mesa. The outfall discharge point was never positively identified; however, a pooling area, which contained pieces of VCP, was identified. Eighteen samples were taken at six locations in 1992. In 1993, a borehole was drilled and sampled downgradient of the tank's outlet pipe to identify potential releases from the septic tank system. The radiological survey from 1992 indicated background levels of alpha, gamma, and low-energy gamma emitters. The 1992 analytical results for inorganic chemicals, organic chemicals, and radionuclide concentrations were below SALs. The 1993 analytical results for inorganics, organics, and radionuclide concentrations from borehole samples were all below SALs. The vertical and horizontal extent of contamination at SWMU 21-024(a) has been defined. NFA was proposed for SWMU 21-024(a) in the Phase I RFI report addendum.
21-024(b)	In Progress	SWMU 21-024(b) is a septic system that routed sewage from Building 21-17 (a passageway decommissioned in 1969) through a septic tank (structure 21-55) to the surface south of a laboratory building (Building 21-5). Structure 21-55 is made of reinforced concrete, and is 4 ft wide x 8 ft long by 6.5 ft deep. The outfall is a cast-iron pipe that emerges from backfill inside the security fence and discharges on a gentle slope. The slope extends approximately 70 ft to the mesa edge with no defined channel. During 1988 reconnaissance sampling, one sample was collected from the discharge point of the outlet pipe for SWMU 21-024(b). Americium-241, plutonium-239/240, tritium, and lead were reported above regional background levels. Low levels of oil, grease, and methylene chloride (a common laboratory contaminant) also were detected. RFI sampling activities were conducted in 1992 and additional samples were collected in 1993. The 1992 RFI activities included a radiological field survey and collection of nine samples from three locations. The radiological survey indicated background levels of alpha and low-energy gamma emitters and slightly elevated levels of gamma emitters. Samples were collected from locations within the outfall drainage channel because the radiation survey indicated the presence of elevated concentrations of gamma emitters. Plutonium-239 concentrations exceeded SALs. All inorganic analytes were below SALs. No VOCs or SVOCs were reported above detection limits. RFI activities during 1993 included drilling one borehole near the location of the septic tank. Four samples were collected at 2-ft intervals from the borehole. Only plutonium-239 exceeded SALs. No inorganic analytes were above SALs. No VOCs or SVOCs were above detection limits. Analytical data from 1992 and 1993 indicated that the extent of contamination was defined. Only plutonium-239 concentrations were greater than SALs. SWMU 21-024(b) was recommended for NFA for hazardous constituents in the RFI report. Further risk assessment was recommended to address the radioactive contamination. In 1996, an IA was proposed for the outfall area. Surface soils in the outfall were contaminated with plutonium-239 at levels that exceeded action limits for soil-contamination areas established by LANL's ESH Division. The proposed IA consisted of placing a fence between an area of soil contaminated with plutonium-239 and a trail.
21-024(c)	In Progress	SWMU 21-024(c) is a septic system that routed sewage from a laboratory building (Building 21-54) and another laboratory building (Building 21-61), through a septic tank (structure 21-56). The septic tank was built in the late 1940s and abandoned in place in 1966. It is constructed of reinforced concrete and is 4 ft wide x 8 ft long x 5 ft deep. Drainlines are 4-in. VCP. One inlet line routed sanitary waste and connected floor

		drains from Building 21-54 to the septic tank (structure 21-56). Building 21-54 was built in 1945 and served as a machine shop and a warehouse; it was removed and demolished in 1967. Little is known about what was stored in the warehouse or what type of machine work was done in the building. However, documents describing the work required for demolition of the building indicate that the building was contaminated with radioactive materials, including plutonium. A second inlet line routed sanitary waste and connected floor drains from Building 21-61 to a connection with the inlet line from Building 21-54. Building 21-61 was built in 1950 and decontaminated and decommissioned in 2002. No information has been found to document the type of classified work that was performed in the building from 1950 to 1956. In 1956, the building was remodeled to support work on Project Rover, an experimental project related to the development of nuclear-powered space vehicles. The operations included the use of an electric furnace to coat reactor parts and fuel rods. The reactor parts and fuel rods were coated with niobium pentachloride to improve heat resistance and prolong the life of reactor components. No leaks or releases are known to have occurred. During the early 1960s the coating operation was suspended and the use of the building stopped. A 1961 request for furnace work notes that a small amount of uranium contamination was present in the building. It is unclear from the available information whether the noted uranium contamination came from activities between 1950 and 1956 or from Project Rover work. In the late 1960s and early 1970s, the building was used as a metal fabrication shop to support TA-21 remodeling efforts. Starting in 1978, Building 21-61 and the bare ground directly east of the building were used to store capacitors and transformers containing PCB oil, PCB-contaminated pumps, and drums of PCB-contaminated waste oil, solvents, and trash. Kerosene and petroleum-based solvents were used in the storage area to rinse the transformers and capacitors after the PCB oil was drained. PCB-contaminated materials were stored on the bare ground until 1981, when the northern two-thirds of the yard east of the building were paved with asphalt. Near the center of the fenced yard, a rectangular berm approximately 40 ft wide x 60 ft long surrounds part of the asphalt pad. The berm has an outlet valve in the southeast corner. Soil was not excavated prior to placement of the asphalt pad. After 1981, drums containing less than 500 ppm PCB were stored on the asphalt pad and drums containing greater than 500 ppm PCB were stored inside Building 21-61. Storage of PCB-contaminated materials at Building 21-61 was discontinued in 1989, when PCB storage was moved to the PCB waste storage facility at TA-54. One outlet line from the septic tank extended approximately 80 ft and discharged effluent 20 ft from the south rim of DP Mesa above Los Alamos Canyon. A vaguely defined channel existed downgradient from the area where the outlet pipe surfaces. During 1988 reconnaissance sampling, one sample was collected within the outfall drainage channel. Concentrations of chromium, silver, zinc, copper, lead, mercury, americium-241, plutonium-238, tritium, uranium-234, uranium-235, and uranium-238 were reported above regional background levels. In addition, oil/grease and dichloromethane were reported above detection limits. RFI sampling activities were conducted in 1992 and 1993. The 1992 activities included a radiological field survey and collection of four samples from two locations. The radiological field survey indicated background levels of alpha, gamma, and low-energy gamma emitters. Chromium, lead, and uranium were above SALs. All organic analytes detected were common analytical laboratory contaminants and are not indicative of contamination from this site. The 1993 activities consisted of drilling a borehole downgradient of the septic tank. Four samples were collected from the 20-ft borehole. All inorganic, radionuclide, and organic constituents were below SALs. RFI activities determined that the extent of contamination had not been defined because only a small number of samples were collected at this site. RFI Phase II sampling activities were recommended in order to adequately characterize SWMU 21-

		024(c). In 1998, a SAP was prepared for SWMU 21-024(c) in conjunction with SWMU 21-003-99. The objective for SWMU 21-024(c) is to define the nature and extent of contamination at this site.
21-024(d)	In Progress	SWMU 21-024(d) is a septic system that routed sewage from an office building (Building 21-1, which was removed in 1965) through a septic tank (structure 21-106) to the surface on the south rim of DP Mesa above Los Alamos Canyon. The tank is made of reinforced concrete and is 9.5 ft wide x 18 ft long x 5 ft deep. Drainlines are 6-in. VCP. Samples collected in 1988 indicate that soils south of the outfall marker had elevated levels of mercury, americium-241, plutonium-238, plutonium-239/-240, and tritium; concentrations of oil and grease were above detection limits. RFI activities were conducted at SWMU 21-024(d) in 1992 and 1993. The 1992 investigation included a radiological survey of the discharge area at the canyon rim and on the bench immediately below the mesa top. Four samples were collected from two locations; the mesa top and the bench area. The radiological survey indicated BVs of alpha and gamma emitters and slightly elevated levels of low-energy gamma emitters. Analytical results for the 1992 investigation activities indicated that plutonium-239/-240 exceeded SALs. No inorganic chemicals exceeded SALs. No VOCs or SVOCs were above detection limits. In 1993, an 8-ft borehole was drilled adjacent to structure 21-106 and one sample was collected from each 2-ft interval. Analytical results for 1993 samples indicated that plutonium-239 concentrations were greater than SALs. The RFI report recommended NFA with respect to hazardous constituents, but also indicated that corrective action may be necessary to address radioactive contamination. In 1995, a VCA at SWMU 21-024(d) was conducted to address plutonium-239 contamination. VCA activities consisted of sampling structure 21-106 for waste characterization, conducting a radiological field survey for low-energy gamma radiation, removing the contents of structure 21-106, and transporting/disposing of the waste off the site. Thirteen locations were determined to have elevated radioactivity. Additional field instruments were used to quantify the alpha activity. Five confirmation samples were collected and submitted to an off-site fixed laboratory for plutonium-239 analysis. Structure 21-106 was left in place, in accordance with state of New Mexico regulations. The inlet and outlet lines were grouted with concrete, the tank was filled with pea gravel, and the site was regraded, reseeded, and restored to its original conditions. Analytical results of the confirmation samples indicated that plutonium-239 concentrations were less than SALs for the outfall area. The VCA completion report concluded that the extent of radioactive contamination had been defined. A request was made to DOE to remove PRS 21-024(d) from the list of ER Project PRSs because no additional corrective action was required at this site.
21-024(e)	In Progress	SWMU 21-024(e) is an inactive septic system that routed sewage from the former laundry (Building 21-20) through a septic tank (structure 21-123) to the surface on the south rim of DP Mesa above Los Alamos Canyon. Building 21-20 was removed in 1965. The septic tank and outfall area are located east of MDA V. The septic tank is a 1000-gal. steel tank that is 6 ft, 4 in. wide x 11 ft, 4 in. long x 8 ft deep. The drainlines entering and exiting the tank are 6-in. VCP. The outfall is broad and open, and its channel is poorly defined. The outfall is about 20 ft from the southern edge of DP Mesa. Below DP Mesa is a broad bench with a drop-off to the floor of Los Alamos Canyon. SWMU 21-024(e) was sampled in 1988 during reconnaissance sampling activities. Analytical results indicated elevated concentrations of mercury and zinc, and above-background levels of americium-241, plutonium-238, plutonium-239/240, tritium, uranium-234, uranium-238, and cesium-137. Oil and grease also were found at concentrations above detection limits. Other possible contaminants that may be detected are phosphates and various organic chemicals because Building 21-20 was a laundry facility. RFI activities were conducted at this SWMU in 1992 and 1993. The 1992 investigation activities consisted of a radiological field survey and soil sampling. Two samples were

		collected from three locations for a total of six samples. Analytical results for 1992 samples indicated plutonium-239/240 concentrations were detected above SALs. All inorganic constituents were below SALs. No VOCs or SVOCs were reported above detection limits. In 1993, a 20-ft borehole was drilled downgradient of the septic tank to determine if there were any releases from the tank. Four samples were collected from each 5-ft interval. Analytical results for 1993 samples indicated that all inorganic and radionuclide concentrations were below SALs. No VOCs or SVOCs were reported above detection limits. Analytical data suggest that no releases had occurred from the septic tank (structure 21-123), because no contaminants were detected above background and/or SALs. However, plutonium-239/240 was detected in the outfall area, approximately 16 ft downgradient from the outfall discharge point. NFA was recommended for RCRA constituents. Further risk assessment was required for the radionuclide contamination. In 1996, a VCA was conducted to address radionuclide contamination. The VCA consisted of sampling the tank contents, conducting a radiological field survey, collecting confirmation soil samples from the outfall area, removing the septic tank contents, disposing of approximately 18 cubic yards of waste, grouting the inlet and outlet lines with concrete, and abandoning the septic tank in place by filling it with pea gravel following New Mexico regulations. Subsequently the area over the septic tank was regraded, reseeded, and restored to its original condition. Analytical results indicated that no cleanup actions were required for the outfall area. The VCA completion report concluded that the VCA addressed the radioactive contamination in the septic tank and outfall area and resulted in tank abandonment according to New Mexico regulations. A request was made to DOE to remove SWMU 21-024(e) from further consideration because no risk assessment for radioactivity is necessary at this SWMU.
21-024(f)	Pending	SWMU 21-024(f) is an inactive septic system that consists of an inlet pipe, septic tank, outlet pipe, outfall pit, and outfall drainage area. The septic system received sewage from Building 21-45 from 1947 to 1954. Building 21-45 was originally located at 15th Street and Trinity Drive. In 1947, it was moved to the north side of DP Road and north of the DP laundry building, TA-21-20. Initially the building (TA-21-45) was used for safety training. In 1949, Building TA-21-45 was renovated for the Industrial Waste Studies Group, a group that studied various waste streams in an attempt to recover more plutonium and uranium as well as other valuable and scarce materials. The northwest restroom of the building was converted into a waste treatment room, which included a stainless steel sink with a drainline that led to the septic tank, TA-21-124. Sewage was discharged from the building and ran through a 4-in. vitrified clay pipe (VCP) approximately 84 ft to a 1000-gal. steel septic tank (TA-21-124). Then effluent from the septic tank was discharged through a 4-in. VCP to a shallow rock-lined pit approximately 158 ft north to the northern edge of DP Mesa. The volume of liquid discharged to the pit is unknown. The pit is approximately 5-ft in diameter by 2-ft deep. Downgradient of the pit is broad, moderate slope to the edge of the mesa, then a steep slope to the bottom of DP Canyon. Building TA-21-54 was removed in 1954 and the septic system was abandoned in place. It is probable that the inlet VCP from Building TA-21-45 remains in place. The outlet VCP daylights at the outfall pit, suggesting that the VCP between the septic tank and the pit remains in place. SWMU 21-024(f) was sampled during three separate sampling events prior to 1999. In 1988, one soil sample was collected from the outfall pit beneath the outlet pipe during the reconnaissance sampling activities by DOE. Analytical results indicated that lead, mercury, plutonium-239/240 and tritium were greater than 1999 background values. RFI activities were conducted in 1992 and 1993. The 1992 activities included a radiological field survey in the outfall area adjacent to the pit and collection of soil samples. Nine soil samples were collected from three locations. Analytical results indicated that there were no inorganic chemicals and radionuclides that exceeded SALs. There were no SVOCs reported above detection limits. Three VOCs (acetone, methylene chloride, and toluene) were detected at less than 0.1 of SALs.

		The 1993 activities included drilling two boreholes. One borehole was drilled adjacent to the septic tank location to a total depth of 20 ft and four samples were collected from the borehole. The second borehole was advanced in the center of the outfall pit to a total depth of 10 ft. Four samples were collected from the second borehole. Analytical results indicated that no inorganic analytes or radionuclides were reported above SALs. There were no SVOCs or VOCs reported above detection limits. RFI investigation results indicated that a release has occurred from the septic tank system. The removal of contaminated soil/tuff around the septic system was not required because all potential contaminants were reported at concentrations below SALs. However, the extent of contamination has not been adequately defined because the maximum contaminant concentrations were detected in the samples farthest downgradient. In 1999, a Voluntary Corrective Action (VCA) Plan was prepared for SWMU 21-024(f) [septic tank system] and AOC C-21-015 (sump) and submitted to NMED. The VCA objectives were to define the nature and extent of any contamination and to remove all structures associated with these two SWMUs. Samples had not been previously collected from the contents of these two structures; therefore, the nature of potential contamination is not fully known. Samples were collected from the septic tank and the sump in 1999.
21-024(g)	In Progress	SWMU 21-024(g) was a septic system that routed sewage from a warehouse (Building 21-7) and an electronics shop (Building 21-31) through a septic tank (structure 21-125, which was abandoned in place in 1966) to the surface on the north rim of DP Mesa above DP Canyon. The septic tank is made of reinforced concrete and measures 9 ft, 6 in. wide x 18 ft long x 5 ft deep. The drainlines are 4-in. VCP. In 1988, two samples were collected from this SWMU. Analytical results indicated that plutonium-239/240, tritium, uranium-234, uranium-238, cesium-137, lead, arsenic, mercury, zinc, copper, cadmium, and nickel were detected at concentrations above background levels. Tetrachloroethene and oil/grease concentrations were above detection limits. Other potential contaminants are organic solvents used to clean electronic equipment. RFI sampling activities were conducted in 1992 and 1993. The 1992 RFI activities consisted of a radiological field survey and soil sampling. Soil samples (2) were collected from 6 sampling locations, for a total of 12 samples. The radiological survey indicated background levels of alpha, gamma, and low-energy gamma emitters. Analytical results indicated that plutonium-239 concentrations exceeded SALs. Analytical results also indicated that inorganic analyte concentrations were less than SALs. No VOCs or SVOCs were reported above detection limits. In 1993, a land survey was used to locate the septic tank (structure 21-125); then a 20-ft borehole was drilled downgradient from the septic tank. Four samples were collected from the borehole. The 1993 analytical results indicated that no radionuclide concentrations were detected above SALs. No inorganic constituents were reported at concentrations greater than SALs. All VOCs and SVOCs were reported below detection limits except acetone, which is a common laboratory contaminant and is not considered a contaminant for this site. The RFI report concluded that the extent of contamination had been adequately defined. However, additional risk assessment was recommended for radioactivity.
21-024(h)	In Progress	SWMU 21-024(h) is a septic system that discharged sewage from an administrative building and shop (Building 21-151) through a septic tank (structure 21-163, which was abandoned in place in 1966) to the surface on the north rim of DP Mesa above DP Canyon. The tank is made of reinforced concrete and is 6 ft wide x 14 ft long x 5 ft deep. The drainlines are 6-in. VCP; these lines carried effluent from Building 21-151 to the septic tank and from the tank to the outfall. In 1988, a grab sample was collected north of the septic tank at the junction of two drainage channels. Analytical results indicated above-background concentrations of americium-241, tritium, and plutonium-239/240. Oil and grease concentrations were reported above detection limits. RFI sampling activities were conducted in 1992 and 1993. The investigation consisted

		of a field radiological survey and soil sampling. Eight samples were collected from three locations downgradient from the septic tank. Radiological field survey results indicated background levels of alpha emitters and elevated levels of gamma and low-energy gamma emitters. Analytical results indicated that no inorganic analytes were detected above SALs. Plutonium-239/240 concentrations were reported above SALs. No VOCs or SVOCs were reported above detection limits. In 1993, a 20-ft borehole was drilled adjacent to the downgradient side of the septic tank (structure 21-163). One sample was collected from each 5-ft interval of the borehole for a total of four samples. All radionuclide concentrations and inorganic analyte concentrations were reported below SALs. No VOCs or SVOCs were reported above detection limits. The RFI report indicated that the extent of contamination had been adequately defined. SWMU 21-024(h) was recommended for NFA; however, a risk assessment was recommended for radionuclide contamination. In 1995, this SWMU was selected for a VCA. The VCA, conducted in 1996, consisted of sampling the septic tank contents, conducting radiological field surveys for low-energy gamma radiation and alpha activity, removing and disposing of the septic tank contents as mixed waste, grouting the inlet and outlet lines with concrete, filling the tank with pea gravel, and regrading, reseeding, and restoring the area to its original site conditions. The VCA completion report concluded that SWMU 21-024(h) requires NFA. The report indicated that radioactive contamination in the septic tank and drainage area was addressed. A request was made to DOE to remove SWMU 21-024(h) from further consideration because no risk assessment for radioactivity is necessary at this SWMU.
21-024(i)	In Progress	SWMU 21-024(i) was an inactive septic system that routed sewage from Building 21-152 through a septic tank (structure 21-181, which was left in place in 1965 and removed in 2001) to the surface southeast of a high-temperature chemistry building (Building 21-209). Also, the blowdown from cooling towers (structures 21-166 and 21-167) was routed to the outfall for this SWMU. Structure 21-181 is made of reinforced concrete and is 6 ft by 10 ft by 8 ft deep. The associated inlet and outlet lines were made of 6-in. VCP. Drainlines from the septic system surface in a broad open area that has a gentle slope extending about 30 ft to the south edge of DP Mesa above Los Alamos Canyon. The ER Project investigated this SWMU in 1992, 1993, 1994, 1997, and 2001. In 1992 and 1993, a Phase I RFI was conducted. A radiological field survey was conducted and six soil samples were collected from three locations in 1992; elevated levels of tritium and arsenic were found. In 1993, the investigation focused on further defining the extent of radiologic contamination. Soil samples were taken from surface and near-surface depths at eight locations. Additionally, samples were collected at 5-ft intervals from a 20-ft borehole drilled adjacent to structure 21-181. Temporary fencing was placed around the SWMU to restrict access. In 1994, four samples were taken from the channel to determine pH. In 1995, a SAP was prepared to guide future sampling at this site. Based on comments from the administrative authority, this SAP was formally withdrawn. In 1997, a radiological survey was conducted over the entire outfall area to determine sampling locations. Samples were analyzed for radionuclides, inorganic and organic chemicals, and PCBs. Analysis results indicated no significant migration past the tuff interface in the outfall area. This investigation also determined that the tank contents had not been removed when the tank was abandoned in 1965. The tank contents were sampled during 1997 field activities. In 1998, an IA plan was submitted for this SWMU. The objective of the IA was to remove major sources of contamination and to stabilize SWMU 21-024(i) until a final remedy is designed. The IA proposed removing structure 21-181 and portions of the associated outfall to prevent contaminant migration. A 1998 IA removed contaminated soil from the mesa top. In 2001, the remaining portions of the IA plan were implemented; structure 21-181, the outlet line, and approximately 15 ft of the inlet line were removed. The remaining inlet line, which extends toward Building 21-209, will be removed during the DP East D&D project. Results of the 2001 sampling will determine

		if additional soil removal actions are required or if this site is eligible for NFA.
21-024(j)	In Progress	SWMU 21-024(j) consists of a septic tank (structure 21-194) and associated drainlines. Structure 21-194 received sewage from a warehouse/laboratory (Building 21-155). Constructed in 1961, structure 21-194 is made of reinforced concrete and is 5 ft long by 3 ft wide by 6 ft deep. It is located off the southwest corner of Building 21-155 near the south edge of the perimeter road. Information regarding the discharged effluent waste is not available. Structure 21-194 was left in place and filled with earth in 1966. No quantitative information exists on suspect contaminants. The ER Project conducted an RFI at this SWMU in 1993. Pipes were located using a geophysical survey. The approximate location of structure 21-194 was identified based on the existing inlet and outlet pipes and by using existing maps. A 20-ft borehole was drilled about 2 ft to 3 ft downgradient of the suspected outlet, and one sample was taken from each 5-ft interval in the borehole. Analytical results indicated that no radionuclides or inorganic chemicals were reported above SALs and no VOCs or SVOCs were reported above detection limits. The RFI report recommended NFA at SWMU 21-024(j) based on analytical results and recommended leaving the tank in place. This SWMU was included in a 1995 permit modification request.
21-024(k)	In Progress	SWMU 21-024(k) consists of a septic tank (structure 21-219), associated drainlines, and a leach field. Sewage discharged from a high-temperature chemistry building (Building 21-209) was carried to a manhole (structure 21-217) through a 6-in. cast-iron line. Sewage was carried by 6-in. VCP to a manhole (structure 21-228), and finally to the septic tank (structure 21-219). The septic tank was constructed in 1965 of reinforced concrete and has two chambers. Outside dimensions are 18 ft, 6 in. long x 6 ft, 4 in. wide x 8 ft, 10-in. deep. Overflow from the tank went to a leach field that was 30 ft long x 20 ft wide x 5 ft, 6-in. deep. Also, two 4-in. VCP lines extend from the downslope edge of the leach field. In 1966, the septic system was abandoned in place by pumping out the tank contents and filling the tank with earth. Analytical results indicated that no radionuclides and inorganic analytes were reported above SALs. No VOCs or SVOCs were reported above detection limits. Suspect contaminants were inorganic and organic chemicals and radionuclides. The ER Project conducted RFI activities at this SWMU in 1993 to identify contaminants resulting from discharges from the septic tank to the associated leach field. Three 20-ft boreholes were drilled, one near the tank and two in the leach field. Samples were taken from each 5-ft interval in each borehole for a total of 12 samples. The leach field may have been removed because there is evidence of backfill in the area suspected of containing the leach field. However, no documentation states that any portion of the septic system was removed. The RFI report recommended NFA at SWMU 21-024(k) because no contamination was detected at this site.
21-024(l)-99	In Progress	Consolidated SWMU 21-024(l)-99 consists of former SWMUs 21-022(a) and 21-024(l) and former AOC 21-004(a), a sump, an aboveground tank, and an outfall, respectively. These former SWMUs were associated with a vault (Building 21-21) used to store nuclear materials. Former SWMU 21-022(a), a sump (structure 21-74), is located north of Building 21-21. The sump was built in 1946 and is made of brick, is of an unknown depth, is 5 ft in diameter, and has a wooden cover. An engineering drawing shows the sump with an inlet line from Building 21-21 but does not show an outlet line from the sump. Building 21-21 was a vault used for storage of plutonium and uranium, although it is no longer used for storage of nuclear materials. There is no quantitative contaminant information available for former SWMU 21-022(a). The suspected contaminants for this site are plutonium and uranium. Former SWMU 21-024(l) is an outfall that received liquid waste from the floor drain of the Building 21-21 mechanical room. The drainline to the outfall ran north toward DP Canyon; however, no engineering drawing has been found showing the location of the

		drainline to the outfall. It is possible that the outfall was near the present location of an aboveground tank (structure 21-335), former AOC 21-004(a). A second likely location is a culvert approximately 40 ft northeast of structure 21-335. A geophysical survey will be conducted to locate the outfall discharge point by following the 3-in. cast iron drainline as it exits Building 21-21. Analytical results from 1988 reconnaissance sampling indicated zinc, americium-241, plutonium-239/-240, and tritium were reported above their respective BVs/FVs. Oil and grease were also reported above detection limits. Uranium is considered a potential contaminant because Building 21-21 was used to store uranium and plutonium metal. In 1974, a tank (structure 21-335), former AOC 21-004(a), was installed to receive releases from Building 21-21. The tank may have replaced the sump, former SWMU 21-022(a), associated with Building 21-21. Former AOC 21-004(a) is a 6000-gal. aboveground steel tank (structure 21-335) that was 8 ft in diameter and 16 ft long and is mounted on a steel cradle. The tank is located approximately 2 ft above the ground. The cradle that holds the tank is bolted to a concrete pad that covers the ground surface below the tank. The tank was connected to floor drains in Building 21-21. The tank has not been pumped out since its installation in 1974, and there are no documented releases from the tank. RFI activities conducted at former SWMU 21-024(l) during 1992 consisted of locating the drainline and discharge point using a geophysical survey, conducting a radiological field survey, and collecting soil samples. Radiological survey results indicated background screening levels of alpha, gamma, and low-energy gamma emitters. Six samples were collected from the outfall area. Analytical results indicate that no inorganic chemicals or radionuclides were reported above SALs, and no organic chemicals were reported above detection limits. The Phase Report 1C recommended former SWMU 21-024(l) for NFA because all analytes were below SALs. RFI activities conducted at former AOC 21-004(a) in 1994 consisted of a radiological field survey and collection of filter paper samples from inside the tank (structure 21-335). The radiological field survey was conducted around the tank, on the concrete pad, along the inlet line, and at the valve. Radiological survey results from around the tank suggest that there was no radiological contamination. The tank was dry and empty during collection of samples from inside the tank. It was determined that the tank did not receive any waste. The RFI report recommended former AOC 21-004(a) for NFA because no radiological contamination was detected and this site was characterized in accordance with applicable state and federal regulations.
21-024(m)	Administratively Complete	SWMU 21-024(m) was identified as an 8-in vitrified clay pipe that exited building TA-21-209, the high-temperature chemistry laboratory, and continued south toward Los Alamos Canyon. The pipe was removed during the construction of a storm drain. SWMU 21-024(m) was characterized in 1992 according to the sampling and analysis plans presented in the TA-21 RFI Work Plan. The results of the investigations were reported in the February, 1994, RFI Phase Report 1C. No organic analytes were detected in this investigation; nor were any inorganic analytes detected above background values. These results indicate that no releases of hazardous constituents occurred from this site. Radionuclides were elevated, but not above levels exceeding TA-21 baseline values attributable to airborne deposition processes occurring mesa-wide. These results indicate that no releases of hazardous constituents occurred from this site. Based on this investigation no contaminants of concern were identified. Therefore, SWMU 21-024(m) is appropriate for NFA under Criterion 5.
21-024(n)	In Progress	SWMU 21-024(n) is a drainline that exits Building 21-155 and discharges into DP Canyon. Building 21-155 has been a warehouse and a laboratory and contains a furnace. The furnace is believed to be a heating unit for DP East. The drain system consists of corrugated metal pipe that exits a concrete bulkhead and discharges onto a gravel road adjacent to MDA U [SWMU 21-017(a)-99]. The effluent flows north to the ditch paralleling the north perimeter road. From there, it flows east to a culvert that

		passes under the north perimeter road and into DP Canyon. One sample was collected directly under the opening in the 10-in. drainpipe as part of the 1988 reconnaissance sampling. The analytical results indicate zinc, plutonium-239/-240 and tritium concentrations were above BVs/FVs. Oil and grease concentrations were reported above detection limits. Petroleum products are also potential contaminants because of the furnace in Building 21-155. RFI activities were conducted at this site in 1992. The investigation activities consisted of a radiological field survey and collection of nine samples from three locations at the discharge point and along the ditch that carries discharges into DP Canyon. The radiological survey indicated background levels of alpha, gamma, and low-energy gamma emitters. Analytical data indicates that no inorganic chemicals or radionuclides were reported above SALs and no organic chemicals were reported above detection limits. The Phase Report 1C recommended NFA for SWMU 21-024(n) because the nature and extent of contamination has been characterized adequately.
21-024(o)	In Progress	SWMU 21-024(o) is a 4-in. VCP drainline that served the old diesel plant at TA-21 (Building 21-46). The building was converted to a warehouse in 1957 and used as a warehouse until 1964. The drain discharges south into Los Alamos Canyon. The outfall pipe is shown on an engineering drawing. The area around the probable outfall location is broad and gently sloping, but the flow pattern is apparent. One sample was collected within a few feet from the discharge point during the 1988 reconnaissance sampling. Analytical results indicate tritium concentrations were above its FV. Oil and grease were reported above detection limits. Probable contaminants for this site are petroleum products related to the diesel plant. RFI activities were conducted at this site in 1992. The investigation included a radiological field survey and collection of three samples from two locations, for a total of six samples. The radiological field survey indicated background levels of alpha, gamma, and low-energy gamma emitters. Analytical results indicated no inorganic chemicals or radionuclides were reported above SALs. There were no organic chemicals reported above SALs. The Phase Report 1C recommended NFA for SWMU 21-024(o) because the nature and extent of contamination was characterized adequately.
21-025(a)	Administratively Complete	
21-025(b)	Administratively Complete	
21-026(a)-99	In Progress	Consolidated SWMU 21-026(a)-99 consists of former SWMUs 21-013(a), 21-026(a), and 21-026(b) and former AOCs 21-026(c) and 21-026(d). This consolidated SWMU is the inactive TA-21 sewage treatment plant (Building 21-227), including inactive drying beds, chlorine contact chamber and outfall, and inactive surface disposal area. The former SWMUs and AOCs were consolidated because they are in close proximity, were all part of the sewage treatment process at TA-21, and therefore were expected to have the same suspect contaminants. The inactive sewage treatment plant is located at the eastern end of DP Mesa. The treatment plant replaced septic tank/filter fields and septic tank/surface discharge systems throughout TA-21. The plant, operating from 1966 until approximately 1995, treated sanitary wastes and cooling water from TA-21 facilities and received water from decontamination activities, janitor’s scrub water, and waste from other TA-21 operations. Former SWMU 21-013(a) is a former surface disposal area for waste sand from a series of filter/sludge drying beds [former SWMU 21-026(b)] associated with the Building 21-227. The surface disposal area covers approximately 45 square feet. Use of the area for sand disposal stopped not later than 1991, and possibly earlier. According to the RFI report, any contamination at former SWMU 21-013(a) can be attributed to contaminated wastes that potentially entered the former SWMU 21-026(a) sewage treatment plant. Former SWMU 21-026(a) is the inactive sewage treatment plant (Building 21-227). The

		treatment plant was an extended aeration sanitary waste treatment plant with a grit chamber, comminuter, digester, aeration tank, and clarifier. Wastes were treated at Building 21-227 from 1966 until 1990, when treatment operations stopped. From 1990 until approximately 1995, sanitary wastes were collected and stored at Building 21-227 until they were trucked to the LANL SWSC plant for treatment. Originally, treated effluent leaving Building 21-227 was released at a concrete spill pad located on the southern edge of DP Canyon. Then, effluent was sent to the dosing siphon chamber (structure 21-348), then to two sand filter beds (structure 21-230), and finally to the original outfall in DP Canyon. The outfall is former AOC 21-026(d), the former NPDES-permitted outfall 05S, which was deleted from the LANL NPDES permit effective March 10, 1998. Former SWMU 21-026(b) consists of a series of four sand filter/sludge drying beds. All four beds were used from the time they were built in 1966 until 1990, when the two westernmost beds were converted to sand filters for effluent from the dosing siphon chamber. Each sand filter and sludge drying bed is 14.5 ft x 23 ft with 4-ft-deep concrete walls. When treatment operations stopped, the beds were filled with clean sand. Former AOC 21-026(c) is a dosing siphon chamber built in 1966. The chamber consists of a 5-ft-wide x 7-ft-long x 8-ft-deep concrete tank originally used as a chlorine contact chamber where wastewater was treated with chlorine disinfectant. In 1990, when chlorine treatment was no longer needed, the chamber was converted to a dosing siphon chamber. The dosing siphon chamber received effluent until the chamber was full, and then the effluent was pumped to the two sand filter beds. The dosing siphon chamber was abandoned when treatment operations stopped at the sewage treatment plant. Former AOC 21-026(d) is the former outfall for Building 21-227. The outfall was permitted under NPDES as outfall SSS05S and was deleted from the permit March 10, 1998. Former AOC 21-026(d) received liquid wastes from Building 21-227. Discharge flowed into a concrete channel on the north edge of DP Mesa and ran down a natural drainage to a tributary of DP Canyon. Prior assays of the effluent indicated the presence of gross-alpha, -beta, -gamma and tritium levels. The ER Project conducted an RFI at former SWMUs 21-013(a) and 21-026(a and b) and AOC 21-026(c) in August and September 1994. The purpose of the RFI was to determine if contaminants were present at the site and if so, to determine the extent of contamination. Four boreholes were drilled and 39 samples were collected. Samples were field-screened for radioactivity and VOCs and submitted for analysis for chlorate and nitrate content. Chlorate and nitrate results were used to determine which samples would be sent for outside analysis, based on the assumption that elevated levels indicated areas that were contaminated by leaks from the sewage treatment plant. On the basis of those results, 16 samples were sent for off-site analysis for radionuclides, organic chemicals, and inorganic chemicals. No elevated levels of contaminants were found. The RFI report recommended these former SWMUs for NFA on the basis that the former SWMUs had been characterized or remediated in accordance with applicable state and federal regulations, and available data indicate that contaminants pose no unacceptable level of risk under current and projected future land use. The ER Project conducted an RFI at former AOC 21-026(d) in 1992. The RFI consisted of a field survey and collection of three surface and near-surface samples from four locations in the drainage channel. Samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Elevated levels of SVOCs were found. The elevated SVOC levels (for benzo[a]anthracene, benzo[b]fluoroanthene, and indeno[1,2,3-cd]pyrene) were characteristic of paving materials and consistent with paving materials in the area. The RFI Phase 1C report stated that the detected SVOCs were not indicative of contamination requiring further investigation and proposed NFA for former AOC 21-026(d).

21-027(a)	In Progress	SWMU 21-027(a) is a surface drainage system located between former equipment room 3A in Building 21-3 and the south rim of DP Mesa. It included four outfalls, one of which was permitted under NPDES (EPA03A031) and removed from LANL's NPDES permit effective July 11, 1995. The system originated at the southwest corner of former Building 21-3 with floor drains from equipment room 3A that connected to two 3-in. lines. Those lines connected to a 4-in. line that emptied into a 12-in. storm drain. The 4-in. line extended from the southwest corner of former Building 21-3 beneath a paved area to the southwest corner of the former site of a cooling tower (structure 21-143) where the line emptied into a ponding area. The ponding area also received NPDES-permitted discharges of treated cooling water from the cooling tower. The pond discharged to a 24-in. corrugated metal pipe culvert that carried the effluent to the DP Mesa edge. Runoff flows over the mesa edge and into Los Alamos Canyon. Building 21-3, its drains and the pipes beneath, and the cooling tower were removed during D&D activities in 1994 and 1995. The 4-in. pipes beneath the paved area were left in place, as was the storm drain, which collects runoff from nearby parking lots. The ER Project investigated this SWMU in an RFI in 1992, and additional sampling was done in 1993 to define the vertical extent of contamination found in the 1992 investigation. The 1992 investigation included a radiological field survey and sample collection from 14 locations; 1 sample was obtained from each location. In 1993, two 20-ft boreholes were drilled in the area south of the cooling tower; one sample was taken from each 5-ft interval in the boreholes for a total of eight samples. Elevated levels of chromium, americium-241, plutonium-238, plutonium-239, and uranium were detected. The Phase Report 1C recommends further investigation at SWMU 21-027(a). In January 1996, a Phase II SAP was written. The purpose of the proposed investigation was to collect data necessary to determine the extent of chromium and radiological contamination in the drainage area, to confirm previous mercury analysis (from a 1988 DOE survey), and to support a recreational risk assessment of the site.
21-027(b)	Administratively Complete	SWMU 21-027(b) consisted of a 4-in. steel drainline that extended from the catch basin around fuel tank TA-21-47 south toward Los Alamos Canyon. The line drained storm water runoff from a bermed area. The drainline was removed in March of 1965. SWMU 21-027(b) was characterized in 1992 according to the sampling and analysis plans presented in the TA-21 RFI Work Plan. The results of the investigations were reported in the February, 1994, RFI Phase Report 1C. No organic analytes were detected in this investigation; nor were any inorganic analytes detected above background values. Radionuclides were elevated, but not above levels exceeding TA-21 baseline values attributable to airborne deposition processes occurring mesa-wide. These results indicate that no releases of hazardous constituents occurred from this site. Based on this investigation no contaminants of concern were identified. Therefore SWMU 21-027(b) is appropriate for NFA under Criterion 5.
21-027(c)	In Progress	SWMU 21-027(c) is an outfall that discharged 50 ft inside the south TA-21 perimeter fence to a broad, gently sloping area with no readily identified channel. The line discharged to the south on DP Mesa. This SWMU was reported to be a 4-in. VCP line that was abandoned in place; it exited former Building 21-6 (removed in 1966), which included a cafeteria and a machine shop. On the basis of the known use of Building 21-6, suspect contaminants were solvents and oils. The ER Project conducted an RFI at this SWMU in 1992. Investigators performed a radiological survey and collected six soil samples from six locations within the drainage channel. One sample was taken from each of the locations. Samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Elevated levels of arsenic, calcium, americium-241, and plutonium-239/-240 were found. The Phase Report 1C recommended deferring a decision about this SWMU until characterization of other SWMUs in the area was completed.
21-027(d)-99	In Progress	Consolidated SWMU 21-027(d)-99 consists of former SWMU 21-027(d), which is a stormwater drainline from a fuel tank containment area, and former AOC C-21-028, a former aboveground diesel-fuel storage tank and concrete containment area.

		Former SWMU 21-027(d) is the location of the drainline and outfall for the secondary containment around the former aboveground fuel tank (AOC C-27-028). The first segment of the drainline (approximately 5 ft) from the sump to a gate valve was 4-in. steel pipe. At the gate valve, the drainline changed to a 4-in. VCP, which was buried between the gate valve and the outfall. The outfall for the drainline is located near the mesa edge and continues down the hillside towards BV Canyon, a tributary of Los Alamos canyon. The VCP drainline was removed in 1965. It is unknown whether there were releases from the drainline. Former AOC C-21-028 was a 12,788-gal. aboveground fuel tank (structure 21-47). The tank was installed in 1945 and was on a reinforced 9-in.-thick concrete slab. When the tank was installed, a drainage ditch extended to the southwest from a bermed area around the tank. In 1948, a concrete secondary containment structure was built around the tank to contain any potential releases from the tank. During construction of the secondary containment, a drainline [SWMU 21-027(d)] was installed in the original drainage ditch from the tank and connected to a sump in the center of the south side of the containment. The storage tank was removed in 1960. Historical records conflict over the use of the tank. Retired Zia Company employees who worked at TA-21 have stated that the tank was installed to store diesel fuel for the backup operation of the boiler in the former DP laundry (Building 21-20). However, the DP Laundry was tied into the overhead steam line and condensate return line from the DP steam plant, so there would have been no reason to operate the boiler in the laundry building. It is possible that the boiler and therefore fuel from the tank may never have been used. The exact date of connection of the laundry to the steam system has not been established with certainty. It is possible the boiler and fuel system were used for several years. There are no records of the tank being serviced (i.e., filled with diesel). It is unknown whether the tank leaked. Former AOC C-21-028 was proposed for NFA in the OU 1106 RFI work plan because no documented releases had occurred. The AOC was proposed for NFA in the March 1995 permit modification request and subsequently approved for NFA by DOE. The RFI for former SWMU 21-027(d) was completed in 1992, and the site was determined as being suitable for NFA. EPA Region 6 concurred with the NFA recommendation in 1995 and in December 1996, NMED-HRMB agreed that the former SWMU was suitable for NFA. In 1998, DOE EM-50 selected MDA V (SWMU 21-018(a)-99) at TA-21 to demonstrate the NTISV technology [see SWMU unit description for SWMU 21-018(a)-99]. The two phases scheduled for the NTISV demonstration included a cold demonstration phase (no radiological contamination) planned for the area of the former AOC C-21-028. The hot demonstration phase (radiological contamination) was planned for absorption bed 1 within MDA V. During excavation of the NTISV demonstration pit, hydrocarbons in the form of weathered diesel were found in the subsurface in an area thought to be unaffected from releases from SWMUs. On the basis of the discovery, NMED and DOE/LANL decided that former SWMU 21-027(d) and former AOC C-21-028 should be further evaluated as a VCM. The VCM would include the cold NTISV demonstration and characterization and confirmation sampling of the hydrocarbon release. At the time of the decision, it was also decided to consolidate former SWMU 21-027(d) and former AOC C-21-028 into SWMU 21-027(d)-99 because the two sites had similar operational history, geographic proximity, transport mechanism of concern (the discharge area of the outfall was previously investigated), and type of investigation required to assess residual hydrocarbon contamination. During construction of the demonstration pit, an undetermined amount of hydrocarbon-contaminated soil was returned to the excavation and subsequently treated during the NTISV cold demonstration. Approximately 45 cubic yards of hydrocarbon-contaminated soil/tuff were disposed of as New Mexico Special Waste. The VCM investigation was detailed in the VCM plan. During sampling of the vitrified glass product, hydrocarbon-contaminated soil/tuff was discovered southwest of the demonstration pit. The investigation activities described in the VCM

		plan were expanded in order to define the extent of contamination. NMED-HRMB agreed with the modification to the VCM plan. In response to a request for supplemental information on the VCM plan, LANL proposed to collect additional samples from the outfall area to confirm that there was no release to the outfall from former SWMU 21-027(d) or former AOC C-21-028. NMED-HRMB agreed with the outfall area sampling proposal. All VCM field activities were completed in 1999. A 2002 VCM report for characterization and remediation of diesel contamination recommended NFA for the site. The TPH contamination was adequately bounded and remediated, thus meeting both UST and NMED requirements.
21-028(b)	Administratively Complete	
21-028(c)	In Progress	AOC 21-028(c) consists of four historical container storage areas located around historical Building 21-3. The storage areas were at the door to Room 301 (chemistry research laboratory); at the outer door to Room 360 (organometallic research laboratory); at the northeast side of the fan room, 3N (small-scale synthetic inorganic laboratory); and inside a chemical safety cabinet in Room 362 (name of the laboratory was not specified in the OU 1106 work plan). Although the exact date during which these storage areas were used, storage may have begun in those rooms as early as 1945, when Building 21-3 was completed. Items stored at the Room 301 area included halogenated and nonhalogenated organic chemicals that may have been contaminated with thorium, depleted uranium, technetium, and other metals. At the time the OU 1106 work plan was written, nothing was stored in the Room 301 container storage area. Materials stored in a chemical safety cabinet outside Room 360 included small quantities of acetone, ethanol, toluene, E120, hexane, benzene, benzene D6, and THF and inorganic and organic reagents. Materials stored in a chemical safety cabinet in the fan room included diethyl ether, alkanes, tetrahydrofuran, acetonitrile, chloroform, dimethoxyethane, organic isocyanides, D38 and natural thorium salts, phosphines, phosphates, acetone, toluene, alcohols, carbon tetrachloride, methylene chloride, bismuth salts, and barium salts. In addition, four 5-gal to 10-gal. plastic containers with hazardous waste labels were present. Materials stored in a chemical safety cabinet outside Room 362 included used chromic acid, waste mercury, waste nitric acid, and waste sulfuric acid. Stains were present at one of the four container storage areas; stains were noted on the soil surrounding the storage cabinet outside Room 362. Investigations of the container storage areas were to be performed in conjunction with the D&D of Building 21-3. During D&D, all interiors of the AOCs were removed with the other building structures. Exterior areas were sampled, characterized, and removed. The ER Project plans to conduct verification sampling following the D&D work at this site.
21-028(d)	Pending	AOC 21-028(d) is an active less-than-90-day storage area located on a concrete loading dock on the northwest side of Building 21-209. Building 21-209 is used for high-temperature chemistry and for research involving tritium. The starting date for the use of this area is assumed to be 1965. Waste materials that had been stored on the loading dock include lithium-deuterium waste; waste containing natural uranium, natural thorium, and uranium and thorium isotopes; and gas cylinders of tritium-contaminated hydrogen and argon gas. Field screening and sampling activities determined that no potential contaminants are present at the site.
21-028(e)	Administratively Complete	
21-029	Pending	SWMU 21-029, DP Tank Farm, is the former location of 15 storage tanks and 2 fill stations that contained various petroleum hydrocarbon products. DP Tank Farm was operational from 1946 to 1985 and is a 3.5-acre site located between the eastern boundary of the Knights of Columbus property line and the western boundary of the Los Alamos County Fire and Training Station. SWMU 21-029 was the primary fueling station supporting LASL/LANL operations until the late 1970s, when some of the fuel storage and distribution operations were moved to TA-03. Equipment at the site consisted of storage tanks, fill ports, valve boxes, and subsurface distribution piping.

		The tank capacities ranged between approximately 2100 and 51,000 gal., and the tanks had a total capacity of 281,364 gal. Thirteen of the tanks were installed below ground, and two were installed aboveground. Petroleum hydrocarbon fuels were delivered to the south side of the site. The trucks connected to fill ports positioned above the tanks along DP Road and filled the tanks by gravity flow. Then fuel was gravity-fed from the storage tanks to the two fill stations on the north side of the site where delivery trucks filled up and then distributed the fuel to LASL/LANL facilities. In order to contain any petroleum hydrocarbon release, an earthen berm was constructed on the northern perimeter of the site sometime between 1974 and 1986. The berm was approximately 397 ft long and 4 ft high and capable of containing 377,000 gal. In 1980, only one of the diesel tanks was still in operation; the other tanks still contained various quantities of fuel but were no longer being used. Corrosion inspections of each tank, conducted in 1980, determined that the corrosion coating was intact on each tank and that the tanks' exteriors were in excellent condition. Samples collected from each tank in 1980 were analyzed and compared with the federal specifications for diesel fuel. The analytical results indicated that the diesel fuel in the tanks met all the specifications for use as a motor fuel. In 1983, DP Tank Farm was identified for decommissioning. In 1984, soil samples were collected from various locations around the site. In 1985, soil control samples were collected from an area south across DP Road, and liquid samples were collected from the tanks. Analytical results for liquid samples indicated that fuel-range distillates were present and one sample contained ethanol. Analytical results for the soil control samples indicated there were no elevated concentrations of lead, arsenic, or total organic chemicals in the surface soils. In 1985, a radiation survey was conducted, and results indicated that no radioactivity above background screening levels was detected. All storage tanks and structures (including piping, fill stations, and valve boxes) were decommissioned in 1988. The excavation for each tank was backfilled with the soil that covered the tanks. During decommissioning activities, one tank (structure-21-ATF-10) had a leaking gasket. The remaining tanks were reportedly in excellent condition, as found during the 1980 corrosion inspections. Approximately 4 cubic yards of contaminated soil were removed from beneath the former location of structure-21-ATF-10. In addition, approximately 75 cubic yards of surficial contaminated soil were removed from the former locations of the two fill stations. Clean fill was brought in to fill the depression caused by the removal of contaminated soil beneath structure-21-ATF-10. The clean soil from the soil berm was used to regrade the site. The piping and concrete were disposed of at Los Alamos County landfill. Petroleum-contaminated soil excavated during decommissioning activities was taken to MDA G for disposition. RFI activities were conducted in 1994 and included drilling and sampling 11 boreholes near the 2 former fill stations and 3 of the former tank locations. Two surface soil samples were collected from the bottom of DP Canyon. Analytical results indicated petroleum hydrocarbons were present in the subsurface at concentrations less than soil cleanup levels defined by the NMED UST Bureau. The suspected release was reported to NMED UST Bureau. During the investigation, a localized hydrocarbon seep (western hydrocarbon seep) was discovered in DP Canyon directly north of DP Tank Farm. RFI activities were conducted in 1995, in accordance with NMED UST regulations, in order to define the extent of petroleum contamination at the site. Investigation activities included drilling and sampling 13 boreholes adjacent to the 2 fill station areas and advancing 3 hand-auger boreholes (12 samples), collecting 7 surface sediment samples, and collecting 4 water samples from the surface water and stream channel in the western hydrocarbon seep area in DP Canyon. Analytical results indicated petroleum-related contamination at the East Fill Station at concentrations above the New Mexico Special Waste thresholds for benzene (10 ppm), BTEX (500 ppm), and TPH (1000 ppm) in several boreholes. The East Fill Station area analytical results were consistent with the 1994 data, which show that BTEX concentrations were greater than

		500 ppm in two boreholes. The West Fill Station area analytical results were also consistent with the 1994 data, which show that TPH, BTEX, nor benzene was reported at concentrations greater than the 1000, 500, and 10 ppm, respectively. Analytical data for the DP Canyon stream channels did not confirm a relationship between the western hydrocarbon seep area and DP Tank Farm. The RFI report recommended NFA at this SWMU because the requirements for site characterization were complete as required by the NMED UST Bureau. Site remediation was not required under NMED UST regulations because highly contaminated soil, as defined in the regulations, was not found at the site nor was the soil contamination located within 50 ft of groundwater. The DP Tank Farm property is owned by DOE, and it was anticipated in 1995, and is still expected, to be transferred to Los Alamos County for commercial use or to San Ildefonso Pueblo for uses yet to be decided. Therefore, a VCA was planned to remediate the area around the former location of the East Fill Station. Remediation of the site was intended to assist in the transfer of land; to remove any contaminated soil so that a deed restriction could be obtained if the site were to be developed for commercial use; and so any future activities would not require disposal of New Mexico Special Waste. VCA activities were conducted in 1996 at the former location of the East Fill Station. Approximately 1720 cubic yards of petroleum-contaminated soil and tuff were excavated and transported offsite for remediation at a land farm. Cleanup levels at that time were based on the New Mexico Special Waste criteria to eliminate the potential for special wastes being generated by future landowners or developers as a result of construction activities. Twenty-three confirmation samples were collected from the sidewalls and the bottom of the excavation. Analytical results indicated that residual benzene concentrations were below the 1-ppm cleanup level and BTEX concentrations were below the 500-ppm cleanup level. The TPH cleanup level of 1000 ppm was met with the exception of a maximum concentration of 6700 ppm in a fracture at a depth of 32 ft bgs. The excavation was backfilled, regraded, and reseeded, and the site was restored to its original condition. In June 1997, the NMED-HRMB issued a letter that denied the 1996 RFI report for SWMU 21-029. LANL and DOE responded to the denial letter in July 1997. In June 1998, NMED-HRMB issued a compliance order for SWMU 21-029, which required that a work plan be prepared for SWMU 21-029. The work plan would include the activities required for investigating and determining the nature and extent of contamination, determining the migration pathways within and from the SWMU, and determining the actual and potential receptors, including environmental systems that are potentially susceptible to contaminant exposure from the facility. A work plan was prepared and submitted to NMED-HRMB in October 1998. LANL received an RSI from NMED-HRMB in August 1999. LANL and DOE submitted an RSI response for the work plan in December 1999. NMED-HRMB accepted the RSI response and subsequently approved the work plan. A second seep area (eastern petroleum-hydrocarbon seep area) was identified during reconnaissance activities associated with the DP Canyon investigation in March 2000. Subsequent analytical results confirmed the presence of petroleum hydrocarbons consisting of weathered diesel and gasoline-range organic chemicals. Phase II RFI field activities were conducted between April 2000 and July 2001. The activities included collection of 27 sediment samples, 121 hand-auger samples, and 351 core samples to characterize the area of SWMU 21-029 and the two hydrocarbon seep areas in DP Canyon. The Phase II RFI focused on determining the source of petroleum-hydrocarbon contamination in DP Canyon, determining the nature and extent of contamination, and developing/revising the conceptual model for fate and transport of contamination. The Phase II RFI report concluded the following for the mesa-top investigation area: the extent of contamination was defined; the most probable contaminant sources are the East Fill Station, the West Fill Station, and two

		tanks (structures 9 and 10); the subsurface migration of petroleum hydrocarbons in the unsaturated zone has ceased; and the types of contaminants for the three investigation areas were characterized as weathered diesel and gasoline. The report concluded the following for the Western Seep investigation area: the source for the western seep is DP Tank Farm; and the transport mechanism for contamination migration is in and along fractures, along a clay-altered horizon, and along the Guaje Mountain fault zone. The report concluded the following for the Eastern Seep investigation area: the source of the eastern seep is DP Tank Farm; and the transport mechanism for contamination includes hydrocarbon migration in tuff, flow in and along fractures, and flow along a clay-altered horizon. All data collected from outside the SWMU 21-029 boundary will be provided to the Canyons team for integration into the Los Alamos/Pueblo Canyon surface aggregate report. Regular inspections of the hydrocarbon seep areas in DP Canyon have been conducted for approximately two years. The purpose of these inspections is to document any changes in the seeps in relation to seasonal changes and precipitation events. The results of the inspections have shown there is some seasonal variability in the presence of hydrocarbons in the canyon. In the last year of inspections, there was very little physical evidence of hydrocarbon contamination in DP Canyon. The 2001 RFI report recommended that regular inspections of the two seeps in DP Canyon be stopped. The overall Phase II RFI investigation objectives to improve the understanding of nature and extent of contamination and to refine the conceptual model for SWMU 21-029 and the two seeps were met. As a result of the screening assessment for SWMU 21-029, the site was recommended for NFA because concentrations of UST-related chemicals were less than NMED risk levels and SALs.
21-030	Administratively Complete	AOC 21-030 is a concrete sump, installed in 1947 and operated through 1954. Dimensions of the sump are approximately 3.5 ft x 4.0 ft x 2.8 ft. The sump identified as AOC 21-030 is the same sump that is included with Building 21-45 for AOC C-21-015. AOC 21-030 is located entirely within the boundaries of AOC C-21-015.
22-001	Administratively Complete	
22-003(a)	Administratively Complete	
22-003(b)	Administratively Complete	
22-003(c)	Administratively Complete	
22-003(d)	Administratively Complete	
22-003(e)	Administratively Complete	
22-003(f)	Administratively Complete	
22-003(g)	Administratively Complete	
22-010(a)	In Progress	SWMU 22-010(a) is an inactive, 1365-gal. septic tank and leachfield that served Building 22-34 until 1993, when the building wastewater was rerouted to the Sanitary Wastewater Systems Consolidation Plant. The septic system is located immediately north of Building 22-34, and the tank itself is about 100 ft north of Building 22-34. While it was active, the septic system drained into a marshy area in Tributary B of Twomile Canyon. Materials associated with the operation of Building 22-34 are acetone, alcohol, and explosives. If present, HE contamination was determined most likely to be PETN, RDX, and tetryl. Building 22-34 continues to operate as an explosives laboratory. In 1972, the septic tank was reportedly sampled for HE and no HE contamination was found. RFI sampling was conducted initially in 1994 and again in 1997. During review and

		assessment of the initial sampling activities from 1994, it was determined that sampling points for the leach field had been mislocated and not sampled; therefore, a second round of sampling was planned and executed in 1997. The objective of the investigation was to determine if potential contaminants were present in the septic tank, in media surrounding the tank, or in the leach field area of the system. If present, a screening assessment process would determine if the potential contaminants posed an acceptable human health risk. The sampling plan was designed to investigate the potential release of materials to the surrounding media during normal operations through cracks or leaks in the system. The field investigation was designed to preferentially sample locations and media that were associated with the tank and leach field most likely to have received and retained chemical contaminants. In 1994, 19 samples were taken from 7 locations. In 1997, six samples were taken from three locations. Subsequent to the data analysis and reporting, the SWMU was recommended for NFA in the RFI report.
22-011	In Progress	SWMU 22-011 is the reported location of a disposal pit that was dug in 1946 to dispose of discarded objects and shapes. The pit was thought to be associated with a disturbed area south of Building 22-1, an abandoned building previously used for HE research. Upon investigation, the disturbed area south of Building 22-1 is thought to be associated with former SWMU 22-015(d), a former seepage pit, not SWMU 22-011. The documentation referenced for inclusion of this SWMU is a 1946 memorandum from Norris Bradbury. The memorandum refers to TD Site, but the best current information is that all disposal pits for special shapes on Twomile Mesa were dug in the area of MDA F [SWMU 06-007(a)-99]. MDA F is located approximately 0.5 mi from TA-22. In spite of extensive document searches and site visits, the site of this disposal pit at TA-22 has not been located with certainty. SWMU 22-011 was recommended for NFA in the RFI work plan and approved by the EPA. SWMU 22-011 was proposed for NFA in a permit modification request because the exact location of the site is not known and the SWMU is expected to be included under the investigation of SWMU 06-007(a)-99 (MDA F).
22-013	Administratively Complete	
22-014(a)	In Progress	SWMU 22-014(a) is an active explosives sump system with an inactive seepage pit area that is located immediately south of Building 22-93 (currently designated as the High Explosive Wing of the detonator facility). This system serves rooms C112 and C114. The sump system includes a settling basin, a drainline connecting the building to the basin, an outflow drainline, and a seepage pit. The sump is made of concrete and contains an aluminum tank. Drainlines are 4 ft deep x 9 ft, 2 in. long x 3 ft, 2 in. wide. The sump receives rinse water from a washing facility for parts and clothing used in explosives operations. Prior to 1995, the sump discharged approximately 100 gal. of wastewater per week to a 4-ft-diameter x 40-ft-deep seepage pit that discharged to the upper part of Tributary B of Twomile Canyon. The outflow from the sump was capped in 1995, leaving the drainlines and seepage pit inactive. Discharged effluent from current operations is retained in the sump and suspended solids settle out as sludge. Sump contents are periodically removed for disposal in approved facilities. HE and barium were identified as potential contaminants at this SWMU. In interviews, however, DX-1 employees involved with operations since the building opened in 1984 stated that barium was never used at the facility; therefore, barium was eliminated from further consideration. An RFI was conducted in 1994 to determine whether media associated with the sump system or seepage pit were contaminated as a result of past operational releases and if so, whether the contamination posed an unacceptable human health risk. The investigation was designed to assess the presence of environmental releases from leaks, spills, and normal operations related to the system over its lifetime. Nine locations were identified for sampling and 27 samples were taken. Subsequent to the data analysis and reporting, this SWMU was recommended for NFA in the RFI report.
22-014(b)	In Progress	SWMU 22-014(b) is an active explosives sump and inactive outfall area that serves rooms 101 through 113 in Building 22-34. Building 22-34 currently is used as a laser

		laboratory; previously, it was used as an explosives laboratory and as a photographic laboratory (without a silver recovery unit). The sump system is located on the northeast corner of Building 22-34. The drainlines extend north from the building. The sump is made of concrete and contains an aluminum tank. It is raised about 6 in. above ground surface; it abuts an asphalt parking area to the west and north, and a concrete pad to the east. Drain lines are 4 ft x 2 ft x 3 ft deep and, until 1994 when the explosives sump outlet was capped, effluent drained to a marshy area in the upper part of Tributary B of Twomile Canyon. Suspect contaminants at this SWMU included inorganic chemicals, organic chemicals, and HE. An RFI was conducted in 1994 to determine whether media associated with the sump system or outfall area were contaminated as a result of past operational releases, leaks, and spills and if so, whether the contamination posed an unacceptable human health risk. The sump itself was not sampled. The investigation focused on the inactive outfall area and soils surrounding the active sump. It was necessary to remove the asphalt and concrete to collect surface and subsurface soil samples. Twenty samples were taken from eight locations at this SWMU. Subsequent to the data analysis and reporting, this SWMU was recommended for NFA in the RFI report.
22-014(c)	Administratively Complete	
22-015(a)	In Progress	SWMU 22-015(a) is situated on Twomile Mesa in the central-east area of TA-22. SWMU 22-015(a) comprises two inactive seepage pits, located east of Building 22-91 in an open, grass-covered area. The pits served rooms B102, B107, B121, B123, B145, and B160 of Building 22-91, which housed printed circuit-board etching operations. From 1985 to 1987, waste from the etching operations in Building 22-91 was discharged through a 6-in.-diameter PVC drainpipe to the seepage pits. Before discharge, waste material was pretreated to remove most contaminants. However, small quantities of dissolved contaminants and fine particulates may have been carried as effluent into the pits. The seepage pits were intended to enable liquids to percolate into the surrounding soils and tuff, while retaining most potential contaminants in the seepage pit sediments and immediate (surrounding) soil matrix. The system failed because the effluent production rate exceeded the infiltration rate of liquid into the tuff. This resulted in seepage pit overflow. In 1987 the pits were disconnected from drainlines and abandoned in place. The ER Project conducted an RFI at SWMU 22-015(a) to determine if contamination was present in the seepage pits and surrounding area and if so, to determine if the contamination posed an unacceptable human health risk. Surface and subsurface soil samples were collected in 1994 but data were problematic, so a second set of focused samples was collected in 1997. All sample locations were field-screened for radioactivity, organic chemical vapors, and HE. All field-screening results were negative or at background levels. During the 1994 sampling, three boreholes were drilled: two were located not more than 6 ft away and downgradient from Pits A and B, and a third was located downgradient between the pits. Three samples were collected from each borehole for a total of nine samples. Samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and HE. For the 1997 sampling, one borehole was drilled through each pit into the underlying tuff. Two samples were taken from each borehole. The 1994 and 1997 sampling indicated elevated levels of copper in both pits and some migration was observed below one pit, but the levels did not present a human health risk. No substantial use and discharge of organic chemicals or HE were expected or found at this SWMU. The RFI report recommended NFA at SWMU 22-015(a). In 1999, a supplemental SAP was written that was designed to more thoroughly address the nature and extent of contamination at the unit.
22-015(b)	In Progress	SWMU 22-015(b) is an inactive explosives sump and outfall located on Twomile Mesa at the far eastern end of TA-22 and north of the TA-22 main access road, TD Road. The sump is constructed of concrete and aluminum and is 4.5 ft wide x 6 ft long x 3.5 ft deep. It is adjacent to the northeast corner of Building 22-25. Building 22-25 is a small

		structure previously used for the recrystallization of PETN. Asphalt pavement extends from the sump perimeter approximately 7 ft to the northeast and 30 ft to the south. An outfall line from the sump extends under the asphalt pavement, under the security fence, to an open area approximately 50 ft to the north. No seepage pit is associated with this sump and outfall. The sump and outfall were in operation from 1949 until the 1960s, when they were abandoned in place. The drainline to the outfall is still in place. The ER Project conducted an RFI at SWMU 22-015(b) to determine if contamination was present in the sump or outfall area and if so, to determine if the contamination posed an unacceptable human health risk. Surface and subsurface soil samples were collected in 1994 but data were problematic, so a second set of focused samples was collected in 1997. All sample locations were field-screened for radioactivity, organic chemical vapors, and HE. All field screening results were negative or at background levels. During the 1994 sampling, one borehole was hand-augered at each corner of the sump and an additional borehole was drilled at the connection of the sump and drainline to assess the potential for leakage for a total of five boreholes. Three samples were collected from each borehole for a total of fifteen samples. Samples were submitted for laboratory analysis of organic chemicals and HE. No samples were taken in the sump because no liquid or sludge was present. The organic chemical samples were lost, the HE samples inadvertently were not analyzed for PETN, which is the principal HE component associated with SWMU activities, and the outfall area was not addressed. Therefore, additional sampling took place in 1997. For the 1997 sampling, one borehole was drilled at the northeast corner and one at the outfall pipe area of the sump. Three additional boreholes were drilled in the outfall area. The area was first field-screened for organic chemicals and HE to determine the best location for the boreholes. All field screening was negative, and the sampling team sampled the outfall drainage by locating one borehole at the drainpipe outfall and two downgradient from the outfall. Twelve samples were collected. No PETN was detected in any site samples. Tetryl, another HE, was found in a very low concentration in the farthest downgradient borehole. Toluene was detected also, but its level did not pose an unacceptable human health risk. The RFI report recommended NFA at SWMU 22-015(b). In 1999, a supplemental SAP was written that was designed to more thoroughly address the nature and extent of contamination at the unit.
22-015(c)	In Progress	SWMU 22-015(c) is a former NPDES-permitted outfall (EPA 077077, deleted from LANL's NPDES permit prior to 1990) and related runoff area originating from a floor drain system in a plating and circuit etching shop (Building 22-52) that operated from about 1953 to 1985. The floor drains received spilled liquids from plating baths and rinse tank overflow. The shop's former location is on Twomile Mesa on the northern flank of Pajarito Canyon. SWMU 22-015(c) includes a drainage channel leading to a former pond area located near the edge of the mesa. The overflow drainage channel from the pond area flowed downhill and across a wagon road and discharged over a cliff into Pajarito Canyon. Spilled plating liquids were believed to contain gold, copper, nickel, chromium, silver, cadmium, rhodium, zinc, and platinum. The outfall became inactive in 1977, after which time the plating liquids were containerized and sent to LANL's liquid waste treatment plant. The ER Project conducted an RFI at SWMU 22-015(c) in 1994. Sediment and soil samples were collected from stained and unstained areas within the drainage and from the pond area. The area was divided into seven reaches to designate sampling locations. A total of 56 samples were collected from those locations and submitted for laboratory analysis of cesium-137, strontium-90, inorganic chemicals, and organic chemicals. Arsenic, chromium, copper, lead, nickel, and silver exceeded SALs. Bis(2-ethylhexyl)phthalate was detected, and its presence was determined to be from contamination of the samples by laboratory gloves. Bis(2-ethylhexyl)phthalate was not used in Building 22-52 operations. Methylene chloride and trichloro-1,2,2-trifluoroethane were detected and were attributed to laboratory contamination. Subsequent to RFI sampling, four additional samples were

		collected from RFI sample locations that represented the "worst case" inorganic chemicals concentrations. Analytical results for the samples did not approach TCLP limits. The ER Project conducted an expedited cleanup at SWMU 22-015(c) in 1995 to excavate soils and regrade the site to minimize further erosion. Verification samples were collected to ensure that cleanup was achieved. The report for the expedited cleanup requested regulator concurrence to remove SWMU 22-015(c) from Module VIII of LANL's Hazardous Waste Facility Permit.
22-015(d)-99	In Progress	Consolidated SWMU 22-015(d)-99 consists of former SWMUs 22-010(b), 22-012, 22-015(d), 22-015(e) and 22-016. Former SWMU 22-016 was Septic Tank 22-42 that served Buildings 22-1 and former Building 22-4. Former SWMU 22-016 discharged to an inactive outfall with drainage to Pajarito Canyon. The tank was used from 1945 until 1948, when it was supplemented by former SWMU 22-010(b), an inactive septic system consisting of Septic Tank 22-51, a large leach field, sand filter, and drain lines. Septic Tank 22-51 was installed upgradient of Septic Tank 22-42 and on the same sewage line. Buildings 22-5, -32, -52, -90, -91 and -92 were added to the system that was served by former SWMU 22-010(b). The leach field was abandoned in the late 1970s or early 1980s and a sand filter was constructed east of the leach field. The system remained in service until it was replaced by the SWSC in the 1990s. The tanks in this consolidated SWMU received sanitary wastewater from buildings associated with HE assembly, fabrication, and laundry operations. Former SWMU 22-012 is a concrete pad that was used for washing explosive-contaminated equipment with water. Former SWMU 22-015(e) is an inactive explosives sump that collected water through interconnected drainlines from the wash pad and a sink drain from Room 108 of Building 22-1. The sump was filled with concrete after the building was abandoned in 1984. Former SWMU 22-015(d) is an inactive explosives drain and seepage pit that served Building 22-1. The seepage pit was built in 1948 and collected wastewater from HE operations in the building, including water from former SWMUs 22-012 and 22-015(e). A 150-yd-long, 6-in. diameter vitrified clay pipe drainline from the wash pad sump extends in a southeasterly direction to the seepage pit. Chemicals used in the processes that discharged to this consolidated SWMU include HE, solvents, non-PCB oils, inorganic chemicals, acids, and photoprocessing chemicals. The ER Project conducted an RFI at former SWMUs 22-010(b) and 22-016 in the summer of 1994. The objective of the RFI was to determine if contaminants were present in the inactive septic tanks, in media surrounding the tanks, or in the effluent release areas of the system, and if so, whether the contaminants posed an unacceptable human health or ecological risk. The ER Project sampled the contents of Septic Tank 22-51, soils surrounding the tanks, the inactive outfall area, the inactive leach field area and the inactive sand filter and outfall area. Septic Tank 22-42 (former SWMU 22-016) was never positively located during field activities, so it was not sampled during the RFI. Septic Tank 22-42 was located at a later date but was never sampled. Because the tanks shared the same discharge system, analytical results from former SWMU 22-010(b) were considered in the RFI report to be representative of contaminants expected to be found in former SWMU 22-016. The outfall and runoff area for former SWMU 22-016 was identified and sampled as part of former SWMU 22-010(b) sampling activities. Forty-seven samples were collected from twenty-two locations. Samples were analyzed for inorganic chemicals, organic chemicals, and HE. Elevated concentrations of inorganic chemicals (silver, cadmium, copper, mercury, lead, vanadium, and zinc) were found in a short segment of the inactive outfall drainage area. In addition, limited contamination from lead and zinc also was observed in individual subsurface soil intervals in the inactive leach field area and septic tank areas. The RFI report recommended NFA at former SWMUs 22-010(b) and 22-016. The ER Project conducted an RFI at former SWMUs 22-012, 22-015(d), and 22-015(e) in summer 1994 with additional sampling in spring 1997. RFI objectives were to

		determine whether media associated with the former SWMUs were contaminated from past operational releases and if so, to determine if the contamination represented an unacceptable human health or ecological risk. The 1994 RFI sampled 20 locations and collected 37 samples. Samples were analyzed for HE and organics. During the 1997 sampling, 5 samples were collected from 2 locations. The objective of the 1997 sampling was to collect and analyze sediments from within the seepage pit [former SWMU 22-015(d)] and to perform limited characterization of the drainline. The RFI report stated that no significant contamination existed at these SWMUs based on sample analysis results. The RFI report recommended NFA at former SWMUs 22-012, 22-015(d), and 22-015(e). In 1999, a supplemental SAP was completed that was designed to more thoroughly address the nature and extent of contamination at the unit.
25-001	Administratively Complete	
26-001	In Progress	SWMU 26-001 is a disposal area on the south-facing slope of Los Alamos Canyon that contains debris from a five-room concrete storage vault that was decommissioned and dismantled in 1966. The vault originally was used to store radioactive sources. The Zia Company later used it to store HE. The vault operated from about 1946 to 1966. Before dismantling, the vault was surveyed for radioactive contamination. Contaminated parts of the debris were disposed of at TA-50, MDA C. Remains of the vault were bulldozed into the canyon. A Phoswich radioactivity survey conducted in 1985 on the mesa at the location of the former storage vault revealed radiation levels 20 to 25 percent higher than BVs on the west side of the site. The source of the contamination is unclear and the extent of contamination beyond the vault site, ledge, and canyon is not known. No formal survey of the refuse on the canyon ledge has been performed; however, no alpha activity was detected on the mesa top after the structures there were demolished. The OU 1071 work plan proposed geomorphologic mapping to determine the location of drainage channels, followed by a radiological survey and surface and subsurface sampling.
26-002(a)	In Progress	SWMU 26-002(a) is the former acid sump system that served the historic concrete storage vault at former TA-26 (D-Site) from 1948 to 1965. The sump system consisted of a 6 in. VCP floor drain in the south center room of the vault connected to a collection sump and outfall that discharged to Los Alamos Canyon. The collection sump was located outside the vault. The sump was decommissioned and its contents were disposed of either at TA-50, MDA C or over the edge of the mesa along with the vault debris. H-1 personnel assumed that the sump system was contaminated with radioactivity because of the contamination found in the storage vault. The OU 1071 work plan proposed field surveys to verify removal of subsurface structures and surface and subsurface sampling at SWMU 26-002(a) to detect radioactive contamination.
26-002(b)	In Progress	SWMU 26-002(b) was the equipment room drainage system for the former TA-26 historic concrete storage vault. It carried effluent through a 4 in. VCP that discharged directly to Los Alamos Canyon. The OU 1071 work plan proposed field surveys to verify removal of subsurface structures and surface and subsurface sampling at SWMU 26-002(b) and at the outfall to detect radioactive contamination.
26-003	In Progress	SWMU 26-003 is the sanitary septic system that served sanitary facilities in the east room of the historic concrete storage vault at former TA-26. The septic system consisted of a 4 in. VCP drainline connected to a 250 gal. steel septic tank. Effluent discharged to Los Alamos Canyon. The septic tank was thought to have handled only sanitary waste; however, because radioactive contamination was found in the vault, it is possible that contaminants were introduced into the system. Positive documentation of the septic tank's removal was not located, but it probably was removed at the same time as the sump system [SWMU 26-002(a)] was decommissioned. A radiological survey of the septic tank was not conducted because the tank was not easily

		accessible. H-1 personnel assumed that the septic tank was free from radioactive contamination because the tank served the toilet and sink in the least contaminated room of the storage vault. The OU 1071 work plan proposed surveying to verify removal of subsurface structures, followed by surface and subsurface sampling to determine the extent, if any, of contamination.
27-001	Administratively Complete	PRS 27-001 consists of naval gun barrels that were reportedly buried in Pajarito Canyon. Field investigations, including an extensive electromagnetic survey, and archival information were unable to verify the burial of the naval gun barrels at the suspected locations. SWMU 27-001 is appropriate for NFA under Criterion 1 because it cannot be located.
27-002	In Progress	SWMU 27-002 is a firing site in Pajarito Canyon used between 1944 and 1947. The five firing pits that comprise the site are situated on both sides of Pajarito Road, approximately 0.9-mi. from TA-18 and east of the inactive sewer lagoons that once served TA-18. Estimated positions of the firing pits are based on surveyed map positions and old iron marker stakes. Firing Pit 1 is located in the grassy area 105 ft south of the TA-36 fence. Firing Pits 2 and 3 are between the fence and Pajarito Road; Firing Pit 4 lies under the road (i.e., it has been destroyed by road construction). Firing Pit 5, the only one not backfilled, is located on a small curve on the road's north side. These pits were used for explosives testing of materials such as thorium, uranium, and beryllium. A 1946 bullet sensitivity test at Firing Pit 1 caused a block of Composition B explosive to undergo a low-order explosion, scattering unexploded HE over a 250-yd radius. Safety personnel made several visits in the 1960s and 1970s to pick up HE fragments. However, some pieces could have been hidden by grass, covered by topsoil, or buried when the four firing pits were backfilled during the site decommissioning circa 1960. This SWMU is described in both the 1987 CEARP report and the 1990 SWMU report, which refer to a 1959 contamination status report for abandoned structures at TA-27. This 1959 report mentions a nearby firing control bunker having alpha and beta contamination on its concrete floor. While the bunker was not a subject of the 1995 RFI, these contamination data confirm that radioactive material had been present when this site was in use. The CEARP report also says that uranium levels at Firing Pits 2 and 3 were found to be 2 to 10 times greater than background. The field investigation at this site was conducted in 1994 and consisted of two different types of sampling events. Surface soil samples were collected at selected locales in concentric zones around each firing pit. A second sampling team also collected subsurface soil samples from boreholes drilled at each firing pit. Surface soil sampling locales were positioned to check for surface contamination surrounding each firing pit. Fourteen locales, all from the canyon floor, were sampled due to the size of the SWMU. At 10 of the 14 locales, a single composite sample was prepared using material from 4 grab samples collected along a directional axis. At the remaining four locales, two separate composites of two grab samples each were collected (one grab sample from each of four directional axes), resulting in two samples for each locale. This method provided a statistical comparison of the variability of measurements of the average analyte concentration across the composited samples. Boreholes were also drilled at each firing pit down to a depth of 5 ft and samples were collected from three intervals. For each firing pit, one hole was drilled in the center of the firing pit; the other four were drilled 10 ft north, south, east, and west of the center. Firing Pit 4 could not be sampled using this pattern because the center of the pit is two ft from the pavement of Pajarito Road, a heavily traveled thoroughfare; instead, two boreholes were drilled in the pit's northern half, 10 ft northeast and northwest from center. All samples collected were submitted for inorganic and organic chemical and radiological analyses. The data analysis concluded that none of the detected compounds posed a risk to human health and the site was recommended for NFA in the RFI report.
27-003	In Progress	SWMU 27-003, the bazooka impact area, is a target practice area that was used by the Army between 1944 and 1948. Fenced and unused by the Laboratory since 1962, the area is located north of Pajarito Road in Pajarito Canyon, 0.2 mi. east of the inactive

		TA-18 sewer lagoons and 1.25 mi. east of TA-18. Most of the SWMU lies on the steep slope of the north wall of the canyon, below the rim. However, the footprint of the impact area extends northward onto the top of Mesita del Buey within the TA-54 fence. The south side of the impact area extends downslope to the canyon floor, crosses an ephemeral stream, and ends near Pajarito Road. Firing was done from a point located south of the curve in the current road. The road dates from 1962, when it briefly allowed civilian access to unexploded ordnance (UXO) lying in the impact area. Archival research yielded numerous records on the history of the site, including an accident investigation report that contained archival photographs of the ordnance impact area. Comparison of these photographs with on-site inspections determined the location of the impact area to be within the one-half-mile-long fenced region north of Pajarito Road. This area, visible as a distinct light-colored patch of highly fragmented rock on the cliff slope, was the center of the investigation. Ordnance fired at the cliff face consisted of many hundreds of bazooka rounds (2.36 in., rocket propelled), typically with armor-piercing, shaped-charge warheads. The potential hazard of the ordnance was from possible unexploded warheads and fuses buried in the soil or slope talus and traces of undetonated HE in warhead subassemblies. Superimposed on the bazooka impact area are two fragment impact areas used for explosives testing conducted by LANL. One of these is from the use of firing pits in Pajarito Canyon used from 1946 to 1947 (SWMU 27-002). The second is the result of TA-36's Lower Slobbovia firing site, an operating test area beyond the mesa to the south of Pajarito Road, still active in 1996. Occasional metal fragments from these sites were found in these fragment impacted areas. Because they were not related to the UXO operations, these fragments were not always retrieved from the outer edges of the bazooka impact area. The nature of the UXO hazard prompted a departure from the original intent of the RFI work plan, which was to conduct a Phase I site investigation with remediation to follow. The large quantity of ordnance debris present (based on initial visual survey) and its wide pattern of dispersion indicated the impracticality of marking and mapping each fragment rather than simply removing it when found. Discussions with explosive ordnance disposal personnel from Environmental Hazards Specialists International, Inc., clearly indicated that immediate disposal of UXO upon its discovery, a standard practice in ordnance-clearing operations, would eliminate hazard to survey personnel. The Environmental Hazards Specialists International, Inc., personnel were contracted to search for and clear any unexploded bazooka rounds and to recover all ordnance debris from this SWMU. In 1993, 3200 pieces of ordnance debris were removed. The debris was screened for radioactivity by radiological technicians from the LANL Health Physics Operation Group. A small number of slightly radioactive (30 dpm beta/gamma) aluminum fragments (from LANL explosive testing unrelated to this SWMU) were found. These fragments were disposed of at TA-54, Area G. The remainder of the debris was sent to a TA-16 interim-status, open-burning unit to destroy any residual HE. Following the removal of ordnance debris, 5 surface samples, from 5 locations, were collected from this SWMU and submitted to an analytical laboratory for inorganic chemical and HE analyses. No HE was detected in the samples submitted and no inorganic chemicals were detected above SALs. This site was recommended for NFA in the 1995 RFI report. In 1996, LANL requested a permit modification to remove this SWMU from Module VIII of LANL's Hazardous Waste Facility Permit. In the NOD to the request for permit modification, NMED requested additional information about the number of RFI samples and the resulting data and expressed concern that five samples may not be sufficient to cover the SWMU. In the 1997 NOD response, LANL temporarily withdrew the NFA request for this SWMU. In January 1999, NMED requested additional documentation on the site and in July 1999, NMED indicated that confirmation samples would be required to support the NFA. To confirm the nature and extent of any residual metals or HE contamination at this site in support of the pending NFA determination, LANL collected six additional confirmation samples. The additional confirmation sample locations extended toward the south and southeast within the drainage area of the site. Four soil and two sediment samples were collected for inorganic chemical and HE

		analyses. Samples were biased on the downhill side of the SWMU and in stormwater channels that may have transported contaminants from the site. Analytical results yielded nondetects for all HE analyses. Inorganic chemical analyses yielded three samples with zinc values above the BV of 48.8 mg/kg for zinc in soil. However, all three values were within the range of background concentration (14mg/kg to 75.5 mg/kg). All other inorganic chemical analyses yielded inorganic chemical values less than the BV. This SWMU was resubmitted for permit modification in 2001.
27-004	Administratively Complete	
30-001	Administratively Complete	
31-001	In Progress	SWMU 31-001 consists of a former septic system located in the former TA-31. This septic system consisted of a septic tank (structure 00-7), two sanitary sewer manholes (structures 00-41 and 00-42), associated waste lines, and outfall. The former TA-31 was located in what is now the eastern residential area of Los Alamos, just west of the Los Alamos Airport. TA-31 served as the receiving area for all truck shipments to LANL from 1945 until 1954. SWMU 31-001 served former Building 31-7, which was constructed in 1949 and served as the main warehouse at TA-31. The septic tank (structure 00-7) was constructed of reinforced concrete and was 4 ft x 3 ft x several ft high. This septic tank was located aboveground on a small bench above the rim of Pueblo Canyon, north of Building 31-7, and the outfall from the tank discharged into Pueblo Canyon. The septic tank was constructed in 1949, operated until 1954, and was removed in 1988. The waste line from Building 31-7 to the septic tank was approximately 600 ft long and included the two manholes (structures 00-41 and 00-42). The waste line was not encountered when the septic tank was removed in 1988. The contents of the septic tank were sampled when the tank was removed and found to contain no hazardous materials. When the RFI work plan was prepared in 1992, the sampling results could not be located and verified. No other environmental investigations have previously been conducted at SWMU 31-001. The ER Project conducted a Phase I RFI for SWMU 31-001 in 1994 to determine whether there was residual soil contamination associated with the former septic system and outfall, to corroborate the results of the sampling performed during tank removal, and to determine whether the waste line had been removed. Field activities included collecting soil samples at the location of the former septic tank, along the location of the waste line, and in the outfall area. Three shallow (6- to 12-in. deep) subsurface samples were collected at the location of the former septic tank. Two trenches were excavated along the path of the waste line, perpendicular to the alignment of the waste line. The first trench was located approximately 60 ft south of the septic tank and was 31 ft long by 4 ft deep. Three samples were collected from this trench. The waste line was not encountered in this trench, but a filled trench was noted in the bedrock that appeared to be the trench previously used for the waste line. The second trench was excavated approximately 50 ft south of the first trench and was 25 ft long x 6.5 to 8.5 ft deep. Three samples were collected from this trench. Pieces of broken clay pipe that appeared to be from the former waste line were observed in this trench. The outfall pipe was discovered in its original location and three shallow (6- to 13-in. deep) subsurface samples were collected from one location at the discharge of this pipe. Five surface samples were also collected from four sediment trap locations in the drainage below the outfall. All samples were field-screened for radioactivity and submitted for laboratory analysis for inorganic and organic chemicals. Four inorganic chemicals were detected above BVs. Only one of these inorganic chemicals were detected above its SAL. Twelve organic chemicals were detected. Five of these organic chemicals were detected above SALs. The results of the Phase I sampling and analysis were used to perform a human health risk-based screening assessment and ecological screening assessment. Based on these assessments, the RFI report recommended a VCA for SWMU 31-001. The VCA would address the area immediately below the septic tank outfall where SALs for organic and inorganic chemicals were exceeded. The RFI report indicated that the other organic chemicals whose concentrations exceeded SALs were

		PAHs and concentrations were below anthropogenic BV. As a result, these organic chemicals would not be addressed by the VCA. Based on observations made during excavation of sampling trenches along the path of the former waste line, the RFI report concluded that this waste line had previously been removed. The ER Project prepared a VCA plan and conducted the VCA for SWMU 31-001 in 1995. The VCA included excavating soil from approximately 2 ft above the outfall to 4 ft below the outfall. Soil was excavated to the underlying tuff with the depth of the excavation ranging from 1 to 2 ft and the width ranging from 0.5 ft to 6 ft. Two confirmatory samples were collected from the excavation and analyzed for radionuclides, inorganic chemicals, and PCBs. No inorganic chemicals were detected above BV. Radionuclides did not exceed BVs/FVs. No PCBs were detected. In response to NMED comments on the VCA, LANL indicated that an additional investigation would be conducted to characterize potential contamination associated with organic chemicals other than PCBs. This investigation would address the area under the former septic system and in the outfall area to the point where the canyons investigation begins.
32-001	In Progress	SWMU 32-001 is the footprint of an incinerator (structure 32-9) that adjoined the northeast corner of the medical research and training facility's main building, a laboratory (Building 32-01). Structure 32-9 was made of brick and was 2.5 ft wide x 2.5 ft long x 10 ft high. It received combustible waste from the medical research facility, and the ash was disposed of at MDA C (SWMU 50-009). TA-32 served as a LASL medical research and training facility from 1944 to 1953, when use was discontinued. TA-32 structures were decommissioned in 1954. Research activities at the site involved plutonium-238, plutonium-239, americium-241, carbon-14, and tritium. Inorganic and organic chemicals also may have been used at the facility. SWMU 32-001 now is located beneath asphalt in the current working area of the Los Alamos County Public Works Department. The ER Project conducted Phase I and Phase II RFIs at SWMU 32-001. The purpose of the 1993 Phase I RFI was to determine if there was residual soil contamination from the incinerator; analytical results indicated the presence of low-concentration PCB levels at a depth of 11 in. bgs. A Phase II investigation was recommended to determine the extent of PCB contamination in the surface and surrounding soils. The Phase II sampling took place in 1996 to determine the lateral and vertical extent of Aroclor-1260 and to confirm that the former incinerator location had been characterized adequately. To determine the extent of contamination, 18 samples were collected from nine locations. Samples were submitted to the MCAL for PCB analysis. Two samples were submitted to a fixed laboratory for a full suite of analyses to ensure that the site was characterized adequately. No cleanup activities were required at the site because the detected PCB values were less than the cleanup level of 10 mg/kg. To confirm the incinerator's location, two additional samples were collected south of the former incinerator location. Samples were submitted for fixed-laboratory analysis for inorganic and organic chemicals. The samples also were submitted to the MCAL for analysis for gross alpha, beta, and gamma radiation, and tritium. Copper, manganese, mercury, sodium, trichlorethene, and zinc were either detected or detected in concentrations greater than BVs. No chemicals were detected at concentrations greater than or equal to SALs. Because manganese and sodium have no SALs, they were compared with the RDAs for those essential nutrients. Intake of both nutrients was determined to be less than RDA; therefore, manganese and sodium were eliminated from further consideration. The Phase II and VCA report (contained in one document) recommended NFA at SWMU 32-001 because the site was characterized in accordance with applicable state and federal regulations and available data indicate that contaminants pose no unacceptable human health risk. The ecological risk screening assessment report for SWMU 32-001 stated that due to the location and current use of the site, no ecological receptors were determined to be present and no off-site transport pathways exist. Therefore, no further ecological assessment of SWMU 32-001 was proposed.

32-002(a)	In Progress	SWMU 32-002(a) is a former septic tank (structure 32-7) and its associated drainlines. The septic system served a laboratory (Building 32-01). TA-32 was a medical research and training facility from 1944 to 1953, when use was discontinued. TA-32 structures were decommissioned in 1954. Research activities at the site involved plutonium-238, plutonium-239, americium-241, carbon-14, and radioactivity. Inorganic and organic chemicals also may have been used at the facility. Structure 32-7 was made of wood-frame construction and was 4 ft wide x 8 ft long x 4 ft deep. It was connected to an outfall over the edge of Los Alamos Canyon. The septic tank and drainlines were believed to have been left in place. The 1987 CEARP survey noted that the tank was observed near the edge of the mesa top. Suspect contaminants are inorganic chemicals, organic chemicals, and radionuclides. The ER Project conducted RFIs at SWMU 32-002(a) in 1993 and 1996. The purpose of the 1993 RFI was to determine the presence or absence of any residual contamination from the septic system. During the Phase I investigation, a pile of wood debris was assumed to be the remains of SWMU 32-002(a). However, archival engineering drawings located after the Phase I investigation was complete but before the RFI report was issued indicate that SWMU 32-002(a) actually is east of the wood-debris pile. The wood debris may have been the remains of the platform for the former transformer (structure 32-10). The field investigation for SWMU 32-002(a) also was considered the field investigation for the former transformer location, and a new SWMU was identified for the transformer location (SWMU 32-003). No samples were collected at the actual location of former structure 32-7 or its outfall. The Phase I RFI report recommended additional investigation to determine if the septic tank and any associated drainlines remained in place. The Phase II investigation and VCA addressed SWMU 32-002(a) in three areas: influent drainlines, septic tank footprint, and outfall area. The purpose of the Phase II drainline investigation was to locate the influent drainlines and to determine the nature and extent of contamination. Exploratory trenches were excavated to locate the drainlines and samples of sludge from within the pipe were analyzed. Elevated levels of inorganic chemicals and radionuclides were detected. Visual inspection and field-screening results indicate no evidence of releases from the drainline, which was removed. Restoration activities included backfilling the drainline trenches with material removed during excavation. The fill material was placed into the trench and compacted. Confirmatory sampling results were below SALs for all analytes except PAHs. To determine if additional cleanup was required, the average concentration of PAHs that exceeded SALs was used to estimate lifetime excess cancer risk. The risk level was within the EPA-specified acceptable-risk range. Results of the VCA confirmation sampling at the influent drainlines indicated that contaminants were not present at levels greater than cleanup levels or at levels that would pose an unacceptable human health risk in soil surrounding the drainlines. Asphalt was placed over the trench in areas that were asphalt-covered before excavation. Nonpaved areas were reseeded. The location of the former septic tank was established based on archival engineering drawings and the location of the outlet pipe. A stormwater swale may carry contaminants from this adjacent facility onto the SWMU. Ten samples were collected from eight locations. Four initial samples were analyzed for inorganic and organic chemicals, PCBs, and radioactivity. The latter two analyses were conducted at the MRAL. Results indicated gross alpha and mercury contamination, and six additional samples were collected to bound the contamination. The MCAL analyzed the six samples by XRF for metals and the MRAL analyzed them for radioactivity. Screening results indicated the presence of gross alpha contamination and mercury. The SALs for plutonium-239, uranium-234, uranium-235, and uranium-238 were selected as cleanup levels to address the gross alpha radioactivity detected at the site. Mercury was present at levels above SAL. A VCA was conducted to remove the contaminated material from the septic tank footprint. Confirmation samples showed that the levels of mercury and radioactive contamination were below SALs. The area was backfilled with clean fill, compacted, and reseeded.

		Phase II samples were collected at the outfall area for SWMUs 32-002(a) and 32-002(b) to characterize the presence of radionuclides and determine the lateral and vertical extent of inorganic chemical and PCB contamination. A total of 29 samples were taken from 29 locations. Samples were screened by XRF for metals and analyzed for radioactivity at the MRAL. Samples for fixed-laboratory analyses were selected from areas with elevated concentrations of metals and gross beta radioactivity based on screening results. To bound the extent of contamination, samples for fixed-laboratory analysis also were selected from areas thought to be uncontaminated; 12 samples were taken from 9 of the initial 29 locations for fixed-laboratory analysis. Samples were analyzed for inorganic chemicals, organic chemicals, isotopic plutonium, isotopic uranium, americium-241, and radioactivity. Total chromium, lead, and mercury were found above SALs. No organic chemicals were detected above SALs. No radionuclides were found at levels above SALs. To characterize the extent of PCB contamination, five samples were taken from five locations and analyzed for PCBs in the MCAL. PCBs were not detected in any of these samples and were eliminated from further consideration. Aroclor-1260 was detected during the Phase I investigation near the mouth of the outfall pipe. Because the area was small (1 cubic ft) and easily accessible, remedial activities were conducted as a BMP to address the contamination. The TSCA cleanup level of 10 mg/kg for property with unrestricted access was selected. About one cubic foot of soil was removed near the mouth of the outfall pipe. The pipe was grouted as a BMP. Two confirmation samples were collected and analyzed for PCBs at the MCAL. Results indicated that no PCBs remained in the surface soils at levels greater than 1 mg/kg. The Phase II and VCA report recommended NFA at SWMU 32-002(a) because the site was characterized and remediated in accordance with applicable state and federal regulations, and available data indicate that potential contaminants are present but at levels that pose no unacceptable human health risk. In response to a 1998 NMED request, the ER Project conducted an ecological risk screening assessment at SWMU 32-002(a). No ecological risk screening assessment for the drainlines was deemed necessary because the site has no receptors and no off-site transport pathways for potential contaminants. The ecological risk screening assessment considered potential contaminants reported in surface and subsurface soils collected south of the paved area within the footprint of the former septic tank and down the outfall areas to the edge of the canyon bottom. No ecological risk screening assessment was determined to be necessary for the removed drainlines because there are no receptors on-site and no offsite transport pathways for potential contaminants. Three spatial aggregates were identified during the ecological scoping process; SWMU 32-002(a) was included in the eastern SWMU aggregate. Threatened and endangered species are potential receptors for contaminant releases associated with the eastern SWMU aggregate and were determined relevant to ecological risk screening assessment at SWMU 32-002(a). Chromium and mercury were identified as the major potential contaminants for potential ecological risk at the site. Other analytes with HQs greater than 1.0 were silver, thallium, Aroclor-1260, lead, di-n-butyl phthalate, bis(2-ethylhexyl) phthalate, antimony, zinc, copper, cadmium, uranium-234, and uranium-238. Those substances would be identified as potential ecological contaminants for any future site investigation or assessment activities. The ecological-risk screening assessment report said that the analysis of the eastern SWMU aggregate under the worst-case assumptions leads to a conclusion of potential ecological risk.
32-002(b)	In Progress	SWMU 32-002(b) was a septic tank (structure 32-8), its associated drainlines, and outfall. TA-32 was a medical research and training facility from 1944 to 1953, when its use was discontinued. TA-32 structures were decommissioned in 1954. Research activities at the site involved plutonium-238, plutonium-239, americium-241, carbon-14, and tritium. Inorganic and organic chemicals also may have been used at the facility. Structure 32-8 was made of reinforced concrete and was 9 ft wide x 5 ft long x 6 ft deep

		that served two laboratories (Buildings 32-01 and 32-02). Structure 32-8 is thought to have been added when another septic tank [structure 32-7, SWMU 32-002(a)] was no longer able to handle the needs of Building 32-01. The influent drainline that served structure 32-7 was diverted to the new tank, structure 32-8. A VCP septic line also was installed between Building 32-02 and structure 32-8 at that time. The septic tank drainline discharged via an outfall into Los Alamos Canyon. It was decommissioned in 1954 and removed in 1988. Sludge samples were taken from the tank before it was removed. The samples contained organic and inorganic chemicals. The ER Project conducted a Phase I RFI at SWMU 32-002(b) in 1993. Trenches were dug to ensure that drainlines had been removed. Steel pipe with a clean-out extension was found in one of the trenches. Six samples were collected from six locations in the trenches, the clean-out extension, and beneath the pipe seam. The samples were screened for radioactivity and then submitted to the MRAL for analysis. No radioactivity was detected. Four samples were taken from four locations at the site of former structure 32-8. At the outfall area, seven samples were taken from seven locations. All samples were analyzed for inorganic and organic chemicals, PCBs, and radionuclides. Aroclor-1260, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, chromium, indeno(1,2,3-cd)pyrene, lead, manganese, and mercury were detected at concentrations greater than SALs. Arsenic, benzo(g,h,i)perylene, beryllium, iron, and phenanthrene were also retained as potential contaminants. Aroclor-1260 was detected during the Phase I investigation near the mouth of the outfall pipe. Because the area was small (1 cubic ft) and easily accessible, remedial activities were conducted as a BMP to address the contamination. The TSCA cleanup level of 10 mg/kg for property with unrestricted access was selected. About one cubic foot of soil was removed near the mouth of the outfall pipe. The pipe was grouted as a BMP. Two confirmation samples were collected and analyzed for PCBs at the MCAL. Results indicated that no PCBs remained in the surface soils at levels greater than 1 mg/kg. The Phase I RFI report recommended a Phase II RFI to determine the nature and volume of waste associated with the removal of the inflow lines and to determine if any releases had occurred from the drainline. The ER Project conducted a Phase II investigation and VCA at SWMU 32-002(b)in 1996 to locate the influent drainlines, characterize their contents and the presence of radionuclides, and determine the lateral and vertical extent of PCB contamination in the outfall area. The investigation was combined with the investigation for SWMU 32-002(a). Exploratory trenches were excavated to locate the drainlines and samples of sludge from within the pipe were analyzed. A location inside the drainline contained elevated levels of lead, mercury, plutonium-238, plutonium-239, cesium, americium, uranium-238, uranium-235, and uranium-234. Visual inspection and field-screening indicated that no releases occurred from the drainline. The drainline was exposed using a backhoe and was inspected visually for breaks and cracks. A total of 116 ft of drainline was removed. The pipe and surrounding soil were screened for VOCs and radioactivity before they were removed. Restoration activities included backfilling the drainline trenches with material removed during excavation. The fill material was placed into the trench and compacted. Five confirmation samples were collected at 25-ft intervals in the base of the trench beneath the drainline. Samples were submitted for laboratory analysis for inorganic and organic chemicals, isotopic plutonium, isotopic uranium, tritium, and gamma spectrometry. Confirmatory sampling results were below SALs for all analytes except the PAHs benzo(a)pyrene and benzo(b)fluoranthene. The PAHs were determined to be attributable not to LANL activities but to runoff from the parking lot at the public works department. Nevertheless, risk estimates were calculated based on the average PAH concentrations. The risk level was within the EPA-specified acceptable-risk range. PAHs were eliminated from further consideration. The results of VCA confirmatory sampling at the influent drainlines indicated that contaminants were not present at levels greater than cleanup levels. Asphalt was placed over the trench in areas that were asphalt-covered before excavation. Nonpaved areas were reseeded.

		Phase II samples were collected at the outfall area for SWMUs 32-002(a) and 32-002(b) to characterize the presence of radionuclides and determine the lateral and vertical extent of inorganic chemical and PCB contamination. A total of 29 samples were taken from 29 locations. Samples were screened by XRF for inorganic chemicals and analyzed for radioactivity at the MRAL. Samples for fixed-laboratory analyses were selected from areas with elevated concentrations of inorganic chemicals and gross beta radioactivity based on screening results. To bound the extent of contamination, samples for fixed-laboratory analyses also were selected from areas with no known elevated concentrations of inorganic chemicals and radioactivity. Twelve samples were taken from nine of the initial twenty-nine locations for fixed-laboratory analysis. Samples were analyzed for inorganic and organic chemicals, isotopic plutonium, isotopic uranium, americium-241, and radioactivity. Lead and mercury were found above SALs. No organic chemicals were detected above SALs. To characterize the extent of PCB contamination, five samples were taken from five locations and analyzed for PCBs in the MCAL. PCBs were not detected in any samples and were eliminated from further consideration. The Phase II and VCA report recommended NFA at SWMU 32-002(b) because the site was characterized and remediated in accordance with applicable state and federal regulations, and available data indicate that potential contaminants are present at levels that pose no unacceptable human health risk. In response to a 1998 NMED request, the ER Project conducted an ecological risk screening assessment at SWMU 32-002(b). No ecological risk screening assessment for the drainlines was deemed necessary because the site has no receptors and no off-site transport pathways for potential contaminants. The ecological risk screening assessment considered potential contaminants in surface and subsurface soil samples collected south of the paved area within the footprint of former structure 32-8 and down the outfall areas to the edge of the canyon bottom. Phase II RFI data from the drainline removal was not considered because following the VCA, the sampled media were covered with 1 ft to 2 ft of clean fill and asphalt. Three spatial aggregates were identified during the ecological scoping process; SWMU 32-002(b) was included in the eastern SWMU aggregate. Threatened and endangered species are potential receptors for contaminant releases associated with the eastern SWMU aggregate and were determined relevant to ecological risk screening assessment at SWMU 32-002(b). Chromium and mercury were identified as the major potential contaminants for ecological risk at the site. Other analytes with HQs greater than 1.0 were silver, thallium, Aroclor-1260, lead, di-n-butyl phthalate, bis(2-ethylhexyl) phthalate, antimony, zinc, copper, cadmium, uranium-234, and uranium-238. Those substances would be identified as potential ecological contaminants for any future site investigation or assessment activities. The ecological-risk screening assessment report said that the analysis of the eastern SWMU aggregate under the worst-case assumptions leads to a conclusion of potential ecological risk.
32-003	In Progress	AOC 32-003 is the former location of a transformer station. The station consisted of three transformers on a wood platform (structure 32-10) elevated 19.5 ft above the ground. In the OU 1079 RFI work plan and during the 1993 Phase I investigation, a pile of wood debris and several sawed-off poles were assumed to be the remains of SWMU 32-002(a) (structure 32-7). Archival engineering drawings located after the Phase I investigation indicate that the wood debris may have been a platform for the former transformer. The former transformer location currently is beneath the asphalt parking area of the Los Alamos County Public Works Department. The ER Project conducted a Phase I RFI at AOC 32-003 in 1993. Two samples were collected at the wood-debris pile and three samples were collected from locations in the drainage immediately downgradient from the former transformer location. Samples were analyzed for inorganic and organic chemicals. Lead and zinc were found above BVs but below SALs (230 mg/kg and 110 mg/kg, respectively). Aroclor-1260 was found at 1.5 mg/kg, above its SAL. Lead, zinc, and Aroclor-1260 exceeded their ESALs. Lead

		and zinc fell within their respective BVs farther down the drainage and concentrations downstream would be too low to have an impact. Aroclor-1260 was the only contaminant retained as a potential contaminant at AOC 32-003. The Phase I RFI report recommended further investigation at AOC 32-003 to evaluate PCB contamination. The ER Project conducted a Phase II RFI and VCA at AOC 32-003 in 1996. The wood-debris pile was removed and disposed of as PCB debris. Samples were collected from seven locations to define the extent of contamination and were sent to the MCAL for PCB analysis. PCBs were present in soils at levels of up to 4700 mg/kg, and analytical results indicated that an area about 38 ft long x 30 ft wide x 2 ft to 5 ft deep required excavation. A VCA was conducted to excavate contaminated soil. Samples were collected from each of four lifts of PCB-contaminated soil. Samples were submitted to the MCAL for analysis and results were used to determine whether the required cleanup level of 10 mg/kg for total PCBs was achieved. Once the level was achieved, excavation ceased. Site restoration activities included backfilling with clean fill, compacting, and reseeding the area. Additional sampling confirmed that the VCA was successful. The Phase II/VCA report recommended NFA at AOC 32-003 because the site was characterized and remediated in accordance with applicable state and federal regulations, and available data indicate that contaminants are present only in concentrations that pose no unacceptable human health risk. In response to a 1998 NMED request, the ER Project conducted an ecological risk screening assessment at AOC 32-003. The ecological risk screening assessment considered potential contaminants in surface and subsurface soil samples collected south of the paved area within the footprint of SWMU 32-002(a) and down the outfall areas to the edge of the canyon bottom. Three spatial aggregates were identified during the scoping process; AOC 32-003 was included in the eastern SWMU aggregate. Threatened and endangered species are potential receptors for contaminant releases associated with the eastern SWMU aggregate and were determined relevant to ecological risk screening assessment at AOC 32-003. Chromium and mercury were identified as the major potential contaminants driving potential ecological risk at the site. Other analytes with HQs greater than 1.0 were silver, thallium, Aroclor-1260, lead, di-n-butyl phthalate, bis(2-ethylhexyl) phthalate, antimony, zinc, copper, cadmium, uranium-234, and uranium-238. Those substances would be identified as potential ecological contaminants for any future site investigation or assessment activities. The ecological risk screening assessment report said that the analysis of the eastern SWMU aggregate under worst-case assumptions leads to a conclusion of potential ecological risk.
32-004	In Progress	AOC 32-004 is a former drainline and outfall from a former office building (Building 32-03). Building 32-03 included a vault room where a radioactive source was stored. The ER Project discovered this AOC after conducting the Phase I investigation at TA-32 in 1993. The Phase I RFI report recommended further investigation at AOC 32-004. In 1996 the ER Project conducted an investigation at AOC 32-004. The Phase II investigation was divided into three areas: the former radiation source vault location, drainline location, and outfall area. The objective of the investigation was to define the location of the radiation source vault and to determine the nature and extent of radiological contamination, if any. The former location of the radiation source room vault was located using archival engineering drawings and historical survey points. The location was screened for radioactivity and four surface-soil samples were collected from the corners of the vault footprint and submitted to the MRAL for analysis for radioactivity. Analysis results indicated that no radioactive contamination existed at the site. The drainline was investigated to determine if it had been removed and to determine if releases had occurred in the soil surrounding the pipe. Exploratory trenches were excavated to locate the drainline, which extended from the edge of former Building 32-03 to the edge of Los Alamos Canyon. The line was field-screened for organic

		chemicals and radioactivity. The pipe interior was swipe-sampled because no sludge was found inside the pipe. Results of the investigation indicated that the pipe was free of sludge and radioactive contamination. Visual inspection, field-screening, and laboratory analytical results indicated that no releases had occurred from the drainline. Because archival evidence suggested that radiological and hazardous constituents may have been associated with activities at this AOC and because the site is located on Los Alamos County property that may be developed in the future, a VCA was conducted to remove the drainline and to confirm that no releases had occurred from the pipe. The drainline was excavated and removed. During excavation, the trench was field-screened for organic chemicals and radioactivity. No evidence of contamination was found inside or outside the 42.5 ft of drainline that was removed. About 50 ft of drainline remain at the site on DOE property. Each end of the remaining drainline was grouted as a BMP. Two confirmatory samples were collected beneath the pipe. The samples were submitted for laboratory analysis for inorganic and organic chemicals, isotopic plutonium, isotopic uranium, and radioactivity. Sample analysis results were below SALs except for the PAH benzo(a)pyrene. Benzo(g,h,i)perylene and phenanthrene have no SALs for comparison. The PAHs were determined to be associated with runoff from the paved parking lot associated with the Los Alamos County Public Work's Department's pavement management division and were eliminated from consideration. Because the influent drainline was located on a mesa top that potentially could be developed for residential use, the average concentration of benzo(a)pyrene was used to estimate lifetime excess cancer risk to determine if additional cleanup was required. The risk was determined to be within the EPA-specified acceptable-risk range, and benzo(a)pyrene was eliminated from consideration. The remaining PAHs have no published toxicity values. They were eliminated from consideration based on the results of the risk determination from benzo(a)pyrene. Restoration activities at AOC 32-004 involved backfilling the trench with material that was removed during excavation, compacting the area, and placing an asphalt patch over the trench. The outfall area was investigated to determine the nature and extent, if any, of contamination. The investigation addressed the drainage pathway from the mesa edge to the bottom of the hillside in Los Alamos Canyon, focusing on the upper portion of the hillside near the mouth of the outfall pipe; 15 samples were collected from 15 locations. To address potential contamination from an industrial area along Knecht Street (including two auto repair shops, a car wash, a gas station, and a paint and body shop) northwest and upgradient from the site that may have impacted the AOC 32-004 outfall area, samples were collected from two locations upgradient from the outfall pipe within the area affected by the Knecht Street drainage. All samples were screened for radiation and analyzed at the MCAL by XRF for inorganic chemicals and at the MRAL for radioactivity. Field-screening data were used to select sample locations for off-site laboratory analysis. A total of 7 samples from 5 of the 15 original sampling locations were submitted for off-site laboratory analysis of inorganic and organic chemicals, isotopic plutonium, isotopic uranium, americium-241, and radioactivity. Chromium, copper, lead, mercury, silver, and zinc were found at levels above BVs. Based on BV comparisons and further statistical tests, lead, mercury, and silver were carried forward to the screening assessment. No radionuclides were detected at levels above BVs. Acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene were detected and included in the screening assessment. The PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene were detected at levels greater than or equal to SALs. Two PAHs, benzo(g,h,i)perylene and phenanthrene, had no SALs and were retained as potential contaminants. Because no archival evidence indicated that PAHs were used or generated at Building 32-03, PAHs detected in the outfall area were determined to be the result of runoff from the asphalt parking lot and storm drain located upgradient from AOC 32-004 that drains directly into the outfall area. Nevertheless, risk estimates were calculated based on the average concentrations of the PAHs. The risk level was within the EPA-specified acceptable-risk range. PAHs were eliminated from further

		consideration. To confirm the source of contamination at the outfall area, sample analysis results from samples taken upgradient from AOC 32-004 were compared with results from samples taken downgradient from AOC 32-004. Upgradient samples associated with the industrial area showed that concentrations of inorganic and organic chemicals were significantly greater than the concentrations downgradient. The Phase II/VCA report stated that the contaminant sources likely are both the current and historical activities in the industrial area along Knecht Street. The mouth of the AOC 32-004 outfall pipe was grouted as a BMP and no further remediation was conducted in the outfall area. The Phase II/VCA report recommended NFA at AOC 32-004 because the site was characterized and remediated in accordance with applicable state and federal regulations, and available data indicate that COCs are present at levels that pose no unacceptable human health risk. In response to a 1998 request from NMED, the ER Project conducted an ecological risk screening assessment at AOC 32-004. The ecological risk screening assessment report for AOC 32-004 stated that because of the location and current use of the site, no ecological receptors were determined to be present and no off-site transport pathways exist. Therefore, no further ecological assessment of AOC 32-004 was proposed.
33-001(a)-99	In Progress	Consolidated SWMU 33-001(a)-99 consists of former SWMUs 33-001(a), 33-001(b), 33-001(c), 33-001(d), and 33-001(e), which collectively are referred to as MDA E. The former SWMUs in this consolidated unit consist of waste disposal pits and an underground test chamber and shaft. The test chamber and shaft have been inactive since 1950 and use of the disposal pits ceased in 1963. This consolidated unit is located at the south end of TA-33 near the edge of Chaquehui Canyon. It occupies an area approximately 140 ft x 220 ft and is enclosed by an 8-ft fence. Former SWMUs 33-001(a), 33-001(b), 33-001(c), and 33-001(d) consist of four of six disposal pits developed at MDA E. These four pits were used to dispose of spent projectiles, uranium components, beryllium, and explosive test shot debris. The other two pits are not known to have been used for waste disposal and were not designated as SWMUs in the RFI work plan. Based on drawings contained in the RFI work plan, the approximate dimensions of the pits are 20 ft x 60 ft for former SWMU 33-001(a), 20 ft x 50 ft for former SWMU 33-001(b), and 20 ft x 100 ft for former SWMU 33-001(d). The dimensions of former SWMU 33-001(c) could not be determined. The four pits all reportedly contain beryllium and uranium. In addition, former SWMU 33-001(c) reportedly contains a can of beryllium dust immersed in kerosene. Dates of construction are not known. When disposal ceased in 1963, the pits were filled and compacted to reduce erosion and infiltration. Former SWMU 33-001(e) consists of an underground chamber, designated chamber #3 (structure 33-29), and an associated underground shaft. Structure 33-29 was constructed from November 1949 to February 1950. The chamber was octagonal, and was 14 ft wide x 11 ft high, with 2-ft-thick concrete walls, floor, and ceiling. The adjacent chamber shaft was 6 ft x 8 ft x 48 ft deep. Former SWMU 33-001(e) was used to conduct tests involving explosives, beryllium, and tungsten; residual materials likely are present at the site. Structure 33-29 collapsed during an experiment conducted in April 1950 and was abandoned at that time. Previous sampling at MDA E and described in the RFI work plan includes subsurface and surface sampling conducted by the LANL Environmental Surveillance Program in 1982 and 1983, respectively, and subsurface sampling conducted by Roy F. Weston, Inc., in 1989. These sampling efforts were undertaken to determine whether releases from MDA E had occurred. The 1982 sampling effort consisted of collecting samples from two 50-ft-deep borings located outside the MDA E fence. Samples were collected from several depths and analyzed for tritium, uranium, and cesium-137. Tritium was detected above BVs in some samples, but these results reportedly were suspect due to the low moisture content of the samples. Uranium and cesium-137 concentrations appeared to be within FVs. In 1983, 45 samples were collected within MDA E from

		random locations on a sampling grid. Samples were collected from intervals of 0 cm to 1 cm and 1 cm to 10 cm; they were analyzed for tritium, uranium, and cesium-137. All three constituents were detected above BVs in some samples. The maximum uranium and cesium-137 concentrations reported were below DOE guidelines. In 1989 six boreholes were installed within MDA E at depths ranging from 9 ft to 59 ft. Samples were collected at various depths and analyzed for tritium, uranium, and lead. Tritium concentrations appeared to be at BVs. Uranium and lead concentrations generally were at BVs, but appeared to be slightly elevated in samples collected from a borehole near structure 33-29. Based on the results of these previous sampling efforts, the RFI work plan indicated that subsurface contaminants are not being released from materials in the waste pits and underground chamber. The RFI work plan proposed geologic investigations to collect data needed to evaluate the site's long-term stability and its suitability for disposal of the wastes present at the site. If the site were determined to be unsuitable for waste disposal, additional investigations would be needed to plan for removal of the buried wastes.
33-002(a)-99	In Progress	Consolidated SWMU 33-002(a)-99 consists of former SWMUs 33-002(a), 33-002(b), 33-002(c), 33-002(d), 33-002(e), and 33-010(f), which collectively are referred to as MDA K. The former SWMUs in this consolidated unit consist of a septic system, two sumps, an outfall, a roof drain, and a surface disposal area. All five former SWMUs that were used to manage liquid wastes are associated with the Tritium Facility (Building 33-86), which operated from June 1955 until 1990. The origin of the surface disposal area is unknown, but it does not appear to have been associated with Building 33-86. This consolidated unit is located within the TA-33 Main Site, immediately east of Building 33-86, in an approximately 350-ft x 370-ft unfenced area. Former SWMU 33-002(a) is a septic system that serves Building 33-86 and a nearby guard station (Building 33-90). The septic system was installed in 1954 and comprises a drainline, an 860-gal. septic tank (structure 33-93); a siphon tank; and a tiled, approximately 50-ft x 100-ft drainfield. The septic system operates under NMED Permit Number LA-35. The principal waste stream received by the septic system was sanitary wastewater from Buildings 33-86 and 33-90. The system also received tritium-contaminated liquids and possibly uranium-contaminated liquids associated with operations and accidental releases from Building 33-86. In addition, the system received two emergency releases of plutonium-contaminated liquid in 1961. Former SWMUs 33-002(b) (structure 33-134) and 33-002(c) (structure 33-133) consist of two sumps connected to sinks and floor drains in Building 33-86. These sumps are unlined, rubble-filled seepage pits 6 ft in diameter and 8 ft deep, with 3-in. concrete covers that are covered with 1 in. of soil. These sumps have been inactive since 1959. Wastes discharged to former SWMU 33-002(b) contained organic solvents including ethanol, methanol, trichloroethene, benzene, and acetone. Some of these solvents were contaminated with tritium. Former SWMU 33-002(b) also may have received beryllium, mercury, and depleted uranium. Wastes discharged to former SWMU 33-002(c) contained tritium and organic chemical solvents, such as trichloroethene, methanol, ethanol, acetone, and propanol. Former SWMU 33-002(d) is an outfall used to discharge noncontact cooling water from Building 33-86. This outfall was created when former SWMU 33-002(c) was deactivated and disconnected from the Building 33-86 drainline. This drainline then was extended an additional 90 ft to create an outfall. This outfall operated under the LANL NPDES permit as Outfall EPA 04A147 and was removed from the LANL NPDES permit July 11, 1995. Potential contaminants in the noncontact cooling water are believed to be limited to tritium. Discharges from the outfall produced heavy vegetation around the outfall, including wetland vegetation such as cattails. Former SWMU 33-002(e) is a roof drain from Building 33-86. This drainline is 2 in. in diameter and approximately 90 ft long and discharges to an outfall east of Building 33-

		86. These discharges are expected to contain tritium that is associated with releases from the Building 33-86 air-discharge stacks. Former SWMU 33-010(f) apparently was used to dispose of various solid wastes. The history of the site and the origins of the wastes are unknown. The site was observed during a 1987 ER Program reconnaissance and was described as consisting of concrete, old cans, metal pieces, and debris at the southeast corner of MDA K. The RFI report describes this former SWMU as consisting of two small surface-disposal areas, one approximately 15 ft square and the other approximately 10 ft x 20 ft; they were located approximately 50 ft apart and 300 ft southeast of Building 33-86. Materials at the site included pieces of concrete and concrete culvert; piles of tuff and cured asphalt; rusted metal cans, rebar, and strapping bands; and other debris. Although the source of these materials is unknown, some were believed to be associated with roadwork. Apparently no previous investigations were conducted at this site other than the 1987 reconnaissance. The ER Project conducted a Phase I RFI at former SWMU 33-002(a) in 1993. That investigation focused on characterizing the septic tank to support a VCA and determining the extent of subsurface tritium contamination beneath the drainfield. Phase I sampling efforts at and near the septic tank included collecting one liquid and one sludge sample from the septic tank, collecting four samples from a 4-ft-deep borehole adjacent to the septic tank, collecting three samples from each of two 10-ft-deep boreholes drilled into the drainfield, and collecting surface samples from two locations in the drainfield. All samples were analyzed for uranium, tritium, plutonium, gamma emitters, inorganic chemicals, and organic chemicals. Inorganic chemicals and radionuclides above BVs were arsenic, cadmium, lead, plutonium-239, tritium, and uranium. Concentrations of inorganic chemicals and radionuclides were detected above BVs in the samples of septic tank liquid and septic tank sludge, but not in soil samples. Constituents that exceeded SALs were arsenic, cadmium, lead, and tritium. Twenty-seven organic chemicals were detected: acetone, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, bis[2-ethylhexyl] phthalate, sec-butylbenzene, tert-butylbenzene, carbon disulfide, chlorobenzene, chrysene, di-n-butyl phthalate, para-dichlorobenzene, 1,1-dichloroethane, ethylbenzene, fluoranthene, indeno[1,2,3-cd]pyrene, isopropylbenzene, 4-isopropyltoluene, phenanthrene, propylbenzene, pyrene, toluene, 1,2,4-trimethylbenzene, 1,2,5-trimethylbenzene, and mixed xylenes. Benzo[a]pyrene was present above its SAL in two samples. Bis(2-ethylhexyl) phthalate was present above its SAL. No other organic chemicals were present above SALs. The RFI report recommended Phase II sampling (drilling and sampling a deeper borehole at least 100 ft deep) adjacent to the septic tank to determine whether the septic tank is the source of the tritium plume at MDA K and to bound the vertical extent of contamination at the septic tank. The RFI report also recommended removing contaminated liquid and sludge from the septic tank. Additional Phase I sampling at former SWMU 33-002(a) involved drilling three deep boreholes near the eastern (downgradient) edge of the drainfield to depths of 230 ft to 315 ft. Samples were collected at approximately 5-ft intervals and analyzed for tritium. A subset of samples also was analyzed for inorganic chemicals and organic chemicals. Inorganic chemicals and radionuclides, other than tritium, detected above BVs in samples from these boreholes were antimony, cadmium, chromium, lead, nickel, uranium, plutonium-238, and plutonium-239; none were present above SALs. The RFI report does not discuss the results of organic analyses and whether any organic chemicals were detected or above SALs. Twelve subsurface samples from one of the three boreholes showed tritium concentrations above SALs. The surface sample from another of the boreholes also exceeded its SAL for tritium. The RFI report recommended Phase II sampling consisting of drilling and sampling an additional deep (at least 100 ft) borehole in the drainfield to better characterize the tritium plume. The ER Project conducted a Phase I RFI at former SWMUs 33-002(b) and 33-002(c) in

		1993 that focused on characterizing the sumps to support VCAs. Phase I sampling at former SWMU 33-002(b) consisted of collecting a soil sample from a depth of 5 ft within the sump and augering a 30-in.-deep borehole adjacent to the sump and collecting two soil samples from this borehole. All samples were analyzed for uranium, tritium, plutonium, gamma emitters, inorganic chemicals, and organic chemicals. The RFI work plan also called for collecting liquid and sludge samples from the sump, but these samples could not be collected because no liquid or sludge was present. Inorganic chemicals and radionuclides above BVs in these soil samples were cadmium, plutonium-238, plutonium-239, and tritium. Tritium was present above its SAL in the sample from the bottom of the borehole adjacent to the sump and in the sample from within the sump. No organic chemicals were detected in any samples. The RFI report recommended Phase II sampling consisting of drilling and sampling a deeper borehole (at least 15 ft) at the center of the sump to determine the vertical extent of tritium contamination beneath the sump and to determine whether other contaminants were present beneath the sump. Phase II sampling at former SWMU 33-002(b) was conducted in 1996 and is described in the NFA report that includes this site. A borehole was advanced through the sump to a total depth of 117 ft; samples were collected at intervals of approximately 5 ft and analyzed for tritium. In addition, three samples were collected within the first 15 ft and analyzed for uranium, plutonium, inorganic chemicals, and organic chemicals. Tritium was the only radionuclide detected above BVs and was present above SALs in 16 samples. These samples comprise all samples collected over the depth interval of 1 ft to 52 ft. Inorganic chemicals detected above BVs were copper, mercury, silver, and zinc; none was present above SALs. Twelve organic chemicals (anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, bis(2-ethylhexyl) phthalate, chrysene, di-n-butyl phthalate, fluoranthene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene) were detected. Benzo[a]pyrene was detected above SALs in two samples. The results of the Phase II RFI sampling were used to perform a risk-based screening assessment and human-health risk assessment. Based on these assessments, the NFA report recommended NFA for former SWMU 33-002(b) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. Phase I sampling at former SWMU 33-002(c) consisted of augering a 48-in.-deep borehole adjacent to the sump and collecting three soil samples from this borehole. All samples were analyzed for uranium, tritium, plutonium, gamma emitters, inorganic chemicals, and organic chemicals. The RFI work plan also called for collecting liquid and sludge samples from the sump, but these samples could not be collected because no liquid or sludge was present. Radionuclides above BVs in these soil samples were plutonium-238, plutonium-239, and tritium; none was detected above SALs. The RFI report did not discuss results of inorganic chemical analyses and whether any inorganic chemicals were detected above BVs or SALs. Only one organic chemical, 2-hexanone, was detected in these samples. The RFI report did not indicate whether this organic chemical was above its SAL. The RFI report recommended Phase II sampling consisting of drilling and sampling a deeper borehole (at least 15 ft) at the center of the sump to determine whether contaminants were present beneath the sump. Phase II sampling at former SWMU 33-002(c) was conducted in 1996 and is described in the NFA report that includes this site. A borehole was advanced through the sump to a total depth of 62 ft; samples were collected at intervals of approximately 5 ft and analyzed for tritium. In addition, three samples were collected within the first 12 ft and analyzed for uranium, plutonium, inorganic chemicals, and organic chemicals. Six additional samples also were collected from two shallow borings at locations near the Phase I sample location and analyzed for plutonium. Plutonium-238 and plutonium-239/240 were detected above BVs, but measured values were all below SALs. Tritium also was detected above BVs and was present above SALs in 2 samples. These samples were collected over the depth interval of 5 ft to 8.5 ft. Inorganic chemicals

		detected above BVs were chromium, copper, mercury, lead, and zinc; none was present above SALs. Thirteen organic chemicals (acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, bis(2-ethylhexyl) phthalate, chrysene, di-n-butyl phthalate, fluoranthene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene) were detected. Benzo[a]pyrene was detected above SALs in two samples. Benzo[a]anthracene and benzo[b]fluoranthene also were present above SALs. The results of the Phase II RFI sampling were used to perform a risk-based screening assessment and human-health risk assessment. Based on these assessments, the NFA report recommended NFA for former SWMU 33-002(c) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The ER Project conducted a Phase I RFI at former SWMU 33-002(d) in 1993 that focused on investigating the transport of contaminants along the drainage channel below the outfall. Phase I sampling at former SWMU 33-002(d) consisted of collecting five surface samples from four locations in the channel. All samples were analyzed for uranium, tritium, plutonium, gamma emitters, inorganic chemicals, and organic chemicals. The RFI work plan also called for collecting water samples from the channel, but these samples could not be collected because no water was present. Inorganic chemicals and radionuclides above BVs in these samples were cadmium, chromium, lead, silver, uranium, zinc, plutonium-238, and tritium. Tritium was present above its SAL in the three samples. Twelve organic chemicals (aldrin, Aroclor 1254, mixed Aroclors, alpha-BCC, delta-BHC, chrysene, p,p'-DDD, p,p'-DDT, endosulfan II, endosulfan sulfate, fluoranthene, and pyrene) were detected. Aldrin was present above its SAL in one sample. No other organics exceeded SALs. The ER Project resampled the drainage channel in December 1994 to determine whether tritium concentrations had changed after approximately 1.5 years. Samples were collected from three locations at or near the original sampling locations and analyzed for tritium. All tritium concentrations were below those detected in 1993; none exceeded SALs. The RFI report concluded that tritium concentrations had been reduced through natural dilution factors. The RFI report recommended NFA for former SWMU 33-002(d), because the site had been characterized or remediated in accordance with current applicable state or federal regulations, and available data indicate that COCs either are not present or are present in concentrations that pose no unacceptable level of risk under projected future land use. The ER Project conducted a Phase I RFI at former SWMU 3-002(e) in 1993 that focused on contaminant transport along the drainage channel below discharge from the drainline. Phase I sampling at former SWMU 33-002(e) consisted of collecting five surface samples from three locations. All samples were analyzed for tritium and organic chemicals. Tritium was present slightly above BVs. Seventeen organic chemicals (acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, dibenzofuran, dibenzo[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene) were detected. All these organic compounds were detected in samples collected at the drainline discharge point; none was above SALs. The RFI report concluded that the organic chemicals detected were associated with the asphalt roof material on Building 33-86 and were not associated with waste disposal. The RFI report recommended NFA for former SWMU 33-002(e) because the site was never used to manage RCRA solid or hazardous waste and/or constituents, radionuclides, or other CERCLA hazardous substances. According to the documentation of ecological risk assessment and other applicable regulations and standards for 37 administrative NFA proposals (Functional Area A.1.2 performance measure), NMED approved NFA in a July 21, 1997, RSI. The ER Project conducted a Phase I RFI at former SWMU 33-010(f) in 1993 that focused on determining whether localized areas of elevated contaminant concentrations existed at the site. Phase I sampling at former SWMU 33-010(f)

		consisted of collecting five surface samples from two locations, one at each waste pile. All samples were analyzed for radionuclides and inorganic chemicals and two samples also were analyzed for organic chemicals. No radionuclides or inorganic chemicals were present above BVs. Four organic chemicals (beta-BHC, p,p'-DDE, p,p'-DDT, and endosulfan II) were detected, but all were below SALs. Based on these results, the RFI report recommended NFA for this site because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. Tritium was detected above SALs in surface samples from several locations [former SWMUs 33-002(a), 33-002(b), and 33-002(d)] throughout MDA K. As a result, the Phase I RFI evaluated the risk associated with general surface tritium contamination within MDA K. The results of this risk assessment indicated that tritium releases from surface soils pose no unacceptable risk and no remediation was recommended. The RFI report did recommend posting MDA K for radioactivity in accordance with the LANL Radiological Control Manual.
33-003(a)-99	In Progress	Consolidated SWMU 33-003(a)-99 consists of former SWMUs 33-003(a) and 33-003(b), which collectively are referred to as MDA D. Both former SWMUs in this consolidated unit are former underground experiment chambers that were used to conduct experiments involving HE and radioactive materials. This consolidated unit is located at the east end of TA-33 (East Site) on a mesa bordered by Ancho and White Rock Canyons. MDA D occupies an approximately 60-ft x 210-ft area. Former SWMU 33-003(a) consists of an underground chamber, designated chamber 1 (structure 33-4), and associated underground shaft. Structure 33-4 was constructed to perform experiments with initiators; construction was completed in January 1948. The chamber was octagonal, 18 ft x 18 ft x 11 ft high, with the top of the chamber located approximately 30 ft below grade. The adjacent shaft, which was an elevator shaft, was 4 ft x 6 ft x 46 ft deep and was shored with timbers. Former SWMU 33-003(a) was used to conduct a single experiment in April 1948. The experiment did not vent to the surface and no radioactivity was detected on the ground surface or in the atmosphere immediately after the test or 24 hr later. This experiment is believed to have destroyed structure 33-4, and later a berm was built over the site. Components used in the experiment included HE, which was consumed in the test; gram-quantities of beryllium; polonium-210 (half-life 138 days); kilogram-quantities of steel, copper, and aluminum; gram-quantities of lead; and several kilograms of PCBs. In 1989, Roy F. Weston, Inc., investigated the site and installed three boreholes: one to the floor of the elevator shaft, one to the concrete roof of the chamber, and one adjacent to the chamber to a depth below the chamber floor. Samples were analyzed for radionuclides, inorganic chemicals, and HE. One sample, taken at depth of 44 ft adjacent to the chamber, showed uranium above BV. No other radionuclides or inorganic chemicals were above BVs and no HE was detected. Former SWMU 33-003(b) consists of an underground chamber, designated chamber 2 (structure 33-6), and associated underground shaft. Structure 33-6 was constructed to perform initiator experiments; construction was completed in October 1948. The chamber was octagonal, 18 ft x 18 ft x 11 ft high, with the top of the chamber located approximately 30 ft below grade. The adjacent shaft, which was an elevator shaft, was 4 ft x 6 ft x 46 ft deep and was shored with timbers. Former SWMU 33-003(b) was used to conduct two experiments, one in December 1948 and one in April 1952. The second experiment destroyed the chamber, caused debris to be ejected from the shaft onto the ground surface, and formed a 10-ft-deep crater. This crater later was filled with the ejected debris and covered with uncontaminated soil. The depression was refilled in 1963. The 1997 RFI report noted a broken 8-ft x 12-ft concrete pad and a 6-ft x 10-ft depression near the shaft location. This depression was up to 2 ft deep. Components used in the experiments included HE, which was consumed in the tests; gram-quantities of beryllium; polonium-210 (half-life 138 days); kilogram-quantities of steel, copper, and aluminum; gram-quantities of lead; and several kilograms of PCBs. Surface sampling was conducted in 1977 as part of LANL's Environmental Surveillance

		Program. Sixteen surface samples were collected around the site and analyzed for radionuclides. No elevated levels were detected. In 1989, Roy F. Weston, Inc., investigated the site and installed three boreholes: one to the floor of the elevator shaft, one to the concrete roof of the chamber, and one adjacent to the chamber to a depth below the chamber floor. Samples were analyzed for radionuclides, inorganic chemicals, and HE. Several inorganic chemicals were detected above BVs, but did not exceed SALs. The ER Project conducted a Phase I RFI at MDA D in 1994. No sampling was performed at former SWMU 33-003(a). Rather, the RFI made use of the data collected during the 1989 investigation by Roy F. Weston, Inc. Based on these data and the conceptual site model for this former SWMU, the 1995 RFI report recommended NFA for former SWMU 33-003(a) because no release to the environment had occurred. The 1994 Phase I RFI activities were conducted former SWMU 33-003(b) to determine the presence or absence of PCOCs at this site. Nine surface samples were collected from eight locations at this former SWMU on a 100-ft x 100-ft grid around the shaft location. These samples were field-screened for radioactivity and HE and analyzed in a fixed laboratory for radionuclides, inorganic chemicals, and HE. No radionuclides were detected above BVs or FVs. The only inorganic chemicals detected above BVs were lead and zinc; neither was present above its SAL. The RFI report does not discuss whether HE was detected. The RFI report also indicated that the surface sampling was not sufficient to characterize debris that might have been used to backfill the crater around the shaft (i.e., the samples may have been representative of clean cover soil) and recommended additional subsurface sampling at former SWMU 33-003(b). In addition, archival information that was discovered after the RFI work plan was prepared identified the possible presence of PCBs; Phase I analyses did not include PCBs. Therefore, the 1995 report recommended additional sampling and analysis for PCBs. In 1996, the ER Project collected additional samples at former SWMU 33-003(b). Surface samples were collected at each of nine locations around the shaft and field-screened for PCBs. PCBs were detected in two samples in the range of 0.5 mg/kg to 1 mg/kg, which was below the 1 mg/kg screening level that triggered the need for fixed laboratory analysis. Boreholes were drilled at two locations within 3 ft to 4 ft of the shaft location. The boreholes were drilled to a depth of 15 ft and samples were collected from three depths in each borehole. Each sample was submitted for laboratory analysis for inorganic chemicals and four samples also were submitted for laboratory analysis for PCBs. No inorganic chemicals were detected above BVs and no PCBs were detected. The 1995 RFI report recommended NFA for former SWMU 33-003(a) because no release to the environment had occurred. The 1997 RFI report recommended NFA for former SWMU 33-003(b) because the site has been characterized and available data indicate that contaminants at former SWMU 33-003(b) are not present or are present in concentrations that pose no unacceptable risk under projected land use. The report indicated that evaluation of this site for ecological risk concerns would be deferred until an ecological risk assessment methodology had been developed.
33-004(a)-00	In Progress	Consolidated SWMU 33-004(a)-00 consists of former SWMUs 33-004(a), 33-004(h), 33-004(i), 33-011(d), 33-015, and 33-017. The former SWMUs in this consolidated unit consist of a septic system, three outfalls, a storage area, an incinerator, and operational releases. All these former SWMUs are geographically located in the northeast corner of TA-33 Main Site and some of the former SWMUs overlap. The former SWMUs that comprise this consolidated unit generally are associated with early operations at TA-33, which involved initiator development from 1950 through 1972. These former SWMUs are not associated with Building 33-86 or the tritium operations conducted at TA-33. Former SWMU 33-004(a) consists of a septic tank (structure 33-31), drainlines, two seepage pits, and a drainfield that is no longer in use. The septic tank has a capacity of 1360 gal. and is located 50 ft northeast of Building 33-39. This septic tank is active and serves all major buildings at the TA-33 Main Site, except the tritium facility (Building 33-

		86). The septic system operates under NMED Permit Number LA-32. Structure 33-31 originally received sanitary wastewater from a laboratory and office building (Building 33-19) and a storage building (Building 33-27). Industrial wastes from Building 33-19 reportedly were discharged to a separate outfall. Structure 33-31 originally discharged to the drainfield, which occupies an area 90 ft x 80 ft and is located approximately 200 ft northeast of structure 33-31. This drainfield is constructed of 4-in. vitrified clay tiles spaced approximately 10 ft apart. In 1951, the system was redesigned to accept industrial wastes, primarily from laboratories in Buildings 33-19, 33-113, and 33-114, and the machine shop in Building 33-39. Two 4-ft-diameter x 50-ft-deep gravel-filled seepage pits were constructed to receive discharge from structure 33-31, and the drainfield was disconnected and no longer used. No previous environmental investigations have been conducted at this site. Former SWMU 33-004(h) consists of an outfall associated with a warehouse (Building 33-20). Building 33-20 was constructed in 1950 and reportedly was used from 1952 until 1972 to store materials associated with initiator tests, including beryllium and uranium. The building subsequently was cleaned and used by other groups. Historical engineering drawings identified a floor drain in Building 33-20 that was connected to an 8-in.-diameter VCP. This pipe reportedly discharged to an outfall that drained to former SWMU 33-017. This outfall had not been located when the RFI work plan was prepared. No previous environmental investigations have been conducted at this site. Former SWMU 33-004(i) consists of two outfalls associated with a machine shop (Building 33-39). Building 33-39 was completed in 1951 and housed a welding and soldering bench that used cadmium and silver, a lead-melting facility, a beryllium-machining room, and a sand blaster. Cadmium, uranium, stainless steel, and polystyrene plastic also were machined in the building. Machine shop operations ceased in late 1990. Drains in the building are connected to two 4-in.-diameter VCPs, which run to the east of Building 33-39 before discharging to the surface. The northernmost of the two outfalls is located approximately 30 ft east of the building and the other outfall is located approximately 40 ft east of Building 33-34. The drains connected to these outfalls are believed to have been plugged. No previous environmental investigations have been conducted at this site. Former SWMU 33-011(d) consists of a former storage area that was located on the asphalt paving around a warehouse (Building 33-20) constructed in 1950. Beryllium and uranium reportedly were stored around Building 33-20 until 1972. In addition, recovered scrap from shots containing uranium, beryllium, and tungsten reportedly was stored south of Building 33-20. A 1987 site survey found no materials remaining in storage at this location. No previous environmental investigations have been performed at this site. Former SWMU 33-015 consists of an incinerator (structure 33-110) located approximately 50 ft southeast of Building 33-39 on a hillside that slopes to a side wash of Chaquehui Canyon. The incinerator is approximately 4 ft x 4 ft x 6 ft high and mounted on a concrete base. It reportedly was used to burn uncontaminated office trash. The incinerator was used first in 1955 and the date that its use stopped is unknown. No previous environmental investigations have been performed at this site. Former SWMU 33-017 consists of areas potentially impacted by operational releases from the TA-33 Main Site. Former SWMU 33-017 occupies the northern and eastern edges of Main Site and is approximately 600 ft long x 100 ft to 600 ft wide. The site generally slopes down to the east, and is at the head of a small drainage tributary of Chaquehui Canyon. Former SWMU 33-017 potentially is impacted by runoff from paved areas of the TA-33 Main Site complex, by deposition from airborne releases from TA-33 Main Site facilities, and by releases from an area east of Building 33-39 that was used for vehicle maintenance. Operations conducted within Main Site facilities included uranium processing and machining, cadmium and silver welding and soldering, lead melting and casting, cadmium and beryllium machining, and tritium processing and

		decontamination. These operations began in 1949 and most continued until 1972. Following these operations, some of the facilities were used for offices and electronics laboratories. No previous environmental investigations have been conducted at this site. The ER project conducted a Phase I RFI at former SWMU 33-004(a) during 1993 to support a possible VCA for structure 33-31 and to determine the presence or absence of potential contaminants in the seepage pits and drainfield. One sludge sample and two liquid samples were collected from structure 33-31. A borehole was drilled to a depth of 15 ft adjacent to structure 33-31 and samples were collected at three depths. A borehole was drilled adjacent to each seepage pit to a depth of 50 ft and samples were collected at four depths from each of these boreholes. Thirteen samples were collected from the drainfield. Four of these samples were subsurface samples collected at joints in the vitrified clay tiles and the remaining seven surface samples and two subsurface samples were collected at random locations in the drainfield. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Analysis results for these samples are summarized below. Septic tank sludge and liquid. Inorganic chemicals detected in the liquid and sludge samples were arsenic, barium, cadmium, chromium, lead, mercury, nickel, silver, and zinc; none was present in liquid or sludge samples above SALs for water and soil, respectively. Total uranium was detected in the liquid and sludge samples, but was below the SALs for water and soil, respectively. Thirty-six organic chemicals were detected in the liquid and sludge samples from the septic tank: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, bis[2-ethylhexyl]phthalate, 2-butanone, butyl benzyl phthalate, n-butyl benzene, sec-butyl benzene, tert-butyl benzene, carbon disulfide, chloroform, chrysene, di-n-butyl phthalate, 1,4-dichlorobenzene, 1,1-dichloroethane, ethyl benzene, fluoranthene, indeno[1,2,3-cd]pyrene, isopropyl benzene, 4-isopropyl toluene, methylene chloride, 4-methylphenol, phenanthrene, phenol, propyl benzene, pyrene, 1,1,2,2-tetrachloroethane, tetrachloroethene, toluene, 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1,1-trichloroethane, trichloroethene, 1,2,4-trimethylbenzene, and xylenes. Ten organic chemicals were present in the sludge sample at concentrations above the SAL for soil: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, bis[2-ethylhexyl]phthalate, chloroform, chrysene, indeno[1,2,3-cd]pyrene, 4-methylphenol, and trichloroethene. Two of these organic chemicals, bis(2-ethylhexyl)phthalate and 4-methylphenol, also were present in the liquid samples at concentrations above the SAL for water. Septic tank borehole. Total uranium was detected above BV but below its SAL in a sample from the borehole next to structure 33-31. Eight organic chemicals were detected in samples from the borehole next to the septic tank: benzo[a]anthracene, benzo[a]pyrene, benzo(k)fluoranthene, chrysene, di-n-butyl phthalate, fluoranthene, phenanthrene, and pyrene. The only organic chemical detected above its SAL was benzo[a]pyrene. Seepage pit boreholes. No inorganic chemicals were detected above BVs and no radionuclides were detected above BVs or FVs in samples from boreholes adjacent to the seepage pits. The only organic chemical detected in these samples was di-n-butyl phthalate, which also was detected in the laboratory blank and was believed to be a laboratory contaminant. Drainfield. Inorganic chemicals detected above BV in the samples from the drainfield are chromium, lead, mercury, silver, and zinc. Lead was the only inorganic chemical detected above its SAL. Total uranium was detected above BV, but below its SAL. Seventeen organic chemicals were detected in drainfield samples: acenaphthene, acenaphthalene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, bis[2-

		ethylhexyl]phthalate, chrysene, di-n-butyl phthalate, dibenzo[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene. Six of these organic chemicals were present above SALs: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene. Based on the results of the Phase I sampling and analysis, the RFI report concluded that contamination at former SWMU 33-004(a) primarily consists of organic chemicals in septic tank sludge, with lesser amounts of organic chemicals in the drainfield. Because the septic system is active and is expected to remain so for the foreseeable future, the RFI report recommended deferring additional action until the septic system is decommissioned. In 1997 the ER Project decontaminated structure 33-31 after removing its contents. Soil samples were collected beneath the structure 33-31 inlet and outlet and beneath the tank and analyzed for inorganic chemicals, radionuclides, and organic chemicals. Based on these actions, TA-33 facility management agreed to accept responsibility for any future contamination in or around structure 33-31. This agreement did not apply to the seepage pits or drainfield, which remained the responsibility of the ER Project. The ER project conducted a Phase I RFI at former SWMU 33-004(h) in 1993 to determine the presence or absence of contamination associated with discharges from the outfall. Because the outfall could not be located visually, a geophysical survey was conducted to identify the possible location of the drainline. Three sample locations were selected based on the results of the geophysical survey; five surface samples were collected at these locations. The samples were field-screened for radioactivity and submitted for laboratory analysis for radionuclides and inorganic chemicals; one sample also was submitted for laboratory analysis for organic chemicals. Inorganic chemicals detected above BV were nickel and zinc, neither of which exceeded its SAL. No radionuclides were detected above BV or FV. Two organic chemicals (p,p'-DDE and endosulfan) were detected, but both were below SALs. Based on the results of the Phase I sampling and analysis, the RFI report recommended NFA for former SWMU 33-004(h) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. Former SWMU 33-004(h) was recommended for NFA in the September 1995 permit modification request. The ER project conducted a Phase I RFI at former SWMU 33-004(i) in 1993 to determine the presence or absence of contamination associated with discharges from the outfalls. A geophysical survey was conducted to locate the drainlines and outfalls. Surface samples were collected at each outfall and at two locations in the drainages downstream of each outfall, for a total of six samples. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Inorganic chemicals detected above BV were chromium, lead, and zinc. Lead was the only inorganic chemical present above its SAL. The only radionuclide present above BV or FV was total uranium, which was not present above its SAL. Eleven organic chemicals were detected: acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, fluoranthene, fluorene, phenanthrene, and pyrene. Three of these organic chemicals were detected above SALs: benzo[a]anthracene, benzo[a]pyrene, and benzo[b]fluoranthene. The results of the Phase I sampling and analysis were used to conduct a risk assessment related to the presence or absence of lead in soils. Based on this assessment, the RFI report recommended NFA for former SWMU 33-004(i) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The organic chemicals detected above SALs were not considered in the risk assessment for SWMU 33-004(i). Rather, because former SWMU 33-004(i) is located within the boundaries of former SWMU 33-017, and organic chemicals were detected

		above SALs at other locations within former SWMU 33-017, the organic chemicals detected at former SWMU 33-004(i) will be considered with former SWMU 33-017. As discussed below in the unit description for former SWMU 33-017, the Phase I RFI for that site recommended Phase II sampling and analysis to better characterize the organic contamination. The ER Project conducted a Phase I RFI at former SWMU 33-011(d) in 1993 to determine the presence of contamination associated with storage of materials at this site. Two asphalt samples and three soil samples from beneath the asphalt were collected at three locations. These samples were field-screened for radioactivity and submitted for laboratory analysis for radionuclides and inorganic chemicals. Radionuclides detected above BV or FV were uranium and tritium. Both uranium and tritium were detected in asphalt above their SALs for soil, and uranium also was detected in soil above its SAL. Inorganic chemicals detected above BV were cadmium, lead, nickel, and zinc. Lead was detected in one asphalt sample in excess of the SAL for soil. Based on the results of the Phase I sampling and analysis, the RFI report recommended Phase II sampling for former SWMU 33-011(d) to better characterize the lead and uranium contamination around Building 33-20. In 1996, the ER Project conducted a Phase II RFI at former SWMU 33-011(d). One surface and one subsurface sample were collected at each of seven locations. Six of these locations were beneath the asphalt and one was in a drainage south of the asphalt. Subsurface samples were collected from a depth interval of 0.5 ft to 1 ft; six of the seven samples were collected at the soil-tuff interface. All samples were field-screened for radioactivity and submitted for laboratory analysis for isotopic uranium. All but the two samples from the drainage also were submitted for laboratory analysis for inorganic chemicals. Because lead was the only inorganic chemical detected above its SAL in the Phase I RFI, the Phase II RFI screening for inorganic chemicals addressed only lead. Lead was detected in Phase II samples above both BV and SAL. Uranium isotopes were detected above BV but not above SALs. The results of the Phase II RFI were used to conduct a human health risk-based screening assessment. Based on this assessment, the Phase II RFI report recommended NFA for former SWMU 33-011(d) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use, which is industrial. The Phase II RFI report also indicated that ecological risk assessment of this site would be deferred until development of the ecological exposure unit methodology had been completed. The ER Project conducted a Phase I RFI at former SWMU 33-015 in 1993 to determine the presence or absence of contamination associated with structure 33-110. Two surface soil samples were collected, one from each of the two downslope corners of the concrete base. These samples were field-screened for radioactivity and organic vapors and submitted for laboratory analysis for inorganic chemicals and radionuclides. Inorganic chemicals detected above BV were silver, cadmium, lead, and zinc; none was present above its SAL. Uranium was the only radionuclide detected above BV or FV, but it did not exceed its SAL. The results of the Phase I sampling and analysis were used to conduct a preliminary risk assessment. Based on this assessment, the RFI report recommended NFA for former SWMU 33-015 because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The ER Project conducted a Phase I RFI at former SWMU 33-017 during 1993 to determine the extent of contamination resulting from operational releases and site drainage and to determine the presence or absence of contamination associated with the vehicle maintenance area. Sampling efforts associated with these objectives and the results of these efforts are discussed below. Operational releases. To characterize the extent of general sitewide contamination that resulted from operational releases, 56 surface samples were collected at 51 locations,

		which were random offsets from a 100-ft grid overlying the Main Site and four radial extensions from the grid. These samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for radionuclides, inorganic chemicals, and, with the exception of one sample, organic chemicals. Radionuclides present above BV or FV were total uranium, plutonium-239, and tritium; none was present above its SAL. Inorganic chemicals present above BV were arsenic, cadmium, chromium, lead, nickel, silver, and zinc. Lead was the only inorganic chemical present above its SAL. Twenty-six organic chemicals were detected: acenaphthene, aniline, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, beta-BHC, bis[2-ethylhexyl]phthalate, chrysene, 2,4-D, [p,p']DDE, di-n-butyl phthalate, dibenzofuran, dibenzo[a,h]anthracene, dieldrin, diethyl phthalate, dinoseb, endrin, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene). Five of these organic chemicals were detected above SALs: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, and indeno[1,2,3-cd]pyrene. Drainages. To characterize the extent of contamination of surface drainages, 20 samples were collected from drainage channels that receive runoff from the Main Site. These samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Inorganic chemicals detected above BV in these samples were cadmium, lead, and zinc; none were above SAL. Total uranium also was detected above BV, but below its SAL. Four organic chemicals were detected, but all were below SALs: benzo[b]fluoranthene, fluoranthene, phenanthrene, and pyrene. Vehicle maintenance area. To characterize potential contamination that resulted from releases at the vehicle maintenance area, six samples were collected from this area. These samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis of inorganic chemicals, radionuclides, and organic chemicals. Inorganic chemicals detected above BV were chromium, lead, nickel, and zinc; none were above SAL. Total uranium also was detected above BV, but below its SAL. Sixteen organic chemicals were detected: acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, bis[2-ethylhexyl]phthalate, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene. Six of these organic chemicals were detected above SALs: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene. The results of the Phase I sampling and analysis were used to perform a preliminary risk assessment. Based on the results of this assessment, the RFI report recommended Phase II sampling to better characterize the organic contamination east of Building 33-39. As stated in the unit description for former SWMU 33-004(i), the outfalls comprising former SWMU 33-004(i) are located east of Building 33-39, within the area to be addressed by this Phase II investigation. Thus, the RFI report indicated that the organic contamination identified during the sampling for former SWMU 33-004(i) will be considered as part of former SWMU 33-017. The ER Project conducted a Phase II RFI at former SWMU 33-017 in 1996 to better characterize contamination detected by the Phase I RFI. Twenty-five surface soil samples were collected from 24 locations and submitted for laboratory analysis for organic chemicals. Twenty-two organic chemicals were detected: acenaphthene, anthracene, Aroclor-1254, Aroclor-1260, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, benzoic acid, bis[2-ethylhexyl]phthalate, chrysene, di-n-butylphthalate, dibenzo[a,h]anthracene, dibenzofuran, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene. Seven of these organic chemicals were detected above SALs: Aroclor-1254, Aroclor-1260, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenzo[a,h]anthracene, and indeno[1,2,3-

		cd]pyrene. The detected organic chemicals fall into the general categories of PAHs and PCBs. The PAHs were believed to be associated with former SWMU 33-017, while the PCBs are believed to be associated with SWMU 33-012(a) and AOC C-33-001, which are located within former SWMU 33-017. Because PAH concentrations detected during the Phase II RFI were lower than the PAH concentrations detected during the Phase I RFI, Phase I data were used to conduct a human health risk assessment. Based on this assessment, the Phase II RFI report recommended NFA for former SWMU 33-017 because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use, which is industrial. The RFI report indicated that an ecological risk assessment of this site would be deferred until development of the ecological exposure unit methodology had been completed. The Phase II RFI report indicated that PCB contamination would be addressed as part of future actions at SWMU 33-012(a) and AOC C-33-001.
33-004(b)	In Progress	SWMU 33-004(b) consists of an inactive septic tank (structure 33-33) and associated drainline and outfall located in TA-33 South Site. This septic tank receives wastewater from Building 33-24, which was constructed in June 1950 to support experiments at a nearby firing site. The septic tank has a capacity of 730 gal. and is located approximately 300 ft south of Building 33-24. Wastewater was conveyed to the tank through a 6-in.-diameter steel pipe and effluent from the tank flowed through a 6-in.-diameter steel pipe to an outfall approximately 35 ft southwest of the tank. This outfall is situated on the rim of Chaquehui Canyon. Two additional drainlines are located in the same pipe trench as the drainline, but run directly from Building 33-24 to the canyon rim, bypassing the septic tank. Building 33-24 originally was used to house personnel and electronic equipment associated with firing-site experiments and then was used for storage. There is no documented past use of hazardous or radioactive materials within Building 33-24, although photographic chemicals may have been used. Building 33-24 currently is used only for storage; water to the building was shut off in 1994. When SWMU 33-004(b) was active, it operated under NMED Permit LA-33. No previous environmental investigations have been conducted at this site. The ER project conducted a Phase I RFI at SWMU 33-004(b) during 1994 to determine whether leakage from the tank had occurred and whether contaminants were present at the outfalls. No liquid or sludge was present in the tank, so a single sample of sediment, for waste chareacterization, was collected from the bottom of the tank. A borehole was drilled to a depth of 6 ft approximately 5 ft downslope of the tank and samples were collected at three depths. Surface samples were collected at three locations at and downslope of the outfalls. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, organic chemicals, and cyanide. Eight inorganic chemicals were detected in sediment samples from the septic tank. Two inorganic chemicals were present above the SAL for soil. Three inorganic chemicals were present above BVs in soil samples, but did not exceed SALs. Eleven organic chemicals were detected in the sediment sample from the septic tank. Concentrations of three of these organic chemicals exceeded the SALs for soil. Six organic chemicals were detected in the soil samples, but none of these exceeded SALs. Cyanide was detected in the sediment sample from the septic tank and in soil samples, but was not present above its SAL. The results of the Phase I sampling and analysis were used to conduct a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 33-004(b) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report stated that this SWMU would be included in ecological exposure units defined for both ecological screening and ecological risk assessments. In 1995, one borehole was drilled approximately 4 ft west of the septic tank. Total depth of the borehole was 10.5 ft. One sample was collected from a depth of 8.5 to 10.5 ft. The sample was submitted to an off-site analytical laboratory for analysis for organic and inorganic chemicals. This sampling event was not documented in a written report.

33-004(c)	In Progress	SWMU 33-004(c) consists of an active septic tank (structure 33-96) and associated drainline and drainfield located in TA-33 East Site. This septic tank receives wastewater from Building 33-87, which was constructed in June 1955 to serve as the control bunker for the firing site at East Site. The septic tank has a capacity of 768 gal. and is located approximately 100 ft northeast of Building 33-87. Wastewater was conveyed to the tank through a 4-in.-diameter VCP and effluent from the tank flowed through a similar pipe to a small drainfield approximately 30 ft east of the septic tank. No outfall was associated with this septic tank. Building 33-87 was used as a control bunker for experiments conducted by Group W-3 until 1972. It has since been used for storage and for occasional short-term experiments. There is no documented past use of hazardous or radioactive materials within Building 33-87, although photographic chemicals may have been used. Structure 33-96 is considered an active septic tank and is operated under NMED Permit Number LA-34. No previous environmental investigations have been conducted at this site. The ER project conducted a Phase I RFI at SWMU 33-004(c) during 1994 to determine whether leakage from the tank had occurred and whether contaminants were present in the drainfield. At the time of the Phase I RFI, the tank contained liquid, but no sludge. Two samples of liquid were collected from the tank. One surface sample and two subsurface samples were collected at each of four boreholes installed to depths of 4 ft to 6 ft. One of these boreholes was located 5 ft from the septic tank and the other three were located in the drainfield. Before drilling the boreholes, a trench was dug into the drainfield to locate the drainage tiles. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, organic chemicals, and cyanide. Inorganic chemicals detected above BVs were beryllium, cadmium, and zinc. Beryllium was the only inorganic chemical that exceeded its SAL. No organic chemicals were detected in any samples. Cyanide was detected, but was below its SAL. No radionuclides were detected above BVs. The results of the Phase I sampling and analysis were used to conduct a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 33-004(c) because the site has been characterized and available data indicate no unacceptable risk under projected land use. The RFI report stated that this SWMU would be included in ecological exposure units defined for both ecological screening and ecological risk assessments.
33-004(d)	In Progress	SWMU 33-004(d) consists of an active septic tank (structure 33-121) and associated drainline and drainfield located in TA-33, Area 6. Structure 33-121 receives wastewater from a toilet and sink in a wood laboratory building (Building 33-1) that supported experimental activities at Area 6. Structure 33-121 is constructed of corrugated iron and has a capacity of 500 gal. It is located approximately 50 ft southeast of Building 33-1. Effluent was discharged from structure 33-121 to a drainfield located approximately 20 ft east of the tank. The drainfield was constructed of a single row of vitrified-clay tiles installed in gravel approximately 5 ft below grade. The RFI work plan indicates there was a buried outfall from the drainfield in a side wash of Chaquehui Canyon. Land surface at the tank location slopes down to the east approximately 200 ft to a shallow drainage eroded into the bedrock that flows south. Building 33-1 was used from 1948 to 1955 to support nonexplosive initiator tests conducted at Area 6. It later was used as an office and for storage; it was abandoned in 1991. Although Building 33-1 is no longer used, it is still connected to utilities and the septic tank is considered active. No previous environmental investigations have been conducted at this site. The ER project conducted a Phase I RFI at SWMU 33-004(d) during 1993 to support VCA of structure 33-121 and to determine whether contaminants were present at the buried outfall and drainage. At the time of the Phase I RFI, the tank was dry and rusty so no liquid or sludge samples could be collected, as the RFI work plan specified. One surface sample and two subsurface samples were collected at each of three boreholes installed to depths of 7 ft to 8 ft. One borehole was placed adjacent to the tank and two were placed downslope along the line of drain tiles. Including duplicates, a total of six surface samples and six subsurface samples were collected at these three locations. Seven additional surface samples were collected at seven locations on the slope below

		the outfall and along the drainage. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, organic chemicals, and cyanide. The two subsurface samples from the borehole nearest the septic tank were resampled later and submitted for laboratory analysis for organic chemicals. No inorganic chemicals were detected above BVs. No radionuclides were detected above BVs or FVs. Four organic chemicals were detected: acetone, fluoranthene, phenanthrene, and pyrene; none was present above SALs. Cyanide was detected, but was below its SAL. Based on the results of the Phase I sampling and analysis, the RFI report recommended NFA for SWMU 33-004(d) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. Former SWMU 33-004(d) was recommended for NFA in the September 1995 permit modification request.
33-004(e)	Administratively Complete	SWMU 33-004(e) is an abandoned seepage pit that received overflow from a septic system serving an office building. Both the office building and seepage pit were removed in 1989. Documentation shows that no hazardous constituents were received by this seepage pit. SWMU 33-004(e) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
33-004(f)	Administratively Complete	SWMU 33-004(f) is a 1,000-gal. fiberglass holding tank that served a residential trailer. The tank received domestic sewage only. It was pumped periodically and the sewage was trucked and treated at the TA-3 sanitary wastewater treatment plant. SWMU 33-004(f) is appropriate for NFA because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
33-004(g)-00	In Progress	Consolidated SWMU 33-004(g)-00 consists of former SWMUs 33-004(g) and 33-007(c). The former SWMUs in this consolidated unit consist of a septic system, outfall, and firing areas. These former SWMUs are located in the northwest corner of TA-33, in an area adjacent to the west side of Main Site known as Area 6. The former SWMUs that comprise this consolidated unit are associated with past activities in Area 6, which included initiator tests conducted from 1949 through 1955. Former SWMU 33-004(g) is an outfall that discharged wastewater from Building 33-16. This outfall is located at the end of a VCP that runs west approximately 50 ft from the northwest corner of Building 33-16. The pipe daylights at the edge of a level, filled area above a drainage channel that leads to a tributary of Chaquehui Canyon. The ground surface below the outfall slopes down steeply to the to the tributary channel, which is approximately 70 ft lower than the outfall. A culvert under a roadway, approximately 60 ft southwest of the outfall, receives runoff from almost all the paved portion of Area 6. Building 33-16 was constructed in 1949 as a gun building for initiator tests and housed electronic equipment used to measure neutron production. Large-bore guns located at or around Building 33-16 were used to fire projectiles containing initiator test assemblies. Compressed air and propellants were used to fire these guns. These activities continued until 1955. In 1956, Building 33-16 was used to make and machine laminating materials that contained barium, lead, titanium, and zinc. The RFI work plan reports that releases of toxic fumes from Building 33-16 were noted in 1957. Building 33-16 later was used as a library and storage building and has been empty since 1991. No previous environmental investigations have been conducted at this site. Former SWMU 33-007(c) consists of inactive firing areas associated with the initiator tests conducted at Area 6. The firing areas include three firing pads and two catcher boxes. The pads were located near Building 33-16; two of the pads are on a level area excavated into a basaltic cinder cone. Guns (2-in.- to 5-in.-bore) were placed on the concrete pads and used to fire projectiles into the catcher boxes, which are located approximately 20 ft south of Building 33-16. The catcher boxes were approximately 6 ft x 6 ft, constructed of timbers, and filled with soil, wood chips, and vermiculite. The projectiles contained beryllium, polonium-210, and uranium. The RFI work plan reports that projectiles frequently cracked open, contaminating the pads and surrounding area with polonium-210. Contaminated areas on the guns and pads reportedly were painted with lead-based paint to fix surface contamination. No previous environmental

		investigations have been conducted at this site. The ER Project conducted a Phase I RFI at former SWMU 33-004(g) in 1993 to determine the presence or absence of contaminants associated with past discharges from the outfall. A surface-soil/sediment sample was collected at each of four locations at and downslope of the outfall. Downslope sampling locations were in sediment traps in the drainage channel that lead to the tributary channel and were approximately 100 ft apart. Another surface-soil sample was collected at the culvert discharge point. All samples were field-screened for radioactivity and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, organic chemicals, and HE. Inorganic chemicals above BV were barium, lead, nickel, silver, and zinc; all were below SALs. Uranium was the only radionuclide present above BV and was below its SAL. One organic chemical (bis[2-ethylhexyl]phthalate) was detected, but was also below its SAL. No HE was detected in any samples. Based on the results of the Phase I sampling and analysis, the RFI report recommended NFA for former SWMU 33-004(g) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. Former SWMU 33-004(g) was recommended for NFA in the September 1995 permit modification request. The ER Project conducted a Phase I RFI at former SWMU 33-007(c) in 1993 to determine the presence or absence of contamination from past operations at the firing areas. Twenty-two surface samples were collected from sixteen locations around the firing areas. All samples were field-screened for radioactivity and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, and HE. Three samples also were submitted for laboratory analysis for organic chemicals. Inorganic chemicals detected above BV were antimony, cadmium, chromium, lead, nickel, and zinc; none was above its SAL. Total uranium was the only radionuclide detected above BV or FV, but was not detected above its SAL. One organic chemical (2,4-dichlorophenoxyacetic acid,) was detected below its SAL. No HE was reported above detection levels. The ER project conducted additional RFI activities in 1994, including trenching through the catcher-box area. Chunks of uranium and several intact experimental devices were discovered during trenching. No external radiation was measured from the experimental devices. Eight soil samples were collected from six locations within the trench and one additional soil sample was collected adjacent to the trench. These samples were field-screened for radioactivity and HE and submitted for laboratory analysis for inorganic chemicals and uranium. Inorganic chemicals detected above BV were lead, nickel, silver, and zinc; none was above its SAL. Uranium was detected above BV and above its SAL. Based on the results of this sampling and analysis, the ER project recommended an EC to address the uranium in the catcher boxes and indicated that an EC plan would be prepared. Based on the presence of the uranium, the catcher boxes were fenced and posted as radioactive areas. The ER Project prepared and implemented a VCA plan for former SWMU 33-007(c) in 1996. As part of the VCA, the RESRAD model was used to establish VCA cleanup standards for uranium. A total of 202 cubic feet of soil was processed. During the separation and screening process a total of 56 experimental projectiles were discovered and removed to locked storage pending investigation to determine management and disposal methods. The projectiles were inventoried and screened in 1996-97 and separated into two groups: non-hazardous/non-radioactive, and radioactive. The radioactive projectiles were decontaminated and 37 of the 40 radioactive projectiles were confirmed clean based on radioactive screening. These projectiles screened at or below background levels for alpha and beta/gamma radioactivity and were disposed of as non-hazardous/non-radioactive waste. The remaining three projectiles were disposed of as radioactive waste. Soil and rocks were screened for gamma radiation and impacted soil was contained in collection bags, the remainder of the soil and rocks was returned to the catcher box area. To determine if the soil and area of the catcher boxes met cleanup goals, a total of 20 confirmatory samples were collected and analyzed for isotopic uranium. Results were generally

		above FVs, however the highest isotopic uranium results were less than 25% of the established cleanup levels. The site was recommended for NFA.
33-004(j)-00	In Progress	Consolidated SWMU 33-004(j)-00 consists of former SWMUs 33-004(j), 33-006(a), 33-007(b), 33-008(a), 33-010(c), 33-010(h), 33-011(c), and 33-014. The former SWMUs in this consolidated unit consist of an outfall, a firing site and associated debris area, gun-firing sites, a landfill, two surface disposal sites, a radioactive materials storage area, and an open-burning area. These former SWMUs are located in the south-central portion of TA-33 in an area known as South Site. South Site was used primarily from 1950 through 1956 to test initiators, and the former SWMUs that comprise this consolidated unit are generally associated with this use. Former SWMU 33-004(j) is an outfall at the end of a 4-in. steel pipe used to drain the entrance pad to Building 33-26. This building is the X-unit vault for the South Site firing pad and was used to house electronics used to control experiments conducted on the firing pad. These experiments were conducted from 1950 until 1955 or 1956, and the vault is now empty. The firing pad, which is part of former SWMU 33-006(a), was located above the vault. The vault was cut into the tuff and the entrance pad to the vault is located below grade. The drainline runs from the entrance pad, which is on the south side of Building 33-26, approximately 200 ft south to the outfall. The outfall is located in a small arroyo that drains south to Chaquehui Canyon. A culvert at the upper end of this arroyo, upstream of the outfall, also may have received runoff from the vault entrance pad. No hazardous materials are known to have been used in Building 33-26, but the entrance pad may have been contaminated with debris from the firing pad. No previous environmental investigations have been conducted at former SWMU 33-004(j). Former SWMU 33-006(a) consists of an inactive shot pad and the surrounding area that potentially is impacted by shrapnel and debris from implosion tests conducted at the pad. This area extends to a radius of approximately 1.1 mi around the shot pad. Operations at South Site began in June 1950 and continued until 1955 or 1956. The shot pad has been inactive since that time. The shot pad is approximately 40 ft in diameter and was constructed on top of Building 33-26, which housed electronic equipment associated with the tests. The tests conducted at former SWMU 33-006(a) involved initiator devices placed inside uranium shells and imploded with HE. The amount of HE used in each test ranged from 275 lb to 5000 lb. Before detonation, the assemblies and neutron detectors were placed inside copper cans, which provided electrical shielding. A wood shack was constructed over the entire apparatus. The detonations spread shrapnel, including copper and uranium, throughout the South Site valley. Two to three shots reportedly were made per week. Runoff from the firing pad flows to an arroyo, which drains south to Chaquehui Canyon. Previous environmental investigations at former SWMU 33-006(a) include a phoswich radiation survey conducted around the firing site in October 1985. Radiation measurements 50% above background were detected more than 348 ft from the shot pad; radiation levels near the shot pad were up to five times background. Former SWMU 33-007(b) consists of two inactive gun-firing sites. The first of these is located on the north end of South Site and includes a 125-ft-diameter half-circle berm (structure 33-43) that was constructed in August 1950 and is approximately 50 ft wide at the base x 12 ft high. West of structure 33-43, a level area approximately 100 ft x 100 ft was excavated into the tuff, creating 10-ft vertical embankments along the north and west perimeters. This area was used to test free-recoil weapons. Tests involved firing projectiles into the embankment face. A catcher box was located along the north side of the level area and the soil that filled the box was present at the edge of the embankment when the RFI was conducted in 1994. A 6-ft x 6-ft concrete pad gun mount (structure 33-85) was constructed near structure 33-43 in June 1952. Projectiles fired from the guns contained uranium, beryllium, titanium, and tritium, inside steel casings. The other gun-firing site was located on the west side of South Site and included a gun building (structure 33-25) and a berm (structure 33-63). The gun building housed 2-in.- to 4-in.-bore guns that were used to fire projectiles into structure

		33-63, which consisted of a mound of soil approximately 50 ft x 50 ft x 10 ft high. The projectiles used at this site contained uranium, beryllium, and tungsten. The RFI work plan stated that the number of projectiles recovered from structure 33-63 is not known. South Site activities were discontinued in the late 1950s. The site currently is used to support atmospheric physics measurements. Structures associated with these activities include a tower (structure 33-203) that was constructed in 1987 in the level area and two trailers (structures 33-201 and 33-202). Due to the presence of the tower, the level area west of structure 33-43 is now referred to as the "tower area." No previous environmental investigations have been conducted at former SWMU 33-007(b). Former SWMU 33-008(a) is a landfill that was created in 1984 as part of a major cleanup of the firing sites at TA-33. The landfill was created inside the horseshoe-shaped berm (structure 33-43) that is part of former SWMU 33-007(b). The landfill occupies an area approximately 50 ft x 60 ft and the fill is up to 8 ft thick. Former SWMU 33-008(a) was used to dispose of uncontaminated debris, including large items such as telephone poles, timbers, and railroad ties. All debris from the cleanup reportedly was screened for radioactivity and radioactively contaminated materials were sent to MDA G for disposal. Uncontaminated salvageable materials reportedly were removed from the site rather than deposited in the landfill. After disposal was complete, the landfill surface was graded so that water would not pond and the corners of the fill area were marked with metal posts. Samples were collected from the edge of the landfill and from the berm as part of the 1994 Phase I RFIs for former SWMUs 33-006(a) and 33-007(b). No inorganic chemicals or radionuclides above BV/FV or organic chemicals were detected in these samples. A geophysical survey of the landfill area conducted in 1994 indicated the presence of buried metal. Former SWMU 33-010(c) is a surface disposal area associated with the South Site firing site [former SWMU 33-006(a)]. Former SWMU 33-010(c) is a debris pile that is located approximately 230 ft south of the shot pad at former SWMU 33-006(a), adjacent to the asphalt road and parking lot south of Building 33-26. This site reportedly was used to dispose of debris from the implosion tests conducted at former SWMU 33-006(a) from approximately 1950 through 1955. The shot pad and surrounding area apparently were scraped to clean the area between shots and debris was disposed of at former SWMU 33-010(c). This debris included road gravel, copper and aluminum shrapnel, pieces of electronic cable, and pieces of wood. The disposal pile is approximately 50 ft x 30 ft x 2 ft to 4 ft deep. The debris is located at the edge of the arroyo that drains South Site. Previous environmental investigations at former SWMU 33-010(c) include DOE sampling in 1989 that involved collecting samples from the face of the disposal pile. Elevated levels of copper and uranium were detected in these samples. Former SWMU 33-010(h) consists of a surface disposal area located near the berm (structure 33-43) associated with former SWMU 33-007(b). This surface disposal area was discovered during an ER Project site reconnaissance during 1987. Discarded materials were scattered over the mesa surface and appeared to have been covered with a layer of soil. This disposal area is adjacent to the south side of structure 33-43 and occupies an approximately 100-ft x 100-ft area. The main drainage for South Site bounds the disposal area on the west and an unimproved road is located to the east. No historical information could be located concerning this site, its period of operation, and the nature of materials disposed therein. Materials previously observed at this site include operational debris, including cabling. Shrapnel from the nearby firing site [former SWMU 33-006(a)] also was observed. No previous environmental investigations have been performed that specifically addressed former SWMU 33-010(h). Former SWMU 33-011(c) is an area that was used to store leaking gaseous tritium reservoirs, known as blivits. This storage area is located in South Site between a berm (structure 33-63), gun building 33-25, and control building 33-24 and was used to store blivits after acceleration tests conducted at TA-33. Leaking reservoirs were placed in

		this area and allowed to discharge to the atmosphere. This practice reportedly was discontinued in 1972. When the RFI work plan was prepared, this site was highly disturbed and the remains of fencing that once surrounded the site were present. No previous environmental investigations have been conducted that specifically addressed former SWMU 33-011(c). Former SWMU 33-014 is a former open-burning area located on the crest of a low ridge on the east half of the South Site valley, about 300 ft north of the fence surrounding MDA E [SWMU 33-001(a)-99]. Although this site has been referred to as a burning pit, it actually is a U-shaped, bermed area that is large enough to accommodate a dump truck. The soil at the burning site reportedly has been scraped to bedrock and some bedrock is blackened from burning. This burning area was believed to have been established in 1950 when operations at South Site began, and may have served all of TA-33. Materials reportedly burned at this site are wood buildings, timbers, sawdust used in catcher boxes, and black powder. A geophysical survey of the area was conducted in 1989 to determine whether a pit actually was present. No indication of a pit was found. Aside from this geophysical survey, no previous environmental investigations have been conducted that specifically addressed former SWMU 33-014. The ER Project conducted a Phase I RFI at former SWMU 33-004(j) in 1994 to determine whether contaminants had been released at the outfall. Surface-sediment samples were collected from each of four locations: one at the outfall, one in the arroyo approximately 30 ft downslope of the outfall, and two at the culvert discharge point. All samples were field-screened for radioactivity and submitted for laboratory analysis for inorganic chemicals and radionuclides. The two samples collected at and downstream of the outfall also were submitted for analysis for organic chemicals. Copper was the only inorganic chemical detected above BV, but it did not exceed its SAL. Uranium was the only radionuclide detected above BV or FV, but it was below its SAL. No HE was detected in any samples. The results of the Phase I sampling and analysis were used to conduct a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for former SWMU 33-004(j) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report stated that this former SWMU would be included in ecological exposure units defined for both ecological screening and ecological risk assessments. The ER Project conducted a Phase I RFI at former SWMU 33-006(a) in 1994 to determine mean contaminant concentrations and distribution over this site. Forty-six surface samples were collected from 42 random locations across former SWMU 33-006(a). In addition, 11 surface samples were collected from 10 locations in the arroyo that receives runoff from the site. All samples were field-screened for radioactivity and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, and HE. In addition, two of the drainage samples were submitted for laboratory analysis for organic chemicals. Inorganic chemicals above BV were copper, lead, selenium, silver, and zinc. Copper was the only inorganic chemical present above its SAL. Uranium and cesium-137 were the only radionuclides present above BV or FV and only uranium was present above its SAL. Ten HE species were detected: amino-dinitrotoluenes, HMX, nitrobenzene, 2-nitrotoluene, 3-nitrotoluene, 4-nitrotoluene, RDX, TNT, tetryl, and trinitrobenzene. Only RDX was present above SALs. The RFI report noted, however, that 80% of the HE data were rejected during the data validation process. The results of the Phase I RFI were used to perform a human health risk-based screening assessment. The RFI report recommended limited Phase II resampling for HE. The results of a human health risk assessment conducted for copper and uranium contamination at nearby former SWMU 33-010(c) were used to assess the risk attributable to copper and uranium at this site. This assessment stated that the copper and uranium contamination at former SWMU 33-006(a) posed no unacceptable risk. The RFI report also stated that the need for a VCA to remove shrapnel would be evaluated and a VCA would be conducted, if appropriate. The RFI report stated that this former SWMU would be included in ecological exposure units defined for both

		ecological screening and ecological risk assessments. The ER project carried out an IA at former SWMU 33-006(a) from September though November of 1996. Debris was removed from Bandelier National Monument and from channels in Chaquehui Canyon within a hilf-mile radius of the implosion pad. IA activities were designed to prevent off-site migration of contaminated debris from Chaquehui Canyon to the Rio Grande and Cochiti Lake. This IA also removed the potential for visitor and worker exposure to experimental debris within Bandelier National Monument and the drainage around former SWMU 33-006(a). The ER Project conducted a Phase II RFI at former SWMU 33-006(a) in 1996 to better characterize potential HE contamination at this site in light of the data quality concerns about Phase I results. Surface samples were collected at each of eight locations that had been sampled in the Phase I RFI. All samples were submitted for laboratory analysis for HE. Eleven HE species were detected: dinitrobenzene, amino-dinitrotoluenes, HMX, nitrobenzene, 2-nitrotoluene, 3-nitrotoluene, 4-nitrotoluene, RDX, tetryl, trinitrobenzene, trinitrotoluene; none was present above SALs. The results of the Phase II sampling and analysis were used to conduct a human health risk-based screening assessment for HE. Based on this assessment and a similar assessment for other potential contaminants identified in the Phase I RFI, the Phase II RFI report recommended NFA for former SWMU 33-006(a) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The Phase II RFI report stated that ecological risk assessment of this site would be deferred until development of the ecological exposure unit methodology had been completed. The ER Project conducted a Phase I RFI at former SWMU 33-007(b) in 1994 to determine the presence or absence of contamination from past operations at the gun-firing areas. The field investigation focused on four areas: the tower area (i.e., level area and embankments), the catcher box on the north side of the tower area, structure 33-43, and structure 33-63. Eleven surface samples were collected from ten locations in the tower area and along the embankments. These samples were field-screened for radioactivity, organic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, organic chemicals, and HE. Yellow flakes, presumed to be uranium, were noted at one sampling location. Three locations were resampled in 1995 in response to concerns over the quality of results for inorganic chemical analyses. These samples were analyzed for inorganic chemicals. The two berms and catcher-box soil were sampled by trenching: 5 samples were collected at depths of 3 ft to 20 ft at structure 33-43; 21 samples were collected at depths of 0.08 ft to 27 ft at structure 33-63; and 5 samples were collected at a depth of 6 ft from the catcher-box soil. In addition, two surface-sediment samples were collected in drainage channels leading from structure 33-63. All these samples were field-screened for radioactivity and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, and HE. Pieces of uranium were observed at one location in structure 33-63. Sample analysis results for these four areas are summarized below. Tower area. Inorganic chemicals detected above BV were chromium, lead, and zinc; none was present above its SAL. Uranium was detected above BV and above its SAL. One organic chemical (di-n-butylphthalate) was detected, but there is no SAL for this chemical. HE reportedly was detected in surface samples. The RFI report stated that HE surface-sample results would be evaluated as part of former SWMU 33-006(a). Structure 33-43. No inorganic chemicals were detected above BV. RDX was the only HE detected at this site and it was not present above its SAL. Structure 33-63. Inorganic chemicals detected above BV were antimony, beryllium, chromium, nickel, selenium, silver, and zinc; only beryllium was present above its SAL. Uranium was detected above BV and above its SAL. DNT and HMX were the only HEs detected at this site and neither exceeded its SAL.

		Catcher-box soil. No inorganic chemicals were detected above BV. HE was not detected in any samples. The results of the Phase I RFI were used to conduct a human health risk-based screening assessment. This assessment did not address uranium contamination because uranium was not considered a RCRA-regulated contaminant. Based on this assessment, the RFI report recommended NFA for former SWMU 33-007(b) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report stated that this former SWMU would be included in ecological exposure units defined for both ecological screening and ecological risk assessments. The RFI report stated that a VCA plan would be prepared to address uranium contamination. The ER Project prepared a VCA plan in 1999 that proposed excavating the soil that comprises structure 33-63; treating this soil to remove uranium, using a segmented gate system; and restoring the site using the decontaminated soil. The ER Project conducted a Phase I RFI at former SWMU 33-008(a) during 1996 to determine the presence or absence of contamination in the landfill. The Phase I RFI for former SWMU 33-008(a) originally was to have been conducted in 1994 along with the Phase I RFIs for the other sites comprising consolidated unit 33-004(j)-00. The RFI work plan specified trenching into the landfill to determine whether the landfill contained hazardous materials. After the RFI work plan had been submitted, historical photographs of the TA-33 cleanup activities were discovered that indicated the presence of materials such as telephone poles and railroad ties within the fill. Based on the presence of these materials, the proposed trenching activities were judged unsafe and a revised work plan for former SWMU 33-008(a) was prepared. The 1996 Phase I RFI activities included drilling boreholes into the landfill at four randomly selected locations. The boreholes were drilled to the soil/tuff interface and ranged in depth from 5 ft to 12.5 ft. Four samples were collected from each borehole at various depth intervals. All samples were field-screened for radioactivity, organic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals, uranium, organic chemicals, and HE. Inorganic chemicals detected above BV were copper, silver, and zinc; none was present above its SAL. Uranium also was present above BV, but did not exceed its SAL. Twenty-one organic chemicals were detected: acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, carbazole, 4-chloroanaline, chrysene, dibenzo[a,h]anthracene, dibenzofuran, di-n-butylphthalate, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene. Five of these organic chemicals were present above SALs: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene. No HE compounds were detected above method limits. Most detected organic chemicals were believed to be associated with creosote-treated wood that had been disposed of in the landfill. The results of the Phase I RFI were used to conduct a human health risk-based screening assessment and human-health risk assessment. Based on these assessments, the RFI report recommended NFA for former SWMU 33-008(a) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report also stated that ecological risk assessment of this site would be deferred until development of the ecological exposure unit methodology had been completed. The ER Project conducted a Phase I RFI at former SWMU 33-010(c) in 1994 to determine the distribution of contaminants at and around the disposal pile. Six shallow (0.5-ft- to 1-ft-deep) soil samples were collected from five locations on the face of the disposal pile and six shallow (0.5-ft deep) sediment samples were collected from five locations in the drainage below the disposal pile. All samples were field-screened for radioactivity, organic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, and HE. Two sediment samples also were

		submitted for laboratory analysis for organic chemicals. Inorganic chemicals detected above BV were antimony, barium, copper, lead, selenium, silver, and zinc. Copper was the only inorganic chemical that exceeded its SAL. Uranium was detected above BV, as well as above its SAL. No organic chemicals were detected. The results of the Phase I RFI were used to conduct a human health risk-based screening assessment and human-health risk assessment. Based on these assessments, the RFI report recommended NFA with respect to human health risk because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report also stated that former SWMU 33-010(c) would be included in ecological exposure units defined for both ecological screening and ecological risk assessments. Although NFA was recommended for former SWMU 33-010(c), the New Mexico Water Quality Division had identified concerns with about contaminant migration to surface waters. These concerns related to the presence of elevated uranium levels and the site's location on the side of a major drainage leading to Chaquehui Canyon. Thus, the RFI report stated that a VCA plan to stabilize the site and prevent debris from entering the drainage would be considered. The ER Project prepared a VCA plan for former SWMU 33-010(c) in 1999 that proposed excavating debris and contaminated soil; treating the soil and debris to remove uranium, using a segmented gate system; and restoring the site using decontaminated soil. The ER Project prepared and implemented a VCA plan for former SWMUs 33-007(b) and 33-010(c) and AOC C-33-003 in 1999. As part of the VCA, the RESRAD model was used to establish VCA cleanup standards for uranium. At AOC C-33-003, fill material was excavated until native soil or tuff was encountered. A total of 408.5 cu yd of fill material was excavated. Radiation surveys of the excavated areas showed no readings greater than 2 times background. Confirmation samples were collected to verify that cleanup levels had been achieved. Confirmation samples consisted of a surface and subsurface sample collected at each of four locations at each site. These samples were submitted for laboratory analysis for inorganic chemicals, isotopic uranium, and organic chemicals. Two additional samples were collected from the drainage at the site near the water tower (there is no drainage at the other site). These samples were submitted for laboratory analysis for inorganic chemicals and isotopic uranium. The excavated material was transported to an SGS treatment plant, where radioactive materials were separated from the fill. A total of 1.45 cu yd of contaminated fill was separated and disposed of as low-level radioactive waste. Three samples of the treated fill were collected to verify decontamination. Two of these samples were submitted for laboratory analysis for inorganic chemicals, total uranium, tritium, and organic chemicals. The other sample was submitted for laboratory analysis for isotopic uranium and organic chemicals. The decontaminated fill then was returned to the site and the site was restored and revegetated. Inorganic chemicals detected above BV in the confirmation samples from the excavated areas were antimony, barium, calcium, cobalt, copper, lead, magnesium, nickel, and selenium. Radionuclides detected above BV/FV in the confirmation samples from the excavated areas were tritium, uranium-234, and uranium-238. Total uranium concentrations were below the VCA cleanup levels. Nineteen organic chemicals were detected in confirmation samples from the excavated areas: anthracene, Aroclor-1254, Aroclor-1260, benzene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, bis[2-ethylhexyl] phthalate, chrysene, di-n-butyl phthalate, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene, pyrene, toluene, and trichloroethene. The VCA report did not compare sampling results to SALs or use the data to perform human health risk-based screening assessments. The VCA report stated that further work at this AOC would be addressed as part of the Chaquehui Canyon aggregate. The ER Project conducted a Phase I RFI at former SWMU 33-010(h) in 1994 to determine the presence or absence of contamination at this site. Prior to sampling, a geophysical survey was conducted to determine the presence or absence of subsurface anomalies. None was identified. A trench was dug across the site and no

		debris was encountered. Radiation surveys during trenching did not identify elevated radioactivity. Two soil samples were collected from the trenched area at random locations. These samples were field-screened for radioactivity, organic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, organic chemicals, and HE. No inorganic chemicals or radionuclides were detected above BV or FV. No organic chemicals were detected. HMX was the only HE detected and was not present above its SAL. Based on the results of the Phase I sampling and analysis, the RFI report recommended NFA for former SWMU 33-010(h) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report stated that this former SWMU would be included in ecological exposure units defined for both ecological screening and ecological risk assessments. The ER Project conducted a Phase I RFI at former SWMU 33-011(c) during 1994 to determine the presence or absence of contamination at this site. Three surface samples were collected from two locations. Each sample was field-screened for radioactivity and submitted for laboratory analysis for radionuclides. Tritium was detected, but was below its SAL. Based on the results of the Phase I sampling, the RFI report recommended NFA for former SWMU 33-011(c) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report also stated that this former SWMU would be included in ecological exposure units defined for both ecological screening and ecological risk assessments. The ER Project conducted a Phase I RFI at former SWMU 33-014 during 1994 to determine the presence or absence of contamination at the site. Five surface samples were collected from five locations at the burning area, including near the blackened bedrock. These samples were field-screened for radioactivity and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, and HE. Two of these samples also were submitted for laboratory analysis for organic chemicals. Inorganic chemicals detected above BV were cadmium, mercury, and silver; none was present above its SAL. Uranium was present above BV and also exceeded its SAL. HE was detected, but all HE analytical results for this site were rejected during data validation. No organic chemicals were detected. The results of the Phase I sampling were used to conduct a human health risk-based screening assessment. Based on the results of this assessment, the RFI report recommended NFA for former SWMU 33-014 because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report noted that former SWMU 33-014 is located within the boundaries of former SWMU 33-006(a) and that the uranium detected above SAL at former SWMU 33-014 would be addressed as part of the widespread uranium contamination associated with former SWMU 33-006(a). The RFI report also stated that former SWMU 33-014 would be included in ecological exposure units defined for both ecological screening and ecological risk assessments.
33-004(k)	In Progress	SWMU 33-004(k) consists of a suspected outfall in the East Site area of TA-33. The RFI work plan identified SWMU 33-004(k) as an outfall associated with drains in a bunker (structure 33-87) that was constructed in 1955 to support firing experiments in East Site. According to an historical engineering drawing, a drainline ran southeast from structure 33-87 to the outfall. This drainline reportedly consisted of 54 ft of 8-in.-diameter cast-iron pipe and 71 ft of 8-in.-diameter VCP. Structure 33-87 and part of the reported path of the drainline are covered by a soil berm. Structure 33-87 was used to house electronic equipment and there is no recorded use of radioactive materials in this building. The RFI work plan indicated that photo processing may have occurred, however. The firing tests that structure 33-87 supported were conducted until the early 1970s. No previous environmental investigations have been conducted at this site. The ER project conducted Phase I RFI activities at SWMU 33-004(k) in 1994, 1995, and 1996 to determine the presence or absence of contamination associated with this site. Initial RFI activities consisted of geophysical surveys to locate the drainline and

		outfall. In 1994, magnetic and electromagnetic surveys were conducted at the location of the drainline as indicated on the historical engineering drawing. These surveys did not indicate the presence of the pipe. In 1995, a ground-penetrating radar survey conducted in this area identified two anomalies at the southeast corner of structure 33-87. Eleven trenches were dug to bedrock around the locations of the anomalies and no evidence of a pipe or pipe trench was found. In 1996, the inside of structure 33-87 was inspected to identify the locations of the floor drains noted on the historical engineering drawing. No floor drains were identified in the building. A toilet and sink were present, but they are connected to a septic system north of the building [SWMU 33-004(c)]. In the Phase I RFI for this septic system [SWMU 33-004(c)] beryllium was the only chemical detected above SALs. Based on the results of the Phase I RFI activities for SWMU 33-004(k), the RFI report recommended NFA because the SWMU could not be located or may have never existed.
33-004(l)	Administratively Complete	PRS 33-004(l) is outfall TA-33-89. A perforated, corrugated metal pipe exits TA-33-89 and runs south to an outfall on the rim of White Rock Canyon within PRS 33-010(b). TA-33-89 was completed in June 1955. Implosion testing activity never occurred at East Site, so the unit was never used. There is no record of radioactive or hazardous materials being used or stored in this building. Nor, was shot debris scattered over this site. TA-33-89 is not in use at this time.
33-004(m)	In Progress	SWMU 33-004(m) consists of an active septic tank (structure 33-179) and associated leach field located in the TA-33 NRAO site. Structure 33-179 receives wastewater from a support building (Building 33-178), which was constructed in 1987 for the radiotelescope located at the NRAO site. Structure 33-179 has a capacity of 1000 gal. It and the leach field are located outside the northeast corner of the fenced compound that contains Building 33-178 and the radiotelescope. Because the soil is shallow at this site, the tank excavation is in bedrock and bedrock is exposed downslope of the leach field area. There is no documented past use of hazardous or radioactive materials within Building 33-178. Technicians assigned to the facility, however, indicated solvents may have been used to clean equipment and were disposed of in the septic system. SWMU 33-004(m) operates under NMED Permit SF-89032. No previous environmental investigations have been conducted at this site. The ER project conducted a Phase I RFI at SWMU 33-004(m) in 1994 to determine the level of solvent contamination in the tank and whether solvents had escaped from the tank. One sample of liquid and one sample of sludge were collected from the septic tank. Four boreholes were drilled near the septic tank and drainline and eleven surface and subsurface (up to 4 ft deep) samples were collected from these boreholes. All samples were field-screened for organic chemicals and submitted for laboratory analysis for organic chemicals. Five organic chemicals (acetone, ethylbenzene, toluene, 1,3,5-trimethylbenzene, and xylenes) were detected in the sludge sample, though none of these exceeded SALs for soils. Two of these organic chemicals (acetone and toluene) also were detected in the liquid sample, but did not exceed SALs for water. No organic chemicals were detected in the soil samples. The results of the Phase I sampling and analysis were used to conduct a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 33-004(m) because the site has been characterized and available data indicate contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report stated that this SWMU would be included in ecological exposure units defined for both ecological screening and ecological risk assessments.
33-004(n)	Administratively Complete	
33-005(a)-00	In Progress	Consolidated SWMU 33-005(a)-00 consists of former SWMUs 33-005(a), 33-005(b), 33-005(c), and 33-011(a). The former SWMUs in this consolidated unit consist of a septic system, drainlines, and drum storage area. These former SWMUs are geographically located in the Main Site area of TA-33. All are associated with managing liquid and solid wastes generated at former Building 33-21. Building 33-21 was constructed in 1950 and originally housed gloveboxes used to section projectiles used for initiator tests. These projectiles contained uranium, beryllium, and polonium-210.

		Former Building 33-21 later was used for other experiments that involved plutonium. An accidental release of a mixture of plutonium and beryllium powders in April 1960 contaminated the entire facility, which was decontaminated within weeks, but was never reused. In 1974, the building, septic system, drains, and leach field were removed and the entire area was decontaminated and restored. Soils containing gross alpha radioactivity above 20 pCi/g were excavated. Soil over much of the site was removed down to bedrock. Radioactive debris and soil were disposed of at MDA G. Excavations were backfilled with clean soil and revegetated. Former SWMU 33-005(a) consists of a former septic system that served restrooms and change-room lavatories in Building 33-21. Drainlines from these sources discharged to a manhole (structure 33-74), which drained to a septic tank (structure 33-32). The outfall for the septic system was reported to be a few feet south of the septic tank. No previous environmental investigations have been conducted at former SWMU 33-005(a). Former SWMU 33-005(b) consists of a drainline connected to a sink, floor drain, and safety shower in the counting room in Building 33-21. No details concerning the quantities or characteristics of wastes associated with this former SWMU were provided in the RFI work plan. The drainline apparently discharged to an outfall located south of Building 33-21. No previous environmental investigations have been conducted at former SWMU 33-005(b). Former SWMU 33-005(c) was a drainline that served sink, shower, and glovebox drains in the process and hot-change rooms in Building 33-21. This drainline discharged to a leach field located approximately 50 ft south of the building. This line was removed during the 1974 removal activities and 30 ft of trench reportedly was found to be contaminated, resulting in removal of 8.2 cu ft of contaminated soil. Other than characterization activities to verify removal of contaminated soil, no previous environmental investigations have been conducted at former SWMU 33-005(c). Former SWMU 33-011(a) is a former drum storage area at the former location of structure 33-21. This area appears to be within a gravel area that is located west of West Road, just south of the former location of Building 33-21. This area occupied 0.25 acre and reportedly was used to store 55-gal. drums of waste oil before they were recycled. These drums were stored on pallets or directly on the soil and were observed in an aerial photograph taken in 1987. The drums have since been removed. When the Phase I RFI was conducted in 1993, former SWMU 33-011(a) was being used to store drilling equipment, including drilling pipe. No previous environmental investigations have been conducted at former SWMU 33-011(a). The ER Project conducted a Phase I RFI at former SWMU 33-005(a) in 1993 to determine whether contamination had resulted from past use of the septic system. Two surface and one shallow (2-ft-deep) subsurface sample were collected from a borehole drilled at the former structure 33-32 location, as determined from engineering drawings. Because soil backfill at the site was thinner than anticipated, the depth of the borehole was less than specified in the RFI work plan. Surface samples also were collected at the former location of the outfall and at two locations in the drainage downslope of the outfall. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. No inorganic chemicals were detected above BV. Uranium, plutonium-239, and cesium-137 were detected above BV and/or FV, but none was present above its SAL. Fifteen organic chemicals were detected: acetone, acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene. Five of these organic chemicals were above SALs: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, and indeno[1,2,3-cd]pyrene. Based on these results, the RFI report recommended NFA for former SWMU 33-005(a) because the site has been

		characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. This recommendation did not consider the organic chemicals detected at this site. These organic chemicals were believed to have originated from storage activities at former SWMU 33-011(a) and were considered in the evaluation for that site. The ER Project conducted a Phase I RFI at former SWMU 33-005(b) in 1993 to determine whether contamination had resulted from past waste discharges. Surface samples were collected at the former location of the outfall, as determined from engineering drawings and topography; at one location in the drainage downslope of the outfall; and at one location upslope of the outfall. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. No inorganic chemicals were detected above BV. Plutonium-239 was detected above FV, but did not exceed its SAL. Twenty-one organic chemicals were detected: acenaphthene, acenaphthalene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, dibenzofuran, dibenzo[a,h]anthracene, 2,4-dimethylphenol, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, 2-methylnaphthalene, 2-methylphenol, 4-methylphenol, naphthalene, phenanthrene, and pyrene. Seven of these organic chemicals were present above SALs: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene. Based on these results, the RFI report recommended NFA for former SWMU 33-005(b) because the site has been characterized and available data indicate contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. This recommendation did not consider the organic chemicals detected at this site. These organic chemicals were believed to have originated from storage activities at former SWMU 33-011(a) and were considered in the evaluation for that site. The ER Project conducted a Phase I RFI at former SWMU 33-005(c) in 1993 to determine whether contamination had resulted from past waste discharges. Nine surface and four subsurface samples were collected from four boreholes. One borehole was drilled at the location of the former leach field, as determined from engineering drawings and site topography, and the others were at random locations in the vicinity of the leach field. Three boreholes were drilled to a depth of 2-ft and one to a depth of 5-ft. Because the soil backfill was thinner than anticipated, the depth of the boreholes was less than specified in the RFI work plan. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Silver was the only inorganic chemical detected above BV, but did not exceed its SAL. Plutonium-238 was detected above FV, but did not exceed its SAL. Seven organic chemicals were detected: acetone, butyl benzyl phthalate, di-n-butyl phthalate, fluoranthene, 4-isopropyltoluene, phenanthrene, and pyrene. None of these organic chemicals was present above its SAL. Based on these results, the RFI report recommended NFA for former SWMU 33-005(c) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The ER Project conducted a Phase I RFI at former SWMU 33-011(a) in 1993 to determine whether contamination had resulted from past waste-storage activities. Four surface samples were collected from three drum-storage locations indicated by the 1987 aerial photograph. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for organic chemicals. One sample also was submitted for laboratory analysis for inorganic chemicals and radionuclides. No inorganic chemicals or radionuclides were detected above BV or FV. Seventeen organic chemicals were detected: anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, p,p'-DDE, p,p'-DDT, dieldrin, endosulfan I, endosulfan II, endrin aldehyde, fluoranthene,

		indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene. Four of these organic chemicals were present above SALs: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and indeno[1,2,3-cd]pyrene. Based on the types of organic chemicals (i.e., PAHs) detected at the former SWMUs in consolidated unit 33-005(a)-00, the RFI report indicated that the source of these organic chemicals was more likely the storage activities at former SWMU 33-011(a) than the liquid-waste disposal activities at former SWMUs 33-005(a), 33-005(b), and 33-005(c). As a result, all organic chemicals detected in this consolidated unit were considered to be from former SWMU 33-011(a) and were used to conduct a human health risk assessment for former SWMU 33-011(a). The results of this risk assessment indicated that resultant risks likely would be acceptable under recreational land-use scenarios, but might not be acceptable under residential-use scenarios. The RFI report indicated that a final decision on future land use of TA-33 has not been made. If former SWMU 33-011(a) is dedicated to recreational use, the RFI report stated that no additional site characterization or remediation would be considered necessary.
33-006(b)-00	In Progress	Consolidated SWMU 33-006(b)-00 consists of former SWMUs 33-006(b), 33-007(a), 33-008(b), and 33-010(a). The former SWMUs in this consolidated unit consist of gun-firing sites, a landfill, and a surface disposal site. These former SWMUs are located at the east end of TA-33 in an area known as East Site; East Site is on a mesa between White Rock and Ancho Canyons. The former SWMUs in this consolidated unit are associated with initiator tests that were conducted at East Site. Former SWMU 33-006(b) is a former gun-firing site that consists of two inactive shot pads and associated berms that were used to conduct tests of gun-type initiators. The shot pads are 15-ft x 15-ft concrete gun mounts (structures 33-97 and 33-98), where guns were used to fire test projectiles. The shot pads are located in the centers of two adjacent, crescent-shaped berms constructed of soil and tuff fragments. The berms are aligned roughly east-west and each berm is approximately 200 ft wide x 10 ft high. Guns mounted on the shot pads were used to fire uranium projectiles containing beryllium, polonium-210, and cobalt-60 into the berms. The projectiles then were recovered for investigation. Neutron detectors were used in initiator tests and some may have contained liquid organic scintillation fluids. Operations at East Site began in June 1955. The operating dates of former SWMU 33-006(b) were not reported, but firing tests at East Site were conducted until 1972. A general cleanup of the site was conducted in 1984. No previous environmental investigations have been conducted at former SWMU 33-006(b). Former SWMU 33-007(a) consists of an inactive gun-firing site used for gun-type initiator tests. This former SWMU occupies an area approximately 550 ft wide x 150 ft long and is located adjacent to and south of former SWMU 33-006(b). Two concrete pad gun mounts (structures 33-116 and 33-135) were located at the west end of the site. Projectiles were fired from these guns into two large (10 ft wide x 10 ft high x 80 ft long) catcher boxes (structures 33-118 and 33-136) and recovered. The catcher boxes were located at the east end of the site and were filled with sawdust, vermiculite, and sand. The projectiles were constructed of uranium and contained beryllium, polonium-210, and cobalt-60. In some tests, projectiles were x-rayed as they went past a flash x-ray unit in Building 33-151. A 25-ft x 35-ft x 8-ft metal box filled with sand, apparently a catcher box, was located adjacent to Building 33-151. A 1987 aerial photograph shows an additional catcher box on a small berm at the west end of the site. Some tests may have used neutron detectors that contained organic scintillation fluids. A projectile reportedly disintegrated in a gun barrel during a test in 1962 and most fragments of the projectile, including a cobalt-60 source, were never recovered. Operations at East Site began in June 1955. The operating dates of former SWMU 33-007(a) were not reported, but firing tests at East Site were conducted until 1972. A general cleanup of the site was conducted in 1984. No previous environmental investigations had been conducted at former SWMU 33-007(a). Former SWMU 33-008(b) consists of a landfill that was created in 1984 as part of a major cleanup of the TA-33 firing sites. The landfill was created between the firing pads

		at the west end of former SMWU 33-007(a) and Building 33-151. The site of the landfill is believed to have been a depression that was created by excavations to provide material used to construct nearby firing-site berms. Former SWMU 33-008(b) was used to dispose of uncontaminated debris, including large items such as telephone poles, timbers, and railroad ties. All debris from the cleanup reportedly was screened for radioactivity, and radioactively contaminated materials were sent to MDA G for disposal. Uncontaminated, salvageable materials reportedly were also removed from the site rather than deposited in the landfill. After disposal was complete, the surface of the landfill was graded so that water would not pond and the corners of the fill area were marked with metal posts. No previous environmental investigations have been conducted that specifically addressed former SWMU 33-008(b). Former SWMU 33-010(a) consists of a surface disposal area located on a cliff ledge southeast of former SWMU 33-007(a) at the edge of White Rock Canyon. Much of the debris disposed of at this site was associated with the initial clearing of East Site and included dead tree trunks, rocks, and scraped earth. Other debris, such as metal scrap, timbers, and plastic foam, was associated with site operations. The period of operation for this disposal site was not reported, but firing-site operations at East Site were conducted from 1955 through 1972. Debris reportedly was scattered at the rim of the canyon and within 15 ft below the rim. No previous environmental investigations have been conducted at former SWMU 33-010(a). The ER Project conducted a Phase I RFI at former SWMU 33-006(b) in 1994 to determine whether contamination was present as a result of past firing tests. A geophysical survey was conducted over the berms in an attempt to locate buried metallic objects. Numerous anomalies were detected. Subsequent trenching indicated that the anomalies were associated with large pieces of buried tuff. The only metallic object identified appeared to be a piece of an artillery gun breech. A surface-soil sample was collected at each of two locations near each firing pad (four samples total). Soil samples also were collected from a 5-ft-deep trench cut into each berm at a location directly in front of each gun mount. Three samples were collected from the east trench and six from the west trench. Three of the samples from the west trench reportedly were collected from the areas around metal projectiles found in the berm. All samples were field-screened for radioactivity, organic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, organic chemicals, and HE. Inorganic chemicals above BV were arsenic, lead, silver, and zinc. Arsenic was the only inorganic chemical present above its SAL. Uranium was the only radionuclide present above BV, but did not exceed its SAL. Three organic chemicals (bis[2-ethylhexyl]phthalate, fluoranthene, and phenathrene) were detected, but none exceeded its SAL. HMX was the only explosive detected, and was not above its SAL. Approximately 30% of the HE analytical results were rejected during data validation because holding times were exceeded. These results then were subject to focused validation. The results of the Phase I RFI were used to conduct a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for former SWMU 33-006(b) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report stated that this SWMU would be included in ecological exposure units defined for both ecological screening and ecological risk assessments. The ER Project conducted a Phase I RFI at former SWMU 33-007(a) in 1994 to determine whether contamination was present from past operations at the gun-firing areas. Although not part of the Phase I RFI, an aerial radiological survey of the entire LANL site was conducted in 1994. Special attention was given to attempting to locate the cobalt-60 source from the 1962 release. This survey did not identify radiological anomalies in the East Site vicinity. The Phase I RFI included a geophysical survey of the embankment at the west end of the site at the location of the catcher box identified in the 1987 aerial photograph. Two anomalies not associated with surface structures were detected, but no objects were identified during trenching. Twenty-eight surface

		samples were collected from 27 randomized grid locations within former SWMU 33-007(a). In addition, four surface-sediment samples were collected from three locations north and south of the culvert that drains the central part of the area, and three soil samples were collected from a trench in the berm at the west end of the site. All samples were field-screened for radioactivity and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides (except sediment samples), organic chemicals, and HE (except sediment samples). Inorganic chemicals detected above BV were antimony, chromium, lead, mercury, and silver; none was present above its SAL. Uranium was detected above BV and above its SAL. Seventeen organic chemicals were detected: acenaphthene, anthracene, benzoic acid, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, bis[2-ethylhexyl]phthalate, chrysene, p,p'-DDT, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene. Four of these organic chemicals (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and indeno[1,2,3-cd]pyrene) were present above SALs. Six explosives were detected: dinitrotoluene, HMX, 2-nitrotoluene, 3-nitrotoluene, RDX, and tetryl; none was detected above its SAL. Approximately 10% of the HE analytical results were rejected during data validation because holding times were exceeded. These results then were subject to focused validation. The results of the Phase I RFI were used to conduct a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for former SWMU 33-007(a) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report stated that this SWMU would be included in ecological exposure units defined for both ecological screening and ecological risk assessments. The ER Project conducted a Phase I RFI at former SWMU 33-008(b) in 1996 to determine the presence or absence of contamination in the landfill. The Phase I RFI for former SWMU 33-008(b) originally was to have been conducted in 1994 along with the Phase I RFIs for the other sites that comprise consolidated unit 33-006(b)-00. The RFI work plan specified trenching into the landfill to determine whether the landfill contained hazardous materials. After the RFI work plan had been submitted, historical photographs of the TA-33 cleanup activities were discovered that indicated the landfill contained materials such as telephone poles and railroad ties. Based on the presence of these materials, the proposed trenching activities were judged unsafe and a revised work plan for former SWMU 33-008(b) was prepared. The 1996 Phase I RFI activities included drilling boreholes into the landfill at six locations. The boreholes were drilled approximately 3 ft into the tuff and ranged in depth from 4.5 ft to 7.5 ft. One tuff sample and two or three soil samples were collected from each borehole for a total of 22 samples. All samples were field-screened for radioactivity, organic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals, uranium, and organic chemicals. Inorganic chemicals detected above BV were chromium, copper, lead, nickel, and selenium; none was present above SALs. Uranium also was present above BV, but did not exceed its SAL. Twenty-four organic chemicals were detected: acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, benzoic acid, bis[2-ethylhexyl]phthalate, butyl benzyl phthalate, chrysene, dibenzo[a,h]anthracene, dibenzofuran, 2,4-dichlorophenol, 2,4-dinitrophenol, di-n-octylphthalate, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, pentachlorophenol, phenanthrene, pyrene, and 2,4,5-trichlorophenol. Five of these organic chemicals were present above SALs: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenzo[a,h]anthracene, and pentachlorophenol. Most of the detected organic chemicals were believed to be associated with creosote-treated wood that had been disposed of in the landfill. The results of the Phase I RFI were used to conduct a human health risk-based screening assessment and human-health risk assessment. Based on these assessments, the RFI report recommended NFA for former SWMU 33-008(b) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report indicated that ecological risk assessment of this site would be deferred until

		development of the ecological exposure unit methodology had been completed. The ER Project conducted a Phase I RFI at former SWMU 33-010(a) during 1994 to determine the distribution of contaminants around the disposal area. Five surface soil samples were collected from five locations on the face of the slope below the debris area. All samples were field-screened for radioactivity and submitted for laboratory analysis for inorganic chemicals and radionuclides. Inorganic chemicals detected above BV were copper, lead, mercury, and zinc. Lead was the only inorganic chemical that exceeded its SAL. Uranium was the only radionuclide detected above BV or FV, but was below its SAL. The results of the Phase I RFI were used to conduct a human health risk-based screening assessment. The results of this assessment indicated no risk to human health or the environment. The RFI report stated that a VCA would be conducted at former SWMU 33-010(a) to remove debris. The ER Project prepared a VCA plan in 1995 and the VCA was implemented in 1995. Debris was field-screened for radioactivity and inorganic chemicals to determine whether the debris would be managed as nonhazardous/nonradioactive, hazardous, or radioactive waste. Natural materials and debris smaller than 3 in. in diameter were not removed unless radioactivity was above background. A total of 8 cu yd nonhazardous/nonradioactive debris and 0.2 cu yd radioactive debris was removed. No confirmatory samples were collected because no soil was removed.
33-008(c)	In Progress	AOC 33-008(c) is a suspected landfill located along the east side of the TA-33 Main Site area. This landfill originally was not included in the RFI work plan for TA-33, but was discovered during a site reconnaissance in 1996. During that reconnaissance, empty and partially filled chemical bottles were noticed near a culvert exit. These bottles appeared to have been exposed by recent erosion around the culvert. Other wastes, including machine turnings, cable, and general trash, were present in the area and in the channel downstream of the culvert. The culvert passes below the security fence on the east side of Main Site and is located approximately 3 ft below grade. The culvert and the fill above it are located in a drainage channel that leads to a tributary of Chaquehui Canyon. Fill appeared to extend approximately 20 ft to 30 ft north of the culvert and to an unknown distance south of the culvert. An additional potential disposal site approximately 250 ft north of the culvert also was identified. This site was a long, narrow (approximately 3-ft-wide) trench. A linear feature at the location of this trench was noted on a historical aerial photograph taken in 1958. A small asphalt pad was noted at the west end of the trench and a partially full bottle was present on the ground surface. No previous environmental investigations have been conducted that specifically addressed AOC 33-008(c). This site is located within the boundaries of former SWMU 33-017 in consolidated unit 33-004(a)-00. Surface soil and sediment samples were collected near AOC 33-008(c) in 1993 as part of the Phase I RFI for former SWMU 33-017. Several inorganic chemicals and tritium were present above BV/FV, but did not exceed SALs. The ER Project conducted a Phase I RFI at AOC 33-008(c) in 1996 to determine whether contamination was present in the suspected disposal areas. Geophysical surveys that used metal detection and electromagnetic induction were conducted at the suspected fill areas in June 1996. The survey of the suspected landfill areas near the culvert indicated the presence of shallow metallic debris, but did not suggest the presence of a landfill or of significant buried debris. The survey of the trench area identified no geophysical anomalies. A SAP was prepared in July 1996 that specified installation of four boreholes in the suspected fill area near the culvert, four boreholes in a suspected fill area downstream of the culvert, and two boreholes in the suspected trench north of the culvert. The SAP also specified that samples would be collected in the fill and at the soil-tuff interface. Sediment samples also would be collected at four locations in the drainage downstream of the culvert. All samples would be analyzed for inorganic chemicals, total uranium, and organic chemicals. March 1997 correspondence from the ER Project to NMED indicated that this SAP was implemented in September 1996; three inorganic chemicals were detected above SALs: copper, lead, and mercury. The correspondence stated that a VCA was planned for 1999 and that temporary erosion controls had been placed at the site.

		A Best Management Plan was written and implemented in 1999. The objective of the Best Management Plan was to reduce the amount of potential exposure of contamination that could pose a significant threat to human health or the environment. All visible debris was removed from the watercourse an two sediment catchments were installed to prevent further migration of potential contamination.
33-009	In Progress	SWMU 33-009 is a former surface disposal site located in Area 6, which is adjacent to the west side of Main Site. The disposal site includes an area approximately 100 ft long x 75 ft wide that has been leveled into the side of a basaltic cinder cone, as well as an area that extends down the slope of the cinder cone approximately 80 ft. This slope continues below the disposal site until it reaches a tributary of Chaquehui Canyon. SWMU 33-009 was believed to have been constructed to dispose of debris from a nearby gun-firing site [former SWMU 33-007(c)]. This gun-firing site operated from 1949 until 1955. After the firing tests ceased, SWMU 33-009 received various debris from TA-33 operations, including metal wastes, light bulbs, old tires, and drums. In 1960, the site reportedly received uranium chips from Building 33-113, which is located in TA-33 Main Site. From 1967 until 1974, the site served as a storage and disposal site for defective electrical capacitors. In December 1974, the site was partially cleaned up as part of general cleanup activities conducted at TA-33. Several dump-truck loads of material were taken to MDA G for disposal. A radiation survey reportedly was performed after the cleanup; radiation above background was not detected. Not all material was removed in 1974, however, and broken glass and chunks of metal still were present when the RFI was conducted in 1993. No previous environmental investigations have been conducted at SWMU 33-009. The ER Project conducted a Phase I RFI at SWMU 33-009 in 1993 to determine the presence or absence of contamination from past disposal activities. A geophysical survey that used magnetic and electromagnetic methods detected no anomalies that could not be attributed to site features. Seven surface samples were collected from six locations in the former disposal area and surface samples were collected from each of four locations in the drainage channel downslope of the disposal area. All samples were field-screened for radioactivity and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. The four samples from the drainage channel also were submitted for HE analysis. Inorganic chemicals detected above BV were nickel and zinc; neither exceeded its SAL. Uranium was detected above BV, but below its SAL. One organic chemical (the PCB Aroclor-1254) was detected. A spent capacitor reportedly was discovered in 1994 on the surface of the lower slope of the disposal area. A soil sample collected at this location contained Aroclor-1254. Based on the results of the Phase I RFI, the RFI report recommended Phase II sampling to determine the extent of PCB contamination. In addition, geophysical surveys were recommended to determine whether the site contains additional spent capacitors.
33-010(b)	In Progress	SWMU 33-010(b) consists of a canyon-side disposal area on a narrow ledge below a 30-ft cliff on the southern edge of East Site in TA-33. This ledge is approximately 10 ft to 15 ft wide. A slope extends below the ledge into White Rock Canyon. Wastes disposed of at this site are believed to have been operation and construction debris. Materials observed at the site in the past include timbers and asbestos boards. When the Phase I RFI was conducted in 1994, a large (10-ft-diameter) pile consisting of metal turnings and strapping strips was present at the site. The period of operation for this disposal site was not reported, but firing-site operations at East Site were conducted from 1955 through 1972. A firing-site bunker (structure 33-87) constructed in 1955 is located approximately 300 ft north of SWMU 33-010(b). No previous environmental investigations have been conducted at SWMU 33-010(b). The ER Project conducted a Phase I RFI at SWMU 33-010(b) in 1994 to determine the distribution of contaminants around the pile of metal turnings. Three surface-soil samples were collected at the base of the metal pile on the face of the slope below the debris area. All samples were field-screened for radioactivity and submitted for laboratory analysis for inorganic chemicals and radionuclides. Inorganic chemicals

		detected above BV were cadmium, chromium, lead, mercury, nickel, and zinc; only cadmium exceeded its SAL. Radionuclides present above BV/FV were uranium and cesium-137; only uranium exceeded its SAL. The results of the Phase I RFI indicated that contaminants were being released from the metal pile, with potential for migration beyond the SWMU. As a result, a VCA that included removing the metal pile and contaminated soil was recommended for this site. The ER Project prepared a VCA plan in 1995 and the VCA was implemented in 1996. The VCA included removing the metal pile and associated debris as well as the contaminated soil beneath and around the pile. In addition, other debris that was present around the canyon rim was removed. Wastes were field-screened for radioactivity and inorganic chemicals and segregated based on waste type. Waste generated during the VCA were 0.5 cu yd of asbestos tiles, 12 cu yd of nonhazardous/nonradioactive debris, less than 1 cu yd hazardous and mixed waste debris, and 6 cu yd mixed waste soil. Following soil removal, two composite confirmatory soil samples were collected from the pile site. In addition, two composite soil samples were collected from the slope below the site of the pile. Each sample was composited from subsamples taken at 10 locations. The samples were submitted for laboratory analysis for inorganic chemicals and radionuclides. The results of these analyses showed that cadmium and uranium were below PRGs. As a result, the VCA report recommended NFA for SWMU 33-010(b) because the site has been remediated in accordance with current applicable state or federal regulations.
33-010(d)	In Progress	SWMU 33-010(d) is a canyon-side disposal area on the edge of Ancho Canyon on the north side of East Site in TA-33. This disposal site is located just north of the gun-firing site soil berms at former SWMU 33-006(b) and northeast of MDA D [SWMU 33-003(a)-99]. Wastes were deposited along the canyon rim and in a small drainage leading into Ancho Canyon. Wastes disposed of at this site are believed to have been operation and construction debris. Materials observed at the site in the past include concrete blocks, part of the surface cable holder from an underground experiment chamber [former SWMU 33-003(b)], empty glass specimen vials, pieces of foam, and metal cans. The period of operation for this disposal site was not reported, but the experiment chambers at MDA D were used in 1948 and 1952 and gun-firing operations at East Site were conducted from 1955 through 1972. No previous environmental investigations have been conducted at SWMU 33-010(d). The ER Project conducted a Phase I RFI at SWMU 33-010(d) in 1994 to determine the distribution of contaminants around the disposal area. Surface-soil samples were collected from each of four locations on the canyon edge amid the debris and two locations in the drainage area. All samples were field-screened for radioactivity and submitted for laboratory analysis for inorganic chemicals and radionuclides. Inorganic chemicals detected above BV were lead and zinc; neither was present above its SAL. No radionuclides were detected above BV or FV. The results of the Phase I RFI indicated no risk to human health or the environment. The RFI report stated that a VCA would be conducted at SWMU 33-010(d) to remove debris. The ER Project prepared a VCA plan in 1995 and the VCA was implemented in 1995. Debris was field-screened for radioactivity and inorganic chemicals to determine whether the debris would be managed as nonhazardous/nonradioactive, hazardous, or radioactive waste. Natural materials and debris smaller than 3 in. in diameter were not removed unless field-screening results for radioactivity were above background. A total of 2 cu yd nonhazardous/nonradioactive debris and 0.1 cu ft radioactive debris was removed. No confirmatory samples were collected because no soil was removed.
33-010(e)	Administratively Complete	AOC 33-010(e) is a canyon-side disposal area located in an area adjacent to the west side of Main Site known as Area 6. This disposal area is located outside the southeast corner of the Area 6 security fence on a hillside that slopes to a drainage channel. AOC 33-010(e) was identified initially during field reconnaissance for the 1990 SWMU report. The location given in the SWMU report was not definitive, and no evidence of reported debris could be located during preparation of the RFI work plan. A LANL staff member familiar with past operations at Area 6 indicated that this site might have been used to dispose of firing debris when Area 6 was active (1948 to 1955). No previous environmental investigations have been conducted at AOC 33-010(e).

		The ER Project conducted a Phase I RFI at AOC 33-010(e) during 1993 to determine whether contamination was present from past disposal activities. A radiation survey and geophysical survey were conducted in the area southeast of Area 6 to identify evidence of past waste disposal. No anomalies were detected that could be used to bias sampling locations. Six surface-soil/sediment samples were collected from three random locations on the hillside where disposal was believed to have occurred. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals and radionuclides. Three samples from one location also were submitted for analysis for organic chemicals. No inorganic chemicals were detected above BV. Radionuclides detected above BV/FV were uranium and cesium-137; neither was present above its SAL. No organic chemicals were detected. Based on these results, the RFI report recommended NFA for AOC 33-010(e) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use.
33-010(g)	In Progress	SWMU 33-010(g) consists of a canyon-side disposal area located on the south side of TA-33 South Site at the edge of Chaquehui Canyon. Debris was scattered on the rim and upper walls of the canyon at this site, which is just south and east of MDA E [SWMU 33-001(a)-99]. This SWMU also is located within the boundaries impacted by former SWMU 33-006(a) activities. Former SWMU 33-006(a)consists of a firing site and associated debris/shrapnel area. The firing pad for former SWMU 33-006(a) is located approximately 500 ft northwest of the disposal area. Some debris disposed of at SWMU 33-010(g) reportedly resulted from the initial clearing of South Site, such as dead tree trunks, rocks, and scraped earth. Other debris also was present, including chunks of metal. The period of operation for this disposal site was not reported, but firing site operations associated with initiator testing at South Site were conducted from 1950 through 1956. No previous environmental investigations have been conducted at SWMU 33-010(g). The ER Project conducted a Phase I RFI at SWMU 33-010(g) in 1994 to determine the distribution of contaminants around the disposal area. Surface-soil samples were collected from two locations on the mesa top amid debris and two locations on the canyon side below the disposal area. All samples were field-screened for radioactivity, organic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, and HE. One sample also was submitted for analysis for organic chemicals. Mercury was the only inorganic chemical detected above BV, but it was not present above its SAL. No radionuclides were detected above BV or FV. No HE or organic chemicals were detected. The results of the Phase I RFI did not indicate a human health risk from soil contamination because SALs were not exceeded. The RFI report stated that a VCA would be conducted at SWMU 33-010(g) to remove debris. The ER Project prepared a VCA plan in 1995 and the VCA was implemented in 1995. Debris was field-screened for radioactivity and inorganic chemicals to determine whether the debris would be managed as nonhazardous/nonradioactive, hazardous, or radioactive waste. Natural materials and debris smaller than 3 in. in diameter were not removed unless radioactivity was above background. A total of 4 cu yd nonhazardous/nonradioactive debris and 2 cu ft radioactive debris was removed. No confirmatory samples were collected because no soil was removed.
33-011(b)	In Progress	AOC 33-011(b) is a storage area located just outside the northwest corner of the NRAO site near the center of TA-33. This area is approximately 300 wide ft x 600 ft long. Approximately 75% of the site has been scraped and leveled to or near the tuff bedrock. From the 1950s until the early 1990s, the site served as a storage area for equipment and materials. Strategic materials such as tungsten, uranium, and beryllium were accumulated until there were sufficient quantities for shipment. The site also was used to store equipment used at the firing sites in TA-33. The site was cleaned in 1984 and most materials and debris were removed at that time, though some debris remained. A small (4-ft x 4-ft x 4-ft) wood bunker is present at the site. No previous environmental investigations have been conducted at AOC 33-011(b). The ER Project conducted a Phase I RFI at AOC 33-011(b) in 1994 to determine

		whether contaminants were present from past storage activities at this site. Surface-soil samples were collected from each of 10 locations. Six of these sample locations were at the former storage area and four were in drainages on the slope west of the former storage area. All samples were field-screened for radioactivity and submitted for laboratory analysis for inorganic chemicals and radionuclides. One sample also was submitted for analysis for organic chemicals. No inorganic chemicals were detected above BV. Cesium-137 was the only radionuclide detected above FV, but was not present above its SAL. No organic chemicals were detected. The results of the Phase I RFI did not indicate a human-health risk from soil contamination, as SALs were not exceeded. During a site visit subsequent to the Phase I RFI, a piece of radioactively contaminated metal debris was discovered at the site. The RFI report stated that a VCA would be conducted at AOC 33-011(b) to remove debris. The ER Project prepared a VCA plan in 1995 and the VCA was implemented in 1995. Debris was field-screened for radioactivity and inorganic chemicals to determine whether the debris would be managed as nonhazardous/nonradioactive, hazardous, or radioactive waste. Natural materials and debris smaller than 3 in. in diameter were not removed unless field-screening results for radioactivity were above background. A total of 2 cu yd nonhazardous/nonradioactive debris and 0.5 cu ft radioactive debris was removed. No confirmatory samples were collected because no soil was removed.
33-011(e)	In Progress	SWMU 33-011(e) is a former drum-storage area located approximately 30 ft northwest of Building 33-22, which is a former HE storage magazine located at the south end of TA-33 Main Site. Drums of unknown materials were stored at this area. All drums have been removed from the site and no other materials are present. No trace of the former storage area remains. The area is unpaved, and slopes down gradually to the southwest. The dates when wastes were stored at this site are unknown. Previous environmental investigations at SWMU 33-011(e) include soil sampling that was conducted in 1987. The results of this sampling showed uranium and gamma-emitting radionuclides above background. SWMU 33-011(e) lies within the boundaries of former SWMU 33-017, which includes areas impacted by operational releases from TA-33 Main Site. The ER Project conducted a Phase I RFI at SWMU 33-011(e) in 1993 to determine whether contamination had resulted from past waste-storage activities. Three surface samples were collected from two random locations within a 20-ft x 100-ft area where drum storage was believed to have occurred. All samples were field-screened for radioactivity and submitted for laboratory analysis for radionuclides. Two samples also were submitted for laboratory analysis for organic chemicals. No radionuclides were detected above BV or FV. No organic chemicals were detected. Based on these results, the RFI report recommended NFA for SWMU 33-011(e) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use.
33-012(a)	In Progress	SWMU 33-012(a) is a former satellite waste-accumulation area for a building (Building 33-39) that houses a machine shop. This satellite area is an asphalt pad, approximately 20 ft wide x 20 ft long, located on the east side of Building 33-39, between the building and a storage shed. This site was used to accumulate 55-gal. drums of solvents and solvent-contaminated oil which potentially was contaminated with PCBs and metals. Drums were stored on pallets or directly on the asphalt pad. The 1990 SWMU report notes the presence of multiple oil stains at this site. The 1992 RFI work plan, however, states that no evidence of oil staining was found. The asphalt pad is level and the ground surface east of Building 33-39 slopes down, to the east. The dates of operation of the waste storage area are unknown. Building 33-39 was constructed in 1951. The waste-storage area was active when the RFI work plan was prepared in 1992, but inactive when the Phase I RFI was conducted in 1993. No previous environmental investigations have been conducted at SWMU 33-012(a). SWMU 33-012(a) lies within the boundaries of former SWMU 33-017, which includes areas impacted by operational releases from TA-33 Main Site. The ER Project conducted a Phase I RFI at SWMU 33-012(a) during 1993 to determine whether contamination had resulted from past waste-storage activities. A grid-based

		radiation survey was conducted and no anomalies were identified. Soil samples were collected at two random locations on the pad and at two locations on the edge of the pad. All samples were collected beneath the asphalt and the depth interval sampled ranged from 0 in. to 14 in. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Lead and zinc were the only inorganic chemicals above BV; they did not exceed SALs. No radionuclides were detected above BV or FV. Organic chemicals detected include p,p'-DDT and Aroclor-1254; neither exceeded its SAL. The RFI report also stated that low levels of SVOCs were detected, but did not state the concentrations detected or whether SALs were exceeded. However, the RFI report did indicate that the SVOC contamination was believed to be associated with former SWMU 33-017, which includes a vehicle maintenance area east of Building 33-39, rather than from SWMU 33-012(a). Based on the results of the Phase I RFI, the RFI report recommended NFA for SWMU 33-012(a) because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The basis for the NFA did not consider the elevated lead or SVOCs. The lead was believed attributable to adjacent former SWMU 33-004(i) and lead results were included in the risk assessment conducted for that site. In addition, the SVOCs were believed to be associated with releases from a vehicle maintenance area near Building 33-39 that is considered part of former SWMU 33-017. Phase II sampling to better characterize SVOC contamination at former SWMU 33-017, including the area occupied by SWMU 33-012(a), was conducted in 1996 and led to an NFA recommendation for former SWMU 33-017. This Phase II sampling also identified the additional PCB contamination (Aroclor-1254) believed to be attributable to SWMU 33-012(a). After the Phase I RFI report for SWMU 33-012(a) was prepared, the SAL for PCBs had been reduced from 10 mg/kg to 1 mg/kg and the levels of Aroclor associated with SWMU 33-012(a) exceeded the new SAL. The Phase II RFI report for former SWMU 33-017 indicated that the previous NFA recommendation for SWMU 33-012(a) would be withdrawn and that PCB contamination at this site would be investigated further.
33-012(b)	Administratively Complete	PRS 33-012(b) is decribed in the SWMU Report as a storage area for photoprocessing chemicals at Main Site in TA-33-114, Room 116. During 1991 site cvisits, it was noted that photoprocessing chemicals were being collected and stored in plastic containers in the darkroom, Room 126, rather than Room 116. There is no evidence of any releases from this unit. This storage area and its locations agree with the November 1991 LANL container storage data base.
33-012(c)	Administratively Complete	PRS 33-12(c) is described in the SWMU Report as a satellite waste storage area for organics in TA-33-114, Room 117. This satellite storage area is a laboratory collection point for organic wastes. It is located in Room 116 rather than Room 117. There is no evidence of any releases from this unit. This storage area and its locations agree with the November 1991 LANL container storage data base.
33-012(d)	Administratively Complete	
33-013	In Progress	SWMU 33-013 is an area in TA-33 Main Site that was used to store items awaiting disposal. This uncovered former storage area was approximately 50 ft x 50 ft in size and was located on the asphalt surface inside the northeast corner of the fence around the TA-33 Tritium Facility (Building 33-86). The former storage area is level and runoff flows east toward a drainage leading to Chaquehui Canyon. Items stored at this site include vacuum pumps from throughout LANL, drums containing oil that was contaminated with tritium and possibly with metals and solvents, and dumpsters of miscellaneous materials. Some of these containers reportedly had leaked and some materials may have been stored in this area for years. Stains were noted on the asphalt during a 1987 ER Program site reconnaissance. The exact date that storage operations began is not known, but Building 33-86 began operation in June 1955. Storage activities were moved to a fenced site at the southeast end of Building 33-86 in the spring of 1989. No previous environmental investigations have been performed at SWMU 33-013. The ER Project conducted a Phase I RFI at SWMU 33-013 in 1993 to determine

		whether contamination had resulted from past waste-storage activities. A soil sample was collected at each of three random locations in the storage area. Samples were collected just beneath the asphalt at depth intervals of 0 in. to 6 in. All samples were field-screened for radioactivity and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Inorganic chemicals present above BV were beryllium, cadmium, chromium, nickel, and silver; cadmium and chromium were present above SALs. Based on the results of the Phase I RFI, the RFI report recommended Phase II sampling to better characterize the inorganic chemical contamination. The RFI report also stated that the tritium contamination detected at this site would be addressed in a risk assessment for tritium at Main Site that was part of the RFI report for MDA K [consolidated unit 33-002(a)-99]. This risk assessment indicated that TEDE resulting from tritium contamination at Main Site was below DOE standards. The ER Project conducted a Phase II RFI at SWMU 33-013 in 1996 to better characterize the inorganic contamination detected by the Phase I RFI. Fourteen surface soil samples and one subsurface (6-in. to 12-in.) soil samples were collected from thirteen locations. Nine of the samples were collected at random locations within each cell of a nine-cell grid over the storage area. The remaining samples were collected at biased locations. All samples were field-screened for inorganic chemicals and submitted for laboratory analysis for inorganic chemicals and uranium. Inorganic chemicals detected above BV were copper, lead, mercury, and zinc; none was detected above its SAL. Uranium was not detected above BV. The results of the Phase II RFI sampling were used to perform a human health risk-based screening assessment. Based on the results of this assessment, the Phase II RFI report recommended NFA for SWMU 33-013 because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use, which is industrial. The RFI report indicated that ecological risk assessment of this site would be deferred until development of the ecological exposure unit methodology had been completed.
33-016	In Progress	SWMU 33-016 is a sump and outfall at a bunker (structure 33-23) located in TA-33 Main Site. The concrete sump is 3 ft x 2 ft x 2 ft deep and is located just outside structure 33-23, near the door. A drainline leads from the sump to an outfall approximately 250 ft southwest of the building at a small side canyon of Chaquehui Canyon. The sump was connected to a sink and floor drain in structure 33-23, which was constructed in 1950. From 1950 until 1972, structure 33-23 was used as a trim building to prepare propellant charges for gun tests at South Site. Later it was used (until 1994) to store lithologic cores from the Hot Dry Rock Program. In addition to the sink and floor drain, the sump also may receive rainfall and snowmelt. No previous environmental investigations have been conducted at this site. The ER project conducted a Phase I RFI at SWMU 33-016 in 1993 to determine whether contamination was present due to leakage or discharges from the sump and to support a VCA, if needed. Two liquid and two sludge samples were collected from the sump. In addition, a borehole was drilled to a depth of 12 ft adjacent to the sump and one surface and two subsurface samples were collected. Five surface samples also were collected at and downslope of the outfall. All samples were field-screened for radioactivity, organic chemicals, and HE and submitted for analysis of organic chemicals and HE. Thirty-one organic chemicals and HE species were detected in the sludge samples: acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, bis[2-ethylhexyl] phthalate, sec-butylbenzene, chrysene, di-n-butyl phthalate, dibenzofuran, 1,3-dinitrobenzene, 2,4-dinitrotoluene, ethylbenzene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, isopropylbenzene, 4-isopropyltoluene, methylene chloride, 2-methylnaphthalene, naphthalene, phenanthrene, propylbenzene, pyrene, RDX, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and xylenes. Seven of these organic chemicals and HE species were detected above the SALs for soil: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene,

		bis[2-ethylhexyl] phthalate, 2,4-dinitrotoluene, and indeno[1,2,3-cd]pyrene. No organic chemicals or HE species were detected in the water samples. Two organic chemicals (acetone and bis[2-ethylhexyl] phthalate) were detected in soil/tuff samples, but did not exceed SALs. No HE species were detected in soil or tuff samples. Based on these results, the RFI report concluded that no releases of contaminants from the sump had occurred. Because of the presence of organic chemicals and HE species in sludge at concentrations exceeding SALs, however, the RFI report recommended a VCA for the sump. The ER Project implemented a VCA at SWMU 33-016 in 1995. The VCA involved removing approximately 250 gal. of liquid and 45 gal. of sludge from the sump, filling the sump with approximately 3 cu yd of sand and gravel, and capping the sump with 1 ft of concrete. The sludge was sampled and analyzed to determine whether it was hazardous waste. The results indicated that the sludge was nonhazardous. The VCA requested NFA status for SWMU 33-016.
35-001	Administratively Complete	
35-002	In Progress	SWMU 35-002, MDA X, lies under 0.05 acres of parking lot near the southeast corner of a laboratory and office building (Building 35-2). MDA X is the burial site of the LAPRE-II reactor, which was defueled and decommissioned in 1959. Reactor components that were buried in place included the reactor pressure vessel, the fuel reservoir, the connecting pipe, and possibly others. LAPRE-II and associated structures were removed from MDA X in 1991. Soil sampling conducted during a 1990 D&D site characterization effort revealed minimal contamination at a depth of 15 ft on the east side of the reactor. One sample collected from backfill located 2 ft from the reactor contained europium-152 as the primary contaminant. Cesium-137 was also discovered in the soil. Samples collected from five other boreholes yielded no radioactive contamination. Confirmation soil sampling (not related to the ER Project) was conducted to verify the removal of all potential contaminants including radionuclides and hazardous chemicals. The D&D activity, completed in 1992, removed 430 gallons of mixed waste, radionuclides and lead, to TA-54 Area L, and removed 533 cubic meters of LLW to TA-54 Area G. A second D&D event in 1996 removed portions of 2 USTs from LAPRE-I. No ER Project samples have been collected from this site to date. Confirmation sampling was proposed for SWMU 35-002 according to the SAP for Middle Mortandad/Ten Site Aggregate.
35-003(a)-99	In Progress	Consolidated SWMU 35-003(a)-99 consists of components of the TA-35 WWTP and includes former SWMUs 35-003(a, b, c, e, f, g, h, m, misc., n, o, p). The WWTP was located on the east end of Ten Site Mesa and operated from 1951 until 1963. It consisted of an array of underground waste lines, storage tanks, and chemical treatment precipitation tanks. The plant treated liquid waste that originated from the radiochemistry laboratories and operation of the radioactive lanthanum-140 hot cells in Building 35-2; the liquid wastes from the laboratories were acidic, and the radioactivity in the waste came from barium-140, lanthanum-140, strontium-89, strontium-90, and yttrium-90. Former SWMU 35-003(misc.) consists of the network of underground lines that connected the various structures that composed the Ten Site WWTP. Two of the lines had direct outfalls to the small side canyon east of the WWTP known as Pratt Canyon [SWMU 35-003(r)]. The canyon received effluent discharge and spills from the WWTP holding tanks. It is expected that contamination at the WWTP will not be distinguishable from each SWMU at the site. Former SWMUs 35-003(a, b, and c) are former 600-gal. stainless steel underground holding tanks associated with former SWMU 35-003(n), the former PSP. The exhaust from laboratory hoods was routed to the PSP for removal of liquids before being sent to the air filter building [former Building 35-7, former SWMU 35-003(p)]. The liquid wastes were stored temporarily in one of the three underground holding tanks, at former structure 35-10, former SWMU 35-003(d), at the east end of TA-35. The PSP and the

		holding tanks were a closed system in which liquid flowed from Building 35-2 into the PSP, into the tanks for temporary storage, and at some later time, back into the PSP for treatment. It is not known exactly when the PSP and the three holding tanks were last used - possibly in the mid-1970s or early 1980s. The structures were probably not used after 1985, when the pipeline from structure 35-10 to TA-50 was removed. There are no documented intentional or accidental releases from this system. The PSP and the three holding tanks were the subject of D&D and were removed in 1996. The ER Project performed verification sampling in concert with the D&D activities. Radionuclides and several VOCs were detected in a decommissioning sample from the holding tank at SWMU 35-003(b). Actual volume of low-level solid waste removed from the north and south sides of Building 35-2, including soil below the PSP and holding tanks, is approximately 2,265 cubic yards of low-level radioactive waste and 20 cubic feet of mixed waste. The bottom of the excavations were 20 to 30 feet belowground; they were backfilled with clean soil. Former SWMU 35-003(e) is the site of a former 25,000-gal. storage tank, structure 35-36, that was added to the WWTP in 1960. The tank was used to store RLW. The tank was connected to the air filter building (former Building 35-7) by two 3-in. diameter lines totaling 156 ft in length. The drainlines led to a surface diversion channel. The storage tank and waste lines were removed in August 1981. The extent of soil contamination to the diversion channel is not documented. Former SWMU 35-003(f) is the site of a former flocculator tank (structure 35-37). The flocculator tank was part of the WWTP in 1956 and used until 1963 when the plant was abandoned. The tank was removed in 1980 to prepare for D&D of the WWTP's underground liquid waste lines. ER project RFI samples were collected from this site as part of consolidated SWMU 35-003(e)-99. Former SWMU 35-003(g) is the site of a former ion exchange column regenerant tank. This tank was added along with the flocculator tank, former SWMU 35-003(f), in 1956 and used until 1963 when the plant was abandoned. The regenerant tank was removed in 1980 to prepare for the D&D of the WWTP's underground liquid waste lines. ER Project RFI samples were collected from this site as part of consolidated SWMU 35-003(e)-99. Former SWMU 35-003(h) is the site of a former concrete retention tank. The tank was constructed in 1961 and added as a component of the WWTP. The tank had dimensions of 8 ft x 12 ft x 10 ft deep and was connected to Building 35-41 and structure 35-10 by 4-in. diameter stainless steel underground pipes. The retention tank and associated piping were removed in February 1985 during LANL's RLWLR project; during decommissioning, no leaks or discharges from the tank were documented. The tank and excavated soil were field-screened for radioactive contamination during the removal. No detection of radionuclides was documented. ER Project RFI samples were collected from this site as part of consolidated SWMU 35-003(e)-99. Former SWMU 35-003(m) is the site of a former 1,000-gal. underground sludge tank (structure 35-22). The tank was part of a pilot plant scale unit meant to remove strontium-90 from waste sludge. The sludge tank was removed in August 1981. During the removal, the soil surrounding the tank had concentrations of strontium-90 and cesium-137 at levels up to 46,000 dpm/g; the method used for this measurement was not documented. Soil from around the tank was excavated laterally until activity could not be detected above instrument background, and below the tank to bedrock, a depth of 10 ft bgs. At this depth, fractures in the rock measured by radiation field-screening instruments had activity levels as high as 5,000 pCi/g gross beta. The decision was made to stop the excavation to avoid the large enterprise of further soil removal and because the risk of exposure was insignificant. This concrete tank was excavated and removed in one load to TA-54. Contaminated soil was left at a 10-ft depth in solid tuff in this excavation. The excavation was backfilled with clean soil material and paved over with asphalt. ER Project RFI samples were collected from this site as part of

		consolidated SWMU 35-003(e)-99. Former SWMU 35-003(misc.) consists of the network of underground lines connecting the various structures of the TA-35 WWTP. Most of the piping of the waste disposal system was constructed from stainless, black, or galvanized steel with screwed or welded joints. The majority of these lines were removed from 1981 through 1985, during the RLWLR project. Releases of radioactive contamination to the environment from these lines were documented. The releases typically occurred at depths of 15 to 20 ft bgs in the trenches containing the lines. Extent of contaminant migration from these releases had not been determined until a D&D event occurred in 1996 at which time Building 35-7 and associated piping were removed, including many of the lines designated as former SWMU 35-003(misc.). The ER Project provided verification sampling during the 1996 D&D. Former SWMU 35-003(n) is the site of the former PSP associated with the TA-35 WWTP that operated from 1951 to about 1963. The PSP was used in conjunction with three 600-gal. stainless steel underground storage vaults, former SWMUs 35-003(a, b, and c), for temporary storage of RLW. The PSP was a large, subterranean, reinforced concrete structure that housed equipment used to treat vented air exhaust from laboratory hoods in a laboratory and office building (Building 35-2). The three holding tanks were connected to the PSP by several underground pipelines and were used to retain the waste liquids before treatment and eventual discharge into larger waste holding tanks (at former structure 35-10). Building 35-2 was used for a wide variety of research operations during the time the WWTP was in use. The building housed two experimental reactors, a hot cell used for preparing sources of lanthanum-140, plutonium research laboratories, and a facility that handled lithium titride components. Soil samples taken from the PSP in 1980 showed radioactive contamination with activities up to 2,000 dpm/60 sq centimeters. Samples taken from under the pit in 1990 showed activities as high as 10,000 dpm/60 sq centimeters. Samples collected from boreholes drilled in 1993 as part of characterization activities in preparation for decommissioning indicated that the bedding materials around the structures contained elevated levels of several radionuclides, including tritium, plutonium-238, and strontium-90. These structures were decommissioned and removed in 1996. Former SWMU 35-003(o) is the site of a former manhole (structure 35-12). The manhole, subsurface line 90A, and 86 cubic yards of contaminated soil adjacent to the east wall of the air filter building (former Building 35-7) were excavated and removed in January 1985. Following the removal, 15 soil samples were collected. These samples contained up to 7,145 pCi/g of beta activity. Because further excavation may have compromised the integrity of the excavation walls, the area was backfilled and paved over with asphalt. ER Project RFI samples were collected from this site as part of consolidated SWMU 35-003(e)-99. Former SWMU 35-003(p) is the site of the former air filter building (former Building 35-7). Radioactive air was filtered in this building and the cleaning filters were washed by tap water and/or long-decayed wastewater from the tank farms. This long-decayed wastewater was contaminated with strontium-89 and strontium-90. Buildup of strontium in the air filters became a problem and required numerous washings, which produced more radioactive wastewater. The large volumes of water overwhelmed the storage capacity of the system leading to spills, overflows, and unplanned releases to Pratt Canyon. The air filter building was first the subject of D&D in 1980. A second D&D event occurred in 1996 at which time the building and associated piping were removed. The ER Project provided verification sampling during the 1996 D&D. Phase I RFI sampling was conducted at former SWMUs 35-003(a, b, c, and n) in conjunction with decommissioning of the structures in 1996. The RFI team was present before and during decommissioning to observe the condition of the structures and to inspect them for signs of leakage. The holding tanks, when removed, were observed to be in good condition with no visible leaks or cracks. No cracks were found in the floor or

		walls of the PSP, and no staining was observed under any of the structures. A radiation grid survey was conducted on the surface of the underlying bedding material prior to RFI sampling to determine whether any "hot spots' were present to help guide the sampling. This survey included 90 screening measurements of alpha and beta/gamma radiation, and organic vapors. Beta/gamma measurements were within instrument background for TA-35, and no alpha radiation or organic vapors were detected. Neither visual observations nor field-screening instruments indicated that a release had occurred. A total of twelve samples were collected from the bedding material and underlying tuff bedrock. After RFI sample collection was completed and preliminary data analysis indicated that no further corrective action was warranted at the site, the excavation was backfilled with clean fill material and the surface of the site was recontoured and covered with asphalt pavement. The area of the SWMUs is now 20 to 33 ft below the current surface. Final analytical results indicated that inorganic chemicals were detected above BVs, radionuclides were detected above FVs, and organic chemicals were detected. No chemicals were detected above SALs. Phase I RFI sampling was conducted at former SWMUs 35-003(e, f, g, m and o) in March and April 1994, with supplemental sampling performed in December 1995. A total of 13 locations were sampled, and 50 subsurface samples were collected. Samples were submitted to both mobile and fixed-site laboratories for analysis of inorganic and organic chemicals, and radionuclides. Inorganic chemicals were detected above BVs. Organic chemicals were detected. Three of the detected organic chemicals exceeded their SALs in one sample. Radionuclides were detected above FVs. Phase I RFI sampling was conducted at former SWMU 35-003(h) in March 1994. A borehole was drilled to a depth of 30 ft, and 4 samples were collected. Samples were submitted to both mobile and fixed-site laboratories for analysis of inorganic and organic chemicals, and radionuclides. Inorganic chemicals were detected above BVs by the mobile laboratory. One organic chemical was also detected. Radiological detections were within FVs. No sample results for any chemical exceeded SALs at this former SWMU. Phase I RFI sampling was conducted at former SWMUs 35-003(misc) and 35-003(p) in conjunction with decommissioning of the structures in 1996. Inorganic chemicals were detected above BVs. Organic chemicals were detected. Radionuclides were detected above FVs. Results were reported in the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002. Additional sampling was conducted in 1997 at this consolidated SWMU. Forty-one samples from nine locations were collected and submitted to an off-site analytical laboratory for inorganic chemical and radionuclide analysis. Inorganic chemicals and radionuclides were detected above SALs. Additional sampling was proposed for SWMU 35-003(a)-99 according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-003(d)-00	In Progress	The former SWMUs in consolidated SWMU 35-003(d)-00 represent the Pratt Canyon component of the WWTP known as consolidated SWMU 35-003(a)-99. Consolidated SWMU 35-003(d)-00 is comprised of former SWMUs 35-003(d), 35-003(l), 35-003(q), and 35-003(r). The former structures associated with these former SWMUs were an integral part of the WWTP and were collectively referred to as the "tank farm". These structures were used as part of the WWTP until 1963 when a new WWTP at TA-50 became operational. However, as late as 1974, the holding tanks at TA-35 were used to store low-level wastes. The canyon received effluent discharge and spills from the WWTP holding tanks. It is expected that contamination at the WWTP will not be distinguishable from each SWMU at the site. All buildings, foundations, and structures were removed during D&D activities in 1981 and 1985. After the structures were removed in 1985, the site was backfilled with up to 20 ft of clean fill material, indigenous tuff, and, at the time of the RFI in 1994, was described as an open field covered with

		weeds and grasses. A stormwater outlet pipe discharged to the southeast corner of the site, flowing across the site into Pratt Canyon. The source of the stormwater was a surface storm drain located at the southwest corner of Building 35-7. By 1994, an arroyo had formed in the backfill material that transected the site from southwest to northeast. The arroyo was up to 10 ft deep at the eastern edge of the site. Former SWMU 35-003(d) is the site of the former liquid-waste holding tank structure (structure 35-10), a rectangular, reinforced concrete structure composed of four separate 50,000-gallon tanks (referred to as T-3 through T-6). Each tank was 35 ft wide and 85 ft long and was situated mostly below ground with the top portions exposed. The tanks did not have drain outlets. All liquids were pumped out through a pipe trench and pump house to Building 35-7 for treatment and discharge from the WWTP. The tanks were designed to provide a six-month holding time for liquid wastes to allow for decay of lanthanum-140 and barium-140. In February 1985, the tanks were removed and a total of 86 soil samples were collected from the vicinity. Field-screening measurements of beta activities were observed in 37 of the samples, with a maximum of 356 pCi/g. The activity was primarily from strontium-90 and yttrium-90 with most of the samples collected from depths of 18 to 20 ft. Because of problems with further excavation, LANL employees halted further remediation and backfilled the area with clean soil. The area was determined to be decontaminated and an ALARA decision was made. Former SWMU 35-003(l) is the site of a former pump pit (structure 35-08) that was adjacent to the pipe trench and the liquid-waste holding tanks. The pump pit was approximately 10 ft wide by 14 ft long and housed two large capacity electric pumps and associated valves and piping to transfer liquid waste between the holding tanks and to the air filter building (former Building 35-7). The pump pit also had floor drains that discharged to a surface diversion channel. The pump pit and associated piping were removed in December 1984. No radioactive contamination was detected in these structures. Former SWMU 35-003(q) is the site of a former pipe trench (structure 35-09) that connected Buildings 35-2, 35-3, and 35-7 to the former WWTP and connected the pump pit to the waste holding tanks. The trench contained at least five pipelines that connected the pump pit to each of the four holding tanks. The trench was approximately 60 ft long and 10 ft wide. The pipe trench was partially buried below ground and had floor drains that discharged to the surface diversion channel. The pipe trench was removed in December 1984. At least eleven instances of spills or non-operational releases were documented from the piping or holding tanks from 1951 to 1956. Former SWMU 35-003(r) is the site of the canyon disposal area for liquid sludge effluent associated with the holding tanks, former SWMU 35-003(d), of the former WWTP. This SWMU is located in Pratt Canyon and extends from the eastern edge of Ten Site Mesa, from the headwall of Pratt Canyon, to the confluence of Pratt and Ten Site Canyons. Pratt Canyon is contaminated by radionuclides, strontium-90, cesium-137, and plutonium-239. The WWTP that released the effluent ceased operation in 1963. Phase I RFI sampling was performed at former SWMUs 35-003(d, l, and q) in April and May 1994 with supplemental sampling conducted in December 1995. A total of 13 locations were sampled and 49 soil samples were collected. Samples were submitted to both a mobile and a fixed-site laboratory for inorganic and organic chemical and radiological analysis. Inorganic chemicals were detected above BVs. Organic chemicals were detected. One radionucide was detected in one sample above its FV; other radionuclides with no established FVs were also detected. No sample results for any chemical exceeded SALs at these former SWMUs. Phase I RFI sampling was performed at former SWMU 35-003(r) in May, June,

		October, and November 1994, and in February 1995: supplemental sampling was conducted in December 1995. A total of 13 locations were sampled, and 62 samples were collected. Samples were submitted for laboratory analysis for inorganic and organic chemicals and radionuclides. Inorganic chemicals were detected above BVs. Organic chemicals were detected and six of the chemicals were detected above SALs. Radionuclides were detected above FVs, and radionuclides with no established FVs were also detected. An IA was performed on former SWMUs 35-003(d, l, and q) in September 1996 to prevent stormwater-induced transport of contamination from the SWMUs into Mortandad Canyon. The IA consisted of backfilling, compacting, and revegetating the erosion channels; relocating a stormwater CMP discharge, which was the major cause of the erosion; and constructing a 2-ft-high, 100-ft-long berm above the slope break at the head of Pratt Canyon, which was designed to divert additional stormwater that is not captured by the relocated CMP northeastward to an existing stormwater outfall. By relocating the CMP discharge to the southern rim of Ten Site Mesa, stormwater has been diverted from known radioactively contaminated sites including former SWMUs 35-003(d, l, q, and r). Backfilling and compacting the erosion channels will prevent the erosion of potentially contaminated soil at former SWMUs 35-003(d, l, and q) and will minimize the potential for release until further characterization is performed and a final disposition is made. In 1997, additional sampling was conducted at this consolidated SWMU. Thirty-two samples from seven locations were collected and submitted to an off-site analytical laboratory for inorganic chemical and radionuclide analysis. Inorganic chemicals and radionuclides were detected above SALs. In 1998, sampling was conducted in Pratt Canyon to help characterize this consolidated SWMU. Nine sediment samples from nine locations were collected and submitted to an off-site analytical laboratory for organic chemical, inorganic chemical, and radionuclide analysis. Organic chemicals and radionuclides wee detected above SALs. Additional sampling was proposed for consolidated SWMU 35-003(d)-00 according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-003(i)	Administratively Complete	SWMU 35-003(i) is the site of two steel surge tanks that were used to accommodate gas pressure excursions from the gas laser facility in Building TA-35-29. Helium and nitrogen gases were the only substances handled by these tanks. The surge tanks were never associated with the wastewater treatment plant despite their designation as a sub-unit of SWMU 35-003, which generally refers to the wastewater treatment facility. SWMU 35-003(i) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
35-003(j)-99	In Progress	Consolidated SWMU 35-003(j)-99 consists of two former aboveground storage tanks, former SWMUs 35-003(j and k), a former leaking 55-gallon drum, former SWMU 35-014(b), a stained area, former SWMU 35-014(d), associated with the aboveground storage tanks, and a former waste-oil treatment facility, former SWMU 35-015(b). The site was backfilled in 1988 or 1989 with clean soil material and covered with asphalt to create a parking area. These former SWMUs are included in the same decision unit because they are located in the same area and have the same potential contaminants. Former SWMUs 35-003(j and k) were two former aboveground storage tanks, structures 35-96 and 35-97, located on the west side of Building 35-29. The tanks were probably used for storage of dielectric oil in association with the waste-oil treatment facility, former SWMU 35-015(b), on the east side of Building 35-29. The tanks were installed in 1974, and were still present in a 1986 aerial photograph but were removed in 1989 or 1990. The tanks were large, rectangular, external frame structures approximately 35 ft long by 10 ft wide by 10 ft tall. In 1988, equipment at the site was reported to be leaking dielectric oil. Subsequently, the equipment was removed, and the site was backfilled with clean soil material and covered with asphalt for a parking

		area. The volume of the oil leak is unknown, and it is not known if the leak prompted a cleanup of the site. Former SWMU 35-014(b) was a leaking 55-gallon drum found near the southwest corner of the northwest wing of Building 35-2 contained oil with 50.4 micrograms per gram PCBs. The drum was removed and Laboratory group HSE-7 cleaned the site. The precise location of this release is unknown. Former SWMU 35-014(d) was a stained area at the former location of two oil siege tanks, former SWMUs 35-003(j and k), at the southwest corner of Building 35-29. Dielectric oil may have leaked from the valve system of the siege tanks. These tanks were associated with the decommissioned oil treatment facility, former SWMU 35-015(b). Oil-stained soil occurs at the entry point of a culvert that drains this area, and also at the point at which the culvert ends near the southeast corner of Building 35-29. Former SWMU 35-015(b) was an oil-handling facility located on the southwest side of Building 35-29. This unit was used for treating oil from the old Gemini gas laser in Building 35-29. This facility was found to be leaking dielectric oil in 1988 and was removed. It is not known if the oil spilled at this site contained hazardous constituents, or if the contaminated soils were cleaned up when the facility was removed. Stained soil and asphalt are located in this area, especially at the entrance to a drainage culvert. Phase I RFI sampling was performed in November and December 1993 and December 1995. A total of 17 locations were sampled and 45 samples were collected. Samples were submitted for laboratory analysis for inorganic and organic chemicals, and radionuclides. Inorganic chemicals were detected above BVs. Organic chemicals were detected and three of the detected chemicals were detected above SALs. Radionuclides were also detected above FVs. In 1997, 9 surface and subsurface samples were collected from two locations near SWMU 35-015(b). The samples were submitted to an analytical laboratory for analysis for organic chemicals. This supplemental sampling was conducted to determine if organic chemicals present in soils near SWMU 35-015(b) are at levels that pose a threat to human health or the environment. Additional sampling was proposed for SWMU 35-003(j)-99 according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-004(a)	In Progress	SWMU 35-004(a) is made up of an outdoor storage area previously used to store drums of oil and drums of organic chemicals. The area is located at the southeast corner of the sodium building (Building 35-25). Stained soil was observed at the site during a 1988 reconnaissance and evidence of releases was apparent during a 1990 site inspection, but they were reportedly cleaned up prior to the completion of the 1992 RFI work plan. A temporary, metal, hazardous storage structure, structure 35-386, was present at the time of the Phase I RFI. SWMUs 35-004(a) and 35-009(e), a drainline from Building 35-25 that discharges to an outfall in Ten Site Canyon, were investigated during the ER Phase I RFI in conjunction since they are located in such close proximity that potential contaminants from the container storage area could intermingle with the potential contaminants below the outfall area, thus preventing independent evaluation. In 1995, a total of ten ER Phase I RFI samples were collected from six locations, with one hand-auger hole drilled and two surface samples collected at each SWMU. Samples were analyzed at a mobile laboratory for organic chemicals, inorganic chemicals, PCBs/pesticides, and radionuclides; six of the samples were also submitted to an off-site laboratory for analysis for organic chemicals, inorganic chemicals, and radionuclides. Analytical

		results indicated detectable concentrations of radionuclides greater than FVs and of PCBs and inorganic chemicals greater than BVs; however, one PCB chemical was detected greater than it's SAL. No risk-based contaminants were identified from this site. Two ER Project RFI samples were collected in 1998 from this site for radiological analysis as part of the sampling for SWMU 35-014(a), none of the analytes were detected above FV. Additional sampling was proposed for SWMU 35-004(a) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-004(b)	In Progress	SWMU 35-004(b) is a former chemical container storage area located at the northeast corner of the chemical laser facility (Building 35-85). The pad is approximately 25 ft wide x 35 ft long, with its northern edge located about 10 ft from the mesa edge. The storage area is asphalt-paved and has been used to store organic chemical solutions, oils, and rags since 1977. A temporary metal storage structure, structure 35-412, which housed a compressor, was located at the site. No releases of hazardous materials have been documented at this site, but oil stains on the storage pad itself were reported during an ER Project site reconnaissance in 1988. Six ER Project RFI samples were collected from this site in 1995. One of these samples was submitted to an off-site analytical laboratory for analysis for inorganic chemicals, and one for organic chemicals; all six of the samples were submitted to the mobile laboratory for analysis for organic and inorganic chemicals. Two inorganic chemicals were detected above BVs; none of the analytes were detected above SALs. Additional sampling was proposed for SWMU 35-004(b) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-004(c)	Administratively Complete	
35-004(d)	Administratively Complete	
35-004(e)	Administratively Complete	PRS 35-004(e) is a satellite accumulation area (SAA) located in a laser laboratory in the basement of Building TA-35-2. SAAs, such as PRS 35-004(e), are hazardous waste accumulation areas that are regulated under 40 CFR 262, Standards Applicable to Generators of Hazardous Waste. Spent laser dyes, methanol, toluene, and Kimwipes are accumulated in small containers for disposal. This PRS was regulated under 40 CFR 262 and managed accordingly.
35-004(f)	Administratively Complete	
35-004(g)-00	In Progress	SWMU 35-004(g)-00 is located near the southern edge of Ten Site Mesa and consists of former SWMUs 35-004(g) and 35-009(b). SWMU 35-004(g) is a former container storage area located on the south side of a warehouse (Building 35-67). SWMU 35-009(b) is an out-of-service septic system including drainlines and a leach field, which served Building 35-67. Stormwater runoff and any spills from SWMU 35-004(b) migrated toward former SWMU 35-009(b) which would cause possible contaminants from both sites to commingle. The former container storage area, former SWMU 35-004(g) is an asphalt-paved area adjacent to a concrete pad that houses an air filter structure. This former SWMU reportedly stored oils, solvents, Freon, and vacuum pumps. The asphalt-paved area extends southward approximately 20 ft, and then slopes abruptly 5 to 6 ft onto another flat asphalt-paved area that extends approximately 40 ft towards the southern edge of Ten Site Mesa. Former SWMU 35-004(g) was investigated as part of "Environmental Problem 19 - Spills and Leaks from Drums" in the DOE Survey. Three soil samples were collected and analyzed for alpha and gamma activities, inorganic chemicals, pesticides/PCBs, and VOCs. The samples had low alpha and gamma activities; the only chemicals detected were some unspecified metals and acetone. Staining was

		present during a site reconnaissance in 1988. At the time of RFI activities in 1995, electrical cables, pallets, and other scrap were being stored there; several small oil spills and stains were observed on the asphalt, and there was a small spill of what appeared to be iron pellets at the corner of Building 35-67 and the concrete pad. Former SWMU 35-009(b) is the site of an out-of-service septic system that is located near the southern edge of Ten Site Mesa, south of Building 35-67. The former SWMU includes a septic tank (structure 35-76), a dosing chamber (structure 35-77), a distribution box manhole, and an associated leach field. This septic system served various laboratory buildings at TA-35 from 1966 to 1975. The septic system was taken out of service but left in place when new sanitary sewer lines were routed to the new sewage lagoons in the canyon east of TA-35. The septic system handled sanitary wastes and may have received a variety of industrial wastes including radionuclides. Specific information concerning waste streams introduced to the septic system is not available. At the time of the RFI in 1995, the entire septic system was covered by asphalt, and only the septic tank, dosing chamber, and distribution box manholes were exposed. The manholes for each structure are located at the south edge of a relatively flat parking area adjacent to Building 35-67. The ground surface drops steeply downward about 8 ft at the south side of the manholes. Phase I RFI sampling was conducted at former SWMU 35-004(g) in March 1995. Three locations were sampled and a total of five soil samples were collected. Samples were submitted to both a mobile and fixed-site laboratory for inorganic and organic chemical and radiological analysis. The inorganic chemicals, copper and lead, were detected above BVs but below their SALs by the mobile laboratory; however, there were several quality assurance problems related to the analytical procedures for these chemicals. No organic chemicals were detected in any soil sample. Radionuclide results were within FVs. Phase I RFI sampling was conducted at former SWMU 35-009(b) in January 1994 and December 1995. A total of 6 locations were sampled and 17 samples were collected and submitted to both a mobile and a fixed-site laboratory for inorganic and organic chemical and radiological analysis. Inorganic chemicals were detected above BVs by the mobile laboratory. One SVOC, diethyl phthalate, was detected. The radionuclides, uranium-234, -235, and -238, were measured above FVs. No sample results for any chemical exceeded SAL values. A VCA was conducted on former SWMU 35-009(b) in March of 1996. The contents of the tanks were removed using a vacuum suction truck and a high-powered vacuum "guzzler" truck, which helped to remove the sludge from the tanks. After the contents were removed, the tanks were pressure sprayed and rinsed with fresh water; the rinse water was also removed using a vacuum suction truck. The vacuum suction trucks transported the liquid and sludge to the appropriate off-site waste disposal facility. The septic tanks and associated structures (distribution box, dosing chamber, and manholes) were then left in place and filled with a total of 38 yds of concrete. In 1997, thirteen surface and subsurface samples were collected from five locations in the drainages near SWMU 35-009(b). The samples were submitted to an analytical laboratory for analysis for radionuclides. This supplemental sampling was conducted to determine if radionuclides present at the leach field or in the drainages below the leach field are above BVs or at levels that pose a threat to human health or the environment. Additional sampling was proposed for SWMU 35-004(g)-00 according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.

35-004(h)	In Progress	SWMU 35-004(h) is the former location of a container storage area near the northeast corner of the former air filter building (former Building 35-7). SWMU 35-004(h) was formerly used to store containers of oils, capacitors, and organic chemicals including Freon. The area is no longer used as a storage area and the date of closure is not documented. The disposition of the containers is not documented. Stained soil was observed at the site during a 1988 reconnaissance. Building 35-7 was first the subject of D&D in 1985 during decommissioning activities for the TA-35 WWTP as part of the Radioactive Liquid Waste Line Removal Project. A second D&D event occurred in 1996 at which time Building 35-7, foundation, and inactive buried waste lines (which were buried under the container storage area) were removed to a depth of approximately 15 feet in the area of this SWMU. The entire area was backfilled with clean fill and regraded. A near-surface sample collected from the SWMU location during the RFI in 1994 was submitted to a mobile laboratory for organic and inorganic chemical and radiological analysis; the sample was also submitted to an off-site analytical laboratory for organic chemical and radiological analysis. Thorium was detected above BV by the mobile laboratory; none of the chemicals were detected above SALs. Due to the extensive excavation of this SWMU during D&D activities for Building 35-7, no further sampling of this site is needed. SWMU 35-004(h) was proposed for NFA in the RFI Report Addendum.
35-004(i)	Administratively Complete	
35-004(j)	Administratively Complete	
35-004(k)	Administratively Complete	
35-004(l)	Administratively Complete	
35-004(n)	Administratively Complete	
35-004(o)	Administratively Complete	
35-005(a)	Administratively Complete	AOC 35-005(a) is a former gunite-lined surface impoundment used for storage of waste dielectric oil. AOC 35-005(a) was located on the TA-35 mesa top near Mortandad Canyon northeast of the chemical laser facility (Building 35-85). AOC 35-005(a) was constructed in 1985 to replace the impoundment that previously existed at this location, SWMU 35-006. The impoundment was built to collect oil spills within the bermed area around the oil-handling facilities on the west side of Building 35-85, liquid wastes (i.e., solvents and oils) from drains that serviced the oil-handling equipment (i.e., Marx tanks and switch sections) of the KrF laser in Building 35-85, and precipitation runoff. When the impoundment was in use it was periodically pumped and the oil was recycled. Stained soil and rock along the rim of Mortandad Canyon had indicated that this impoundment had overflowed in the past. The stained area around the impoundment was sampled for PCBs in 1985 and yielded no samples with concentrations greater than the detection limit of 1 ppm. The impoundment was drained in August 1988, and samples of liquid and sludge were collected. The liquid and sludge samples were analyzed for organic and inorganic chemicals and radionuclides. Analysis of the liquid sample detected some organic chemicals above BVs and radionuclides above FVs; however, no PCBs were detected and inorganic chemicals were below EP-toxicity levels. The sludge sample contained detectable organic chemicals, and lead was the only inorganic chemical detected in concentrations that exceeded the EP-toxicity levels. This impoundment was closed in the summer of 1989 in accordance with RCRA interim status closure standards. When the impoundment was decommissioned in 1989, soil samples taken immediately beneath the gunite liner indicated the presence of RCRA VOCs. Consequently, soil beneath the impoundment was removed. Approximately 1 to 2 ft of soil was excavated from the location of the pond near Building 35-85. At these depths, confirmation

		samples showed that soils still contained petroleum hydrocarbons, but VOCs were detected at concentrations too low to pose a health concern. In 1990, soil samples were taken again at this site to verify cleanup. Samples were collected near the surface, and at 5-ft increments from core holes that penetrated to depths of 45 ft. All samples measured within BVs for gross-alpha, -beta, and -gamma activity, and below detection limits for VOCs and SVOCs. All subsurface samples tested negative for TPH, but total hydrocarbons were detected in the two surface soil samples. No ER Project samples have been collected from this site. These SWMUs were proposed for NFA in a 2002 permit modification request.
35-005(b)	Administratively Complete	AOC 35-005(b) is a former gunite-lined surface impoundment used for storage of waste dielectric oil. AOC 35-005(b) was located on the TA-35 mesa top near Ten Site Canyon on the south side of the Antares Carbon Dioxide Laser Building (Building 35-125). It received waste oil and solvents from electrical equipment inside buildings 35-124, -125, and -126, as well as stormwater runoff. When it was in operation, it was also periodically pumped and the oil recycled. A stained area approximately 6-ft wide that extended to the floor of Ten Site Canyon indicated past overflows from the pond. AOC 35-005(b) was investigated as “Environmental Problem 16 - TA-35 Surface Impoundments” in the DOE Environmental Survey. The stained area around the impoundment was sampled for PCBs in 1985, and yielded no samples with concentrations greater than the detection limit of 1 ppm. The overflow area south of Building 35-125 was investigated as "Environmental Problem 21 - Spills and Leakage of Dielectric Oil" in the DOE Environmental Survey. Three samples collected at 50-ft intervals down the slope below the impoundment indicated low levels of alpha and gamma emitters, PCBs, and VOCs. The impoundment was drained in August 1988, and samples of liquid and sludge were collected. The liquid sample was analyzed for organic and inorganic chemicals, and radionuclides. The sludge sample was analyzed for organic chemicals. The liquid sample contained detectable VOCs, radioactivity was measured at FVs, and inorganic chemicals were below the EP-toxicity levels. The sludge sample contained several detectable VOCs. The impoundment was closed in the summer of 1989 in accordance with RCRA interim status closure standards. When this impoundment was decommissioned in 1989, soil samples taken immediately beneath the gunite liner indicated the presence of RCRA VOCs. Consequently, soil beneath the impoundment was removed. Between 10 and 15 ft of soil was removed from beneath AOC 35-005(b). At these depths, confirmation samples showed that soils still contained petroleum hydrocarbons, but VOCs were detected at concentrations too low to pose a health concern. In 1990, soil samples were taken again at these sites to verify cleanup. Samples were collected near the surface and at 5-ft increments from core holes that penetrated to depths of 55 ft. All samples measured at FV for beta and gamma activity. Gross-alpha activity ranged from FV to 60 pCi/g and was observed throughout the soil profile, although the highest readings were near the surface. Samples from the 20-ft depth in one core contained over 20 target VOCs (not specified in the report). Three VOCs were present in concentrations greater than 1 ppm. Acetone was detected in a sample collected at a depth of 25 ft. Total petroleum hydrocarbons were present in almost all samples. In the other core, most samples collected from greater than 15-ft depth contained trichlorotrifluoroethane in concentrations less than 30 ppb. Acetone was detected at 30 ft, and 1,1,1-trichloroethane at 15-ft depth. Total petroleum hydrocarbons were present in most samples. No SVOCs were detected in samples from either core. No ER Project samples have been collected from this site. AOC 35-005(b) was proposed for NFA in 2002.
35-006	Administratively	PRS 35-006 was an unlined waste-oil impoundment that was removed in 1985 and

	Complete	replaced by a RCRA-permitted impoundment, AOC 35-005(a). In 1989, AOC 35-005(a) was removed and remediated under an approved closure plan in accordance with 40 CFR 265. Clean closure was demonstrated and a final closure report was submitted to and approved by the regulatory authority. Because of their co-location, all remedial actions undertaken for AOC 35-005(a) also addressed potential contamination at PRS 35-006.
35-007	Administratively Complete	
35-008-00	In Progress	Consolidated SWMU 35-008-00 consists of former SWMUs 35-008 and 35-014(e) located on the north side of Ten Site Mesa along Mortandad Canyon. Impacted soil from SWMU 35-014(e) was reportedly bulldozed over the edge of the mesa onto SWMU 35-008. Former SWMU 35-008 primarily comprises construction debris. The site reportedly included scrap metal and pipe, paint cans, a 55-gallon drum, and miscellaneous building materials refuse including a large concrete slab, conduits, asphalt, pipe and reinforcing rods. During a site inspection in 1991, only a small amount of debris including tubing, scrap metal, and soda cans, was observed at the SWMU. The site has probably been in existence since 1977 when the Chemical Laser Facility (Building 35-85) was constructed. Debris associated with the SWMU extended from the canyon rim to the canyon floor. Releases of hazardous material from this surface disposal area are not documented. SWMU 35-014(e), also known as 35-014(e1), is an area of oil-stained soil on the northern edge of Ten Site Mesa. The area of oil-stained soil is associated with a dielectric oil spill that occurred east of Building 35-188 when a forklift punctured an aboveground oil storage tank. The oil tank was removed before 1992. The amount of oil that was spilled is unknown; however, it was reported that the spill might have flowed northward to the mesa edge and partially down the mesa slope. A 1984 photograph indicates that the spill flowed down the side of the mesa. Reports also suggest that oil-stained soil may have been pushed over the mesa during cleanup of the spill, although no cleanup of the spill was documented. After the oil spill, a long, narrow, laser corridor extension to Building 35-85 was built between Building 35-188 and the edge of the mesa to house laser experiments. This building extension covers part of the area of the reported oil spill, and construction of this building extension may have included site leveling, soil stabilization, and possibly extension and stabilization of the mesa edge by backfilling with soil and riprap materials. At the time the SAP was written for SWMU 35-014(e) in April 1997, oil was visible on the slope near the edge of the mesa as dark stained soil that covered an area of backfill material about 15 ft by 10 ft. The occasional odor of hydrocarbons was also noted at the site. No stained soils or odors were apparent on the mesa top north of Building 35-85. Phase I RFI sampling was performed in June 1994 and March 1995, with supplemental sampling conducted in December 1995. Eighty-four samples were collected from 28 locations and submitted to both mobile and fixed-site laboratories for inorganic and organic chemicals and radiological analysis. Inorganic chemicals were detected above BVs. The radionuclide, radium-226, was detected in one sample above its SAL. However, this concentration is consistent with natural BVs assuming secular equilibrium with uranium-234, -235 and does not indicate a release. Organic chemicals were detected. The mobile laboratory detected azobenzene above its SAL, however this may have been a reporting error because azobenzene is not normally associated with PAHs or with petroleum contamination. TPH was detected above SALs. No VOCs or PCBs were detected. In 1997, SWMU 35-008-00 was resampled. Eight boreholes were hand augered and 3 samples, including 1 duplicate, were collected from each borehole. Two surface samples were also collected. The samples were submitted to an off-site analytical laboratory for analysis for organic chemicals, inorganic chemicals, TPH, and radionuclides. This resampling was conducted to verify the results of the field screening

		samples collected during the 1995 field activities. Additional sampling of SWMU 35-008-00 was proposed in the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-009(a)	In Progress	SWMU 35-009(a) is a septic system that operated from 1951 to 1975. It is located near the southwest corner of Building 35-34 on the mesa. The structures that make up SWMU 35-009(a) are structures 35-14, a 1500-gallon septic tank, approximately 10 ft long x 4 ft wide x 5 ft deep, buried about 4 ft bgs; 35-15, a dosing chamber; and 35-16, a distribution box. The septic system discharged to drain fields on the south-facing slope of Ten Site Canyon. A 1968 memo indicated that the drain field was plugged and the system was daylighted. The location of the drainline is unknown. Releases from the septic system and leach field are hypothesized to span the boundary of the Ten Site slope. The septic system received sanitary wastes and possibly received industrial and radiological wastes from Building 35-2. Specific waste stream information is not available. Historical operations at Building 35-2 involved the use of lanthanum-140. Two nuclear reactors were housed in Building 35-2, as well as plutonium laboratories and lithium titride operations. In 1975, these structures were taken out of service but left in place and portions of the leach field were excavated when new sanitary sewer lines were routed to the sewage lagoons [SWMU 35-010(a)-99] located east of TA-35 in Ten Site Canyon. Phase I RFI sampling of the site was performed in December 1993 and January 1994. A total of 11 locations were sampled, and 41 samples were collected for field-screening, mobile laboratory analysis, and fixed laboratory analysis. Samples included 1 water sample from the dosing chamber, 2 surface soil samples from surface water drainage areas below the leach field, and 38 subsurface soil samples taken adjacent to the dosing chamber and within the leach field. Eight boreholes, two adjacent to the dosing chamber, and six in the leach field, were drilled to a depth of 20 feet. A total of 28 samples were sent to a fixed laboratory for analysis for organic chemicals and inorganic chemicals. Seven inorganic chemicals were detected above BVs; none were detected above SALs. Two SVOCs were detected, none above SALs. A total of 30 borehole samples and 2 surface samples were submitted to a fixed laboratory for radiolnuclide analysis. No gamma-emitting fission or activation products were detected in the three samples analyzed by gamma spectroscopy. Tritium was detected in each of the three boreholes sampled at depths of at least 15 ft. Isotopic plutonium was also detected at depth. Plutonium and uranium isotopes were detected in the two surface samples; uranium-234 and -235 were detected above FVs in one of the samples. None of the radionuclides were detected above SALs. The site was cleaned up during a VCA in September 1996. The VCA included removal and disposal of the tank contents and filling the tank with concrete. Confirmation soil samples were collected after the VCA from below the septic tank for analysis of organic and inorganic chemicals. Copper and mercury were detected above BVs, but below SALs. There were no organic chemicals detected. Additional sampling was proposed for SWMU 35-009(a) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-009(c)	In Progress	SWMU 35-009(c) is an inactive sanitary septic system, structures 35-44 and 35-45, and leach field located north of the northern edge of Building 35-02 that was in operation from 1961 until 1990, treating sanitary and possibly industrial and radiological waste from Buildings 35-2 and 35-253. Specific waste stream information is not available. Historical operations at Building 35-2 involved the use of lanthanum-140. Two nuclear reactors, as well as plutonium laboratories and lithium titride operations, were housed in Building 35-2. The septic system consisted of a 1290-gallon steel-lined reinforced concrete tank, a distribution box, a manhole cleanout, and a leach field. The tank was reportedly pumped on a weekly basis. The leach field covers an area of 1600 square feet and is located under an east-west dirt access road that lies along the mesa edge,

		west of trailer 35-261. Phase I RFI sampling was conducted in January 1994 and December 1995. A total of 9 locations were sampled and 31 samples were collected. Eight boreholes were drilled to a depth of 20 ft, and 3 or 4 samples were collected from each borehole. All samples were analyzed for radionuclides. Uranium-235 was measured slightly above the FV in one sample. Plutonium-238, and -239/-240 were detected above laboratory method limits. No gamma-emitting fission or activation products were detected in the five samples analyzed by gamma spectroscopy. Four samples from 4 locations were submitted to a fixed laboratory for inorganic chemical analysis; 2 analytes were detected above BVs. Five samples from five locations were submitted to a fixed laboratory for organic chemical analysis; 4 chemicals were detected. No sample results for any chemical exceeded SAL values. A VCA was conducted at this site in 1996. The contents of the tank were removed using a vacuum suction truck. After the contents were removed, the tank was pressure sprayed and rinsed with fresh water; the rinse water was also removed with the vacuum suction truck. The vacuum suction truck disposed of the liquid at an appropriate off-site waste disposal area. Because this VCA was not conducted in response to known or potential releases, no confirmation sampling was conducted. Additional sampling was conducted at this site in 1997. Seventeen surface and subsurface samples were collected and submitted to an off-site analytical laboratory for radionuclide analysis. The purpose of this sampling event was to determine if radionuclides are present, at the leach field or in the drainage below the leach field, above FVs or at levels that pose a threat to human health or the environment. Additional sampling was proposed for SWMU 35-009(c) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-009(d)	In Progress	SWMU 35-009(d) is the site of a 1600-gallon septic tank (structure 35-65) which has been taken out-of-service, cleanout manhole (structure 35-64), and associated leach field. The tank is located at the northeast corner of Ten Site Mesa, and the leach field extends from the tank toward the east, an outfall from the eastern end of the septic system drains southward into an extension of Ten Site Canyon informally designated as Pratt Canyon. The leach field covers an area of approximately 1800 sq ft and consists of fine- to coarse-grained sandstone and cobble filter bed material. Consolidated tuff is reached at depths of 8 to 10 ft in the leach field. The tank was reportedly pumped on a weekly basis. This septic system served TA-35 from 1966 to 1990 and handled sanitary wastes from the Nuclear Safeguards Research Building (Building 35-27), and possibly from other laboratory buildings. The system may also have received a variety of industrial wastes including radionuclides. Phase I RFI sampling was collected in February 1994 and December 1995. A total of 10 soil locations were sampled and 27 soil samples were collected for field-screening, mobile laboratory analysis and fixed laboratory analysis for organic chemicals, inorganic chemicals, and radionuclides. Three organic chemicals were detected. Seven inorganic chemicals were detected above BVs. Isotopic uranium results were below FVs. No sample results for any chemical exceeded SAL values. A VCA was conducted at this site in 1996. The contents of the tank were removed using a vacuum suction truck. After the contents were removed, the tank was pressure sprayed and rinsed with fresh water; the rinse water was also removed with the vacuum suction truck. The vacuum suction truck disposed of the liquid at an appropriate off-site waste disposal area. Because this VCA was not conducted in response to known or potential releases, no confirmation sampling was conducted. Additional sampling was conducted at this site in 1997. Fourteen surface and subsurface samples were collected and submitted to an off-site analytical laboratory for

		radionuclide analysis. The purpose of this sampling event was to determine if radionuclides are present, at the leach field or in the drainage below the leach field, above FVs or at levels that pose a threat to human health or the environment. Additional sampling was proposed for SWMU 35-009(d) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-009(e)	In Progress	SWMU 35-009(e) is a 4-in. vitrified clay tile pipe installed in 1956 to service 6 floor drains (inactive) inside Building 35-25. The pipe runs 30 ft from the building to daylight near the north rim of Ten Site Canyon; a ditch was dug from the end of the tile pipe to drain into the canyon. The drainline does not pass through a septic tank or leach field. The outfall has not been located to date and may have been covered by asphalt. SWMUs 35-009(e) and 35-004(a), an outdoor storage area located at the southeast corner of Building 35-25 previously used to store drums of oil and drums containing organic chemicals, were investigated during the ER Phase I RFI in conjunction since they are located in such close proximity that potential contaminants from the container storage area could intermingle with the potential contaminants below the outfall area, thus preventing independent evaluation. In 1995, a total of ten ER Phase I RFI samples were collected from six locations, one hand-auger hole was drilled and two surface samples were collected at each SWMU, and analyzed at a mobile laboratory for organic chemicals, inorganic chemicals, and radionuclides; six of the samples were also submitted to an off-site laboratory for organic and inorganic chemical and radionuclides analysis. Analytical results indicated detectable concentrations of radionuclides greater than FVs and of PCBs and inorganic chemicals greater than BVs; however, only Aroclor 1260 was detected greater than its SAL. No risk-based contaminants were identified from this site at that time. Three samples were also collected in 1997 for radionuclides analysis; cesium-137 was detected in one of the samples above its FV. Additional sampling was proposed for SWMU 35-009(e) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-010(a)-99	In Progress	Consolidated SWMU 35-010(a)-99 includes former SWMUs 35-010(a-e), and comprised the TA-35 WWTP, which consisted of three sewage lagoons, four sand filters, and an outfall. The system was used for the biological treatment of liquid waste. This consolidated SWMU received sanitary and industrial wastewater from TA-35, -48, -50, and -55 from 1975 through 1992. Former SWMUs 35-010(a, b, c) are three wastewater treatment lagoons located in Ten Site Canyon near the confluence with Pratt Canyon. Because the WWTP was built in stages, the lagoons were not constructed until 1975. The sand filter beds and NPDES-permitted Outfall SSS-10S were later installed in 1983. Prior to construction of the sand filter beds, the lagoons discharged via an unpermitted outfall located at the southeast corner of the southeast lagoon, former SWMU 35-010(c). The three lagoons have concrete sides and are described as having bottoms lined with a mixture of topsoil and bentonite (100 lb of bentonite per 100 sq ft). However, subsequent site investigations indicate that the liner is no longer present (or is not differentiable from sludge and weathered tuff at the bottom of the lagoons). The planned capacity of the lagoons was 12,000 gpd. In addition to sanitary waste, these lagoons reportedly received small quantities of radionuclides, organic chemical solutions, and photographic processing wastes from TA-35, -48, -50, and -55. The facility ceased operations in 1992, when sanitary waste was redirected to the LANL SWSC facility located at TA-46. Former SWMU 35-010(d) includes four sand filter beds that handled wastewater discharged from the sewage treatment lagoons through the formerly permitted NPDES-permitted Outfall SSS-10S in the discharge headwall, former SWMU 35-010(e). The filters began operation in 1983 and were deactivated in 1992. The sand filter beds are

		constructed of concrete walls that are 3 ft high and 6 in. wide. Each bed measures approximately 50 ft by 50 ft. Polyvinyl chloride distribution pipes, 2 in. in diameter, radiate from the center of the sand filter bed to the 4 corners in 3 of the 4 sand filter beds. An 8-in.-diameter riser pipe in the center of each sand filter bed feed the effluent to the radial pipelines. The sand filter beds are plastic lined and contain sands of varying composition and texture from fine- to medium-grained quartzose sands to coarse-grained basaltic and granitic gravel. Approximately 2 ft of filter material is present in each filter, and each successive sand filter bed is 1 inch lower than the previous one that provided a hydraulic flow gradient. On the hillside above the sand filter beds is a diversion channel, which diverts surface water to the east. The berm of the diversion channel is composed of tuff material and crushed gravel of 1.5-in. diameter. A second diversion channel is present west of the sand filter beds and appears to have been constructed by digging a channel 2-ft deep. These two diversion channels are apparently intended to divert surface water away from the sand filter beds. Former SWMU 35-010(e) is the former NPDES-permitted Outfall SSS-10 from the sand filter beds that discharged into Ten Site Canyon. A depth recording gauge station is located at the outfall and measured the effluent level above a small v-shaped weir discharge point. A rock dissipater apron is present at the discharge point. Compiled flow records of the outfall indicate an average flow rate of approximately 45,000 gpd, however, the planned capacity of the facility was 12,000 gpd. Phase I RFI sampling was conducted at former SWMUs 35-010(a, b, c) in 1994. A total of 12 locations were sampled, and 16 soil samples, 12 sludge samples, and 4 liquid samples were collected. Samples were submitted for laboratory analysis for inorganic and organic chemicals and radionuclides. Inorganic chemicals were detected above BVs in all media types sampled. Uranium-234, -235, and -238 were detected above FVs in sludge. PCBs were detected in 2 of the 12 sludge samples at a maximum concentration of 2.8 mg/kg. Several other organic chemicals were also identified at low concentrations in sludge and tuff samples. Phase I RFI sampling was conducted at former SWMUs 35-010(d, e) in April 1995. Twelve samples were collected from six locations. Samples were submitted to both mobile and fixed-site laboratories for inorganic and organic chemical and radiological analysis. Inorganic chemicals were detected above BVs. No organic chemicals were detected in any of the samples. Radionuclide results were within FVs. Additional sampling was conducted in 1997 at SWMUs 35-010(a, b, c) to determine if organic chemicals or radionuclides are present in the sludge or underlying tuff; to verify field screening data; and to supplement the organic and inorganic chemical data set. Forty-eight samples were collected from fifteen locations and submitted to an off-site analytical laboratory for organic chemical, inorganic chemical, and radionuclide analysis. In 1997, additional sampling was conducted at SWMU 35-010(d). Eleven samples from five locations were collected and submitted to an off-site analytical laboratory for organic chemical, inorganic chemical, and radionuclide analysis. This samplingwas conducted to determine if organic chemicals, inorganic chemicals, or radionuclides are present in the fill material contained in the sand filter beds. Additional sampling was proposed for SWMUs 35-010(a, b, c) in the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-011(a)	Administratively Complete	PRS 35-011(a) was initially identified as two underground storage tanks located in the basement of Building TA-35-2. Field investigations and archival information indicate

		that the tanks were fiberglass, located above ground, and used for the containment of overflow from research laboratories located in the building. The contents of the tanks were periodically removed and transported to TA-50 for treatment. Before the removal of the tanks and associated lines in 1997, the alarm system on the tanks was tested and found to work properly. The PRS is not known or suspected of releasing laboratory overflow to the environment because of its location and containment within the basement of the building. Therefore, SWMU 35-011(a) is appropriate for NFA under Criterion 3.
35-011(b)	Administratively Complete	
35-011(c)	Administratively Complete	
35-011(d)	Administratively Complete	AOC 35-011(d) lies in the western half of the TA-35 mesa top and consists of two 6,000-gallon USTs formerly located at the southeast corner of the high voltage development laboratory (Building 35-188). The tanks were installed in 1969 and were used to store contaminated dielectric oil used in Building 35-188. These tanks were removed in accordance with NMED UST regulations in the summer of 1991. The tanks were inspected and found to be in good condition; samples were collected for TPH only. An adjacent area of stained soil, AOC 35-014(f), was determined to have originated from a leaking oil-handling facility formerly located above the tanks and not from the tanks themselves. There have been no documented hazardous releases to the environment from these tanks. In 1993, the ER Project conducted samping at AOC 35-011(d). Twenty-four field screening samples were collected from 5 locations and submitted to the mobile analytical laboratory. Additional sampling will be conducted at this site for organic and inorganic chemicals to determine that oil was the only substance stored in the tanks.
35-012(a)	Administratively Complete	AOC 35-012(a) is a 1,000 gallon UST, structure 35-158, located on the north side of the chemical laser facility (Building 35-850). Waste oils and possibly solvents and chemicals from spills in Building 35-85 may have been discharged to this tank through floor drains, former SWMU 35-013(d). The UST was connected to a decommissioned surface impoundment [SWMU 35-005(a)/35-006]. The tank was leak-tested before it was removed, no leaks were found. The tank was removed in 1990 as part of the closure procedure for SWMU 35-005(a), and the pit was backfilled and covered with asphalt. No ER Project samples have been collected from this site. AOC 35-012(a) has been proposed for NFA.
35-012(b)	Administratively Complete	
35-013(a)	In Progress	SWMU 35-013(a) consists of sumps and catch basins in the basement of the target fabrication facility (Building 35-213). The two large sumps and seven catch basins, located beneath metal-plating tanks, have 50- to 100-gal. capacities. The two sumps contain sanitary and industrial wastes with possible radionuclide contamination. The wastes are monitored for radioactivity and are sent to TA-50 if the liquid in the sump exceeds a standard for radioactivity. Wastes containing radioactivity less than this standard were discharged to the TA-35 lagoon system, SWMU 35-010(a)-99. According to LANL personnel, the catch basins beneath the metal-plating tanks have never been used. The ER Project has not collected samples from the SWMU site. The SWMU has been proposed for deferred action, as the sumps are inaccessible for sampling until the units are no longer active and the building is scheduled for D&D.
35-013(b)	In Progress	SWMU 35-013(b) is a sump pump in the basement of a laboratory and office building, Building 35-2, which collects industrial wastewater that contains solvents, chemicals, and small quantities of radionuclides. Treated fixer and developer solutions from photography labs discharged to drains in Building 35-2, which are possibly connected to the sump. This sump discharged to the WWTP lagoons in the canyon east of TA-35.

		The Building 35-2 sump does not receive sewage or sanitary waste, as stated in the SWMU report. This site was originally proposed for NFA in March 1995; this proposal was formally withdrawn in February 2002 because characterization is required ror this SWMU. The SWMU has been proposed for deferred action, as the sumps are inaccessible for sampling until the units are no longer active and the building is scheduled for D&D.
35-013(c)	In Progress	SWMU 35-013(c) is composed of two sump pumps in the basement of the Nuclear Safeguards Research Building, Building 35-27, which receive industrial wastewater that may have contained solvents and other hazardous chemicals. The sumps probably do not receive radionuclides. The wastewater from Building 35-27 is also discharged to the WWTP lagoons in the canyon east of TA-35. The ER Project has not collected samples from the SWMU site. The SWMU has been proposed for deferred action, as the sumps are inaccessible for sampling until the units are no longer active and the building is scheduled for D&D.
35-013(d)	Administratively Complete	PRS 35-013(d) was initially identified as four sumps located within Building TA-35-85. Field investigations and archival information indicate that the “sumps” were actually floor drains. All four drains channeled wash water from routine floor cleaning and sporadic operational releases of oils and solvents to an underground storage tank (UST) TA-35-158 [PRS 35-012(a)] located directly outside the north end of Building TA-35-85. In 1991, the UST underwent removal and closure in accordance with New Mexico Hazardous Waste Regulations (RCRA closure). At the time of closure, all related piping located inside Building TA-35-85 was grouted in place and all related outside connections were sealed. Because it is not known to have released contaminants to the environment, SWMU 35-013(d) is appropriate for NFA under Criterion 3.
35-014(a)	In Progress	SWMU 35-014(a) lies on the southeastern TA-35 mesa top and is a former area of soil contaminated by laboratory radionuclide stack emissions from a former air filter building (former Building 35-7). The area was located on the southwest side of Building 35-2. The facility released several thousand curies of tritium to the atmosphere between 1954 and 1979. Analyses of peach and leaf samples from trees located just beneath the exhaust stack indicated slightly elevated concentrations of tritium, strontium-90, total uranium, plutonium-238 and plutonium-239. The ER Project has collected several samples from the area both after the 1980 decommissioning of services from the building and the 1996 D&D, at which time the building and associated piping were removed. A total of 33 Phase I RFI soil samples were collected in November 1993 at 11 locations and analyzed for radionuclides at a fixed-site laboratory. The radionuclides, uranium-234, -235, and -238 were detected above FVs; plutonium-239 and tritium, were also detected. None of the chemicals were detected above SALs. In 1997, twenty-six additional samples were collected at SWMU 35-014(a). These samples were submitted to an off-site analytical laboratory for radionuclide analysis. This additional sampling was conducted to supplement the Phase I RFI data for the radiological characterization of SWMU 35-014(a). Historical data was reviewed and reported in the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002. Chemicals have been detected at the SWMU at greater than BVs. Analysis was completed for 2 SVOC samples with 2 phthalates detected. No PCBs were detected. Alpha spectroscopy analysis was completed for 27 samples; plutonium-239 and uranium-234/-235 were detected at concentrations greater than FVs. Gamma spectroscopy analysis was also completed for 20 samples; cesium-137, cobalt-60 and europium-152 were detected. There were no detections of strontium-90. Tritium was detected with concentrations below 0.6 pCi/g. The SAP proposed additional sampling for SWMU 35-014(a).
35-014(c)	Administratively Complete	

35-014(e3)	Administratively Complete	
35-014(f)	In Progress	AOC 35-014(f) lies on the northwestern TA-35 mesa top and consisted of an area of soil stained by oil spills. This SWMU is located on the east side of the high voltage development laboratory (Building 35-188). The stained soil was located under the base of a compressor that was part of a dielectric oil-handling system that connected a pair of USTs, AOC 35-011(d), to Building 35-188. When the USTs were removed in 1991, extensive surface and subsurface soil contamination was discovered in the entire area along the east side of Building 35-188 and also at the base of a compressor at the northeast corner of the building. Samples were collected in May of 1993 at the site of two USTs, AOC 35-011(d), after they were removed. Twenty-six soil samples were collected from six 20-foot deep boreholes at the former UST locations and submitted to a mobile laboratory for TPH analysis. TPH was detected in each borehole. Six soil samples were collected as part of the Phase I RFI in March 1995, supplemental sampling of eight additional soil samples was conducted in June of 1996, a confirmation sample was collected in July 1996, and an additional three waste characterization samples were collected in August 1996. Samples were submitted to a mobile laboratory for radiological analysis and to a fixed-site laboratory for organic and inorganic chemical analysis. The analytical results show that TPH contaminated soils are present, but radioactivity is not present significantly above FVs. No PCBs were detected in any of the samples. No hazardous or listed constituents were measured in the samples. Inorganic chemicals including antimony, calcium, chromium, copper, and nickel were measured above BVs. No chemicals were detected above SALs. The site was cleaned up during a 1996 ER Project VCA; 45 cubic yards of TPH-contaminated waste was removed. Four verification samples were collected and submitted to a fixed-site laboratory for TPH analysis. TPH was detected in each of the samples at levels below or slightly higher than the recommended soil cleanup criteria of 2,500 and 5,000 mg/kg for soil depth intervals of 0 to 3 ft and deeper than 3 ft, respectively. At the one location where the TPH levels were slightly above the recommended soil cleanup criteria the sample was collected in bedrock tuff from material that did not exhibit any visual or olfactory indications of contamination. This area was to be backfilled to a depth of at least five feet with clean soil, which would remove the potential for possibly contaminated material to come into contact with storm water. Backfilling would also remove the potential for contamination migration from the site via the surface water pathway and the potential for exposure of site workers to possibly contaminated surface soils. The site was backfilled with clean soil to the original grade at the conclusion of the VCA activities. Additional sampling was proposed for AOC 35-014(f) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-014(g)-00	In Progress	Consolidated SWMU 35-014(g)-00 consists of former SWMU 35-014(g1), and former AOCs 35-004(m), 35-014(g2), and 35-016(n). These consolidated SWMU and AOCs are either located on, or adjacent to, the north slope of Ten Site Canyon or are outfalls that discharge onto that slope. The sites are related primarily to SWMU 35-015(a), the site of a decommissioned tank farm and waste-oil treatment facility formerly located west of the carbon dioxide laser building (Building 35-86) and an experimental support laboratory (Building 35-207). The former waste-oil treatment facility reprocessed used dielectric oil from the Helios CO2 laser in Building 35-86 and included oil surge tanks 35-149 through 35-154, a grease trap, and an oil-treatment unit. When the oil recycling process was complete, separated water was discharged into Ten Site Canyon through a storm sewer that eventually merged with former AOC 35-016(n). Spills from the tank farm were also discharged to a storm sewer and into Ten Site Canyon near Building 35-207. The tank farm and treatment facility were decommissioned and removed in late 1988 or 1989.

		Former SWMU 35-014(g1) is the site of a former oil spill on concrete adjacent to an asphalt-paved catchment basin located at the northeast corner of an experimental support laboratory (Building 35-207). The catchment basin directs stormwater flow to former SWMU 35-016(n), a CMP outfall and daylight drainage channel. A small oil stain remains visible on the concrete; however, no obvious oil staining is apparent in the catchment basin or the outfall. The origin and date of the spill is unknown. There is currently no visible sign of the spill or any sign of continued releases at the CMP outfall, as it was reportedly cleaned up in the late 1980s during the D&D of the former tank farm and waste-oil treatment facility. Historical samples collected from this area contained detectable amounts of metals, pesticides/PCBs, alpha- and gamma-emitting radionuclides, SVOCs, and VOCs. Former AOC 35-004(m) was a storage area [collocated with former AOC 35-014(g2)] for containers of organic chemical solutions, Freon, oil, and rags. The site is a partially asphalted strip, approximately 5 ft x 25 ft, adjacent to the paved area south of Building 35-86. The site is bound to the north by a curb that separates the container storage area from an asphalt-paved road that accesses the south side of Building 35-86. The site is bordered to the south by the TA-35 security fence. A metal chemical storage building and a trash dumpster believed to have originated at the firing sites at TA-15 were present on the site at the time of the Phase I RFI sampling in 1995, but have since been removed (during the D&D of the former tank farm and waste-oil treatment facility). The location is no longer used as a container storage area. Former AOC 35-014(g2) comprises a number of small oil-stained areas within the former container storage area identified as former AOC 35-004(m). The stains were reported to have originated from leaking containers that were formerly stored in the area. The volume and timing of any releases from the containers is not documented. The container storage area is no longer active and was reportedly cleaned up in the late 1980s during the D&D of the former tank farm and waste-oil treatment facility. Former AOC 35-016(n) comprises a 10-in.-diameter CMP outfall and natural daylight drainage channel that received stormwater runoff from the roof and paved area south of the carbon dioxide laser building, Building 35-86, and a grassy slope adjacent to an experimental support laboratory (Building 35-207). The source of the outfall is a daylight drainage channel that leads to an asphalt-paved catchment basin. The outfall receives flow from the catchment basin via an intake grate. Because SWMU 35-015(a), the decommissioned tank farm and waste-oil treatment facility, was formerly located west of Building 35-86, recycled, separated water was also discharged into Ten Site Canyon through a storm sewer that leads to former AOC 35-016(n). The tank farm and treatment facility were decommissioned and removed in late 1988 or 1989. Historical samples collected from this area contained detectable amounts of inorganic chemicals, pesticides/PCBs, alpha- and gamma-emitting radionuclides, SVOCs, and VOCs. Phase I RFI sampling was conducted in April 1995 at AOCs 35-004(m) and 35-014(g2). Four samples were collected and submitted to both a mobile and a fixed-site laboratory for analysis for inorganic and organic chemicals and radionuclides. Inorganic chemicals were detected above BVs by the mobile laboratory . No organic chemicals were detected in any sample. The radionuclides, uranium-234, -235, and -238 were detected above FVs in one sample. Uranium-234 was detected above its SAL. Plutonium-238, and -239/-240 were detected below SALs. A dumpster was being used on the site to store non-hazardous, non-radioactive trash; however, it had previously been used at TA-15 and showed shrapnel scarring. In March 1997, a direct radiation survey of the dumpster indicated elevated beta/gamma measurements. The dumpster was removed from the site after field screening was completed. The area was again field-screened in May 1997 after the dumpster had been removed. Two of the nine locations exhibited both alpha and beta/gamma activities slightly greater than FVs. A confirmation sample analyzed at a fixed-site laboratory detected uranium-235 above FVs, but well below SALs.

		Phase I RFI sampling was conducted at SWMUs 35-014(g1) and 35-016(n) in April and December 1995. Five samples were collected and submitted to both mobile and fixed-site laboratories for inorganic and organic chemical and radiological analysis. Inorganic chemicals were detected above BVs by both laboratories. Neither laboratory detected VOCs in any sample. Both laboratories did detect SVOCs and PAHs; benzo[a]pyrene was detected above its SAL in one sample. Radionuclide results were within FVs. Additional sampling was proposed for SWMU 35-014(g)-00 in the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-014(g3)	In Progress	AOC 35-014(g3) is an oil-stained area resulting from a major oil spill that occurred near the former tank farm, SWMU 35-015(a), on the west side of the carbon dioxide laser building, Building 35-86, located adjacent to the north slope of Ten Site Canyon. The amount of oil that was released is not specified, but the source of the spill was reportedly an oil tank truck. The spill flowed southward through a culvert under the road on the south side of Building 35-86, across the parking lot west of Building 35-207, and south through a natural drainage pathway, former AOC 35-016(n), into Ten Site Canyon. The spill occurred some time prior to May 9, 1984, the date of documentation photographs. The path of the spill was clearly visible in a 1986 aerial photograph. Eleven samples were collected in 1987 along the trace of the spill to the canyon bottom and 100 ft downstream as part of "Environmental Problem 25-Spills and/or Unplanned Releases of Liquids". Inorganic chemicals, radionuclides, and organic chemicals were detected in the samples. The tank farm underwent D&D in 1988 and 1989. The stained area was also observed in August of 1991. At that time, all vegetation in the path of the spill was dead and the area still smelled strongly of oil. In April 1995, 11 soil samples were collected from 6 locations as part of the Phase I RFI and sent to both mobile and fixed-site laboratories. Sample analysis was for inorganic chemicals, radionuclides, and organic chemicals. PAHs were also tested for in the mobile laboratory. The inorganic chemicals, chromium, nickel, uranium, and zinc, were detected above BVs. Several organic chemicals were detected. According to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002, the ER Project collected additional samples from this SWMU area in 1997. Historical ER Project data has been reviewed in the SAP and potential contaminants exist at this AOC at greater than BVs. Analysis was completed for organic and inorganic chemicals, and radionuclides. SVOCs were detected in 12 of 16 samples with LROs detected at concentrations up to 20,000 ppm. VOCs were detected in 5 of 10 samples. Alpha spectroscopy analysis was completed for 2 samples; nothing was detected greater than FVs. Gamma spectroscopy analysis was completed for 14 samples with no detects greater than FVs. Additional sampling was proposed for AOC 35-014(g3) in the SAP.
35-015(a)	In Progress	SWMU 35-015(a) is the site of a decommissioned tank farm and waste-oil treatment facility formerly located west of the carbon dioxide laser building (Building 35-86). The former waste-oil treatment facility reprocessed used dielectric oil from the Helios CO2 laser in building 35-86 and included oil siege tanks 35-149 through 35-154, a grease trap, and an oil-treatment unit. When the oil recycling process was complete, separated water was discharged into Ten Site Canyon through a storm sewer. Spills from the tank farm were also discharged to a storm sewer and into Ten Site Canyon near Building 35-207. In 1985, samples taken in the area of the oil siege tanks indicated no PCB contamination. Field notes recorded during a 1988 environmental survey noted a “bad" oil spill at the surge tanks. This is the same spill, designated as SWMU 35-014(g3), that ran into Ten Site Canyon south of Building 35-207. The tank farm and treatment facility were decommissioned and removed in late 1988 and 1989. The area was partially paved after the tank farm and waste-oil facility were removed. However, stained areas present at the tank farm indicate that contaminated soils were not completely removed when the facility was decommissioned.

		Several out-of-service oil-handling pipelines remain at the site. At the time of the Phase I RFI, the locations of the pipelines could be identified by 4-ft vertical pipe sections which connected to the former tanks. These pipes were subsequently cut flush with the concrete surface and grouted to allow trailers to park at the site. Summer temperatures appear to have caused residual oil in the pipes to expand because oil had seeped around the grout and onto the concrete at three locations in the northern part of the area. Many of the sites in the southern part of the area where vertical pipes were located have been backfilled with aggregate base course up to about 1 ft deep. The backfill material covers most of the Phase I sample locations. No evidence of seeping oil from these vertical pipes has been observed. A total of 19 samples were collected from 11 locations for the Phase I RFI in March and December 1995. Samples were submitted to both mobile and fixed-site laboratories for analysis for organic and inorganic chemicals and radionuclides. PAHs and PCBs were only analyzed at the mobile lab. Eleven inorganic chemicals were detected above BVs. One radionuclide was detected above FV. TPH was detected at elevated levels. Several SVOCs were detected, however their values were estimated due to the dilution required because of hydrocarbon contamination. No VOCs were detected. According to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002, the ER Project collected additional samples from this SWMU in 1997. Historical data was reviewed in the SAP and potential contaminants exist at the site at greater than BVs. Five inorganic chemicals were detected greater than BVs. SVOCs (LROs and DROs) were detected in 16 of 20 samples. Trace amounts of VOCs were detected in 4 of 6 samples. PCB analysis was completed for 6 samples with no detections. Alpha spectroscopy sample analysis was completed for 17 samples; uranium-235 was detected in 1 sample just over its FV. Gamma spectroscopy analysis was completed for 16 samples; 1 radionuclide was detected in 1 sample just over its FV. Additional sampling was proposed for SWMU 35-015(a) in the SAP.
35-016(a)-00	In Progress	SWMU 35-016(a)-00 consists of two former SWMUs, 35-016(a) and 35-016(q). Former SWMU 35-016(a) was established in 1958 to handle noncontact cooling water from the sodium testing building (Building 35-34). The former SWMU originally consisted of an 8-in.-diameter metal pipe with a valve and a 6-in. VCP outfall that were placed in a trench cut into the tuff that discharged into Ten Site Canyon. The outfall, former NPDES-permitted Outfall 04A089, was eliminated from the permit in 1985. The drainlines were decommissioned and removed in 1987, and the trench now serves as a stormwater collection channel for a small area on the south side of Ten Site Mesa. Aerial photographs from 1965 record a diagonal trench extending from the northern end of former SWMU 35-016(a) in a southeasterly direction that appears to connect with the northern end of former SWMU 35-016(q). Aerial photographs from 1974 show that the diagonal trench and approximately two-thirds of the northern portion of the former SWMU were no longer present and may have been backfilled. The 1974 aerial photographs show this site to be much the same as it appeared in the mid-1990s. Former SWMU 35-016(q) is a larger trench cut into the tuff, parallel to and about 60-ft east of former SWMU 35-016(a), which includes several active stormwater collection basins that are located between Building 35-34 and the edge of Ten Site Canyon. The trench discharges stormwater to the same area in Ten Site Canyon as former SWMU 35-016(a) does. This former SWMU also appears to have been constructed in 1958. Three sediment samples were collected from below the discharge area of these former SWMUs in Ten Site Canyon as part of Environmental Problem 24 in the DOE Environmental Survey. The samples contained detectable quantities of SVOCs, PCBs, inorganic chemicals, and alpha- and gamma-emitting radioactive materials. No VOCs or beta emitters were detected in quantities above detection limits. Phase I RFI sampling was conducted at former SWMU 35-016(a) in March 1995 with supplemental sampling completed in June 1996. Four samples were initially collected at former SWMU 35-016(a) in 1995, and four supplemental samples were collected in 1996. The initial samples were analyzed for inorganic and organic chemical and

		radionuclides. The initial samples were primarily analyzed at a mobile laboratory and the supplemental samples were submitted to a fixed laboratory for analysis. Inorganic chemicals were detected above BVs; none were detected above SALs. Organic chemicals were detected in samples analyzed by the mobile laboratory; no VOCs were positively identified in any sample. Benzo[a]pyrene was detected above its SAL in one sample, but was not detected in a duplicate sample collected at the same location. Radionuclides were not detected above FVs. Additional sampling was conducted at SWMU 35-016(a) in 1997. Supplemental data was needed for the radiological characterization of this site. Three samples from one location were collected and submitted to a fixed-laboratory for radionuclide analysis. No radionuclides were detected above SALs. Phase I RFI sampling was conducted at former SWMU 35-016(q) in March 1995. Six soil samples were collected. All six samples were analyzed at a mobile laboratory for organic and inorganic chemicals and radionuclides. All the samples were also analyzed at a fixed laboratory for radionuclides. One sample was submitted to a fixed-site laboratory for organic chemical analysis. The mobile laboratory detected inorganic chemicals above BVs; none were detected above SALs. Organic chemicals were detected by the mobile laboratory; two chemicals were detected above SALs. Plutonium-238, and -239/-240 were detected below SALs; other detected radionuclides were below FVs. Additional sampling was conducted at SWMU 35-016(q) in 1997. Supplemental data was needed for the radiological characterization of this site. Eight samples from three locations were collected and submitted to a fixed-laboratory for radionuclide analysis. No radionuclides were detected above SALs. Additional sampling was proposed for AOC 35-016(a)-00 according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-016(b)	In Progress	AOC 35-016(b) is an inactive outfall established in 1977, which discharged photographic processing effluents and stormwater from roof drains of a photo laboratory and office building (Building 35-87). The outfall was NPDES-permitted Outfall 06A132. The effluent discharge volume, limited to 3,000 gallon/day, was released to Ten Site Canyon. Formerly photographic fluids were processed through a silver and cyanide recovery process before being released. The six photographic laboratory waste drains (three floor, three sink) routed to this outfall were either plugged (floor) or rerouted (sink) to the sanitary sewer system. Four soil samples were collected as part of the Phase I RFI conducted in April 1995. The samples were submitted to both mobile and fixed-site laboratories for organic chemical, inorganic chemical, and radiological analysis. PAHs were only analyzed at a mobile laboratory and SVOCs were only analyzed at a fixed laboratory. Inorganic chemicals were detected at levels above BVs. No specific organic chemicals were detected. According to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002 additional sampling was conducted at this AOC in 1997. Historical data was reviewed in the SAP and potential contaminants exist on the AOC at greater than BVs. Analysis was completed for one inorganic chemical sample and lead was detected at concentrations greater than BVs. Organic chemicals were not detected in the one sample collected. Alpha spectroscopy analysis was completed for 10 samples; uranium-234 and -238 were detected in one sample. Gamma spectroscopy analysis was completed for six samples with no detects. Additional sampling was proposed in the SAP for AOC 35-016(b).
35-016(c)-00	In Progress	Consolidated SWMU 35-016 consists of two former SWMUs, 35-016(c) and 35-016(d), which are former drainlines that discharged noncontact cooling water to outfalls that overlap, discharging to the same area of Ten Site Canyon. Former SWMU 35-016(c)

		consists of two inactive outfalls, former NPDES-permitted Outfalls 04A088 and 04A012, established in 1964 to discharge noncontact cooling water from Building 35-67. The drainline to NPDES-permitted Outfall 04A088 ran about 75 ft southward to its point of discharge into Ten Site Canyon. NPDES-permitted Outfall 04A088 was combined with NPDES-permitted Outfall 04A012 by 1985. NPDES-permitted Outfall 04A012 ran about 125 ft from Building 35-67 to its point of discharge into Ten Site Canyon. It was deactivated in 1987. Former SWMU 35-016(d) is an inactive outfall that was constructed in 1962 to handle noncontact cooling water from the reactor components development building (Building 35-46). This outfall, NPDES-permitted Outfall 04A087, was still listed on the permit as an active outfall in 1985, but it was inactive by 1990. The drainline runs about 50 ft southward to its point of discharge into Ten Site Canyon. Both buildings housed offices and heating and cooling systems in support of other TA-35 buildings. The noncontact cooling water was from building cooling systems and was not process-specific. Phase I RFI samples were collected in March 1995 with supplemental sampling performed in June 1996. Eight soil samples were originally collected in 1995, with an additional 12 supplemental samples collected in 1996. Samples were analyzed for organic and inorganic chemicals, and radionuclides; 1995 samples were analyzed at a mobile laboratory, 1996 samples were analyzed at a fixed-site laboratory. Inorganic chemicals were detected, 16 were above BVs; one exceeded its SAL. No VOCs were detected in any sample. SVOCs were detected, primarily in one sample; four chemicals exceeded their SALs. Radionuclide results were below FVs. Additional sampling was proposed for AOC 35-016(c)-00 according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-016(e)	In Progress	AOC 35-016(e) is an inactive outfall established in 1977 to discharge noncontact cooling water from the chemical laser facility (Building 35-85). This NPDES-permitted Outfall 04A090 was deleted from the NPDES Permit in April 1987. The outfall consists of two adjacent two-in.-diameter steel pipes, insulated with fiberglass and wrapped with protective aluminum coating, that originate from cooling towers on the roof of Building 35-85. This AOC is located north of Building 35-85 on the rim of Mortandad Canyon and discharged to the steep slope found there. The volume of water released is not documented, but the erosion that has taken place below the outfall indicates significant amounts of water were released. Four samples were collected at this AOC for the Phase I RFI in March 1995. Samples were submitted to a mobile lab for organic and inorganic chemicals and radionuclide analysis; one of the samples was also submitted to a fixed-site laboratory for organic chemical analysis. No sample results for any chemical exceeded SALs for this AOC. Additional sampling was proposed for AOC 35-016(e) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-016(f)	In Progress	AOC 35-016(f) is an active storm drain located north of the chemical laser facility (Building 35-85) on the west half of the TA-35 mesa top. The outfall consists of an 18 in. diameter CMP that discharges into a small channel cut into backfill material on the south slope of Mortandad Canyon. Documented releases, consisting of oil spills, have occurred near the source areas for the storm drain. The volume of the spills are not documented. Phase I RFI sampling consisted of the collection of four soil samples in March 1995. Samples were submitted to mobile and fixed-site laboratories for analysis of organic and inorganic chemicals. Samples were also screened for radionuclides in a mobile laboratory. Inorganic chemicals were detected above BVs. No organic chemicals were detected in any sample. No sample results for any chemical exceeded SALs at this AOC. Additional sampling was proposed for AOC 35-016(f) according to the SAP for Middle

		Mortandad/Ten Site Aggregate prepared in March of 2002.
35-016(g)	In Progress	AOC 35-016(g) is the active NPDES-permitted Outfall 04A127 that was established in 1979 to handle reverse osmosis discharge from Room 29 in the basement of the target fabrication facility (Building 35-213). This outfall now handles cooling tower blowdown from the same room. The drainline runs about 100-ft northward to its point of discharge on the south rim of Mortandad Canyon. The discharge point of the outfall is located about 30-ft north of the security fence that surrounds the parking area and is located at the base of the backfill material that forms the parking area. This drainline is suspected of containing tritium and may also contain chemicals added to the cooling water to prevent corrosion, scaling, and algae growth. The discharge from the outfall has formed a small pool of water that has partially submerged the outfall pipe. A small channel has eroded in the bedrock tuff at the outlet from the pool where the water flows over the mesa edge and into Mortandad Canyon. At the time of the RFI investigation, the outfall was flowing at a rate of 2 to 3 gpm. Pursuant to the NPDES permit, LANL monitors the flow volume and collects water samples from the outfall weekly. The samples are analyzed weekly for pH and annually for inorganic chemicals. The results of the sampling are reported monthly to the EPA and the NMED. RFI sampling was performed in March of 1995. Two locations were sampled, and four soil samples were collected and analyzed for organic and inorganic chemicals and radionuclide screening utilizing a mobile laboratory; one sample was submitted to a fixed-site laboratory for organic chemical analysis. Inorganic chemicals were detected above BVs in at least one sample based on mobile laboratory analysis. Saturated hydrocarbons were also detected in the mobile laboratory samples but not in the one fixed laboratory sample. Radiological screening results were within FVs. Chromium was the only chemical detected above its SAL; chromium results were based on mobile laboratory analysis. In 1997, additional sampling was conducted at AOC 35-016(g). Eleven samples from six locations were collected and submitted to a fixed laboratory for organic chemical, inorganic chemical, and radionuclide analysis. No chemicals were detected above SALs.
35-016(h)	In Progress	SWMU 35-016(h) is located north of the target fabrication facility (Building 35-213) on the northern edge of Ten Site Mesa and includes several active storm drains installed in 1979 to handle rainwater runoff from Building 35-213 and possibly brine from the water deionizer in Building 35-213. This drainline is also suspected of containing tritium. Two daylight drainage channels drain the surface area around the north and east sides of the building. The stormwater runoff flows into a roadside ditch (east of the security fence) that discharges to a 50-ft-long, 18-in.-diameter culvert, which extends beneath the Mortandad Canyon access road. The culvert flows into a flat-bottomed daylight drainage channel that is 2 ft wide, 3 ft deep, and extends about 75 ft to the edge of the mesa. Rainwater from the asphalt-paved parking, driveway, and storage areas on the north side of Building 35-213 flows into a concrete-lined drainage channel at the northeast side of the security fence. This drainage channel is about 4-ft wide and extends for about 20 ft over the embankment at the edge of the parking area. This drainage channel discharges to a ditch on the south side of the Mortandad Canyon access road. Before regrading of the access road, runoff water flowed along the road for about 200 ft, then across the road and into Mortandad Canyon, where water and sediment formed an outwash deposit in a flat area of the canyon bench. Since the road was regraded, water flows along the access road to a point where the road reaches the canyon bench. RFI sampling was performed in March of 1995. Seven samples were collected from seven locations for organic and inorganic chemicals using mobile laboratory analysis; one sample for each was submitted to a fixed laboratory for organic and inorganic chemical analysis. Inorganic chemicals were detected above BVs based on mobile

		laboratory analyses. No organic chemicals were detected in the samples. No sample results for any chemical exceeded SALs.
35-016(i)-00	In Progress	SWMU 35-016(i)-00 consists of two former SWMUs, 35-016(i) and 35-014(e2). Former SWMU 35-014(e2) is the site of a former oil spill that originated from overflows of a gunite-lined, surface waste-oil impoundment used to store waste dielectric oil. The impoundment, AOC 35-005(a), was constructed in 1985 to replace an impoundment that had previously existed at the same location. The impoundment was built to collect oil spills from the oil-handling facilities adjacent to Building 35-85, liquid wastes (such as solvents and oils) from drains that serviced oil-handling equipment (such as Marx tanks) in Building 35-85, and precipitation runoff. When the impoundment was operative, the oil was periodically pumped out of the impoundment and recycled. The impoundment was drained in 1988 and decommissioned in 1989. It was later replaced with a bermed steel tank. Documented releases from this former SWMU consist of oil spills from the impoundment. Soil samples from oil-stained areas showed detectable PCB concentrations. The former SWMU is located about 150 feet northeast of the chemical laser facility (Building 35-85). Former SWMU 35-016(i) is a stormwater outfall that originates from stormwater drains south of Building 35-85 along Pecos Drive. The outfall was probably installed around 1977 when Building 35-85 was constructed and is an 18-in.-diameter CMP which discharges to Mortandad Canyon. The area below the outfall also receives surface runoff from the eastern part of SWMU 35-014(e2) and may have provided a pathway for oil spills associated with the former waste-oil impoundment. Previous investigations were performed at SWMU 35-005(a), which was the source for contamination for SWMU 35-014(e2). In 1985, soil samples were collected from oil-stained areas around the impoundment and analyzed for PCBs. The samples did not contain PCB concentrations greater than the detection limit of 1 ppm. In 1990, investigations were performed after decommissioning and removal of the impoundment. After the impoundment was removed, soil beneath the impoundment was found to contain VOCs. Therefore the soil was excavated and removed to a depth of one to two ft. To verify the cleanup, soil samples were collected at the surface and from 5-ft intervals from a borehole that was drilled to a depth of 45 ft. All samples were within FVs for gross-alpha, -beta, and -gamma radiation and below detection limits for VOCs and SVOCs. However, the VOC and SVOC data are suspect because surrogate recovery results were outside EPA limits and holding times were missed. In addition, the SVOC data were compromised because of interference from dielectric waste oil resulting in elevated EQLs. TPH was detected in the surface samples; it was not detected in the subsurface samples. Phase I RFI sampling was conducted in March 1995. A total of 22 samples were collected and analyzed at a mobile laboratory for PCBs. Seven samples were submitted to a mobile laboratory and one to a fixed-site laboratory for organic and inorganic chemical analysis. Radiological screening results were within FVs. Inorganic chemicals were detected above BVs by the mobile laboratory. Aroclor 1260 and TPH were detected. No sample results for any chemical exceeded SALs. Additional sampling was proposed for SWMU 35-016(i)-00 according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-016(j)	In Progress	AOC 35-016(j) is a four-in.-diameter VCP located on the north slope of Ten Site Canyon in TA-35 and is an active outfall that was constructed in 1975 to discharge rainwater runoff from roof drains and the fire protection system and electro-polishing wastewater from Room B102 in the carbon dioxide laser building (Building 35-125). A Santa Fe Engineering report documents eight roof drains and four fire protection drains that daylight to the storm drain leading to Ten Site Canyon. There are no laboratory sinks or floor drains connected to this outfall. All rooms/laboratories that housed polishing activities were plumbed directly to the sanitary sewer; floor drains were plugged where polishing occurred.

		Three Phase I RFI samples were collected in April 1995. Sample analysis was completed for inorganic and organic chemicals and radionuclides at both mobile and fixed-site laboratories. Inorganic chemicals were detected over BVs. TPH was the only organic chemical detected by the mobile laboratory. The fixed-site laboratory did not detect any VOCs; SVOCs were detected. One PAH was detected above its SAL. In 1997, additional sampling was conducted at AOC 35-016(j). Two samples from one location were collected and submitted to a fixed analytical laboratory for radionuclide analysis. The purpose of this sampling was to supplement the RFI Phase I data for the radiological characterization of this site. Additional sampling was proposed for AOC 35-016(j) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-016(k)-00	In Progress	SWMU 35-016(k)-00 is comprised of two former SWMUs 35-016(k) and 35-016(l). Former SWMU 35-016(k) is a formerly permitted inactive outfall that handled cooling water from the gas laser building (Building 35-29). The NPDES-permitted Outfall 04A116 was installed in 1961 and deactivated in 1987. It handled once-through cooling water from a closed heat-exchange system that served a gas laser in Building 35-29. The drainline runs eastward and discharges into a riprap-lined channel, which drains into a small tributary of Ten Site Canyon informally known as Pratt Canyon, consolidated SWMU 35-003(d)-00. Former SWMU 35-016(l) consists of active daylight discharge channels that were established in 1961 to handle rainwater runoff from Building 35-29 and sterilized water leaks from an ultraviolet water sterilizer in Room 001A of Building 35-29. Stained areas from past dielectric oil spills, AOC 35-014(c), consolidated SWMU 35-003(j)-99, and AOC 35-018(a), are present in the source areas for these drains. One of the areas at the head of the channel, AOC 35-018(a), is the site of a transformer near the southwest corner of Building 35-29 that leaked transformer oil; a VCA conducted there removed soil contaminated with PCBs and PAHs. During a 1988 site visit, the concrete catch basin for these drains had gamma radiation readings that measured 50 percent higher than FVs. The drainages flow eastward to a 24-in. CMP outfall located on the north side of the security fence for Building 35-27, discharging to the same riprap-lined channel draining into Pratt Canyon as SWMU 35-016(k). Phase I RFI sampling was performed in February 1995. Five soil samples were collected and analyzed for inorganic and organic chemicals at a mobile laboratory; additionally one sample was submitted to a fixed-site laboratory for analysis for organic chemicals and another for radionuclides. Results from the mobile laboratory indicated inorganic chemicals above BVs. Organic chemicals were detected above SALs; radionuclides were not detected above FVs. The SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002 tabulates additional samples collected in 1997, which were analyzed for inorganic and organic chemicals, and radionuclides. Zinc was detected above its BV. Organic chemicals were detected. Radionuclides were not detected above FVs; however, the method detection limits for americium-241 and plutonium-238 were slightly above FVs. The SAP recommended additional sampling for SWMU 35-016(k)-00.
35-016(m)	In Progress	SWMU 35-016(m) is located on the east end of the TA-35 mesa top south of a cooling tower, structure 35-33, and east of the Nuclear Safeguards Research Building (Building 35-27). This SWMU consists of a 1.5-in.-diameter metal blowdown line and a 4-in.-diameter metal drainline that compose an inactive noncontact cooling tower outfall established in 1966 and deactivated in 1982. The NPDES-permitted Outfall 03A039 was intended for discharging treated cooling tower blowdown from two planned reactors in Building 35-27. The reactors were never installed, the cooling tower never

		operated, and the outfall never served its intended purpose; instead it discharged stormwater runoff from parking areas at the east end of the TA-35 mesa top. Phase I RFI samples were collected from the SWMU in October of 1994 for inorganic and organic chemicals and radiological analysis. Five samples collected were submitted to both mobile and fixed-site laboratories for analysis. Inorganic chemicals were detected above BVs by the mobile laboratory. No PCBs were detected; one organic chemical was detected. Radiological screening results were below FVs. None of the chemicals detected exceeded SALs. Additional sampling was proposed for SWMU 35-016(m) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-016(o)	In Progress	SWMU 35-016(o) consists of three distinct and active storm drains established in 1951 to handle stormwater runoff from the first laboratory and office building, Building 35-02, erected on the TA-35 mesa. This SWMU also possibly handled Building 35-02 floor drain effluents from the following rooms: A10, in which floor drains received leaks and overflow from two 2000-gallon tanks containing low-level radioactive/acid liquid wastes; A13, which contained floor drains and four 55-gallon drums of PCB-contaminated waste oil; A22, the high-velocity projectile testing room; this room is next to room A23, which is sealed due to high background radiation from the LAPR-I and LAMPRE reactors that were formerly housed there. Engineering surveys have identified an additional outfall, which handles runoff from Building 35-27, which may be associated with this SWMU. The three outfalls comprising SWMU 35-016(o) are located on the eastern side of the mesa, on the south slope of Mortandad Canyon, approximately 20 ft below the mesa edge and consist of cast-iron drainpipes (the diameter is not documented). In addition, overflow from the septic system designated as SWMU 35-009(c) was discharged into Mortandad Canyon from two outfalls located at the east and west ends of its leach fields; the outfall in the east end coincides with one of the drainage channels from SWMU 35-016(o). Two of the outfalls in SWMU 35-016(o) are located north of trailers (Buildings 35-261 and 35-262). No documented releases of hazardous materials have occurred at these outfalls. Phase I RFI samples were collected from the SWMU in January and October 1994. A total of 15 soil samples were collected from 9 locations. All samples were analyzed for inorganic chemicals at a mobile laboratory; samples were also submitted to a fixed-site laboratory for radiological and inorganic and organic chemical analysis. Inorganic chemicals were detected above BVs. Radionuclides were detected above SALs. Organic chemicals were also detected above SALs. In 1997, additional sampling was conducted at SWMU 35-016(o). Twenty samples from nine locations wee collected and submitted to an off-site analytical laboratory for organic chemical, inorganic chemical, and radionuclide analysis. Organic chemicals were detected above SALs. The SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002 tabulates an additional 18 samples collected in 1997. Historical data was reviewed in the SAP and chemicals have been detected above BVs at this SWMU. Inorganic chemicals were detected above BVs. Of the organic chemicals analyzed for, SVOCs, DRO and LRO, were detected; Aroclors were also detected in PCB samples. Radionuclides were detected at concentrations greater than FVs. The SAP has proposed additional sampling for SWMU 35-016(o).
35-016(p)	In Progress	SWMU 35-016(p) is an unpermitted and active stormwater discharge system that has handled stormwater runoff from the roof of the Nuclear Safeguards Research Building, Building 35-27, since the building was constructed in 1964. The north and east sides of Building 35-27 are equipped with 6-in.-diameter roof leaders along which direct roof runoff flows into CMP storm drains. The storm drains connect to a storm drain manhole, which is located approximately 25 ft northeast of the northeast corner of Building 35-27. An 18-in.-diameter CMP storm drain originates at this manhole and extends northward

		toward the edge of Ten Site Mesa. The outfall is located 40 ft below the mesa edge on the south slope of Mortandad Canyon, approximately 60 ft north of the security fence, which extends around Building 35-27. No documented releases of hazardous materials have occurred at this outfall. Four Phase I RFI samples were collected from the SWMU in October 1994 and were submitted for organic chemical and radiological analyses at a fixed-site laboratory and also submitted to a mobile laboratory for inorganic chemical and radiological analysis. Organic chemicals were detected above SALs in one of the four samples. Radionuclices were detected just over FVs. Inorganic chemicals were detected above BVs by mobile laboratory analysis. The SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002 tabulates two additional samples collected in 1997 at this SWMU. The samples were submitted for radiological analysis; there were no detections above FVs. The SAP proposes additional sampling for SWMU 35-016(p).
35-017	Administratively Complete	AOC 35-017 is comprised of several areas where former soil contamination occurred from the operation of nuclear power reactors. This particular location is a release from a steam blowoff line from the LAPRE-I and -II reactors. In 1954, the Zia Company installed a 2.5-in. schedule 160 steel exhaust pipe from a reactor at the east end of the basement of Building 35-2 to the north side of Ten Site Canyon. The steam exhaust line was laid in a concrete trough that had expansion joints every 10 ft and was covered with a 1/8-in.-thick steel plate. There was a 9-ft x 4-ft x 1-ft thick concrete pad cast into the upper brow of the canyon wall. This pad was used as a platform to support rollers that allowed the steam line to expand and contract. The concrete pad was designated as structure 35-23 and was removed in 1957. Health and safety personnel associated with the reactor experiments noted that, in February 1956, after the initial run of the LAPRE-I a “substantial quantity” of “enriched uranium soup” was lost through a steam control valve on the blowoff line. Soil near the steam valve was contaminated with enriched uranium and associated alpha, beta, and gamma activity. Soil samples collected in March 1956 had a gross-alpha contamination of 1,420 c/m/g near the point of release. Gross-beta counts were 304 and 400 c/m/g in March 1956; they decayed to 250 c/m/g within six months. Gamma counts in the soil were initially 44,000 c/m/g, but decayed to near background by August 1956. The LAPRE-II, also a high-temperature reactor, was designed to dump superheated steam generated in the reactor vessel to the atmosphere through an air radiator. No documentary evidence has been found that the soils were contaminated by the operation of LAPRE-II. In 1996, 65 ft of the 2.5-in. line and concrete trough were removed during the PSP D&D activities. Because no contamination was found in this line in 1996, the remainder of the line, approximately 200 ft, and trough, leading to the canyon, was left in place. However, from the description of the MDA X D&D event in 1991, it appears as if all of the line has been removed. Soil sampling conducted during a 1990 D&D site-characterization effort revealed minimal contamination at a depth of 15 ft on the east side of the reactor, and samples collected from five other boreholes yielded no radioactive contamination. The 1991 confirmation sampling was conducted by HSE-8 to verify the removal of all potential contaminants including radionuclides and hazardous chemicals. No ER Project samples have been collected to date. According to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002, an investigation is proposed for AOC 35-017 to locate the line and any remaining contamination from the 1956 release.
35-018(a)	In Progress	AOC 35-018(a) is the former site of a leaking transformer (ID No. 5024) located on a substation, structure 35-32, located near the gas laser building, Building 35-29, on the eastern end of the TA-35 mesa. During a transformer assessment survey in 1985, the transformer was documented as leaking onto a porous concrete pad with no spill containment or drip pan. The transformer was added to a daily transformer inspection list. The extent of the release to the underlying pad and surrounding soil was not documented. The transformer was observed again during a site inspection in August

		1991 and no evidence of past or present leakage was documented. The PCB-containing dielectric oil coolant was removed from the transformer in 1994, and the equipment was replaced with non-PCB-containing coolant. During the RFI, site inspections did not find oil staining on the concrete, although some oil staining was located adjacent to the pad. Phase I RFI sampling was conducted in April 1995 with supplemental sampling collected in October 1995. A total of 37 soil samples were collected and submitted for analysis to a mobile laboratory for inorganic and organic chemicals. Two confirmation samples were collected for analysis at a fixed-site laboratory. The RFI confirmed the presence of PCBs above SALs. The pesticide, Diedrin, was detected above SALs, but may have been false positive response. Thirteen samples detected SVOCs above SALs. No VOCs were detected. Inorganic chemicals were detected below SALs. The results of the gross radiation measurements were not significantly above FVs. The site was cleaned up during a 1996 ER Project VCA and a total of 9 cubic yards of PCB-contaminated waste was removed. Thirteen confirmation soil samples were collected for inorganic and organic chemical and radiological analysis at a fixed-site laboratory. PCB detections were below cleanup criteria with the exception of one sample. Radionuclides were detected above SALs. Organic and inorganic chemical results were below the levels of human health concern. The site was backfilled with clean soil to the original grade. Additional sampling was proposed for AOC 35-018(a) according to the SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002.
35-018(b)	Administratively Complete	
36-001	In Progress	SWMU 36-001 consists of disposal trenches known as MDA AA. These trenches are located near the active Lower Slobbovia firing site [SWMU 36-004(d)] in Potrillo Canyon. The trenches were used to dispose of debris resulting from the shots conducted at the Lower Slobbovia firing site. The debris was reportedly transported from the firing site to the trenches by truck, placed in the trenches, and burned. This debris likely consisted of wood, nails, and sand contaminated with barium, uranium, other inorganic chemicals, plastics, and possibly HE. When a trench became filled with debris, it was reportedly covered with approximately 4 ft of soil. The exact number of trenches constructed is unknown but is believed to be from two to four. Similarly, the exact dimensions of the trenches are unknown. The first trench was dug in the mid-1960s, and the site was closed in 1989. Previous environmental investigations at SWMU 36-001 include sampling and analysis of debris and soil collected from the active trench in 1987 and 1988. Analysis of samples revealed elevated levels of cadmium and uranium. The ER Project conducted a Phase I RFI from 1993 through 1995 to characterize potential contamination associated with SWMU 36-001 and to determine the need for remedial action. Initial RFI activities consisted of geophysical surveys using electromagnetic, magnetometer/gradiometer, and ground-penetrating radar techniques to define the trench areas. The geophysical survey results indicated the presence of buried residues but did not delineate the boundaries of discrete disposal trenches. As a result, an exploratory drilling program was conducted to define the extent of buried materials. Approximately 88 boreholes were drilled and indicated the presence of two trenches. The northernmost trench had approximate dimensions of 80 ft x 40 ft x 8 ft to 13 ft deep, and the southernmost trench had approximate dimensions of 120 ft x 20 ft to 30 ft x 3 ft to 12 ft deep. After the trenches had been delineated, five boreholes were drilled into the north trench and four into the south trench to collect samples from three intervals in each borehole. Two of these intervals were in the ash/debris zone, and one was approximately 2 ft below the bottom of the trench. In addition, samples of fill/cover material were collected at three of the boreholes. All samples were screened in the field for organic chemicals, radioactivity, and HE and were submitted for laboratory analysis

		for inorganic chemicals, radionuclides, and organic chemicals. The results of the sample analyses were used to perform a human health risk-based screening assessment and human health risk assessment. On the basis of the assessment results, the RFI report recommended NFA for SWMU 36-001. NMED reviewed the RFI report and identified a number of deficiencies related to inconsistencies and inaccuracies associated with the data contained in the report and, consequently, denied the RFI report. As a result, the ER Project indicated that Phase II sampling and analysis would be performed to address deficiencies with the data and that a Phase II SAP would be prepared. In addition, the ER Project identified the need to stabilize erosion gullies near SWMU 36-001 to prevent encroachment onto the site and erosion of the soil cover over the buried residuals. The ER Project prepared an interim action plan in 1996 calling for stabilization of erosion gullies using wire mesh and cobbles. This plan was implemented in 1996, and the interim action was approved by NMED.
36-002	In Progress	SWMU 36-002 is a former sump (structure 36-49) that was constructed in 1965 and received drainage from two sinks in the controlled-environment building (Building 36-48). The sump consisted of a 4-ft-diameter x 4.5-ft-long section of corrugated metal culvert that was placed into an excavation. The excavation and the interior of the culvert were backfilled with 3-in.-diameter rocks to a depth of approximately 2 ft below grade. The remainder of the excavation outside the culvert was backfilled to grade with soil, and the culvert was covered with a metal cover. The inlet pipe from Building 36-48 consisted of 4-in.-diameter VCP that entered the sump at a depth of 4 ft below grade. The sump was located approximately 40 ft northwest of Building 36-48, near the edge of Threemile Canyon. Building 36-48 was initially used for shot assembly and for controlled-temperature experiments; depleted uranium also was cut, lapped, and polished in the building. One of the sinks connected to the sump has a chemical-resistant coating. Materials discarded into the sink could have included depleted uranium, HE, and solvents. The quantity of materials discharged to the sink is unknown but is expected to be low because the building was reportedly used infrequently (i.e., no more than 10 times per year). These activities are no longer conducted in the building, and the sinks have been disconnected from the sump. There have been no previous environmental investigations at SWMU 36-002. The ER Project conducted a Phase I RFI in 1994 to characterize potential contamination associated with SWMU 36-002 and to determine the need for remedial action. The soil and rock backfill in and around the culvert was excavated and stockpiled on the site on a lined, bermed pad. Samples of the backfill material were collected at five depths ranging from 5 ft to 9.5 ft below grade. The latter depth was the bottom of the original excavation. All samples were screened in the field for organic chemicals, radioactivity, and HE and were submitted for laboratory analysis for inorganic chemicals, total uranium, and organic chemicals. One inorganic chemical was detected above BV, but did not exceed its SAL. Total uranium was not detected above BV. One organic chemical was detected, but did not exceed its SAL. The results of the Phase I sampling and analysis were used to perform a human health risk-based screening assessment. On the basis of the results of these assessments, the RFI report recommended NFA for SWMU 36-002. The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk. On the basis of the Phase I sampling and screening assessment results, the stockpiled material excavated during sampling was returned to the original sump excavation. The culvert and inlet pipe were disposed of as construction debris. SWMU 36-002 was subsequently recommended for NFA in the September 1996 Permit Modification Request. This request for NFA was withdrawn by LANL in February 2002. The NFA withdrawal indicated that this site did not meet current regulatory standards for NFA and that it would be withdrawn until further investigation could be performed.
36-003(a)	In Progress	SWMU 36-003(a) consists of a former septic system that was constructed in 1949 to serve an office and laboratory building (Building 36-1). Components of this septic system are the septic tank (structure 36-17), a manhole (structure 36-38), a second manhole, a seepage pit, a distribution box/leach field, and associated piping. The septic tank (structure 36-17) is located approximately 115 ft east of Building 36-1, and the

		leach field is to the northeast of the septic tank, near the south rim of Threemile Canyon. The septic tank is a single-chamber tank constructed of reinforced concrete and having a capacity of 1160 gal. The leach field consists of four 200-ft-long perforated tile pipes spaced 10 ft apart. The leach field was reportedly used until late 1973 or early 1974, when it was replaced with the seepage pit. Details of the seepage pit are unknown, but other seepage pits constructed during the same period were typically 4 ft in diameter x 50 ft deep and filled with gravel. Building 36-22, the main guard station, was later added to the septic system, but was then disconnected and reconnected to a different system in 1988. Building 36-1 was disconnected from the septic system in late 1992. In addition to sanitary wastes, spent photochemicals from x-ray developing were also reportedly discharged to SWMU 36-003(a) until 1990 or 1991. No previous environmental investigations have been conducted at SWMU 36-003(a). The ER Project conducted a Phase I RFI during 1994 to determine whether contamination was present in the septic tank, the leach field, or surrounding soils. A sample of liquid and a sample of sludge were collected at each of two locations in the septic tank, and subsurface soil samples were collected from borings at six locations within the leach field. At each boring, a sample was collected at the soil/tuff interface and in the tuff below the interface. All samples were screened in the field for organic chemicals, radioactivity, and HE and submitted for laboratory analysis for inorganic chemicals and organic chemicals. Three inorganic chemicals and three organic chemicals were detected in samples from the leach field, but none of the chemicals exceeded SALs. In the liquid and sludge samples from the septic tank, twelve inorganic chemicals were detected above SALs for water. The concentration of silver also exceeded the RCRA TCLP level for characteristic hazardous waste. Five organic chemicals were detected in the liquid and sludge samples from the septic tank, but none of these organic chemicals exceeded SALs for water. The results of the Phase I sampling and analysis for the leach field were used to perform a human health risk-based screening assessment, which indicated that additional sampling or remediation of the leach field would not be required. The sampling plan for SWMU 36-003(a) indicated that the seepage pit would not be sampled unless sampling and analysis results indicated that contamination was present in the leach field. Because no potential contaminants were detected in the leach field, the RFI report indicated that the seepage pit would not be sampled. Based on the presence of inorganic chemicals above SALs for water in the septic tank, the RFI report recommended an expedited cleanup for the septic tank. The ER Project conducted an expedited cleanup at SWMU 36-003(a) in 1995. The cleanup involved excavating soil to expose the top of the tank, opening the tank and removing the contents with a vacuum truck, decontaminating the tank by steam cleaning, filling the tank with flowable concrete so that the tank could not be used again, and placing soil backfill above the tank. The tank contents were disposed of as hazardous waste. Confirmation subsurface soil samples were collected outside the tank walls beneath the tank inlet and outlet and below the bottom of the tank. These samples were submitted for laboratory analysis for inorganic chemicals and organic chemicals. No inorganic chemicals were detected above BV. Only one organic chemical was detected but was not present above its SAL. The expedited cleanup completion report recommended NFA for SWMU 36-003(a). The basis for this recommendation was that the site has been characterized or remediated and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health.
36-003(b)	In Progress	SWMU 36-003(b) consists of a former septic system that was constructed in 1949 to serve a control bunker (Building 36-55) at the I-J Firing Site [AOC 36-004(e)]. The septic system consisted of a septic tank and outfall. The tank is constructed of reinforced concrete and has dimensions of 7 ft long x 3.5 ft wide x 5.7 ft deep, with a capacity of 420 gal. The tank is located approximately 100 ft southeast of Building 36-55, on the north rim of Potrillo Canyon. The tank had a buried overflow pipe connected to an outfall near the edge of Potrillo Canyon. This overflow pipe was capped in 1989, and the tank was subsequently operated as a holding tank. The contents of the tank

		were periodically removed and taken to a sewage treatment plant at LANL for treatment. The tank was taken out of service in the early 1990s. Building 36-55 was used to house electronics and instrumentation, and wastes discharged to SWMU 36-003(b) reportedly consisted only of sanitary waste and sink drainage. No hazardous or radioactive materials were known to have been discharged to SWMU 36-003(b). The contents of the tank were reported to be free of HE and uranium in 1972, and testing in 1981 indicated that HE was not present. No previous environmental investigations were conducted at SWMU 36-003(b). The ER Project conducted a Phase I RFI during 1994 to determine whether contamination was present in the septic tank or near the former outfall. Two samples of liquid were collected from one location within the tank, and four samples of sludge were collected from three locations within the tank. In addition, five surface soil samples were collected from four locations in the drainage channel downstream of the outfall. All samples were screened in the field for organic chemicals, radioactivity, and HE and submitted for laboratory analysis for inorganic chemicals, total uranium, and organic chemicals. Four inorganic chemicals were detected above BV in samples from the outfall drainage area, but none of these inorganic chemicals exceeded SALs. Total uranium was detected in samples from the outfall drainage area above BV but did not exceed its SAL. One organic chemical was detected in samples from the outfall area but was below its SAL. Thirteen inorganic chemicals were detected above the SALs for water in the liquid and sludge samples from the septic tank. Uranium was detected in the liquid and sludge samples from the tank, but there was no appropriate SAL for comparison with these results. No organic chemicals were detected in the liquid or sludge samples from the septic tank. The results of the Phase I sampling and analysis for the outfall drainage were used to perform a human health risk-based screening assessment. The results of this assessment indicated that additional sampling or remediation of the drainage area would not be required. On the basis of the presence of inorganic chemicals above SALs for water in the septic tank, the RFI report recommended a VCA for the septic tank. The ER Project prepared a VCA plan for SWMU 36-003(b) in 1996. The VCA plan called for excavating soil to expose the top of the tank, opening the tank and removing the contents into drums, decontaminating the tank by pressure washing, filling the tank with flowable concrete so that the tank could not be used again, and placing soil backfill above the tank. This VCA was then implemented in 1996. The tank contents and decontamination wastes were disposed of as low-level radioactive waste at TA-54, Area G and the TA-50 RLWTF. Because no releases had occurred from the tank, confirmation soil sampling was not performed. The VCA completion report recommended NFA for SWMU 36-003(b). The basis for this recommendation was that the site has been characterized or remediated and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health.
36-003(c)	Administratively Complete	SWMU 36-003(c) is a sanitary waste system associated with a guard station. The guard station and sanitary waste system are not associated with activities that generate hazardous waste. SWMU 36-003(c) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
36-003(d)	Administratively Complete	
36-004(b)	Pending	AOC 36-004(b) consists of an active firing site, known as Meenie Firing Site, located at the head of Fence Canyon. Facilities associated with AOC 36-004(b) include a control bunker (Building 36-6) and a magazine and make-up building (Building 36-5). Construction of the Meenie Firing Site was completed in 1950. The site has been extensively used for gun firing, with shots fired into a cliff north of the firing area and into an embankment south of the firing area. Shots fired at this site have involved up to 300 lb of HE, and at least one shot involved detonating 60 gal. of nitromethane in a sealed aluminum container. Lead bricks were often used as part of shots until 1971 and were sometimes pulverized during detonation. Other potential contaminants at AOC 36-

		004(b) reportedly include barium, beryllium, depleted uranium, and mercury. No previous environmental investigations have been conducted at AOC 36-004(b). Because AOC 36-004(b) is an active firing site, the RFI work plan indicated that investigation and, if necessary, remediation of the firing site would be deferred until the site is decommissioned. An RFI investigation was conducted at 36-004(b) in 1994. Field activities included the investigation of offsite migration of potential contaminants via major drainage channels. Sediment catchment areas having substantial accumulations of fine particles were identified and sediments from each were sampled. Four surface sediment samples were collected and submitted to an offsite analytical laboratory for analysis of organic chemicals, inorganic chemicals, and radionuclides. Inorganic chemicals and radionuclides were detected above BVs/FVs but not above SALs. No organic chemicals were detected.
36-004(c)	Pending	AOC 36-004(c) consists of an active firing site, known as Minie Firing Site, located near the head of Fence Canyon, approximately 800 ft south of the Meenie Firing Site [AOC 36-004(b)]. Facilities associated with AOC 36-004(c) include a control bunker (Building 36-8), a make-up building (Building 36-7), a firing platform, and an x-ray house. Construction of the Minie Firing Site was completed in 1950. The site has been extensively used to conduct armor-piercing experiments. In these experiments, penetrator jets are directed at targets at the canyon wall to the west of the site. Metal plates are placed behind the targets to stop the penetrators. AOC 36-004(c) has also been used for open detonation of scrap HE. Emergency detonation of leaking gas cylinders has also been performed on a very infrequent basis. Potential contaminants at AOC 36-004(c) reportedly include barium, beryllium, depleted uranium, lead, and mercury. No previous environmental investigations have been conducted at AOC 36-004(c). Because AOC 36-004(c) is an active firing site, the RFI work plan indicated that investigation and, if necessary, remediation of the firing site would be deferred until the site is decommissioned. An RFI investigation was conducted at 36-004(c) in 1994. Field activities included the investigation of offsite migration of potential contaminants via major drainage channels. Sediment catchment areas having substantial accumulations of fine particles were identified and sediments from each were sampled. Four surface sediment samples were collected and submitted to an offsite analytical laboratory for analysis of organic chemicals, inorganic chemicals, and radionuclides. Inorganic chemicals and radionuclides were detected above BVs/FVs but not above SALs. No organic chemicals were detected.
36-004(d)	In Progress	SWMU 36-004(d) consists of an active firing site (Lower Slobbovia Firing Site), an inactive firing site (Skunk Works Firing Site), and inactive burn pits. Lower Slobbovia is located in Potrillo Canyon near MDA AA (SWMU 36-001) and consists of two active firing points. One of the active firing points was constructed in 1950 and is located on top of a pad of dirt and sand, approximately 200 ft in diameter. The control building (Building 36-12) is built into the side of the pad. The second active firing point was constructed in 1986 and is located at the northwest end of a 1000-ft-long sled track adjacent to the pulse-intense x-ray (PIXY) machine. Shots conducted at Lower Slobbovia have generally involved only HE. Less than 2 percent of the shots are believed to have involved significant amounts of metal (e.g., depleted uranium, lead, copper, aluminum, and steel). The largest shot fired at Lower Slobbovia used 6000 lb of HE. The Skunk Works site is approximately 2300 ft up Potrillo Canyon from Lower Slobbovia (i.e., to the northwest). Skunk Works Firing Site was used to conduct small explosives experiments in the 1950s. These experiments involved gas (acetylene and oxygen), liquid (tetranitromethane), and solid explosives. Beryllium and radioactive materials were not believed to have been used at the site. Structures remaining at the Skunk Works site include a 5-ft x 5.5-ft x 5-ft below-grade structure that formerly served as a battery storage room and two buildings (Buildings 36-44 and 36-45) that were

		moved to the site from TA-15. These buildings were reportedly used at TA-15 to prepare uranium for shots. The former Skunk Works firing pad is believed to have been adjacent to Building 36-45, but a shallow depression is located approximately 100 ft farther up the canyon (i.e., to the northwest) and may also have been a firing pad. SWMU 36-004(d) also includes burn pits that were used for burning and disposal of test debris before MDA AA was established in the mid-1960s. These pits are located on Mesita del Potrillo approximately 4000 ft west of Lower Slobbovia. Debris was reportedly transported from Lower Slobbovia to the pits by truck, placed in the pits, and burned. This debris likely consisted of wood, nails, and sand contaminated with barium, uranium, other metals, plastics, and possibly HE. The largest pit area is a bermed enclosure located north of Potrillo Road and is approximately 40 ft in diameter. This pit was reportedly made from soil excavated during construction of the road. Two smaller areas were located south of Potrillo Road. Previous environmental investigations at SWMU 36-004(d) include sampling that was performed by the DOE Environmental Survey in 1988. This effort involved collection of five composite surface samples from the Lower Slobbovia Firing Site and analysis of these samples for inorganic chemicals and radionuclides. These results indicated elevated levels of copper, lead, uranium, and zinc. Because the Lower Slobbovia Firing Site is active, the RFI work plan indicated that investigation and, if necessary, remediation of SWMU 36-004(d) would be deferred until the site is decommissioned. In reviewing the RFI work plan, EPA indicated that Skunk Works Firing Site and the burn pits portions of SWMU 36-004(d) should be investigated because they are no longer active. The ER Project conducted a Phase I RFI of these sites during the period 1994 to 1996 to determine whether contamination was present. Phase I activities at the Skunk Works Firing Site included a radiological survey of the site and field screening for inorganic chemicals, organic chemicals, and HE. On the basis of the results of the field screening, a surface and subsurface soil sample were collected at each of three locations. These locations consisted of the former firing pad adjacent to Building 36-45, the depression to the northwest of Building 36-45, and the former battery storage room. A surface sediment sample was also collected from the drainage channel receiving surface runoff from the site. These samples were screened in the field for radioactivity, organic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals, isotopic uranium, and organic chemicals. No inorganic chemicals were detected above BV. Uranium-235 was the only uranium isotope detected above FVs, but was not above its SAL. No organic chemicals were detected. The results of the Phase I sampling and analysis did not indicate the presence of any potential contaminants at the Skunk Works Firing Site. As a result, the RFI report recommended NFA for Skunk Works. The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health. No request for permit modification was recommended, however, because investigations for other parts of SWMU 36-004(d) were being deferred. Phase I activities at the burn pits included radiological and geophysical surveys to determine the locations of the pits. The results of these surveys were inconclusive, and additional historical research was conducted to determine the locations of the pits. The pits were discovered along Potrillo Road outside the hazard radius for Lower Slobbovia. Ash was found to be present within the bermed area of the north pit. Subsurface soil samples were collected at three locations in the north pit. Samples were collected from two depths at two locations and at three depths at the other location. Subsurface samples were also collected from two depths at each of two locations at the south pit area. All samples were screened in the field for radioactivity, organic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. No inorganic chemicals were detected above BV. Uranium-238 was the only radionuclide detected above FVs, but was not above its SAL. Two organic chemicals were detected. These organic chemicals were detected at very low concentrations and were not expected to be associated with site activities. As a result,

		they were not considered to be potential contaminants. The results of the Phase I sampling and analysis did not indicate the presence of any potential contaminants at the burn pits. As a result, the RFI report recommended NFA for the burn pits. The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health. No request for permit modification was recommended, however, because investigations for other parts of SWMU 36-004(d) were being deferred.
36-004(e)	Pending	AOC 36-004(e) consists of an active firing site, I-J Firing Site. I-J Site consists of two active firing points (I and J), two control buildings, a dirt bunker, and a covered work area. I-J Site is located at the west end of TA-36 on Mesita del Potrillo, along the north rim of Potrillo Canyon. The site was constructed in 1948 and was part of TA-15 until 1981, when the boundary of TA-36 was expanded to include I-J Site. Shots at I-J Site have used up to 500 lb of HE and have involved a variety of solid and liquid explosives and metals. All shots involving radioactive materials at this site were reportedly conducted in fully enclosed containment vessels. These vessels were then removed from the site for use at TA-15, though one was later returned to I-J Site. This returned vessel was identified in the 1990 SWMU report as AOC C-36-001 and was removed from the site in 1994 and disposed of at TA-54, Area G. Activities conducted at I-J Firing Site have also included tests where depleted uranium projectiles were fired into an embankment. This projectile test area has been identified as AOC C-36-006(e). Previous investigations conducted at I-J Site consist of a surface radiological survey conducted in 1991 that identified hot spots up to 255,000 counts per minute. Numerous pieces of depleted uranium and oxidized depleted uranium were reportedly present around the site. Because AOC 36-004(e) is an active firing site, the RFI work plan indicated that investigation and, if necessary, remediation of this site would be deferred until the site is decommissioned. However, the need for an interim action was identified based on the presence of visible pieces of depleted uranium around the site. The ER Project prepared an interim action plan in 1997 that called for removal of visible pieces of uranium from the firing site and surrounding area. This interim action plan addressed AOC 36-004(e), as well as two other AOCs at I-J Firing Site [AOC 15-008(f) and AOC C-36-006(e)].
36-004(f)	Administratively Complete	
36-005	In Progress	SWMU 36-005 consists of a surface storage area known as the Boneyard. This site is located between the Meenie and Minie Firing Sites [AOCs 36-004(b) and 36-004(c), respectively] near the head of Fence Canyon. SWMU 36-005 is an undeveloped area, approximately 500 ft x 300 ft, that is largely covered with grass and ponderosa pine. From the 1950s until the late 1970s, the Boneyard was reportedly used as a parking lot for trailers and a storage area for large nonwaste items. From the late 1970s until the late 1980s, the site was used as a storage area for large waste items that had been exposed to explosives tests. These items included metal drums, cans, and cylinders, and scrap metals such as lead sheets, copper, uranium-contaminated steel, and iron. A major cleanup of the site occurred in the late 1980s, and waste materials were removed. Some of the cans that were removed were labeled isopentane, while other cans and containers were unlabeled. The site is now used to store usable, nonwaste items. The Boneyard is located within the hazard radii for both the Meenie and Minie Firing Sites and may, therefore, contain shrapnel and particulates from these sites. Previous environmental investigations at SWMU 36-005 include a radiological survey and sampling performed by the DOE Environmental Survey in 1988. This effort involved the collection of six grab samples from four locations showing elevated radiation levels and six grab samples from locations having visible staining or debris. Analysis of these samples indicated elevated levels of lead, silver, and uranium. The ER Project conducted a Phase I RFI at SWMU 36-005 during 1994 to determine the presence, concentration, and migration of potential contaminants at the site. Phase I RFI activities included land, geomorphic, and radiological surveys. The radiological

		survey did not identify any areas of elevated radiation. Thirty-one surface soil samples were collected from 27 locations. Nine of these locations were in the current active storage area; nine were in the drainage channel from the site; and nine were from random locations, including three locations outside the Boneyard, but within the hazard radii for the Meenie and Minie Firing Sites. All samples were screened in the field for organic chemicals, radioactivity, and HE and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Inorganic chemicals were present above BVs, but not above SALs. Uranium-235 was the only radionuclide present above FVs, but did not exceed its SAL. Eight organic chemicals were detected. None of the organic chemicals exceeded SALs. On the basis of the Phase I sampling and analysis results, the RFI report recommended additional Phase I sampling to determine the vertical extent of organic chemical contamination. Additional sampling was recommended because most of the detected organic chemicals were volatile organics and highest concentrations would not necessarily be at the surface. A SAP was prepared that called for the collection of subsurface samples at locations where the maximum concentrations of organic chemicals were detected. The plan indicated that if organic chemicals were detected in the subsurface above SALs, Phase II sampling and analysis would be performed. The ER Project conducted the additional Phase I RFI activities in 1997. Four subsurface soil samples were collected from three locations. These samples were submitted for laboratory analysis for organic chemicals. Acetone was the only organic chemical detected, and it did not exceed its SAL. The concentration of acetone was below that detected in the 1994 sampling. Because organic chemicals were not detected above SALs, Phase II sampling was not performed. The results of the 1994 and 1997 Phase I sample analyses were used to perform a human health risk-based screening assessment. On the basis of the assessment results, the RFI report recommended NFA for SWMU 36-005. The basis for this recommendation was that the site has been characterized or remediated and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk to human health.
36-006-99	In Progress	Consolidated SWMU 36-006-99 comprises former AOC 36-004(a) and former SWMU 36-006, an active firing site and an associated surface disposal site, respectively. Former AOC 36-004(a) consists of an active firing site, Eenie Firing Site, located on Mesita del Potrillo on the south rim of Potrillo Canyon. Structures associated with former AOC 36-004(a) are a control bunker (Building 36-3) and a make-up building and container storage area (Building 36-4). Construction of Eenie Firing Site was completed in 1951. Most of the shots that have been conducted at the site are believed to have contained relatively small amounts of hazardous substances. Materials that have been used in shots include lead oxide, mercury, copper, nickel, brass, and depleted uranium. The hazard radius for the firing site is 3000 ft. Activities conducted at the site have also included firing shoulder-mounted projectiles into targets. Previous environmental investigations conducted at AOC 36-004(a) consist of sediment sampling in the stream channel that drains the site. Uranium was detected in these samples. Former SWMU 36-006 consists of an inactive surface disposal area located on the wall of Potrillo Canyon, approximately 100 ft north of the Eenie Firing Site [former AOC 36-004(a)]. This site was used from approximately 1955 to 1970 to dispose of debris from the firing site. This debris included cables, metal, concrete, and other debris. Most of the debris is present in a pile approximately 75 ft wide extending approximately 100 ft down into the canyon. The remainder of the debris is scattered along approximately 300 ft of canyon wall. This debris was apparently dumped into the canyon from trucks, and an asphalt curb is present along the edge of the canyon to prevent trucks from backing too far. The site is no longer used for disposal, but is located within the hazard radius of the firing site, so debris may continue to enter the site. No previous environmental investigations have been conducted at former SWMU 36-006. Because the Eenie Firing Site is active, the RFI work plan indicated that investigation and, if necessary, remediation of former AOC 36-004(a) and former SWMU 36-006 would be deferred until the site is decommissioned. In reviewing the RFI work plan,

		EPA indicated that former SWMU 36-006 should be investigated because it is no longer active. The ER Project conducted a Phase I RFI of this site during 1995 to determine whether contamination attributable to the site was present in surface and subsurface soils. Surface and subsurface samples were collected from 19 locations around the disposal area and screened in the field for inorganic chemicals, radioactivity, organic chemicals, and HE in order to bias sampling locations. Most of the field screening showed background levels, although some elevated lead and uranium concentrations were noted. Based on these results, four locations were selected for sampling. Surface samples were collected from a location upgradient of the debris area and in the first sediment catchment downgradient of the pile. One surface sample and one subsurface sample were also collected from each of two locations at the base of the debris pile. All six samples were submitted for laboratory analysis for inorganic chemicals, isotopic uranium, and organic chemicals. Six inorganic chemicals were detected above BVs. Only one of the inorganic chemicals was detected above its SAL. Radionuclides were detected above FVs. None of these radionucides were present above its SAL. No organic chemicals were detected. The results of the Phase I sample analyses were used to perform a human health risk-based screening assessment. This assessment indicated that one inorganic chemical (chromium) was the only chemical retained as a potential contaminant. The maximum chromium concentration was well below the site-specific PRG for chromium. As a result, the RFI report recommended NFA for former SWMU 36-006. The basis for this recommendation was that the site has been characterized or remediated and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk. The RFI report also indicated that an ecological risk assessment would be conducted for this site following the development of an ecological risk assessment methodology. NMED reviewed the RFI report and identified deficiencies with respect to the Phase I sampling and analysis and indicated that additional sampling would be required. The ER Project indicated that Phase II sampling and analysis would be performed to address these deficiencies and that a Phase II SAP would be prepared.
36-007(a)	Administratively Complete	
36-007(b)	Administratively Complete	
36-007(c)	Administratively Complete	
36-007(d)	Administratively Complete	
36-007(e)	Administratively Complete	
36-007(f)	Administratively Complete	
36-008	In Progress	AOC 36-008 consists of a surface disposal area located on the south rim of Threemile Canyon near an office and laboratory building (Building 36-1). The site covers an estimated area of 1 to 2 acres and extends below the building over the steeply sloping edge of the canyon. Materials disposed of at this site included laboratory glassware, metal cans, glass bottles, metal pipe, miscellaneous metal pieces, and other debris. AOC 36-008 was not originally identified in the 1990 SWMU report and was not addressed in the RFI work plan for SWMUs/AOCs at TA-36. The site was discovered in June 2000 after the Cerro Grande fire burned vegetation surrounding the site. Approximately 5 cubic yards of debris was collected from the site, segregated, and staged for disposal as part of the emergency response actions associated with the fire. Stormwater BMPs were also implemented at that time to prevent erosion. The dates that the site was used for disposal are unknown, but the site appears to be associated with Building 36-1, which was constructed in 1949. No previous environmental investigations have been conducted at AOC 36-008. The ER Project will investigate the nature and extent of contamination at AOC 36-008, if any, as part of the integrated SAP for all AOCs at TA-36.
37-001	Administratively	

	Complete	
39-001(a)	In Progress	SWMU 39-001(a) is a landfill composed of two disposal pits located east and north of the light gas-gun facility (Building 39-69). According to long-time site workers, this landfill [SWMU 39-001(a)] operated between 1953 and 1979. The exact boundaries are unknown, but it is believed that each pit measures approximately 80 ft x 20 ft x 10 ft deep. Parts of the pits may be covered by Building 39-69 and the basketball court east of the building. Materials disposed of in these pits include debris from firing site experiments, empty chemical containers, and office waste. After 1976, hazardous and radioactive materials were separated from other waste and were disposed of off-site. A series of geophysical surveys at the disposal pits [SWMU 39-001(a)] was completed in 1993. The most probable location of the disposal pits was estimated using data compiled from historical documents, surface radiation surveys, and the geophysical surveys. In 1994, two separate field activities were initiated to determine if waste materials had migrated from the disposal pits. The first of these activities consisted of sampling in the adjacent stream channel and surrounding area to determine if waste was migrating from the SWMU. The second activity was the installation of vertical monitoring wells upstream and downstream of the landfill areas. The data collected during the 1994 field activities guided the RFI sampling conducted in 1996, which consisted of trenching and sampling within the confines of the landfill. The test pits for SWMU 39-001(a) were trenched to below 12 ft (the approximate depth of the waste burial), sampled, and recovered in March 1996. The results of both the 1994 and the 1996 field activities were summarized in an RFI report. This report was later formally withdrawn.
39-001(b)-00	In Progress	Consolidated SWMU 39-001(b)-00 consists of former SWMUs 39-001(b) and 39-008. Former SWMU 39-001(b) consists of three pits, excavated beginning in the late 1960s, that were used to dispose of office waste and debris from a former firing range (SWMU 39-008). Former SWMU 39-008 is soil contamination remaining from a Morgan shed (Building 39-137) that housed a single-stage gas gun that used gas as a propellant to fire projectiles at targets on the cliff face. In the past, the area outside and west of Building 39-137 was used for outdoor gas-gun experiments, using a gun with a 6-in.-diameter barrel. Most of the debris from these firings is scattered over the area just west of the building, but occasionally projectiles and target fragments hit the cliff face, some 200 ft west of another building associated with this experimental gun (Building 39-56). Photographic evidence indicates that the area between the buildings and the cliff was leveled later and the removed surface materials were pushed into a mound on the south side of the test area. Testing at this site began in 1960 and continued until 1975, was suspended for 13 years, and then resumed in 1988. A series of geophysical surveys at the disposal pits [former SWMU 39-001(b)] was completed in 1993. The most probable location of the disposal pits was estimated using data compiled from historical documents, surface radiation surveys, and the geophysical surveys. In 1994, two separate field activities were initiated to determine if waste materials had migrated from the waste pits. The first of these activities consisted of sampling in the adjacent stream channel and surrounding area to determine if waste was migrating from the SWMU. The second activity was the installation of vertical monitoring wells upstream and downstream of the landfill areas. The data collected in the 1994 field activities guided the RFI sampling conducted in 1996, which consisted of trenching and sampling within the confines of the landfill. The test pits for former SWMU 39-001(b) were trenched to below 12 ft (the approximate depth of the waste burial), sampled, and recovered in March 1996. The results of both the 1994 and the 1996 field activities were summarized in an RFI report, which was formally withdrawn later. Former SWMU 39-008 was recommended for deferred action in the RFI report because at the time the report was written, former SWMU 39-008 was still active.
39-002(a)	In Progress	SWMU 39-002(a) contains three separate SAAs.

		Area 1 was a RCRA SAA, approximately 25 ft x 30 ft, located near an exit door at the outside northwest corner of Building 39-2. The surface was earth/gravel (no berm) and was not protected by a roof. This site had been in occasional use for approximately 10 years. At one time, SWMU 39-002(a) contained a 30-gal. drum that held small quantities of solvents and adhesives along with rags and paper wipes contaminated with solvents or adhesives. (Waste solvents were usually returned to their original containers, which then were placed in the drum; contaminated rags and paper were put into plastic bags before being placed in the drum). Solvents accumulated at this site included acetone and ethanol. There is no evidence, visible or documentary, of any spills or leaks at this site. An outside metal dumpster was temporarily located near Area 1 to receive low-level radioactive debris from the remodeling of a vault where radioactive materials had been stored for use in experiments. The dumpster has been removed from the area, and since 1993, the area has not been used for waste accumulation. Area 2 was an indoor SAA (inside Room 18-A of Building 39-2) that has since been removed. It had been in use for approximately 10 years for storage of waste chemicals from photographic processing. No releases have been known or documented to have occurred at Area 2, and because the site was inside a building, there is little potential for a release to the environment. Area 3 was an outside SAA and holding/receiving area located on the asphalt driveway at the north end of the loading dock on the southeast side of Building 39-2. This storage area is no longer used for waste storage, but is used for product storage. Various materials used in the firing site experiments are delivered here and picked up as needed. They include transformer oil in 55-gal. drums (one or two per month) and small quantities (1 gal. or less) of vacuum pump oil and solvents (ethanol, acetone, and trichlorethane). The use of trichloroethane is being phased out of current operations, but small quantities are still stored at this site. There is no evidence, visible or documentary, of any spills or leaks at this site. In 1993, five samples were collected from two locations in Area 1. Area 2 was not sampled because it is located inside of an office/laboratory building, (Building 39-2) and there is little potential for releases to the environment from this site. Area 3, located on asphalt pavement, could not be sampled; samples could have been taken only from the asphalt, and when analyzed, asphalt would mask the presence of contaminants. The results of the samples collected from Area 1 indicated inorganic chemicals, SVOCs, HE, and radionuclides above background. This site was recommended for an EC in the 1995 RFI report. As part of preliminary field work for an EC in 1995, the site was resampled for inorganic chemicals and total uranium. Twenty five locations were sampled at multiple depths and the samples were field screened using XRF. Two surface soil samples were subsequently collected and submitted to a fixed analytical laboratory. The results from these samples did not reproduce the inorganic and uranium results detected in the 1993 sampling. The 1993 and 1995 sampling events were limited in scope, so the proposed VCA activities included further site characterization to more clearly define the nature and to determine the extent of potential contamination at the site. In 1997, as part of the VCA activities, a sampling grid was established over the site, and soil samples were collected from the center of each grid section at a depth of 0 in. to 6 in., resulting in a total of 9 samples collected from 9 locations. Three additional locations were sampled at a depth of 12 in. to 18 in. Based on the results of this sampling and the associated risk assessment, remediation at the site was not warranted. All constituent concentrations, in the eleven additional samples collected, were reported below any SAL. No corrective action was taken at this site.
39-002(b)	In Progress	AOC 39-002(b) is a 5 ft x 5 ft concrete pad adjacent to a firing site support structure (structure 39-6) and an active firing site [SWMU 39-004(c)]. This concrete pad has

		been in use since 1953 to store small quantities of paper contaminated with waste solvents (ethanol, acetone, trichloroethane, and copper sulfate), transformer oil, vacuum grease, and photographic (Polaroid) wastes. Nothing is stored here presently, but the area remains available for use as needed. There is no evidence, visible or documentary, of spills or leaks at this site. However, this AOC is within the blast radius of a firing site and is expected to contain contaminants from explosive tests. In the RFI in 1993, this site was sampled by collecting two surface samples from two locations. One sample was collected from the closest point to the storage area (adjacent to the concrete pad) and another sample was collected 10 ft northeast of the concrete pad in an apparent local drainage. PCB and inorganic chemicals were present in the samples collected. Since the active firing site will continue to affect AOC 39-002(b), any further investigation or remedial activities for this site were recommended to be conducted in conjunction with the decommissioning of the active firing site [SWMU 39-004(c)].
39-002(c)	In Progress	AOC 39-002(c) is an outside SAA located on a larger asphalt paved area at the southwest corner of a gas-gun support structure (structure 39-56). The overall area is a gas-gun firing site from which depleted uranium projectiles are fired into the cliff face to the west. AOC 39-002(c) is used only as needed to store waste paper and rags contaminated with solvents (ethanol, acetone, and trichloroethane) and vacuum grease. There is no evidence, visible or documentary, of spills or leaks at this site. In the RFI that was conducted in 1993, this site was sampled by collecting two surface samples from two locations. One sample was collected near the southeastern corner of structure 39-56 from surface soils immediately adjacent to the storage area and the other sample was collected 15 ft north, from soil closest to the asphalt pad. Based on the data collected during the RFI, this site was recommended for a VCA. A VCA was conducted at this site in 1995. Before the start of the VCA, two additional areas of potential contamination associated with structure 39-56 were noted. The first was located on the southwest corner of the building and consisted of oil-stained soils beneath an air compressor. The second area was located on the west side of the building and consisted of a small area contaminated with depleted uranium. Because the areas were small and distinct, these areas were also addressed during the VCA conducted at the site. The VCA consisted of soil removal and confirmatory sampling in four localized areas, the two RFI sampling locations and the two additional areas noted during the walkover of the site before the commencement of the remedial activities. Following excavation, two confirmatory samples were collected from each of the localized areas, resulting in a total of eight confirmatory samples collected. Based on the analysis of the confirmatory samples collected at the site, AOC 39-002(c) was recommended for NFA.
39-002(d)	Administratively Complete	AOC 39-002(d) was a SAA located on a gravel pad on the outside, southwest corner of a blockhouse (structure 39-57) for a firing site [SWMU 39-004(d)]. The SAA is not paved and includes an electrical closet measuring 5 ft x 5 ft x 4 ft. During the 1980s and 1990s, AOC 39-002(d) was in use for storage of photographic wastes and cloth and paper contaminated with various substances (acetone, ethanol, transformer oil, trichloroethane, vacuum grease, and copper sulfate). There is no evidence, visible or documentary, of spills or leaks at this site. In the RFI that was conducted in 1993, this site was sampled by collecting two surface samples from two locations. One sample was collected near the southwestern corner of structure 39-57, and the other sample was collected from an electrical access box. Potential contaminants identified from this sampling were consistent with potential contaminants (inorganic chemicals, HE, and uranium) at SWMU 39-004(d), an active firing site. Since the active firing site will continue to affect AOC 39-002(d), any further investigation or remedial activities for this site were recommended to be conducted in conjunction with the decommissioning of SWMU 39-004(d), the active firing site. In 1998, an RFI report was submitted to the administrative authority formally requesting

		NFA at this site. AOC 39-002(d) was regulated under a separate authority [3004(a) of RCRA] and the site was subject to the requirements for active SAAs specified in 40 CFR 262.34, "Standards Applicable to Generators of Hazardous Waste."
39-002(e)	Administratively Complete	AOC 39-002(e) was an SAA located at the south end of the gas-gun facility (Building 39-69). AOC 39-002(e) was located on a concrete pad under a breezeway that connects Building 39-69 to Building 39-89, a gas-gun support building. Waste materials from gas-gun experiments, including aluminum, lead, carbon dust, ethanol, brass, paraffin, stainless steel, quartz, nylon, WD-40, Gunk, Polaroid film, and Fantastik cleaner, were stored in this location. A total of approximately 60 gal. of waste was generated yearly at this site. The area immediately adjacent and downgradient from this site is asphalt pavement. There is no evidence, visible or documentary, of spills or leaks this site. In the RFI that was conducted in 1993, this site was sampled by collecting two surface samples from two locations from the unpaved drainage area, at locations closest to the storage site. Based on the results of sampling, this AOC was recommended for NFA in the RFI report. In 1998, an RFI report was submitted to the administrative authority formally requesting NFA at this site. AOC 39-002(e) was regulated under a separate authority [3004(a) of RCRA] and the site was subject to the requirements for active SAAs specified in 40 CFR 262.34, "Standards Applicable to Generators of Hazardous Waste."
39-002(f)	Administratively Complete	AOC 39-002(f) was an SAA located on the asphalt driveway outside the northeast corner of a support structure (structure 39-88) for an active firing site [SWMU 39-004(e)]. Before the 1980s, the area was used to store small quantities of waste solvents (ethanol, acetone, trichloroethane), copper sulfate, transformer oil, vacuum grease, and photographic wastes. There is no evidence, visible or documentary, of spills or leaks at this site. During the RFI that was conducted in 1993, this site was sampled by collecting two surface samples from two locations. One sample was collected at the base of a soil berm located near the storage area and the other sample was collected from a drainage channel north and across the driveway from the site. AOC 39-002(f) was recommended for deferred action in the RFI report because the active firing site will continue to affect AOC 39-002(f). The recommendation in the RFI report was that any further investigation or remedial activities for this site be conducted in conjunction with the decommissioning of SWMU 39-004(e), the active firing site. In 1998, an RFI report was submitted to the administrative authority formally requesting NFA at this site. AOC 39-002(f) was regulated under a separate authority [3004(a) of RCRA] and the site was subject to the requirements for active SAAs specified in 40 CFR 262.34, "Standards Applicable to Generators of Hazardous Waste."
39-002(g)	Administratively Complete	
39-003	Administratively Complete	From approximately 1955 to 1977 a small incinerator was located between the south wall of Building TA-39-2 and the south perimeter security fence. It was used primarily to burn office waste, and there is no indication that it was ever used for disposal of hazardous constituents/waste. In 1977, an addition was built onto the south end of Building TA-39-2, necessitating relocation of the perimeter security fence about 60-ft. south of the addition. At this time, the incinerator was removed and buried in one of the TA-39 landfill pits. SWMU 39-003 is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
39-004(a)	Pending	SWMU 39-004(a) is a firing site at TA-39 (structure 39-7). This site was constructed in 1953 as a remote test firing facility. The experiments conducted at this firing site, the primary purpose of which is to test materials, are designed to expend all of the high explosives in the device. If a shot fails so that not all the high explosives are spent, an effort is made to pick up and destroy the unexploded high explosives. A typical shot carries 10 lb to 100 lb of explosives, but on occasion, up to 1000 lb may be used. Signs

		of impact are generally noticeable only within a 200-ft radius around the firing pad. SWMU 39-004(a) is within the fall zone of a high cliff that erodes when explosives experiments are conducted at the site; the site is currently on standby status. SWMU 39-004(d), another remote test firing facility, is near SWMU 39-004(a) and is currently active. Both 39-004(a) and 39-004(d) are located along the northern tributary of the upper reach of Ancho Canyon. The firing pads are located in the canyon bottom between a diverted ephemeral stream and the canyon wall. For the purposes of evaluating the site, SWMU 39-004(a) and SWMU 39-004(d) were sampled as one site. Field sampling efforts at SWMUs 39-004(a and d) were completed in 1995. Because of the complexity of investigating potential contaminant dispersion and migration from an explosives site, these investigations were conducted in two parts: firing pad areas and transects from the firing pads along the adjacent hill sides and mesa top. Initial sampling involved the collection of samples from within the physical boundary of the firing pads (approximately within a 100-ft-diameter circle). Radiation surveys and XRF screening were conducted at both firing pads as a guide to sample location selection. Sample locations were selected, where possible, from the location of the two highest radiation and XRF survey locations. A total of twelve surface sample locations were selected for sampling at SWMUs 39-004(a and d). To characterize the extent of contamination dispersion beyond the firing pads, six arbitrarily drawn transects, using the firing pads as the hub, radiated outward from the 100-ft-diameter circle encompassing the firing pads to a distance of 600 ft. Nine samples were collected from the transects at SWMUs 39-004(a and d). Data from the sampling indicate elevated inorganic chemicals and radionuclides as potential contaminants. Since these sites are within the influence of an active firing site, the RFI report recommended deferring action at these sites until the firing site is decommissioned and removed from service. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. SWMU 39-004(a) was included in the submission because possible contamination at the SWMU is exempt from RCRA regulations under the military munitions definition (40 CFR 260.10 and 40 CFR 266). The sole purpose of activities at SWMU 39-004(a) was to perform activities including research, development, testing, and evaluation of military munitions, weapons, or weapons systems. Therefore, hazardous wastes as defined by RCRA were never managed at this site.
39-004(b)	Pending	SWMU 39-004(b) is a firing site at TA-39 (structure 39-8). This site had been in use from the time of TA-39's establishment as a remote test firing facility. The experiments conducted at this firing site, the primary purpose of which was to test materials, were designed to expend all of the high explosives in the device. If a shot failed, so that not all the high explosives were spent, an effort was made to pick up and destroy the unexploded high explosives. A typical shot carries 10 lb to 100 lb of explosives, but on occasion up to 1000 lb may be used. Signs of impact are generally noticeable only within a 200-ft radius around the firing pad. Activities at this site were discontinued in 1980 because of the constant hazard of falling debris from the nearby cliff. SWMU 39-004(b) is located in the western tributary of the upper reach of Ancho Canyon. The firing pad is located in the canyon bottom between an ephemeral stream and the northern canyon wall. This SWMU is influenced by firing site activities at SWMUs 39-004(a, d, and e). Field sampling efforts at SWMU 39-004(b) were completed in 1995. Because of the complexity of investigating potential contaminant dispersion and migration from an explosives site, these investigations were conducted in two parts: firing pad areas and transects from the firing pads along the adjacent hillsides and mesa top. Initial sampling involved the collection of samples from within the physical boundary of the firing pad (approximately within a 100-ft-diameter circle). Then the firing pad was gridded in 20-ft x 20-ft areas using traditional land survey techniques. Radiation surveys and XRF screening were conducted at each of the nodes. Sample locations were then selected, where possible, from the location of the two highest radiation and XRF survey locations. Six surface soil samples were collected from the firing pad at SWMU 39-004(b). To characterize the extent of contamination dispersion beyond the firing pads, three arbitrarily-drawn transects, using the firing pad as the hub, radiated outward from

		the 100-ft-diameter circle encompassing the firing pad to a distance of 600 ft. Six samples were collected from the transects at this site. Data from the sampling indicate elevated inorganic chemicals and radionuclides as potential contaminants. Since this site is within the influence of active firing sites, the RFI report recommended deferring action at this site until the active firing sites are decommissioned and removed from service. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. SWMU 39-004(b) was included in the submission because possible contamination at the SWMU is exempt from RCRA regulations under the military munitions definition (40 CFR 260.10 and 40 CFR 266). The sole purpose of activities at SWMU 39-004(b) was to perform activities including research, development, testing, and evaluation of military munitions, weapons, or weapons systems. Therefore, hazardous wastes as defined by RCRA were never managed at this site.
39-004(c)	Pending	SWMU 39-004(c) is an open detonation site at TA-39 (structure 39-6). This site is used for both experimental purposes and for treatment of hazardous waste by open detonation. This site has been in use since the time of TA-39's establishment as a remote test firing facility. The experiments conducted at this firing site, the primary purpose of which is to test materials, are designed to expend all of the high explosives in the device. If a shot fails, so that not all the high explosives are spent, an effort is made to pick up and destroy the unexploded high explosives. A typical shot carries 10 lb to 100 lb of explosives, but on occasion up to 1000 lb may be used. Signs of impact are generally noticeable only within a 200-ft radius around the firing pad. SWMU 39-004(c) is located in the southern-most western tributary of Ancho Canyon. The firing pad is located in the canyon bottom between an ephemeral stream, a steep hill slope to the north, and a steep hill slope to the south. A unit-specific Part B permit application for SWMU 39-004(c) has been submitted to NMED to address open detonation, pursuant to the requirements of the New Mexico Hazardous Waste Act and implementing regulations. Field sampling efforts at SWMU 39-004(c) were completed in 1995. Because of the complexity of investigating potential contaminant dispersion and migration from an explosives site, these investigations were conducted in two parts: firing pad area and transects from the firing pads along the adjacent hillsides and mesa top. Initial sampling involved the collection of samples from within the physical boundary of the firing pad (approximately within a 100-ft-diameter circle). Radiation surveys and XRF screening were conducted at the firing pad as a guide to sample location selection. Sample locations were then selected, where possible, from the location of the two highest radiation and XRF survey locations. A total of four surface sample locations were selected from locations near the firing pad at SWMU 39-004(c). To characterize the extent of contamination dispersion beyond the firing pads, three arbitrarily-drawn transects, using the firing pad as the hub, radiated outward from the 100-ft-diameter circle encompassing the firing pad to a distance of 600 ft. Ten samples were collected along each of the transects associated with SWMU 39-004(c). Data from the sampling indicate elevated inorganic chemicals and radionuclides as potential contaminants. Since this site is an active firing site and regulated under another administrative authority, the RFI report recommended deferring action at this site until it is decommissioned and removed from service. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. SWMU 39-004(c) was included in the submission because possible contamination at the SWMU is exempt from RCRA regulations under the military munitions definition (40 CFR 260.10 and 40 CFR 266).
39-004(d)	Pending	SWMU 39-004(d) is a firing site at TA-39 (structure 39-57). The site is used for both experimental purposes and for treatment of hazardous waste by open detonation. This site was constructed in 1953 as a remote test firing facility. The experiments conducted at this firing site, the primary purpose of which is to test materials, are designed to expend all of the high explosives in the device. If a shot fails, so that not all the high explosives are spent, an effort is made to pick up and destroy the unexploded high explosives. A typical shot carries 10 lb to 100 lb of explosives, but on occasion up to 1000 lb may be used. Signs of impact are generally noticeable only within a 200-ft radius around the firing pad. SWMU 39-004(a), another remote test firing facility, is in

		close proximity to SWMU 39-004(d). SWMU 39-004(a) is within the fall zone of a high cliff that erodes when explosive experiments are conducted at the site; the site is currently on standby status. Both 39-004(a) and 39-004(d) are located along the northern tributary of the upper reach of Ancho Canyon. The firing pads are located in the canyon bottom between a diverted ephemeral stream and the canyon wall. For the purposes of evaluating the site, SWMU 39-004(a) and SWMU 39-004(d) were sampled as one site. A unit-specific Part B permit application for SWMU 39-004(d) has been submitted to NMED to address the hazardous waste treatment by open detonation, pursuant to the requirements of the New Mexico Hazardous Waste Act and implementing regulations. Field sampling efforts at SWMU 39-004(a,d) were completed in 1995. Because of the complexity of investigating potential contaminant dispersion and migration from an explosives site, these investigations were conducted in two parts: firing pad areas and transects from the firing pads along the adjacent hillsides and mesa top. Initial sampling involved the collection of samples from within the physical boundary of the firing pads (approximately within a 100-ft-diameter circle). Radiation surveys and XRF screening were conducted at both firing pads as a guide to sample location selection. Sample locations were selected, where possible, from the location of the two highest radiation and XRF survey locations. A total of twelve surface sample locations were selected for sampling at SWMU 39-004(a,d). To characterize the extent of contamination dispersion beyond the firing pads, six arbitrarily drawn transects, using the firing pads as the hub, radiated outward from the 100-ft-diameter circle encompassing the firing pads to a distance of 600 ft. Nine samples were collected from the transects at SWMU 39-004(a,d). Data from the sampling indicate elevated inorganic chemicals and radionuclides as potential contaminants. Since these sites are active firing sites and regulated under another administrative authority, the RFI report recommended deferring action at these sites until they are decommissioned and removed from service. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. SWMU 39-004(d) was included in the submission because possible contamination at the SWMU is exempt from RCRA regulations under the military munitions definition (40 CFR 260.10 and 40 CFR 266).
39-004(e)	Pending	SWMU 39-004(e) is an open detonation site at TA-39 (structure 39-88). This site has been in use since its construction in 1978 as a remote test firing facility. The experiments conducted at this firing site, the primary purpose of which is to test materials, are designed to expend all of the high explosives in the device. If a shot fails, so that not all the high explosives are spent, an effort is made to pick up and destroy the unexploded high explosives. A typical shot carries 10 lb to 100 lb of explosives, but on occasion up to 1000 lb may be used. Signs of impact are generally noticeable only within a 200-ft radius around the firing pad. SWMU 39-004(e) is located in the western tributary of the upper reach of Ancho Canyon on the same tributary as SWMU 39-004(b). This SWMU is within the deposition area of SWMUs 39-004(a, d, and b). Field sampling efforts at SWMU 39-004(e) were completed in 1995. Because of the complexity of investigating potential contaminant dispersion and migration from an explosives site, these investigations were conducted in three parts: firing pad areas, transects from the firing pads along the adjacent hillsides, and mesa top. Initial sampling involved the collection of samples from within the physical boundary of the firing pad (approximately within a 100-ft-diameter circle). The firing pad was divided into grid points and radiation surveys and XRF screening were conducted at each of the 20-ft nodes. Sample locations were then selected, where possible, from the location of the two highest radiation and XRF survey locations. Surface soil samples were collected from four locations at the firing pad. To characterize the extent of contamination dispersion beyond the firing pads, three arbitrarily drawn transects, using the firing pad as the hub, radiated outward from the 100-ft-diameter circle encompassing the firing pad to a distance of 600 ft. Eight soil samples were collected along the transects. Data from the sampling indicate elevated inorganic chemicals and radionuclides as potential contaminants. Since this site is within the influence of other active firing sites, the RFI report recommended deferring action at this site until the active firing sites are

		decommissioned and removed from service. In September 2001, the ER Project submitted documentation supporting NFA for munitions sites. SWMU 39-004(e) was included in the submission because possible contamination at the SWMU is exempt from RCRA regulations under the military munitions definition (40 CFR 260.10 and 40 CFR 266). The sole purpose of activities at SWMU 39-004(e) was to perform activities including research, development, testing, and evaluation of military munitions, weapons, or weapons systems. Therefore, hazardous wastes as defined by RCRA were never managed at this site.
39-005	In Progress	SWMU 39-005 is the site of a former HE seepage pit used for the disposal of HE-contaminated decant from operations at an explosives operations building (Building 39-4). The former seepage pit measured about 5 ft x 5 ft x 7 ft, and the bottom was not lined or otherwise contained. The gravel and HE-contaminated soil that filled the pit were removed in 1986. An RFI was conducted at SWMU 39-005 in 1993. Although the HE seepage pit had been removed, the area was sampled to ensure that no residual HE materials were present. Because the precise location of the former pit was not known, samples were collected from the location thought to have been the most likely site of the pit and from a location downgradient of the presumed location. Two locations were sampled at 3 ft intervals down to a depth of 12 ft, for a total of 10 samples. These samples were analyzed for HE constituents and no HE was detected in any of the samples collected at this site. On the basis of this investigation, SWMU 39-005 was recommended for NFA in the RFI report.
39-006(a)	In Progress	SWMU 39-006(a) comprises an inactive outfall, an inactive septic system (inactive septic tank, structure 39-12), an inactive chemical seepage pit, and the active septic system (structure 39-104) and active sand filter that replaced the inactive septic system. The inactive septic system was constructed in 1952 and was connected only to Building 39-2, an office building, laboratory, and a shop. It consisted of an 1800-gal. reinforced concrete septic tank (structure 39-12), drainlines, and a subsurface sand filter that was constructed to dispose of photographic processing chemicals. The tank was connected to the now inactive sand filter by approximately 260 ft of vitrified clay pipe, which discharged to an outfall in Ancho Canyon. The sand filter is adjacent to the east side of the ephemeral stream channel, in an open area south of the new (active) septic tank. Photographic processing chemicals were routinely disposed into the system at a rate of about 65 gal. per year, which eventually caused it to malfunction. To correct the problem, a separate seepage pit for the photographic processing chemicals was put into use in 1973. The chemical seepage pit was an open pit approximately 12 ft deep and filled with cobble. A corrugated pipe approximately 1 ft in diameter runs vertically through the center of the seepage pit. This seepage pit handled approximately 75 gal. of photographic wastes per year until 1992. The inactive septic tank was enlarged at this time, and a new subsurface sand filter was installed on the south side of State Highway 4. Use of the old sand filter was discontinued at that time. By 1978, the new sand filter had become clogged and was replaced. In 1985, use of the inactive septic tank (structure 39-12) was discontinued; the waste was removed and the tank filled with sand. A new, 2500-gal. precast concrete septic tank (structure 39-104) and drainline were installed, with the line running through the original (inactive) tank. This new septic system serves several buildings at TA-39 in addition to Building 39-2. At the same time, the sand filter south of State Highway 4 was redesigned and replaced, which was the second sand filter replacement in 12 years. New piping was added (the 4-in. line under State Highway 4 was retained to avoid tearing up the road, and the new pipe was tied into the existing line). In approximately 1989, to ensure compliance with EPA regulations concerning surface discharges, the outfall from the new sand filter was plugged, eliminating the discharge into the canyon. During the RFI in 1993, each of the components of this SWMU were sampled. Both the active and inactive sand filters were sampled in three locations at three depths (0 in. to 6 in., 4 ft, and 6 ft) along the center line of the sand filter, resulting in a total of nine samples collected from each of the filters. The active septic tank (structure 39-104) was sampled by drilling a borehole adjacent to and downgradient from the tank. This

		location was sampled at three depths: at the surface (0 in. to 6 in.) and at 9-ft and 11-ft depths. The inactive septic tank (structure 39-12) was partially underneath Building 39-100 and has an active sewer line running in close proximity to the inactive tank, which hampered sampling the tank contents. Four surface samples were collected from four locations and one location was drilled and sampled at additional 9-ft and 11-ft depths. A total of six samples were collected from the inactive septic tank area. The outfall area was sampled at two locations in the drainage channel: 6 ft south of the discharge point and 15 ft south of the discharge point. These samples were collected from both the surface soils and from the 4-ft depth in the drainage channel. The chemical seepage pit was filled with cobble, so sampling was conducted by using a combination of surface and borehole sampling. Surface soils were collected from three locations, approximately 10 ft south, east, and north of the discharge pipe in the center of the pit. Cores were also collected at these locations from depths of 3 ft, 6 ft, 9 ft, and 12 ft. In all, fifteen samples were collected from the area surrounding the chemical seepage pit. The recommendations in the RFI report were made for each component of this SWMU. NFA recommendations were made for all components except the inactive septic tank (structure 39-12) and the chemical seepage pit. Because the chemical seepage pit could not be sampled directly (i.e., in the center of the pit), and both the chemical seepage pit and inactive septic tank are no longer operational, these components of the SWMU were recommended for corrective action.
39-006(b)	Administratively Complete	This active septic system serves Building TA-39-111 (the Pulsed Power Assembly Building) and was part of the original construction of the building in 1989. It is located northwest of TA-39-111 and consists of a 1000-gal. reinforced concrete septic tank (TA-39-132), a distribution box, and a leach field. This system was designed for sanitary waste disposal only. SWMU 39-006(b) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.
39-007(a)	In Progress	SWMU 39-007(a) consists of a waste storage area located on a concrete pad under a covered porch outside the northeast corner of an equipment shelter (structure 39-63). Review of historical information and interviews with site personnel could not establish the dates of operation for this SWMU. However, the 1990 SWMU report indicates that there was no waste present at the site in 1988. Waste transformer oil, possibly containing lead and solvents, was reportedly stored at this SWMU. During site investigations, soils near the concrete pad appeared discolored but there have been no documented spills or releases at this SWMU. The area around the concrete pad is relatively flat but slopes eastward to a local drainage near the adjacent road. RFI sampling was conducted at this site in 1993. Three surface samples (0 in. to 6 in.) were collected within a few feet of the concrete pad. One sample was collected at the southeast corner of the building and two samples were collected from the area most likely to receive runoff from the pad. PCB contamination was detected at the site and a VCA was recommended in the RFI report. A remedial action was conducted at this SWMU in 1995 to remediate PCB contamination detected during the RFI. A portion of the site was excavated and confirmation samples were collected. When the confirmation sampling results indicated that PCB contamination was still present, additional excavation was conducted in the localized area. Confirmation samples were collected following the second excavation at the site, and these sample results indicate that the remediation was successful, resulting in less than 1.0 ppm PCBs at the SWMU. All remedial action was completed at the site in July 1995. Following the remedial action, the site was filled with clean material, regraded, and seeded with native grasses.
39-007(b)	Administratively Complete	
39-007(c)	Administratively Complete	
39-007(d)	Pending	AOC 39-007(d) is an active storage area (structure 39-142) consisting of a bermed asphalt pad covered with a metal roof. The area was initially used for storage of metal and an occasional drum of silicon transformer oil. Later, chemicals were stored at the

		site including dielectric fluid, ethylene glycol, solvents and kerosene. A valved drainpipe discharges stormwater from the bermed area across the access road toward the Ancho Road drainage. Subsequent human health and ecological risk screening assessments show no unacceptable risk. The area is currently operated in accordance with RCRA less-than-90-day storage area requirements and applicable LANL Spill Prevention Countermeasures and Control procedures. This AOC is located in Ancho Canyon. Impacts to groundwater from this AOC are negligible. Surface erosion potential has been evaluated for this site and the erosion potential is deemed to be low. The ER Project conducted sampling at this AOC in 1993. Five surface soil samples were collected. The samples were submitted to an offsite analytical laboratory and analyzed for organic chemicals, inorganic chemicals, and radionuclides. No inorganic chemicals were detected above BVs. One organic chemical was detected but not above it's SAL. One radionuclide was detected above FV but not above it's SAL. All analytes detected were eliminated as potential contaminants on the basis of the human health screening assessment. Two analytes were retained as potential contaminants were identified in the ecotoxicological screening assessment. The ecotoxicological potential contaminants will be addressed in a future risk assessment for the whole of Ancho Canyon. Because no human health potential contaminants were found, this site was recommended for NFA.
39-007(e)	Administratively Complete	
39-009	Administratively Complete	
39-010	In Progress	SWMU 39-010 is a large excavated soils pile. During the construction of the most recent firing site at TA-39 [SWMU 39-004(e)], large quantities of earth were removed and deposited in the canyon east of the site. This soil dump, which covers about 76,200 sq ft, was not identified in the 1990 SWMU report; however, it was noted in both the RFI work plan and report. No data are available concerning the nature and extent of possible contamination of the excavated soil dump, but potential contaminants at this site are expected to be similar to the potential contaminants at SWMU 39-004(e) (HE, radionuclides, and inorganic chemicals).
40-001(a)	Administratively Complete	In the SWMU Report(LANL 1990), SWMU 40-001(a) is described as a septic tank designated as structure number TA-40-22. The SWMU Report also indicates that no structure number appears on original drawings. Additionally, neither a septic tank nor this structure number is identified on site-specific engineering drawings of septic tanks at TA-40. Engineering drawings do indicate a pipe from building TA-40-1 roof drains leading to the area where the structure sign for TA-40-22 is located. In addition, other drawings also indicate the presence of a vitrified clay pipe, apparently fed by the roof drains, leading to this area. Field reconnaissance found a drainpipe but no septic system. Subsequent drain tracing tests indicated that this outlet is fed only by drains from the roof of Building TA-40-1. SWMU 40-001(a) is appropriate for NFA under Criterion 1 because it has been shown not to exist.
40-001(b)	In Progress	SWMU 40-001(b) is an active septic system (structure 40-24) that was installed in 1949. The 1215-gal. tank is constructed of reinforced concrete. The outfall from this tank originally went to a leach field but in 1973, the overflow was connected to two gravel-filled seepage pits. The septic system served former Building 40-19 and still serves Buildings 40-1 and 40-23; all were built in the early 1950s. Building 40-1 contained offices, a darkroom, and an explosives laboratory. In the early 1980s, the explosives laboratory was removed and the building was converted into office space. Building 40-19 was a guard shack and is no longer in use. Building 40-23 has contained a cable shop, a warehouse, and an electronics laboratory. Building 40-23 now contains offices, a laser laboratory, a carpenter shop, and a staff shop. Possible contaminants at the site include HE, photo-processing chemicals, solvents, and acids. The ER Project conducted RFI sampling at SWMU 40-001(b) in 1994. Six samples were collected and submitted to a fixed laboratory for analysis of inorganic chemicals, organic chemicals, and HE. None of the chemicals analyzed exceeded SALs.
40-001(c)	In Progress	SWMU 40-001(c) is an active septic system (structure 40-25) that has served a

		preparation utility building (Building 40-11) since 1950. The 540-gal. tank is constructed of reinforced concrete. Structure 40-25 serves Building 40-11, which houses change rooms and restrooms; operators at the TA-40 firing sites change into Laboratory-provided clothing in this building. No activities in this building have involved production of hazardous wastes, but hazardous material carried on clothing or skin may have washed down sink drains. Possible contaminants of this system include solvents, inorganic chemicals, and HE. Outflow from this tank originally went to adjacent Pajarito Canyon until a new leach field was constructed and placed into service in 1988. The ER Project conducted RFI sampling at SWMU 40-001(c) in 1994. Eleven samples were collected and submitted to a fixed laboratory for analysis of inorganic chemicals, organic chemicals, and HE. Two inorganic chemicals were detected above SALs, however the maximum detected value for one of the inorganic chemicals was below its respective BV.
40-002(a)	Administratively Complete	
40-002(b)	Administratively Complete	
40-002(c)	Administratively Complete	
40-003(a)	In Progress	SWMU 40-003(a) was a circular area, approximately 60 ft in diameter, that was used as a detonation area for explosive scrap materials. Detonated materials included scrap explosive pieces, chips, powder, and waste detonators. After each detonation, all scattered debris was picked up and transported to an appropriate waste-disposal site. The scrap detonation site was not manned continually. Personnel were at the site only for the time needed to set up a detonation. Detonations were remotely controlled from a firing point located 1300 ft to the west. Scrap explosives and explosives-contaminated waste were delivered from other LANL facilities just before detonation. Soils remaining after detonation were nonreactive and nonignitable. The site operated from the early 1960s until April 1985. Repeated detonations have formed a south-facing amphitheater in the northern cliff, below the mesa top. The back (north) of the amphitheater is a cliff that rises 30 ft from the amphitheater floor. The east and west rims of the amphitheater drop to the south, framing its opening on the mesa shelf. In 1990, LANL inspectors found the site had been used as a dumping area for construction rubble and debris. SWMU 40-003(a) was proposed for NFA in the RFI work plan because it was being closed under a RCRA closure plan that NMED approved in 1992 and again in 1994 (as amended). The RCRA closure plan was implemented in 1992 and NMED approved the closure report in 1995. Construction debris was removed from the detonation area in April 1992. The construction debris was field-screened for HE contamination, and all uncontaminated material was properly disposed of at the sanitary landfill. Debris that showed residual HE contamination was either decontaminated and then disposed of at the landfill or was collected by the M-7 Group for treatment and subsequent disposal. Approximately 177 cubic yards of rubble were removed. The last 6 in. of debris remained on the site awaiting analytical results from the surface sample collected (in January 1992) below the debris. Two inorganic chemicals, thallium and silver, were detected above their respective SALs. However, the TCLP concentration for silver was below regulatory levels (thallium does not have a TCLP regulatory level). Therefore, the remaining 6 in. of debris was managed as nonhazardous waste. An investigation was conducted at SWMU 40-003(a) in May 1992. Surface soil samples and core samples were collected and analyzed to determine if any residual contamination remains from the thermal treatment process. Sample locations were selected at random within the amphitheater, because the nature of the detonation process was such that all locations within the amphitheater would be equally likely to exhibit contamination, if present. Nine samples were collected and analyzed for organic

		chemicals and inorganic chemicals. Organic chemicals were detected but none was above its SAL. One inorganic chemical was detected above its SAL. SWMU 40-003(a) was proposed for NFA but subsequently was withdrawn because this site requires further evaluation to assess residual ecological risk.
40-003(b)	In Progress	AOC 40-003(b) is a former burning site that was used from the early 1960s through April 1985 to dispose of trash suspected of containing contamination from explosives and other combustible wastes. The wastes were stacked and burned in a “burn pit” (trench) or in a wire cage. Burning was initiated using explosive detonators set off remotely. Typical wastes included rags, paper, tape, cotton swabs, wood, glassware, and other trash items that had contacted explosives and were suspected of being explosives-contaminated. The site consists of three small former burn areas approximately 6 ft x 6 ft and one “burn pit.” A wire cage, approximately 4 ft x 4 ft sq and 5 ft high, was used to burn wastes in three separate areas at the site. These areas exhibited scorched soil and rock, charred ash, and other debris. The burn pit is believed to be approximately 12 ft wide, 12 ft deep, and 50 ft long, where burned material was buried. The burn pit is believed to have been covered with crushed tuff. The burn areas, excluding the pit, operated as a hazardous waste thermal treatment unit under RCRA interim status until operations ceased in 1985. The burn pit ceased operations prior to 1980 and therefore was not subject to RCRA closure requirements. AOC 40-003(b) is located approximately 1300 ft east of a firing chamber identified as structure 40-15 and approximately 100 ft east of SWMU 40-003(a). Potential contaminants include a variety of inorganic chemicals and organic chemicals, including HE. AOC 40-003(b) was proposed for NFA in the RFI work plan because it was being closed under a RCRA closure plan NMED approved initially in 1992, and approved again in 1994 (as amended). NMED approved the RCRA closure report and closure certification for the burn site in 1995. The burn pit was not included in the closure, but will be addressed under Module VIII of the Laboratory’s Hazardous Waste Facility Permit. Characterization samples were collected in January and May 1992. Analytical results identified two small surface areas, one approximately 4 ft x 4 ft and another approximately 6 ft x 6 ft that required remediation. These two sites are referred to in the closure report as the burn cage area (BCA) and the burn area east (BAE). The amendment to the final closure report (February 1993) presents the results of site characterization and outlines proposed cleanup action for the BCA and the BAE. Two inorganic chemicals (lead and antimony) were identified as contaminants of concern at the BCA. One inorganic chemical (lead) was identified as a contaminant of concern at the BAE. Contaminated soil was removed and confirmation samples were collected in 1994. During excavation of the BAE, an additional area estimated to be 15 ft x 15 ft was discovered immediately north of and partially overlapping the BAE. Per the approved closure plan, one confirmation sample was collected from the BCA and was analyzed for total and TCLP lead and total antimony analysis. Analytical results confirmed that contamination was removed to concentrations below the regulatory levels specified in the closure plan. Five confirmation samples were collected from the BAE and were analyzed for total and TCLP lead. Analytical results confirmed that remediation of the area was successful.
40-004	In Progress	SWMU 40-004 is an area where containers of chloroethane and pump oil were stored. Building 40-9 now covers this area. Hazardous materials that may be present at this SWMU are organic chemicals. In 1994, the ER Project conducted RFI sampling at SWMU 40-004. Samples were collected and submitted to a fixed laboratory for analysis of organic chemicals. None of the chemicals analyzed exceeded BVs or SALs.
40-005	In Progress	SWMU 40-005 consists of an active sump, inactive drainlines and outfall on the northwest side of a laboratory building (Building 40-41), and a marshy area about 0.25 mi upstream and up-canyon from that building. The system serves a room in Building

		40-41 and was part of TA-22 before it was incorporated into TA-40. The system also serves an explosives-grinding operation that is used infrequently. The sump is concrete with an aluminum tank. Drainlines are 4 ft, 6-in. x 6 ft, 4 in. x 5 ft deep. Effluent flowed to Tributary B of Twomile Canyon until 1994. The sump outlet port was capped in 1994 but the sump itself is still used. Sump contents are removed periodically and disposed of at approved facilities. Hazardous materials that may be present in the sump system include HE and VOCs. An RFI was conducted in 1994 to determine whether media associated with the sump system or outfall area were contaminated as a result of past operational releases, leaks, or spills and if so, whether the contamination posed an unacceptable risk to human health. Samples were analyzed for organic chemicals, inorganic chemicals, and radionuclides. Because the 1994 VOC samples were lost and HE sample holding times were missed, a point adjacent to the 1994 sampling sites was resampled in 1996. The samples were analyzed for inorganic chemicals, VOCs, HEs, and radionuclides; 32 samples were taken from 14 locations. One inorganic chemical was detected in one sample slightly above its BV but below its SAL. Two organic chemicals were detected at very low levels, both were detected at levels below their respective SALs. One detected organic chemical, acetone, and one detected inorganic chemical, copper, are both noncarcinogens, and were subjected to an MCE. Results of this evaluation showed a normalized value of 0.009, which is well below the threshold of 1.0, below which the potential for unacceptable health effects is negligible. SWMU 40-005 was recommended for NFA because available data indicated that potential contaminants are not present in concentrations that would pose an unacceptable risk under current and projected future land use.
40-006(a)	In Progress	SWMU 40-006(a) is one of several active firing sites at TA-40. This detonator firing site (structure 40-15) consists of a reinforced concrete and steel building that allows observation of the test shots, a partially protected area adjacent to the building where the shot is set up, and an open area covered with sand where the larger shots are fired. After each shot, large pieces of debris are removed and disposed of and the open area is graded. Because of this practice, a soil berm has developed near the canyon edge. This firing site is used only to test and develop small explosive devices. Tests conducted at the site have included detonator booster tests, which use 2 lb of explosives, and large open-air shots, which can use up to 50 lb of explosives. Explosives and materials used in the tests conducted at SWMU 40-006(a) were similar in composition to those at other sites but the tests were more frequent and some included larger amounts of explosives. Surface soil sampling was conducted at structure 40-15 in 1989, as part of the DOE environmental survey. Results showed that barium, copper, zinc, thorium-232, and potassium-40 were present at levels greater than the analytical limits of detection. The RFI work plan proposed field-screening for inorganic chemicals and radionuclides along and between two transects originating from the firing pad to a distance of approximately 900 ft. Samples were proposed to be collected from the firing pad area, the debris berm, the canyon wall below the debris berm, and the alluvium from the stream channel in adjacent Pajarito Canyon. In 1995, the ER Project conducted RFI sampling at SWMU 40-006(a). One-hundred-twenty-three samples were collected and submitted to a fixed laboratory for analysis of radionuclides, inorganic chemicals, organic chemicals, and HE. One radionuclide, two inorganic chemicals, and five organic chemicals were detected above SALs.
40-006(b)	In Progress	SWMU 40-006(b) is one of several active firing sites at TA-40. This detonator firing site (structure 40-8) was constructed in 1950 and consists of a reinforced concrete and steel building that allows observation of the test shots, a partially protected area adjacent to the building where the shot is set up and, historically, an open area covered with sand where the larger shots were fired. After each shot, large pieces of debris

		were removed and disposed of and the open area was graded. In 1992, structure 40-8 was extended and a containment system consisting of a large vessel with a high-efficiency particulate filtration system was installed. This firing site is used only to test and develop small explosive devices. Tests conducted at the site have included detonator booster tests, which use 2 lb of explosives, and large open-air shots, which can use up to 85 lb of explosives. Explosives and other materials used in the tests conducted at SWMU 40-006(b) included PETN, RDX, HMX, HNS, TATB, Baratol, TNT, nitroguanidine, thallium azide, lead bricks, and diethanolamine. In 1991, the existing firing pad at structure 40-8 was excavated in preparation for the installation of the containment system. A reconnaissance survey was conducted for contaminants in the soil surrounding the firing pad, prior to its excavation. Results showed that lead and uranium were present at levels greater than the analytical limits of detection. Before construction began, the top six inches of soil on the firing pad were removed and placed on plastic sheeting to confine contaminants that might have leached from it. The RFI work plan proposed no further sampling at SWMU 40-006(b) because the SWMU now underlies the building that houses the containment facility. In May 2000, the Cerro Grande fire burned through SWMU 40-006(b). The fire damage was moderate to severe with several buildings destroyed near this site. As part of the post-Cerro Grande recovery activities, BMPs (straw wattles) were in installed on the steep portion of the slope to reduce the sediment migration potential. Wattles were also installed on the mesa's edge to divert run-on from the slope.
40-006(c)	In Progress	SWMU 40-006(c) is one of several active firing sites at TA-40. This detonator firing site (structure 40-5) was constructed in 1950 and consists of a reinforced concrete and steel building that allows observation of the test shots, a partially protected area adjacent to the building where the shot is set up and, historically, an open area covered with sand where the larger shots were fired. After each shot, large pieces of debris were removed and disposed of and the open area was graded. This firing site is used only to test and develop small explosive devices. Tests conducted at the site have included detonator booster tests, which use 2 lb of explosives, and large open-air shots, which can use up to 50 lb of explosives. Explosives and other materials used in the tests conducted at SWMU 40-006(c) included PETN, RDX, HMX, HNS, TATB, Baratol, TNT, nitroguanidine, thallium azide, lead bricks, and diethanolamine. In May 2000, the Cerro Grande fire burned through SWMU 40-006(c). The fire damage was moderate to severe with several buildings destroyed near this site. As part of the post-Cerro Grande recovery activities, BMPs (straw wattles) were in installed on the steep portion of the slope to reduce the sediment migration potential. Wattles were also installed on the mesa's edge to divert run-on from the slope.
40-007(a)	Administratively Complete	AOC 40-007(a) is an active SAA located inside Building 40-3, which is situated at the southern end of TA-40. This building has been used since 1950 to store waste contaminated by explosives. It is now used to prepare for explosives tests at the TA-40 firing sites and for waste storage. Wastes accumulated in the SAA are associated with HE detonator assembly and typically consist of rags contaminated with explosives; such wastes are generated at a rate of 1 to 2 gal. per month. Building 40-3 has no floor drains or other routes by which contaminants can be released to the environment. Hazardous materials that may be present in the SAA include HE. Investigation activities at AOC 40-007(a) were conducted in 1998 and were based on nonsampling data collection. Data collection consisted of a review of all waste management records associated with the AOC, including internal compliance assessment records developed by ESH-19. Results showed no historical record or visual evidence of any releases at this site. The RFI report recommended NFA for AOC 40-007(a) because there is no indication that environmental contamination has resulted

		from historical operations and because ongoing operations are regulated under Section 3004(a), rather than under Section 3004(u), of RCRA.
40-007(b)	Administratively Complete	AOC 40-007(b) is an active SAA located inside Building 40-6, which is situated at the southern end of TA-40. This building has been used since 1950 to store waste contaminated by explosives. It is now used to prepare for explosives tests at the TA-40 firing sites. Wastes accumulated in the SAA are associated with HE detonator assembly and typically consist of detonators, subassemblies, and cleaning materials contaminated with HE; such wastes are generated at a rate of 1 to 2 gal. per month. Building 40-6 has no floor drains or other routes by which contaminants can be released to the environment. Hazardous materials that may be present in the SAA include HE. Investigative activities at AOC 40-007(b) were conducted in 1998 and were based on nonsampling data collection. Data collection consisted of a review of all waste management records associated with the AOC, including internal compliance assessment records developed by ESH-19. Results showed no historical record or visual evidence of any releases at this site. The RFI report recommended NFA for AOC 40-007(b) because there is no indication that environmental contamination has resulted from historical operations and because ongoing operations are regulated under Section 3004(a), rather than under Section 3004(u), of RCRA.
40-007(c)	Administratively Complete	AOC 40-007(c) is an active SAA located inside Building 40-11, which is situated at the southern end of TA-40. This building has been used since 1950 to store waste contaminated by explosives. It now is used to prepare for explosives tests at the TA-40 firing sites and for waste storage. Wastes accumulated in the SAA are associated with HE detonator assembly and typically consist of rags contaminated with explosives; such wastes are generated at a rate of 1 to 2 gal. per month. Building 40-11 has no floor drains or other routes by which contamination can be released to the environment. Hazardous materials that may be present in the SAA include HE. Investigation activities at AOC 40-007(c) were conducted in 1998 and were based on nonsampling data collection. Data collection consisted of a review of all waste management records associated with the AOC, including internal compliance assessment records developed by ESH-19. Results showed no historical record or visual evidence of any releases at this site. The RFI report recommended NFA for AOC 40-007(c) because there is no indication that environmental contamination has resulted from historical operations and because ongoing operations are regulated under Section 3004(a), rather than under Section 3004(u), of RCRA.
40-007(d)	Administratively Complete	AOC 40-007(d) is an active SAA located inside Building 40-14, which is situated at the southern end of TA-40. This building has been used since 1950 to store waste contaminated by explosives. It now is used to prepare for explosives tests at the TA-40 firing sites and for waste storage. Wastes accumulated in the SAA are associated with HE detonator assembly and typically consist of rags contaminated with explosives; such wastes are generated at a rate of 1 to 2 gal. per month. Building 40-14 has no floor drains or other routes by which contaminants can be released to the environment. Hazardous materials that may be present in the SAA include HE. Investigation activities at AOC 40-007(d) were conducted in 1998 and were based on nonsampling data collection. Data collection consisted of reviewing all waste management records associated with the AOC, including internal compliance assessment records developed by ESH-19. Results showed no historical record or visual evidence of any releases at this site. The RFI report recommended NFA for AOC 40-007(d) because there is no indication that environmental contamination has resulted from historical operations and because ongoing operations are regulated under Section 3004(a), rather than under Section 3004(u), of RCRA.
40-007(e)	Administratively	AOC 40-007(e) is an active SAA located inside Building 40-41, which is situated at the

	Complete	southern end of TA-40. This building has been used since 1950 to store waste contaminated by explosives. It now is used to prepare for explosives tests at the TA-40 firing sites and for waste storage. Wastes accumulated in the SAA are associated with HE detonator assembly and typically consist of rags contaminated with explosives; such wastes are generated at a rate of 1 to 2 gal. per month. Building 40-41 has no floor drains or other routes by which contaminants can be released to the environment. Hazardous materials that may be present in the SAA include HE. Investigative activities at AOC 40-007(e) were conducted in 1998 and were based on nonsampling data collection. Data collection consisted of a review of all waste management records associated with the AOC, including internal compliance assessment records developed by ESH-19. Results showed no historical record or visual evidence of any releases at this site. The RFI report recommended NFA for AOC 40-007(e) because there is no indication that environmental contamination has resulted from historical operations and because ongoing operations are regulated under Section 3004(a), rather than under Section 3004(u), of RCRA.
40-008	Administratively Complete	
40-009	In Progress	SWMU 40-009 is a landfill adjacent to Building 40-9. SWMU 40-009 contains debris from decommissioning buildings at TA-15. Before disposal, the debris was monitored for radioactivity. Little additional information exists about the building debris buried at this site. TA-15 is used primarily for explosives testing. Potential contaminants are expected to be similar to those found in an explosives testing area. In 1995, the ER Project conduced RFI sampling at SWMU 40-009. Nineteen samples were collected and submitted to a fixed laboratory for analysis of radionuclides, inorganic chemicals, organic chemicals, and HE. One inorganic chemical and one HE exceeded SALs. In May 2000, the Cerro Grande fire burned through SWMU 40-009. As part of the post-Cerro Grande recovery activities, BMPs (straw wattles) were installed along the mesa edge to divert run-on from the slope. Rock check dams (on-site materials used) were provided to dissipate flow within the drainage channels on both the east and west ends of the site.
40-010	In Progress	SWMU 40-010 is a surface disposal area located on the edge of Pajarito Canyon. SWMU 40-010 extends about 50 ft along the canyon edge and 50 ft down the canyon side. Debris at this site includes farm and home implements that probably predate Manhattan Project activities. SWMU 40-010 also contains approximately twenty 30-gal. drums of a type that may have contained chemicals. The ER Project conducted RFI sampling in 1994. Six samples were collected and submitted to a fixed laboratory for analysis of radionuclides, inorganic chemicals, organic chemicals, and HE. None of the chemicals analyzed exceeded SALs. In May 2000, the Cerro Grande fire burned through SWMU 40-010 and exposed the debris in the disposal area. As part of the post-Cerro Grande recovery activities, straw wattles were installed upslope from the landfill to reduce run-on impact. Large trees were contour felled to provide run-on diversion. The area was handraked, reseeded and straw mulched. The debris near the mesa's edge was removed from the area and disposed of as solid waste.
41-001	In Progress	SWMU 41-001 is an inactive septic tank (structure 41-11) that received sanitary waste from a guardhouse (structure 41-2) from 1949 to 1953. The tank is connected via a 4 in. VCP to structure 41-2. The original guard house has been replaced but the sewer pipe and septic tank are believed to remain in place. The tank emptied into a single 4 in. drain tile line that is about 60 ft long. TA-41 has been used for weapons development and long-term studies on weapons subsystems. Operations in the past

		have involved handling and storing tritium, plutonium, uranium, and beryllium in assemblies. In addition, arsine, hydrogen, deuterium, liquid nitrogen, and squibs that contain explosive residues were also used. Archival information from 1986 indicates that the septic tank is contaminated with plutonium, uranium, and tritium. It is not known where the radioactive contamination originated. In 1995 the ER Project conducted an RFI at SWMU 41-001. Two surface soil samples and four subsurface samples were collected. The samples were submitted to a fixed analytical laboratory for analysis for organic chemicals, inorganic chemicals, and radionuclides. Organic chemicals detected were Di-N-butylphthalate, fluorathene, Indeno(1,2,3-cd)pyrene, and pyrene but none were detected above its SAL. Inorganic chemicals detected above BVs were calcium, chromium, lead, lithium, silicon dioxide, and strontium. Only calcium was detected above its SAL. Plutonium-239 and tritium were detected but not above SALs. A radiation walkover survey was conducted in or adjacent to the eastern portion of TA-41 on October 17 and 18, 2000. The surveys did not reveal elevated surface contamination.
41-002(a)-99	In Progress	Consolidated SWMU 41-002(a)-99 consists of former SWMUs 41-002(a), 41-002(b), and 41-002(c). Former SWMU 41-002(a) is an Imhoff tank (structure 41-7). Former SWMU 41-002(b) is a chlorine contact tank (structure 41-8). Former SWMU 41-002(c) is a sludge drying bed (structure 41-9). The former SWMUs were components of a small sanitary sewage treatment plant at TA-41. The treatment plant was built in 1951 and received sanitary waste from TA-41 until 1987. It discharged to Los Alamos Canyon via NPDES-permitted outfall SSS06S (removed from LANL's NPDES permit effective 12/14/90). The plant received sewage from TA-02 from the mid-1970s until 1987. After 1987, wastes were pumped to TA-03 for treatment [consolidated SWMU 03-014(a)-99] until 1992, and to TA-46 after that. The TA-41 treatment plant was retained as a standby unit in case of a lift pump failure. The former SWMUs are all components of the treatment plant and are interconnected by a network of drainlines. They were consolidated into SWMU 41-002(a)-99 in 1999. Samples were collected from wastes entering the Imhoff tank and exiting the chlorine contact tank in 1955. Sample results showed alpha radiation counts ranging from 216 to 244 dpm/L. The treatment plant effluent was routinely monitored for radiation, toxics, and heavy metals. Several contamination episodes at the treatment plant, especially those with tritium, were documented. It is not known if surrounding soils and sediments have been contaminated as a result of plant operations. In 1995 the ER Project conducted an RFI at SWMU 41-002(a)-99. Twenty five soil samples were collected. The samples were submitted to a fixed analytical laboratory for analysis for organic chemicals, inorganic chemicals, and radionuclides. Organic chemicals detected were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, fluoranthene, phenanthrene, and pyrene. The only chemical present above SAL was benzo(a)pyrene. Inorganic chemicals were detected above BVs. Only arsenic was present in concentrations exceeding SAL. Plutonium-238, plutonium-239, technetium-99, tritium, and uranium-234 were detected above FVs but not above SALs. A radiation walkover survey was conducted in or adjacent to the eastern portion of TA-41 on October 17 and 18, 2000. The surveys did not reveal elevated surface contamination.
41-003	In Progress	AOC 41-003 is an inactive sump pit (structure 41-10) that discharged to Los Alamos Canyon. The pit measured 3 ft 8 in. x 2 ft x 2 ft 6 in. deep. It received effluent from floor

		and sink drains at the underground vault (Building 41-1), stormwater, and rinse water from the TA-41 storage tunnel. The tunnel was used to store TRU wastes and tritium. In 1988, the sump and associated pipes were excavated, removed, and re-buried about 20 ft south of their original location to make room for a concrete pad, retaining wall, and structures supporting a ventilation system upgrade for Building 41-1. At the time the sump was excavated, a concrete sump lid and three pipes from the tunnel to the sump were found. During removal, about 10 ft of soil from each side and beneath the sump also was removed. The material was reported to be free of radioactive contamination, but supporting documentation could not be found. Before construction of the new ventilation system was completed and the sump structure was reburied, the drainlines were capped at the sump, and the floor and sink drains in Building 41-1 were plugged or capped. At the same time, all water except fire protection supply was removed from Building 41-1. Suspect contaminants are radionuclides and inorganic chemicals. In 1995 the ER Project conducted an RFI at AOC 41-003. Five surface soil samples and three subsurface samples were collected. The samples were submitted to a fixed analytical laboratory for analysis for inorganic chemicals and radionuclides. Inorganic chemicals were detected above BVs. Arsenic was the only chemical detected above SAL. Plutonium-239 and tritium were detected above FVs but not above SALs. A radiation walkover survey was conducted in or adjacent to the eastern portion of TA-41 on October 17 and 18, 2000. The surveys did not reveal elevated surface contamination.
41-004	Administratively Complete	
42-001(a)-99	In Progress	Consolidated SWMU 42-001(a)-99 consists of former SWMUs 42-001(a), 42-001(b), 42-001(c), 42-002(b), and 42-003 and former AOC 42-002(a). TA-42 was the site of a radioactive waste incinerator that operated in 1951 and 1952. The incinerator facility was used to store and decontaminate radioactively contaminated equipment from 1957 to 1969. In 1969, an unsuccessful attempt was made to reactivate the incinerator so it could burn uncontaminated classified wastes. By 1970, all operations were discontinued, and all combustibles were removed from the building. The facilities were decommissioned in 1977, and the site was decontaminated in 1978. Contamination remaining after the 1978 D&D of this consolidated SWMU is believed to be associated with radionuclide decontamination operations from 1957 to 1969. Former TA-42 is located within the boundaries of TA-55. Former SWMU 42-001(a) is the historical location of the incinerator and control building (Building 42-1). The complex was built to reduce the amount of radionuclide-contaminated waste produced at LANL. The incinerator, which was never fully operational and was shut down about a year after it was built, was a steel-frame structure covered with corrugated metal. The facility consisted of a 2000-sq-ft floor area control building, incinerator, cyclone dust collector, spray cooler, Venturi scrubber, filter bank, and ash separator. Combustion products passed through an off-gas cleanup system before discharge through an exhaust stack. The off-gas system consisted of a Venturi scrubber, a filter bank, and an ash separator. Ash trapped in the off-gas system and incinerator was transported by underground drainlines to two holding tanks [former SWMUs 42-001(b) and 42-001(c)] located immediately north of the incinerator. Former SWMUs 42-001(b) and 42-001(c) are the locations of two former ash holding tanks (structures 42-2 and 42-3) at the incinerator complex. They were each 22 ft in diameter and approximately 13 ft high, with a volume of 37,000 gal. The tanks were built in 1951 and removed in 1978. Some ash from the incinerator reportedly was discharged to Mortandad Canyon in 1952; the contaminant was thought to be lanthanum-140. Samples taken in the canyon downstream from TA-42 after the discharge showed radioactive contamination. When the tanks were decommissioned in 1978, the contents were assayed and measured for plutonium. Contaminated sludge was removed, mixed with cement, and taken to MDA G for storage. The tanks were

		excavated and taken to TA-54 for disposal. The drainlines were filled with hot asphalt to contain radioactive contamination. It is not known if the drainlines were removed. Former AOC 42-002(a) is the historical location of an indoor storage and decontamination area, and SWMU 42-002(b) is the location of a historical outdoor decontamination area. Between 1956 and 1969, the main floor of Building 42-1 was used to store and decontaminate equipment. During decontamination, a "vacublaster" removed radionuclides and other contaminants from various pieces of equipment. The process generated wastes that are believed to have been discharged to the building's septic system (former SWMU 42-003). It is believed that fine solid residues were bagged and disposed of at an MDA. Objects that were too large to take inside the building (such as vehicles) were cleaned at the end of the asphalt driveway located west and north of Building 42-1. Wash water flowed down an embankment on the northwest side of the parking lot. Contaminated soils in that area were not sampled or removed during the 1978 D&D activities. Former SWMU 42-003 is the historical location of a septic system that served the incinerator complex. The system was composed of a 565-gal. septic tank (structure 42-4), a drainline from Building 42-1 to the tank, a filter trench, a tile leach field, and an outfall to Mortandad Canyon. The septic tank received radioactive liquid wastes from Building 42-1. According to the OU 1129 work plan, the system probably also received solvents, acids, and grease. Radioactively contaminated liquids periodically were removed from the septic tank and disposed of at pit 4 at MDA L. Samples taken downstream from TA-42 in Mortandad Canyon in 1952 showed radioactive contamination in the canyon. The septic tank was observed to contain water and possibly to have overflowed in 1973. At that time, the tank slurry was sampled and was found to be radioactively contaminated. The system was installed in 1951 and the system and associated contaminated soils were removed as part of the 1978 D&D activities. When it was decommissioned, liquid in the tank was pumped and treated at Building 50-1, the radioactive liquid waste treatment facility [SWMU 50-001(a)]. The tank sludge was solidified by adding cement, and the tank and sludge were taken to MDA G. Contaminated soils around the tank also were taken to MDA G, and the excavated area was backfilled. Contaminated soils in the drainfield were excavated. In 1978, following D&D, the Environmental Surveillance Group collected soil samples and analyzed them for radionuclides. Low levels of contamination were found but were considered to meet ALARA standards. After concurrence from DOE-LAAO, the area was contoured and revegetated to minimize erosion. In 1991, LANL's Environmental Protection Group performed a reconnaissance survey. Soil samples were collected and analyzed for radionuclides, PCBs, organic chemicals, and inorganic chemicals. Results from the analyses, which showed elevated concentrations of plutonium and lead, were used by the ER Project to design its SAP for the 1992 RFI. In 1992, the ER Project conducted an RFI at the former sites that make up consolidated SWMU 42-001(a)-99. The purpose of the RFI was to determine whether potential contamination at the site would be exposed during construction of a new facility. Sampling was conducted to detect and to quantify contaminants and to estimate the extent of contamination at former TA-42. The DOE-Albuquerque Operations Office used the RFI results for construction validation of the NSTL that was to be constructed at the site of former TA-42. Sample locations were selected to bound the extent of contaminants detected during the 1991 reconnaissance study and to include locations where construction activities might adversely affect residual contamination around the NSTL structures or utility lines. Fifty-one surface and subsurface soil samples were collected from 19 locations around the location of the former incinerator complex. Samples were field-screened for organic chemicals and radionuclides. No elevated chemical concentrations were detected during field-screening. Samples were analyzed for radionuclides and lead because the analytical suite was based on the results of the 1991 reconnaissance study. Elevated levels of plutonium-238, plutonium-239/-240, and uranium-235 were found. Data indicated that the levels of radionuclides did not pose an

		unacceptable risk to human health. The RFI report recommended NFA at the former sites in this consolidated unit. NMED determined the report to be insufficient in the characterization of the site, and LANL formally withdrew the RFI report in 1997.
42-004	Administratively Complete	AOC 42-004 is the location where building debris was discarded over the canyon edge north of former TA-42, which is located within the boundaries of TA-55. It is not known if the debris contained hazardous or radioactive constituents. Sampling conducted in 1991 during a reconnaissance study indicated background radioactivity levels and no organic or inorganic chemicals or PCBs. The results of the 1991 sampling were used to propose AOC 42-004 for NFA, because contaminants were not present in concentrations that would pose a threat to human health or the environment.
43-001(a1)	In Progress	SWMU 43-001(a1) is a disconnected 4-in. cast iron sanitary sewer line that served the health research building (Building 43-1), now called the HRL. The line runs from a lift station (structure 43-10) at the south side of the HRL to a Los Alamos County manhole 315 ft to the northeast. The sewer line is about 30 ft below ground at structure 43-10 and reaches a joint to the east at a depth of about 10 ft, where gravity then carries the effluent to the county manhole. In 1963, the TA-45 treatment plant shut down and Building 43-1 connected its industrial waste and sewer lines to the treatment facility in Bayo Canyon until 1981 when they were redirected to the TA-03 sanitary sewer system. This SWMU addresses the sewer line until 1981. SWMU 43-001(a2) addresses the sewer line post-1981. The HRL was completed in 1952. TA-43 was established in 1953 when LANL's former H Division, which conducted biomedical and industrial hygiene research, first occupied the HRL. The original emphasis was a mixture of basic and applied research to assess health effects of radiation and materials associated with LANL operations. Industrial hygiene activities were relocated to TA-59 in 1966 and, since then, the focus at the HRL has been on biomedical research conducted by the LS Division. No quantitative historical data exist about the concentration or potential contaminants at SWMU 43-001(a1). In 1973, the HRL was listed as having low contamination of transuranics, fission products, and tritium. For some years, wastes in the sewer lines were composite-sampled and analyzed for radioactivity three times a week. Radioactivity was found to be less than 1/10 of the Table II AEC Manual 0524 guidelines. In 1975, containers for radioactive wastes were placed in laboratories that generated such wastes. The wastes were sent to TA-50 for treatment. In 1979, HRL was found to be one of LANL's major generators of nonradioactive chemical wastes. Waste management activities involved sorting, packaging, and transporting chemicals to disposal areas. Chemicals were not disposed of through the sanitary system. The OU 1136 work plan proposed sampling inside and in the soil surrounding the sewer pipe to determine if contamination exists.
43-001(a2)	In Progress	AOC 43-001(a2) is the post-1981 sanitary waste disposal system serving TA-43 that was redirected from the treatment facility in Bayo Canyon to the TA-03 sanitary sewer system in 1981. In 1992, it was redirected to the LANL sanitary waste system consolidation facility. Effluent managed in the system included sanitary waste, once through cooling water, treated cooling water, and photo processing chemicals. After 1987, recovery units, collection points, and the types of chemicals being used were upgraded in an attempt to eliminate hazardous constituents. TA-43 was established in 1953 when LANL's former H Division, which conducted biomedical and industrial hygiene research, first occupied the HRL (Building 43-1). The original emphasis was a mixture of basic and applied research to assess health effects of radiation and materials associated with LANL operations. Industrial hygiene activities were relocated to TA-59 in 1966 and since then the focus at the HRL has been on biomedical research conducted by the LS Division. The OU 1136 work plan proposed deferring action at AOC 43-001(a2) until the site is decommissioned because the existing sanitary waste collection and disposal system is part of and serves an active experimental site. In addition, there are no known

		documented leaks in the sanitary waste line that currently serves TA-43 and the site does not present a human health or environmental risk.
43-001(b1)	Administratively Complete	
43-001(b2)	In Progress	AOC 43-001(b2) is a storm drain outfall that was permitted under NPDES permit Outfall 03A040 (removed from LANL's NPDES permit January 11, 1999). The outfall received effluent from six floor drains in the sub-basement at the HRL (Building 43-1), blow-down from the evaporative cooler, and stormwater from 13 roof drains on the west side of the HRL. The effluents discharged west of the HRL through a 130-ft. long, 12-in. corrugated metal pipe to Los Alamos Canyon. The outfall may have historically discharged radioactively contaminated water and/or treated cooling water. No quantitative information is available about possible residual contamination as a result of the discharges from this outfall. TA-43 was established in 1953 when LANL's former H Division, which conducted biomedical and industrial hygiene research, first occupied the HRL. The original emphasis was a mixture of basic and applied research to assess health effects of radiation and materials associated with LANL operations. Industrial hygiene activities were relocated to TA-59 in 1966 and since then the focus at the HRL has been on biomedical research conducted by the LS Division. The OU 1136 work plan proposed sampling at the outfall and in the outfall drainage area to determine if contamination exists.
43-002	In Progress	SWMU 43-002 was an incinerator used at the HRL (Building 43-1) to dispose of wastes generated by health research activities. It was a 400,000 BTU/hour gas burner with a 100 lb/hour pathological organic waste capacity. Daily throughput was 5 to 10 lb of rats and mice and 8 to 12 lb of paper with small amounts of animal-cage wood shavings. The incinerator was installed in 1952 in Room B-137 and was modified in the late 1960s or early 1970s when a second burner was added and stack height was increased to improve airflow. In 1992, Room B-137 was remodeled and the incinerator was removed. During remodeling, the room was submitted to a swipe survey. The health monitor found 1000 dpm fixed on the interior surfaces (direct frisk) and the large area swipes revealed no detectable activity. The passage to the stack was sealed off with concrete mortar and the top of the stack was blocked with a stack cover. The ash pit remains and the cleanout door is located on the east wall of the HRL. The ash was analyzed by the LANL Analytical Chemistry Group and results indicated cesium-137 concentrations of 6+/-3 nCi total radioactivity. The OU 1136 work plan recommended deferred action at SWMU 43-002 until the site is decommissioned because the remaining system components (the stack and the ash pit) are within an active LANL site and within Building 43-1. Characterization of the inactive SWMU would disrupt active operations, and neither the stack nor the ash pit presents a human health or environmental risk.
43-003	Administratively Complete	
43-004	Administratively Complete	
43-005	Administratively Complete	
45-001-00	In Progress	Consolidated SWMU 45-001-00 consists of former SWMUs 01-002(b)-00, 45-001, 45-002, 45-003, 45-004 and AOC C-45-001. These former SWMUs and AOC consist of an untreated waste outfall, a wastewater treatment facility and outfall, a vehicle decontamination facility, waste lines, a sanitary sewer outfall, and the location of a past radioactive waste spill. These former SWMUs and AOC were all associated with past wastewater treatment and disposal activities at TA-45. Former SWMU 01-002(b)-00 consists of a former industrial waste line outfall and its drainage into Acid Canyon. The outfall was located within the boundaries of former TA-45 at the head of a small branch of Acid Canyon known as the south fork of Acid

		Canyon. This outfall was used to discharge untreated RLW generated in laboratories and research facilities in former TA-01. These wastes were routed from TA-01 facilities to the outfall by a sewer system referred to as the industrial waste sewer system or acid waste sewer system. Most of this system was removed during decommissioning of TA-01 and associated contamination was investigated as part of the investigations for TA-01. SWMU 01-002(b)-00 only includes the outfall and contamination in the drainage channel below the outfall. Discharges of untreated RLW from SWMU 01-002(b)-00 occurred from 1943 to 1951 and ceased when the TA-45 RLW treatment plant (former SWMU 45-001) began operation. During the period 1943 to 1951, approximately 4,800,000 gal. of untreated wastewater was discharged annually from SWMU 01-002(b)-00. Average plutonium concentrations ranged from 1,000 pCi/L to 10,000 pCi/L, resulting in a total estimated discharge of 1.9 g plutonium. D&D of TA-45 began in October 1966 and included removal of the outlet pipe, an associated weir box, and tuff around the outfall and on the canyon wall below the outfall. Wastes generated during these activities were disposed of at TA-54. In September 1967, the TA-45 property was transferred to Los Alamos County. Several environmental investigations have been conducted at SWMU 01-002(b)-00. The earliest investigations were conducted from 1945 to 1947 and identified radioactivity near the outfall and downstream of the outfall. The TA-45 site, including 01-002(b)-00, was investigated by DOE during the period 1977-1981 as part of FUSRAP. This investigation included analysis of soil and sediment samples collected at and below outfalls. Based on the results of this sampling effort, additional soil and tuff were removed from SWMU 01-002(b)-00 along the drainage channel below the outfall. Former SWMU 45-001 consists of a former RLW treatment plant and associated outfalls. The TA-45 RLW treatment plant (Building 45-2) was the first such facility at LANL and was located near the current intersection of Canyon Road and Central Avenue in the Los Alamos townsite. The treatment plant began operation in 1951 and operated until 1961. The plant initially received RLW only from TA-01. As LANL operations expanded, RLW from TAs-03, -43, and -48 were also sent to SWMU 45-001. The capacity of the plant was originally 90 gal./min, but was expanded to 145 gal./min in 1957. The treatment plant included neutralization and storage tanks, flocculation tanks, sedimentation basins, vacuum filters, and granular-media filters. Effluent from the plant discharged to Acid Canyon through outfalls located near the canyon rim, northeast of former SWMU 01-002(b)-00. One outfall was used to discharge treated wastewater and the other was connected to floor drains in Building 45-2. Operation of the treatment plant ceased after the new RLW treatment facility was constructed in TA-50. D&D of SWMU 45-001 began in October 1966 and included demolition and removal of the treatment plant equipment, facilities, and waste lines and excavation of contaminated soil. Portions of the walls of Acid Canyon below the outfalls were also decontaminated. Wastes generated during these activities were disposed of at TA-54. In September 1967, the TA-45 property was transferred to Los Alamos County. Several environmental investigations have been conducted at SWMU 45-001, including investigations conducted as part of facility decommissioning to verify decontamination. The former TA-45 site, including SWMU 45-001, was investigated by DOE during the period 1977-1981 as part of FUSRAP. This investigation included analysis of soil and sediment samples collected at and below outfalls, at the former treatment plant location, in canyons, and along waste lines. No contamination was detected above FUSRAP soil cleanup criteria at SWMU 45-001. Former SWMU 45-002 consists of a former vehicle decontamination facility (former Building 45-1) that was used to decontaminate vehicles and large equipment, including filters from the Sigma Building, trash dumpsters, and wing tanks from airplanes. On at least one occasion, lead shielding bricks were also decontaminated. SWMU 45-002 was located approximately 40 ft south of the TA-45 treatment plant (former SWMU 45-001). The decontamination facility began operation in 1952. Vehicles and other equipment were decontaminated by steam cleaning. This facility was operated on an infrequent basis, approximately one day per month. The steam cleaning wastewaters were originally discharged untreated into Acid Canyon. Later, a sump was added to

		collect these wastewaters so that they could be pumped to SWMU 45-001 for treatment. SWMU 45-002 was decommissioned in 1966, along with the other facilities in former TA-45. At that time, Building 45-1 was demolished and removed and contaminated soil around the building was excavated. These wastes were sent to TA-54 for disposal. In September 1967, the TA-45 property was transferred to Los Alamos County. Several environmental investigations have been conducted at SWMU 45-002, including investigations conducted as part of facility decommissioning to verify decontamination. The TA-45 site, including SWMU 45-002, was investigated by DOE during the period 1977-1981 as part of FUSRAP. This investigation included analysis of soil and sediment samples collected at and below outfalls, at the former treatment plant location, in canyons, and along waste lines. Soil in the drainage outfall below Building 45-1 was found to contain elevated levels of plutonium-239. Removal of this soil was performed in 1982 as part of FUSRAP activities. Former SWMU 45-003 consists of the former buried industrial waste line and associated manhole (former structure 45-8) located within the boundaries of former TA-45. This waste line was used to convey RLW to the TA-45 treatment plant (former SWMU 45-001). The waste line was connected to the already existing waste line in TA-01 when the TA-45 treatment plant was constructed in 1951. SWMU 45-003 was removed as part of the TA-45 decommissioning activities begun in October 1966. Contaminated soil around the waste line was also removed. Decontamination of TA-45 was completed by July 1967 and the TA-45 property was transferred to Los Alamos County in September 1967. Several environmental investigations have been conducted at SWMU 45-003, including investigations conducted as part of facility decommissioning to verify decontamination. The former TA-45 site, including SWMU 45-003, was investigated by DOE during the period 1977-1981 as part of FUSRAP. This investigation included analysis of soil and sediment samples collected at and below outfalls, at the former treatment plant location, in canyons, and along waste lines. Plutonium-239 was detected in subsurface soils where the waste lines had entered the treatment plant, but did not exceed FUSRAP cleanup criteria. Former SWMU 45-004 consists of a sanitary sewer outfall. This outfall was associated with the sanitary sewer system that was constructed in 1947 to serve the townsite. This sewer system included a sanitary sewer lift station (structure 45-3) and sanitary sewer manholes (structures 45-5 and 45-6). The outfall was located to the north of the lift station, approximately 100 ft north of the TA-45 treatment plant (former SWMU 45-001) and was used for emergency discharge of overflow. The outfall discharged into a drainage leading into Acid Canyon. The sanitary sewer system was transferred to Los Alamos County in 1967. No previous environmental investigations have been conducted at SWMU 45-004. Former AOC C-45-001 is the site of an accidental release of plutonium-contaminated sludge that occurred in the parking lot south of Building 45-2 (former SWMU 45-001) in January 1957. This release was cleaned up by excavating the parking lot and soil at the site of the release to a depth of 18 in., but documentation on residual radioactivity remaining after this cleanup was not available. The parking lot was removed as part of the TA-45 decommissioning activities begun in October 1966. The TA-45 property, including the site of AOC C-45-001, was transferred to Los Alamos County in September 1967. Several environmental investigations have been conducted at AOC C-45-001, including investigations conducted as part of facility decommissioning to verify decontamination. The former TA-45 site, including AOC C-45-001, was investigated by DOE during the period 1977-1981 as part of FUSRAP. This investigation included collection and analysis of soil and sediment samples at and below outfalls, at the former treatment plant location, in canyons, and along waste lines. No contamination was detected above FUSRAP soil cleanup criteria at AOC C-45-001. The ER Project conducted a Phase I RFI for former SWMU 01-002(b)-00 in 1992 to determine whether there was residual soil/tuff contamination associated with the former outfall. Boreholes were hand-augered to depths of 18-in. at five locations along and

		adjacent to the former waste line and a subsurface sample was collected from the bottom of each boring. Three additional boreholes were augered to a depth of 18 in. at locations between the outfall and the canyon rim and a subsurface sample was collected from the bottom of each boring. Surface samples were also collected from four transects across the drainage channel in sediment accumulation areas. These transects were spaced approximately 500 ft apart starting from near the canyon rim and continuing to the confluence of Acid Canyon and Pueblo Canyon. Three samples were collected from each transect: one in the bottom of the drainage channel and one from each side of the channel bank. Including field QA samples, a total of 24 samples were collected. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Inorganic chemicals detected above BVs were lead and mercury. Neither of these inorganic chemicals was detected above its SAL. Radionuclides detected above FVs were plutonium-238, plutonium-239, tritium, and uranium-235. Plutonium-239 was the only radionuclide detected above its SAL. No organic chemicals were detected. The results of the Phase I sampling and analysis for inorganic chemicals and organic chemicals were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 01-002(b)-00 for inorganic chemicals and organic chemicals. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The results of sampling and analysis for radionuclides for all former SWMUs at TA-45 were used to conduct radiological assessments for TA-45. The results from SWMU 01-002(b)-00 were included in the assessment conducted for exposure units in the canyon area. The results of these assessments indicated that resultant doses would be below dose limits and no additional activities were recommended. The ER Project conducted a Phase I RFI for former SWMU 45-001 in 1994 to determine whether there was residual soil/tuff contamination associated with the former treatment plant and outfalls. Boreholes were drilled to depths of 20 ft at six locations along the former waste lines and four samples were collected from each borehole. Samples were collected at the top and bottom of the borehole interval, at a location indicated by field-screening, and at a random location. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Tuff samples were also collected at five locations from the cliff face below the treated waste outfall and surface samples were collected from six locations in the canyon bottom below the treated waste outfall and floor drain outfall. These samples were all field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals and radionuclides. Inorganic chemicals detected above BVs were cadmium, chromium, lead, mercury, nickel, and silver. None of these inorganic chemicals was detected above its SAL. Cyanide, molybdenum, phosphorus, and strontium were also detected but have no BVs. Radionuclides detected above FVs were americium-241, cesium-137, plutonium-238, plutonium-239, strontium-90, tritium, uranium-234, uranium-235, and uranium-238. Cesium-137 was the only radionuclide detected above its SAL. Two organic chemicals (tetrachloroethene and toluene) were detected, but neither was present above its SAL. The results of the Phase I sampling and analysis for inorganic chemicals and organic chemicals were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 45-001 for inorganic chemicals and organic chemicals. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The results of sampling and analysis for radionuclides for all former SWMUs at TA-45 were used to conduct radiological assessments for TA-45. The results from SWMU 45-001 were included in the assessments conducted for exposure units in the TA-45 mesa top and canyon. The results of these assessments indicated that resultant doses would be below dose limits and no additional activities were recommended.

		The ER Project conducted a Phase I RFI for former SWMU 45-002 in 1994 to determine whether there was residual soil contamination associated with the former facility and drainage outfall. Boreholes were drilled to the soil/tuff interface at five locations at the former facility and along the drainage to Acid Canyon. Samples were collected at 5-ft intervals and field-screened for radioactivity and organic chemicals. All samples from the soil/tuff interface were submitted for laboratory analysis for inorganic chemicals, radionuclides, organic chemicals, and HE. Vertical composite samples were prepared from two boreholes and one surface sample was collected from the canyon wall downgradient from SWMU 45-002. These samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, organic chemicals, and HE. Inorganic chemicals detected above BVs were lead, mercury, and silver. None of these inorganic chemicals was detected above its SAL. Radionuclides detected above FVs were americium-241, plutonium-239, strontium-90, tritium, uranium-234, uranium-235, and uranium-238. Strontium-90 was the only radionuclide detected above its SAL. Six organic chemicals (acetone, bis[2-ethylhexyl]phthalate, fluoranthene, methylene chloride, phenanthrene, and pyrene) were detected, but none was present above its SAL. The results of the Phase I sampling and analysis for inorganic chemicals and organic chemicals were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 45-002 for inorganic chemicals and organic chemicals. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The screening assessment did not, however, consider the organic chemicals detected at SWMU 45-002, which the RFI report concluded were below BVs associated with sources other than the TA-45 RLW system. The results of sampling and analysis for radionuclides for all former SWMUs and AOC at TA-45 were used to conduct radiological assessments for TA-45. The results from SWMU 45-002 were included in the assessments conducted for exposure units in the TA-45 mesa top and canyon. The results of these assessments indicated that resultant doses would be below dose limits and no additional activities were recommended. The ER Project conducted a Phase I RFI for former SWMU 45-003 in 1994 to determine whether there was residual soil contamination associated with the former waste lines. Boreholes were drilled to auger refusal at four locations along the alignment of the former waste line. One or two samples were collected from each borehole, depending on the depth of refusal. These samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Mercury was the only inorganic chemical detected above BVs, but was not detected above its SAL. Radionuclides detected above FVs were plutonium-238, plutonium-239, tritium, and uranium-235. None of these radionuclides was detected above its SAL. Ten organic chemicals (anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, fluoranthene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene) were detected. Three of these organic chemicals (benzo[a]anthracene, benzo[a]pyrene, and benzo[b]fluoranthene) were detected above SALs. The results of the Phase I sampling and analysis for inorganic chemicals and organic chemicals were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 45-003 for inorganic chemicals and organic chemicals. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The screening assessment did not, however, consider the organic chemicals detected at SWMU 45-003, which the RFI report concluded were below background values associated with sources other than the TA-45 RLW system. The results of sampling and analysis for radionuclides for all SWMUs and AOC at TA-45 were used to conduct radiological assessments for TA-45. The results from SWMU 45-003 were included in the assessments conducted for exposure units in the TA-45 mesa

		top and ravine. The results of these assessments indicated that resultant doses would be below dose limits and no additional activities were recommended. The ER Project conducted a Phase I RFI for former SWMU 45-004 in 1994 to determine whether there was residual soil or sediment contamination associated with past discharges. A shallow (12- to 18-in. deep) subsurface sample was collected from the upper end of the drainage near the former outfall and surface samples were collected from three additional locations along the drainage. All samples were field-screened for radioactivity and organic chemicals. Samples were submitted for laboratory analysis for inorganic chemicals (three of four samples), radionuclides (three of four samples), and organic chemicals (three of four samples). Inorganic chemicals detected above BVs were lead, mercury, and silver. None of these inorganic chemicals was detected above its SAL. Radionuclides detected above FVs were plutonium-238, plutonium-239, tritium, and uranium-235. None of these radionuclides was detected above its SAL. Seventeen organic chemicals (acenaphthene, acetone, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, dibenzofuran, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, 2-methylnaphthalene, naphthalene, phenanthrene, and pyrene) were detected. Four of these organic chemicals (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and indeno[1,2,3-cd]pyrene) were detected above SALs. The results of the Phase I sampling and analysis for inorganic chemicals and organic chemicals were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 45-004 for inorganic chemicals and organic chemicals. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The screening assessment, however, only considers organic chemicals detected at SWMU 45-004 that were believed to be present above anthropogenic BVs. The results of sampling and analysis for radionuclides for all SWMUs and AOC at TA-45 were used to conduct radiological assessments for TA-45. The results from SWMU 45-004 were included in the assessments conducted for exposure units in the TA-45 canyon. The results of these assessments indicated that resultant doses would be below dose limits and no additional activities were recommended. The ER Project conducted a Phase I RFI for former AOC C-45-001 in 1994 to determine whether there was residual soil/tuff contamination associated with this past release. Boreholes were drilled to depths of 20 ft at five locations in the former parking lot and one location at the canyon rim below the parking lot. Samples were collected at the top and bottom of the borehole interval, at a location indicated by field-screening, and at a random location. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Inorganic chemicals detected above BVs were chromium, nickel, and silver. Chromium was the only inorganic chemical detected above its SAL. Radionuclides detected above FVs were americium-241, plutonium-238, plutonium-239, and uranium-235. None of these radionuclides was detected above its SAL. No organic chemicals were detected. The results of the Phase I sampling and analysis for inorganic chemicals and organic chemicals were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for AOC C-45-001 for inorganic chemicals and organic chemicals. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The results of sampling and analysis for radionuclides for all SWMUs and AOC at TA-45 were used to conduct radiological assessments for TA-45. The results from AOC C-45-001 were included in the assessments conducted for exposure units in the TA-45 mesa top. The results of these assessments indicated that resultant doses would be below dose limits and no additional activities were recommended.
46-001	Administratively	

	Complete	
46-002	In Progress	SWMU 46-002 is a surface impoundment lagoon system located at the east end of TA-46, southeast of the prototype fabrication building (Building 46-77) on the north wall of SWSC canyon. The system consists of a lagoon (structure 46-149), the drainlines connected to it, a siphon box, and three sand filters. Both the lagoon and sand filter structures are lined with butyl rubber. The lagoon received effluent through drainlines that served a variety of buildings at TA-46 from approximately 1972 until 1990. Effluent flowed from the lagoon through an outlet box to the siphon box and through pipes that discharged to daylight, just above the sand filters. Effluent from these pipes splashed onto small concrete pads located in the middle of the sand filters, thereby evenly distributing the effluent flow throughout the sand filters. The lagoon also had an outfall (Outfall JJ) that served as an overflow drain. In 1990, the system was modified to pump effluent in the lagoon directly to another wastewater treatment facility; the system continues to operate in this way. The siphon box and the sand filters were taken off-line in 1990. The top 6 in. of sand and sludge from the filters were removed quarterly until 1990 and were stored at TA-54, MDA G. Because the buildings that discharged effluent to this lagoon system housed electrical and chemical laboratories, machine shops, and testing facilities, suspect contaminants are organic chemicals, inorganic chemicals, and radionuclides. The OU 1140 work plan proposed sampling at SWMU 46-002 to determine the presence or absence of soil contamination.
46-003(a)	In Progress	SWMU 46-003(a) is a sanitary system consisting of a septic tank (structure 46-8), a manhole (structure 46-6), two distribution boxes (structures 46-9 and 46-10), and an associated drainfield. Outfall HH may be associated with this SWMU; it is a drainpipe located adjacent to a warehouse (Building 46-41). Engineering drawing ENG-PL 974 indicates that the drainpipe is associated with this system. The septic tank itself is located approximately 50 ft west of the southwest corner of Building 46-41, on the north wall and at the head of SWSC Canyon. This system was installed in 1954 to serve bathroom facilities at the first two buildings at TA-46 (Buildings 46-1 and 46-2). A janitorial sink in the basement of Building 46-1 also drained to the unit. Building 46-1 housed offices, two assembly bays, a machine shop, a few laboratories for the assembly and checkout of electrical components, general laboratories, and a uranium polishing area. Building 46-2 was a guard station. In 1959, this system was connected to a bathroom facility and a sink along the north wall of Building 46-30. This building contained a high-bay area with a crane, an actuator test area, and a small machine shop. Because general laboratory operations were conducted in these facilities, suspect contaminants are organic chemicals, inorganic chemicals, and radionuclides. The drainfield associated with this SWMU was removed from service sometime before 1968, and the septic tank was connected to a sand filter of SWMU 46-003(f). The OU 1140 work plan proposed sampling at SWMU 46-003(a) to determine the presence or absence of soil contamination. No sampling has been performed.
46-003(b)	In Progress	SWMU 46-003(b) is a sanitary system consisting of a septic tank (structure 46-22), a distribution box (structure 46-29), drainlines, and an associated drainfield. Structure 46-22 is believed to be located beneath an asphalt road 40 ft to 50 ft south of the utility building (Building 46-17) that houses a generator used for charging submarine batteries used in the Rover Program (a reactor research program for a nuclear rocket engine). This SWMU served bathroom facilities at Building 46-17. Structure 46-22 was removed from service in approximately 1972-1973, and wastes discharged by this system were routed to a sanitary lagoon (SWMU 46-002). Suspect contaminants are organic chemicals. The OU 1140 work plan proposed sampling at SWMU 46-003(b) to determine the presence or absence of soil contamination. No sampling has been performed.
46-003(c)	In Progress	SWMU 46-003(c) is a sanitary system consisting of a septic tank (structure 46-49), a distribution box (structure 46-50), drainlines, a drainfield, and possibly a leachate collection outfall, although its installation cannot be confirmed. Structure 46-49 is believed to be located beneath an asphalt road outside the TA-46 security fence,

		southeast of Building 46-76. This SWMU served the bathroom facilities, floor drains, roof drains, sinks, and acid sinks in Building 46-24. It also received effluent from an acid dry well located in Room B22 of Building 46-24. Building 46-24 housed offices, a machine shop, electrical laboratories, and chemical laboratories where fuel rods were handled. An acid sump drainline was connected into this septic system in 1958, and it drained to the septic tank for less than a year. Because general laboratory operations were conducted in Building 46-24, suspect contaminants are organic chemicals and inorganic chemicals. Engineering drawings indicate that the drainfield associated with this SWMU was removed from service sometime before 1968, and the septic tank was connected to a sand filter of SWMU 46-003(f). The OU 1140 work plan proposed sampling at SWMU 46-003(c) to determine the presence or absence of soil contamination. No sampling has been performed.
46-003(d)	In Progress	SWMU 46-003(d) is a sanitary system consisting of a septic tank (structure 46-53), a distribution box (structure 46-54), and drainlines, a drainfield, and possibly a leachate collection outfall, although its installation cannot be confirmed. The septic tank itself is believed to be located about 30 ft northwest of Building 46-31. This SWMU served the bathroom facilities in Building 46-31, which housed test cells with electrical furnaces for thermal testing of graphite/uranium-235/uranium-238 fuel rods. Because of the types of operations conducted in Building 46-31, suspect contaminants are organic chemicals, inorganic chemicals, and radionuclides. Structure 46-53 was removed from service in approximately 1972-1973, when the building it served was connected to a sanitary lagoon (SWMU 46-002). Sediment samples were collected from structure 46-53 in 1973. These samples exhibited elevated gross alpha activity of 65 pCi/g. Sludge was removed from the septic tank in 1974, and subsequent analyses showed alpha contamination in the sludge and in the supernatant. No information has been found on whether the septic drainfield is contaminated. The OU 1140 work plan proposed Phase I VCA sampling for SWMU 46-003(d) to determine if potential contaminants are present in excess of an acceptable risk-based limit.
46-003(e)	In Progress	SWMU 46-003(e) is a sanitary system consisting of a septic tank (structure 46-66), a siphon tank (structure 46-67), a distribution box (structure 46-68), and a drainfield. Structure 46-66 is believed to be located about 20 ft east of Building 46-58, outside the TA-46 security fence. This SWMU served the bathroom facility, shower, water cooler, janitorial sink, and mechanical room floor drain in Building 46-58, which contained office space, a laboratory, a machine shop, and an equipment room. Due to the types of operations conducted in Building 46-58, suspect contaminants are organic chemicals and inorganic chemicals. Structure 46-66 was removed from service in approximately 1972-1973, when the building it served was connected to a sanitary lagoon (SWMU 46-002). In 1992, a distribution box was found on the ground surface in Cañada del Buey near the location of SWMU 46-003(e) and is believed to be structure 46-68, presumably displaced to its current location during the 1973 construction of the sewage lagoon. Swipes taken at the time of discovery indicated readings below the instrument background level of radioactivity of 9 dpm per 15.5 square in. alpha and 23 dpm per 15.5 square in. beta. There were no visual indications, such as stains or deposits, that other hazardous materials had adhered to the box. The OU 1140 work plan proposed sampling for SWMU 46-003(e) to determine the presence or absence of soil contamination. The work plan also proposed a VCA to remove the distribution box.
46-003(f)	In Progress	SWMU 46-003(f) is a sanitary system consisting of a septic tank (structure 46-94), a manhole (structure 46-95), a distribution box (structure 46-97), and a drainfield. Outfall FF may be associated with this SWMU; it is a drainpipe located approximately 30 ft northeast of the drainfield; engineering drawing ENG-C 34339 indicates that the

		drainpipe is associated with this system. Structure 46-94 is believed to be located approximately 150 ft southeast of Building 46-88; visual observation indicates that the distribution box and the drainfield have been removed. This SWMU served the bathroom facilities at Buildings 46-88 and 46-2, and all floor drains and restroom sinks in Building 46-88. Beginning in 1968, the drainfield received effluent not only from structure 46-94, but also from structures 46-8 [SWMU 46-003(a)] and 46-49 [SWMU 46-003(c)]. A guard station (Building 46-2) previously had been connected to another septic system, SWMU 46-003(a), but was disconnected from that unit and connected to the subject septic system when it was relocated in the mid-1960s to its present location west of Building 46-24. Building 46-88 was the core support test facility for the Rover Program and provided a clean-room, temperature- and humidity-controlled environment for the testing and certification of hydrogen vessels. Suspect contaminants are organic chemicals, inorganic chemicals, and radionuclides. SWMU 46-003(f) was removed from service in approximately 1972-1973, when the buildings it served were connected to a sanitary lagoon (SWMU 46-002). The OU 1140 work plan proposed sampling at SWMU 46-003(f) to determine the presence or absence of soil contamination. No sampling has been performed.
46-003(g)	In Progress	SWMU 46-003(g) is a sanitary system consisting of a septic tank (structure 46-230) and possibly a seepage pit, although its installation cannot be confirmed. Outfall KK may be associated with this SWMU; it is a drainpipe located approximately 50 ft northeast of Building 46-158. Although engineering drawings do not show a daylighted pipe associated with this system, the proximity of the outfall to the system suggests the association. The septic tank itself is also believed to be located approximately 50 ft northeast of the northwest corner of Building 46-158. This SWMU served the bathroom facilities, water cooler, floor drains, service sinks, laboratory sinks, an eyewash sink and the kitchen sink in Building 46-158. It also received effluent from nearby office transportables (structures 46-171, -226, and -251). Building 46-158 was built in the early 1980s, and housed laser-induced chemistry experiments. Because general laboratory operations were conducted in Building 46-158, suspect contaminants are organic chemicals, inorganic chemicals, and radionuclides. Structure 46-230 stopped receiving effluent from Building 46-158 in 1988, when this building was connected to the sanitary lagoons (SWMU 46-005). The OU 1140 work plan proposed sampling for SWMU 46-003(g) to determine the presence or absence of soil contamination. No sampling has been performed.
46-003(h)	In Progress	SWMU 46-003(h) is a 6 sq ft area of soil beneath a 1-in.-diameter pipe protruding about 6 in. from the east wall of Building 46-77, and exiting about 1 ft aboveground. This pipe is called Outfall GG in the OU 1140 RFI work plan. Historically, effluent discharged directly onto the soil beneath the pipe; the pipe was plugged in 1994. Outfall GG served a sink in Building 46-77. This building was constructed in the early 1960s as a warehouse for storage in support of a test laboratory (Building 46-16). Building 46-77 is now a welding and machine shop facility. Suspect contaminants are organic chemicals and inorganic chemicals. The ER Project conducted an RFI at SWMU 46-003(h) in 1994 to determine whether contamination was present in the soil beneath Outfall GG and, if present, whether it posed an unacceptable human health risk based on results of a screening assessment. In August and September 1994, three soil samples were taken at SWMU 46-003(h). Two of these samples were collected at a depth of 0.5 ft, and one was collected from a 1-ft depth. All three samples were analyzed for inorganic chemicals and organic chemicals. Inorganic chemicals were detected above LANL BVs and three of these (cadmium, copper, and lead) were present at concentrations above LANL SALs. Organic chemicals were detected but no organic chemicals were found in concentrations above SALs. The RFI report recommended VCA for SWMU 46-003(h) because of the inorganic compounds present at concentrations greater than SALs, even though concentrations were below EPA Region 9 industrial soil cleanup levels. In a VCA conducted at SWMU 46-003(h), soil was removed to a depth of 0.5 ft in a 3.5-

		ft x 4-ft area beneath outfall GG. Field screening by XRF for inorganic chemicals and by PID for organic chemicals was performed after the first 0.5 ft of soil was removed to determine whether further excavation was necessary; such field screening indicated that no contamination remained. Two confirmatory samples were collected at SWMU 46-003(h); the first was collected at the location of the 1994 sampling point directly under outfall GG, at a depth of approximately 6 in. below the excavation floor, and the second was collected from undisturbed soil immediately adjacent to the remediated area. Three inorganic chemicals (copper, mercury, and zinc) were detected at concentrations greater than LANL BVs but below SALs and well below industrial cleanup levels. One organic chemical, methylene chloride, was detected in a trace amount well below its SAL in the confirmatory sample collected below Outfall GG; it is a common laboratory contaminant and is not believed to be associated with SWMU 46-003(h). This SWMU was recommended for NFA in the VCA report.
46-004(a)	In Progress	SWMU 46-004(a) is a drainline from test building #2 (Building 46-31). This line is part of SWMU 46-004(c), a dry well system. This dry well received industrial wastes from Building 46-31, and is still active. Building 46-31 housed test cells with electrical furnaces for thermal testing for the Rover Program. Because such testing operations were conducted in Building 46-31, suspect contaminants are organic chemicals, inorganic chemicals, and radionuclides. NFA was recommended for redundant SWMU 46-004(a) in the OU 1140 work plan. The rationale for the recommendation of NFA that this site is part of another site, and will be investigated as part of that site. A sampling plan has been developed for SWMU 46-004(c), in the OU 1140 work plan, to identify the nature and extent of any contaminants that may be present at the site.
46-004(a2)	In Progress	SWMU 46-004(a2) was the outfall (Outfall MM) from an industrial drain that serviced Rooms 101, 103, and 105 in Building 46-31. The outfall was a 6-in.-diameter pipe located southeast of Building 46-31 and northwest of Building 46-25; this pipe discharged to a ditch located between the two buildings. The ditch is part of a storm drain system (designated Outfall I in the RFI workplan) that discharges to Cañada del Buey. Engineering drawing ENG-C 25879 indicates that the sinks and drains in Rooms 101, 103, and 105 historically were plumbed to this outfall; all lines leading to the outfall have been rerouted to the LANL sanitary sewer system, and Outfall MM is plugged and inactive. Historical information suggests that fissionable materials were used in several rooms in Building 46-31. Suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In August and September 1994, 12 soil and sediment samples were taken in association with SWMU 46-004(a2). One sample was collected at Outfall MM at a depth of 0.5 ft. Two samples were collected at depths of 0.3 ft and 0.5 ft in the shallow drainage on the mesa-top below the outfall. Two more samples were collected from a sediment trap, downgradient from SWMU 46-004(a2), approximately 100 ft below Outfall I, at depths of 0.3 ft and 0.7 ft. The remaining seven samples were collected from locations at the toe of the drainage slope and from the bench below Outfall I; these samples ranged in depth from 0.3 ft to 2 ft. All 12 samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Eight inorganic chemicals detected above LANL BVs were cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc. Trace levels of uranium or plutonium isotopes were detected above LANL FVs in eight samples. None of the inorganic chemicals or radionuclides was present at concentrations above LANL SALs. PCBs were detected at several sampling points that receive runoff from this SWMU. However, because SWMU 46-006(d) received contaminants from many areas of Building 46-31, the PCB contamination detected during sampling conducted in association with SWMU 46-004(a2) is attributed to SWMU 46-006(d). Some PAHs were found in concentrations above SALs. At TA-46, these contaminants are believed to be derived from continuing sources, including asphalt paving and roofing tars. Because they are derived from continuing sources, they were not carried forward in the screening assessment. Two phthalates and methylene chloride were detected in a total of three samples. These compounds commonly are used in analytical laboratories, and are believed to be associated with

		laboratory contamination. The result of an MCE for inorganic compounds was less than the target value of 1.0, which suggests that the potential for adverse health effects is low. Lead was excluded from this grouping because its toxicity is based on the uptake of lead in children as modeled by EPA's IUBEK model, and its SAL is considered to be set at the threshold below which adverse health effects are not seen. Because lead was detected at a level well below its SAL, it was excluded from further consideration. Only one inorganic carcinogen, chromium, was detected above its BV but below its SAL; therefore, no MCE was performed for this grouping. Because only trace levels of radionuclides were detected at this SWMU, no MCE was performed for this grouping. Although analytical results suggest that this SWMU should be recommended for NFA, it was determined after Phase I sampling was completed that construction work had taken place at Outfall MM before the sampling campaign and that soil had been removed from the drainage ditch and stored on the bank. Several contaminants were detected in samples taken from the soil remaining in the drainage ditch, and it is unclear if these samples reflect the highest concentrations of contamination that existed in the soil before construction. Therefore, SWMU 46-004(a2) was recommended for further sampling in the RFI report.
46-004(b)	In Progress	SWMU 46-004(b) was an alkali-metal cleaning tank (structure 46-81) that was used in the late 1950s and early 1960s and removed in 1973. This SWMU was an unlined concrete tank that occupied two different sites during its lifespan. It first sat on asphalt paving within 20 ft of the northwest corner of Building 46-31, and then it was moved approximately 50 ft north to a 12-ft x 20-ft concrete pad. Engineering drawing ENG-C-38763 shows the second location and indicates that the tank was approximately 4 ft x 8 ft in area. The height of the tank is unknown. The tank was known to have no outlet. Engineering drawing ENG-R-5124, Rev 18, indicated that the tank was removed in 1973, and so SWMU 46-004(b) was defined as both locations where the tank had been situated before its removal. The tank was used to douse laboratory equipment with butanol or kerosene to dissolve naturally occurring alkali isotopes of cesium, lithium, potassium, rubidium, and sodium, each of which is reactive on contact with water, before the equipment's reuse or disposal. Suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In the OU 1140 work plan, this site was recommended for NFA. Because the tank had no outlet, all salts and hydroxides remained in the tank while the solvents evaporated. SWMU 46-004(b) therefore was recommended for NFA based on the absence of a contaminant-migration pathway. The EPA did not concur with the NFA recommendation. Consequently, the ER Project conducted an RFI at SWMU 46-004(b) in 1994 to determine whether contamination was present in the soil downgradient of the concrete pad or in the drainage for Outfall L and, if present, whether it posed an unacceptable human health risk based on results of a screening assessment. In August and September 1994, two soil and sediment samples were taken in association with SWMU 46-004(b). These two samples were part of a larger sample set collected in association with SWMU 46-006(d), which surrounds SWMU 46-004(b). The entire sample set for SWMU 46-006(b) was analyzed for organic chemicals, inorganic chemicals, and radionuclides, while the two samples collected in association with SWMU 46-004(b) were analyzed specifically for cesium and lithium. One sample and a field duplicate sample were collected at a depth of 0.25 ft approximately 30 ft downgradient of the former locations of the tank, and another was collected at a depth of 0.5 ft from the drainage for Outfall L. These two locations represent the most likely paths for surface-water runoff from each of the two locations that comprise SWMU 46-004(b). Lithium was detected in all three samples. Cesium was detected in two samples; the field duplicate was not analyzed for cesium. The levels at which both contaminants were detected are comparable to cesium and lithium BVs found in North American soils; consequently, neither a screening analysis nor a risk assessment was performed for this SWMU. The RFI report recommended NFA for SWMU 46-004(b) because contaminants are present only in concentrations that pose no potential unacceptable risk under current and projected land use.

46-004(b2)	In Progress	SWMU 46-004(b2) was the outfall (identified as Outfall U in the OU 1140 work plan) from a now-plugged industrial drain in the north high bay in Building 46-1. The outfall was a 4-in.-diameter vitrified clay pipe located east of Building 46-1. Engineering drawing ENG-C 18111 indicated that the floor drains along the east wall in the north high bay were plumbed to this outfall, which discharged to a ditch (SWMU 46-007) that is part of a storm drain network discharging to Cañada del Buey. Activities and processes conducted in the north high bay are not known; however, based on overall process knowledge of Building 46-1, suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. The ER Project conducted an RFI at SWMU 46-004(b2) in 1994 to determine whether contamination was present in the soil beneath Outfall U and, if present, whether it posed an unacceptable human health risk based on results of a screening assessment. In August and September 1994, four soil and sediment samples were taken in association with SWMU 46-004(b2). Three samples were collected at Outfall U at depths ranging from 0.4 ft to 1 ft, and one was collected at a depth of 1 ft at the mouth of a culvert leading to Outfall M. All four samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Four inorganic chemicals were detected above LANL BVs: copper, lead, mercury, and zinc. Trace levels of two uranium isotopes were detected above LANL FVs in one sample. None of the inorganic chemicals or radionuclides was present at concentrations above SALs. Some PAHs were found in concentrations above SALs. At TA-46, these contaminants are believed to be derived from continuing sources, including asphalt paving and roofing tars. Because they are derived from continuing sources, they were not carried forward in the screening assessment. Inspection of the data indicated that the result of an MCE for inorganic compounds or for radionuclides would be far less than the target values of 1.0. Lead was excluded from this grouping because its toxicity is based on lead uptake in children as modeled by EPA's IUBEK model, and its SAL is considered to be set at the threshold below which adverse health effects are not seen. Because lead was detected at a level well below its SAL, it was excluded from further consideration. The RFI report recommended NFA for SWMU 46-004(b2) because contaminants are present only in concentrations that pose no unacceptable risk under current and projected land use.
46-004(c)	In Progress	SWMU 46-004(c) consists of a dry well (structure 46-61), an associated existing drainline, and an associated historic drainline. Engineering drawing ENG-C 38763 indicates that the historic drainline was to have been removed, but that has not been confirmed. The system is believed to be approximately 10 ft north of the high bay of Building 46-31. Structure 46-61 received industrial wastes from Building 46-31, and is still active. Building 46-31 housed test cells with electrical furnaces for thermal testing of graphite/uranium-235/uranium-238 fuel rods in support of the Rover Program. Because such testing operations were conducted in Building 46-31, suspect contaminants are organic chemicals, inorganic chemicals, and radionuclides. The OU 1140 work plan proposed Phase I VCA sampling at SWMU 46-004(c) to determine of potential contaminants are present in excess of an acceptable risk-based limit. No VCA activities have been implemented at this site.
46-004(c2)	In Progress	SWMU 46-004(c2) is the outfall (Outfall S) from an industrial drain in Building 46-1. The outfall is a 4-in.-diameter cast-iron pipe located northwest of Building 46-1. Engineering drawing ENG-C 18111 indicates that the floor drains in the north equipment room are plumbed to this outfall, which ultimately discharges to NPDES-permitted Outfall 03A042 in Cañada del Buey. Building 46-1 was used for the Rover Program experiments, and although activities and processes conducted in the north equipment room are not known, based on overall process knowledge suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. The ER Project conducted an RFI at SWMU 46-004(c2) in 1994 to determine whether contamination was present in the soil beneath Outfall S and, if present, whether it posed an unacceptable human health risk based on results of a screening assessment. In August and September 1994, 18 soil and sediment samples were taken in

		association with SWMU 46-004(c2). Four samples were collected at Outfall S, at a depth of 0.5 ft. Nine samples were collected from six sampling locations in the drainage below Outfall P, located approximately 150 ft northeast of Outfall S; these samples were collected from 0.5 ft to 3.5 ft deep. Five samples were collected from four sampling locations on the bench in the canyon below TA-46, at depths ranging from 0.5 ft to 1 ft. All 18 samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs. Trace levels of uranium-235 were detected above its LANL FV in one sample. Some PAHs were found in concentrations above SALs. At TA-46, these contaminants are believed to be derived from continuing sources, including asphalt paving and roofing tars. Because they are derived from continuing sources, they were not carried forward in the screening assessment. The pesticide methoxychlor was detected above its SAL in one sample. No evidence indicates widespread contamination, and it is believed that it is present as a result of routine spraying for pest management. A common plasticizer, bis(2ethylhexyl) phthalate, was detected above its estimated quantitation level but below its SAL in three samples. The result of an MCE for inorganic compounds was an order of magnitude less than the target value of 1.0, which suggests that the potential for adverse health effects is low. Lead was excluded from this grouping because its toxicity is based on lead uptake in children as modeled by EPA's IUBEK model, and its SAL is considered to be set at the threshold below which adverse health effects are not seen. Because lead was detected at a level well below its SAL, it was excluded from further consideration. Only one radionuclide was detected in one sample, so no MCE was performed for this grouping. The RFI report recommended NFA for SWMU 46-004(c2) because contaminants are present only in concentrations that pose no unacceptable risk under current and projected land use.
46-004(d)-99	In Progress	Consolidated SWMU 46-004(d)-99 consists of former SWMUs 46-004(d) and 46-004(e). Both these SWMUs are dry wells connected in series and are located within 3 ft of each other. SWMU 46-004(d) receives overflow from SWMU 46-004(e). SWMU 46-004(e) was sampled in 1989, during a DOE environmental study, when two samples were collected from the sludge at the bottom of the dry well and analyzed for organic chemicals, inorganic chemicals, and radionuclides. Seven inorganic chemicals were detected above BVs: cadmium, chromium, copper, lead, mercury, silver, and zinc. Four organic compounds were detected above BVs: tetrachloroethylene, toluene, fluoranthene, and Aroclors. Finally, six radionuclides were detected above FVs: cesium-137, thorium-230, uranium-235, and plutonium-238, -239, and -240. SWMU 46-004(d) is a dry well (structure 46-69) that is located north of Building 46-58. It consists of two vertically stacked 3-ft-diameter concrete cylinders approximately 4 ft in length (each), connected by a nesting joint. The dry well is below grade except for 4 in. to 6 in., and the above-grade portion is covered with a metal lid. SWMU 46-004(d) is connected in series and lies approximately 3 ft west of SWMU 46-004(e). Engineering drawing ENG-C 26092 indicates that SWMU 46-004(d) has a gravel bottom and does not discharge through an outlet pipe to Cañada del Buey. SWMU 46-004(e) is a dry well (structure 46-70). It has an inlet pipe near its top, and an outlet pipe leading to SWMU 46-004(d). Both dry wells are still in use, serving Building 46-58. Building 46-58 contains office space, a laboratory, and an equipment room, and historically housed a machine shop. Building records indicate that the dry wells were used for an acid drain. Suspect contaminants include organic chemicals, inorganic chemicals, and radionuclides. The OU 1140 work plan proposed removing SWMUs 46-004(d) and 46-004(e) in a VCA but the VCA has not been conducted.
46-004(d2)-99	In Progress	Consolidated SWMU 46-004(d2)-99 consists of five former SWMUs 46-004(d2), 46-004(g), and 46-004(h), and AOCs C-46-002 and C-46-003. These three SWMUs and two AOCs were reported as potentially contributing to surface soil contamination at TA-46 in the form of airborne releases of radionuclides or hazardous constituents through building stacks. Additionally, outfalls are associated with two of the SWMUs: 46-004(g) and 46-004(h).

		SWMU 46-004(d2)is potential surface soil contamination associated with exhaust from laboratory stacks from a building, (Building 46-24) in 1960-1961. These experiments used beryllium and beryllium oxide, and quantities of these materials may have been released through the building's stacks. Suspect contaminants include inorganic compounds. SWMU 46-004(g) is potential surface soil contamination associated with drains and an exhaust system from a laboratory building, Building 46-1. TA-41-1 housed the Rover Fuel Element Research Program between the late 1950s and the early 1970s. Work involving baking and high-temperature testing of fuel rods had the potential to result in airborne radionuclide emissions. In addition, this SWMU is associated with the industrial drain that discharged to Outfall N. The drain was a 12-in.-diameter VCP that daylighted at Cañada del Buey northeast of Building 46-1. Engineering drawing ENG-C 18111 indicated that all floor and roof drains within the central portion of the building were plumbed to this industrial drain. Suspect contaminants include radionuclides, inorganic chemicals, and organic chemicals. SWMU 46-004(h) is potential surface soil contamination associated with drains and an exhaust system from Test Building No. 1, Building 46-16. Building 46-16 between the late 1950s and the early 1970s. The primary activity was uranium fuel-rod testing, and at least one report indicated elevated levels of stack emissions. In addition, this SWMU is associated with the industrial drain (now plugged) in Building 46-16 that drains to Outfall A. This outfall is a 6-in.-diameter cast-iron pipe located north of Building 46-16; engineering drawing ENG-C 14983 indicates that the building floor drains and roof drains were plumbed to it. Suspect contaminants include radionuclides, inorganic chemicals, and organic chemicals. AOC C-46-002 reflects possible surface soil contamination associated with a one-time release in 1960 when a tube rupture (associated with Rover Program activities) occurred in Building 46-31, Test Building No.2. The accident released levels of uranium-235 through the stack. Suspect contaminants include radionuclides. AOC C-46-003 reflects a one-time release in 1978 of depleted uranium hexafluoride and uranium-237 from a stack at Building 46-30. Suspect contaminants include radionuclides, although ambient air monitoring conducted following the release showed no detectable levels of uranium-237. There is no direct historical information about any environmental contamination associated with airborne releases at TA-46. However, some stack monitoring results are available. Radioactive materials historically were monitored in stacks at SWMU 46-004(h) and AOC C-46-002. Beryllium emissions historically were monitored at SWMU 46-004(d2). The ER Project conducted an RFI at SWMUs 46-004(g), 46-004(h), and 46-004(d2), and AOCs C-46-002 and C-46-003 in 1994 to determine whether contamination in the soil downgradient from the SWMU was present at levels that pose an unacceptable human health risk. In August and September 1994, twelve soil samples were collected at 10 locations in association with SWMU 46-004(g). Three samples were collected at Outfall N, six were collected at the toe of the steep slope, two were collected in the drainage sediments on the bench, and one was collected in the sediment bed outside any presently established drainage. All samples were collected at a depth of less than 1 ft except for two samples from the toe of the steep slope; these samples were collected at depths ranging from 4 ft to 4.5 ft. All samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above BVs. Inorganic chemicals were also present at concentrations greater than SALs. Radionuclides were detected in concentrations above FVs and two radionuclides exceeded SALs. Several

		organic chemicals in the categories of PAHs and plasticizers were detected at levels greater than SALs. The PAHs are attributed to ongoing sources, notably roofing tar and asphalt paving, and are excluded from further consideration. Plasticizers are attributed to laboratory contamination and are also excluded from further analysis. An MCE screening was performed for the noncarcinogenic inorganic compounds detected at levels above SALs, and the result was greater than 1, which suggests a potential for adverse health effects. Because of the inorganic and radionuclide sampling results, the RFI report recommended Phase II sampling to determine the extent and concentration of inorganic chemical and radionuclide contamination. During the same sampling campaign, five soil samples were collected in association with SWMU 46-004(h). One sample was collected at Outfall A, two were collected at the toe of the steep slope, two were collected in the drainage channel on the bench of Cañada del Buey. All samples were collected at a depth of 1 ft, and all were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above BVs; however, none of these were present at levels above SALs. Two radionuclides (uranium-234 and –235) were detected above FVs but below SALs. There were no detects of PCBs in the one sample submitted for this analysis. Low levels of a plasticizer were detected but below the SAL. The plasticizer is attributed to laboratory contamination and is excluded from further analysis. An MCE screening was performed for the noncarcinogenic inorganic compounds detected at levels above SALs, and the result was less than 1, which suggests that the potential for adverse health effects is low. The RFI report recommended NFA for SWMU 46-004(h) because contaminants are present only in concentrations that pose no unacceptable risk under current and projected land use. To assess the impacts of stack emissions from all three SWMUs and two AOCs, 19 samples were collected over a broad area of TA-46. Eighteen such samples were collected at a depth of less than 1 ft, and one sample was collected from a depth of 2.5 ft. All samples were analyzed for inorganic chemicals and radionuclides, and five samples located downgradient of SWMU 46-004(h) also were analyzed for organic chemicals. Four inorganic chemicals were detected above BVs: copper, mercury, silver, and zinc. None of these inorganic chemicals were present at levels above SALs. Uranium-235 was detected above its FV but below its SAL in two samples. No organic chemicals were detected in any samples. The data indicate that an MCE screening would yield a value less than the target limit of 1. The RFI report recommended NFA for the air emissions component of SWMU 46-004(g) (although Phase II sampling was recommended for the component of this SWMU associated with Outfall N). The RFI report also recommended NFA for SWMUs 46-004(h) and 46-004(d2) and AOCs C-46-002 and C-46-003 because contaminants are present only in concentrations that pose no unacceptable risk under current and projected land use.
46-004(e2)	In Progress	AOC 46-004(e2) is the outfall from roof, floor, and sink drains in Building 46-42. It was discussed in the OU 1140 RFI work plan as an unlocated outfall, but it was located before the 1994 field campaign. The outfall is a 4-in.-diameter pipe located at the head of the ditch that comprises SWMU 46-006(a). The area south of the ditch is paved, and the ditch receives runoff from the pavement. This outfall is approximately 3 ft below the level of the asphalt, and is covered by silt and sediment during runoff events. The outfall pipe is called Outfall AP in the OU 1140 RFI work plan. Building 46-42 was constructed in 1960 as an equipment checkout facility. It now contains electronic and robotics laboratories. Hazardous materials might have been handled in historical machining operations, and solvents may be used in conjunction with the laboratories. Suspect contaminants are organic chemicals, inorganic chemicals, and radionuclides. In August and September 1994, three soil and sediment samples were taken in association with AOC 46-004(e2). One sample was collected at Outfall AP, itself, at a depth of 0.25 ft. Two additional samples were collected from the ditch below Outfall AP, at depths of 0.5 ft. All three samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs; however, none of the inorganic chemicals were present at concentrations above SALs.

		No radionuclides were detected above LANL FVs. Some PAHs were found in concentrations above SALs. At TA-46, these contaminants are believed to be derived from continuing sources, including asphalt paving and roofing tars. Because they are derived from continuing sources, they were not carried forward in the screening assessment. Certain pesticides were detected above their estimated quantitation limits in all three samples, but in no case did pesticide concentrations exceed SALs. No evidence indicates widespread contamination, and it is believed that pesticides are present as a result of routine spraying for pest management. A common plasticizer, bis(2-ethylhexyl)phthalate, was detected above its EQL but below its SAL in one sample. The data indicated that the result of an MCE for inorganic chemicals would be well below the target value of 1.0, which suggests that the potential for adverse health effects is low. Lead was excluded from this grouping because its toxicity is based on the uptake of lead in children as modeled by EPA's IUBEK model, and its SAL is considered to be set at the threshold below which adverse health effects are not seen. The RFI report recommended NFA for AOC 46-004(e2) because contaminants are not present in concentrations that pose an unacceptable risk under the current and projected land use.
46-004(f)	In Progress	SWMU 46-004(f) is the outfall from the industrial drain that serves Rooms 101 through 134 in Building 46-24. The outfall is a 6-in.-diameter VCP that discharges to a storm drain east of the building. This storm drain is part of a network that discharges to SWSC Canyon at NPDES Outfall 04A018, and was called Outfall NN in the OU 1140 RFI work plan. Engineering drawings ENG-C 22720, C-21233, 4194, and C-31620 indicate that a sump, an acid sink, several nonsanitary floor and sink drains, and a cooling water system are among the sources for this outfall. There is little historical information regarding the activities and processes that took place in Building 46-24. However, based on information that is known concerning historical activities and processes in the building, suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In 1994, the ER Project collected one surface soil sample from SWMU 46-004(f). The sample was submitted to an offsite analytical laboratory and was analyzed for organic chemicals, inorganic chemicals, and radionuclides. Four inorganic chemicals were detected above BVs but below SALs.
46-004(f2)	In Progress	AOC 46-004(f2) is the outfall from a floor drain in Room 151B of Building 46-31. This floor drain is now plugged. The outfall discussed in the OU 1140 RFI work plan as an unlocated outfall, but it was located before the 1994 field campaign. The outfall is a 4-in.-diameter cast-iron pipe located on the steep slope north of Building 46-31. The pipe lies approximately 10 ft below the TA-46 perimeter fence near the northwest corner of the building. A large runoff channel lies a few feet west of the pipe. The outfall pipe was called Outfall AQ in the OU 1140 RFI work plan. Historical information indicates that fissionable materials were used in several rooms in Building 46-31. Based on general activity and process information, suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In August and September 1994, six soil and sediment samples were taken in association with AOC 46-004(f2). One sample was collected at Outfall AQ at a depth of 0.5 ft. Two additional samples were collected from a sediment channel on the steep slope, at a depth of 0.5 ft. A fourth sample was collected at the toe of the slope at a depth of 0.5 ft, and two samples were collected at a depth of 0.5 ft from one sampling location in the drainage on the level bench. All six samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs and trace levels of uranium-235 or plutonium-238 were detected above LANL FVs. Only arsenic was present at concentrations above SALs. Some PAHs were found in concentrations above SALs. At TA-46, these contaminants are believed to be derived from continuing sources, including asphalt paving and roofing tars. Because they are derived from continuing sources, they were not carried forward in the screening assessment. One pesticide (dieldrin) was detected above its SAL in two samples. Dieldrin is believed to be present as a result of routine spraying for pest management. The data indicated that the result of an MCE for inorganic compounds or

		radionuclides would be well below the target value of 1.0, which suggests that the potential for adverse health effects is low. Lead was excluded from this grouping because its toxicity is based on the uptake of lead in children as modeled by EPA's IUBEK model, and its SAL is considered to be set at the threshold below which adverse health effects are not seen. Because lead was detected at a level well below its SAL, it was excluded from further consideration. The RFI report recommended NFA for AOC 46-004(f2) because contaminants are present only in concentrations that pose no unacceptable risk under current and projected land use.
46-004(i)	Administratively Complete	
46-004(j)	Administratively Complete	
46-004(k)	Administratively Complete	
46-004(l)	Administratively Complete	
46-004(m)	In Progress	SWMU 46-004(m) is the outfall that drains effluent from an industrial drain in Building 46-30. The outfall protrudes from a 10-ft-deep bank cut located north of Building 46-30. The outfall pipe is called Outfall CC in the OU 1140 RFI work plan, and was identified as Outfall No. NPDES 04A013 in LANL's 1990 NPDES permit application. Engineering drawing ENG-C 22732 indicates that the industrial drain receives wastewater from a noncontact cooling-water system, building roof drains, laboratory sinks, and compressor-room floor drains. Outfall CC ultimately discharges to Canada del Buey. Building 46-30 was constructed in 1967 as a hydraulics laboratory. Suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In August and September 1994, five soil and sediment samples were taken in association with SWMU 46-004(m). Three of these samples were collected at Outfall CC at a depth of 0.5 feet, and two were collected at a depth of 1 ft in the sediment channel on the bench of the drainage system that ultimately discharged to Canada del Buey. All five samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs. Radionuclides were detected but were not present at concentrations exceeding FVs. Some PAHs were found in concentrations above SALs. At TA-46, these contaminants are believed to be derived from continuing sources, including asphalt paving and roofing tars. Because they are derived from continuing sources, they were not carried forward in the screening assessment. Inorganic contaminants were submitted for an MCE for noncarcinogenic effects. Results of the MCE were an order of magnitude lower than the target value of 1.0, which indicates a low potential for adverse health effects from exposure to this grouping of contaminants. Lead was excluded from this grouping because its toxicity is based on lead uptake in children as modeled by EPA's IUBEK model, and its SAL is considered to be set at the threshold below which adverse health effects are not seen. An MCE is not appropriate when only an individual contaminant is detected. The RFI report recommended NFA for SWMU 46-004(m) because contaminants are present only in concentrations that pose no unacceptable risk under current and projected land use.
46-004(n)	Administratively Complete	
46-004(o)	Administratively Complete	
46-004(p)	In Progress	SWMU 46-004(p) is a dry well that is approximately 2 ft x 2 ft x 10 ft deep, and is lined with corrugated metal pipe. It is located at the southwest corner of Building 46-1. This dry well served Building 46-1, which was constructed in 1954. The dry well was constructed for the disposal of alkali metal wastes, but ultimately was used to dispose of a variety of chemical wastes. Activities conducted in Building 46-1 included machining, components assembly, uranium polishing, and general laboratory work; any of these activities could have generated waste that ultimately was disposed of in SWMU 46-004(p). Suspect contaminants are organic chemicals, inorganic chemicals, and radionuclides.

		According to the OU 1140 work plan, a Phase I investigation was recommended for SWMU 46-004(p), however no sampling has been conducted.
46-004(q)	In Progress	SWMU 46-004(q) is a 6-in.-diameter cast-iron pipe that discharges to Cañada del Buey north of Building 46-58. The outfall pipe was called Outfall B in the OU 1140 RFI work plan. Because the source from which the outfall receives wastewater is unknown, the outfall was treated as an industrial drain. Suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In August and September 1994, five soil and sediment samples were taken in association with SWMU 46-004(q). One sample was collected at Outfall B at a depth of 0.5 ft. Two were collected at a depth of 0.5 ft and 1 ft, respectively, in the nearest downstream sediment trap to SWMU 46-004(q), and another two were collected at a depth of 1 ft in the drainage channel on the level bench. All five samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs, arsenic and mercury were present at concentrations above SALs. Radionuclides were detected above LANL FVs. U-234 and U-235 were both present at concentrations exceeding SALs. Low levels of an organic compound, bis(2-ethylhexyl)phthalate, were reported but are believed to be associated with field or laboratory contamination rather than with SWMU 46-004(q), because phthalates were never identified with TA-46 activities. Because mercury and uranium isotopes were detected above SALs, these constituents will be addressed in future assessment activities planned for SWMU 46-004(q). Inorganic contaminants were submitted for an MCE for noncarcinogenic effects. Because results of the MCE were greater than the target value of 1.0, these contaminants also will be addressed in future assessment activities planned for this SWMU. Lead was excluded from this grouping because its toxicity is based on lead uptake in children as modeled by EPA's IUBEK model, and its SAL is considered to be set at the threshold below which adverse health effects are not seen. The RFI report recommended Phase II sampling for SWMU 46-004(q) to further address contamination levels around the outfall itself.
46-004(r)	In Progress	SWMU 46-004(r) is the outfall from an industrial drain that services the west wing of Building 46-24. The outfall is a 4-in.-diameter cast-iron pipe that discharges to a storm drain south of Building 46-24, between Buildings 46-59 and 46-76. The outfall pipe is called Outfall Z in the OU 1140 RFI work plan. Effluent from this outfall flows through a storm drain network that ultimately is discharged into SWSC Canyon through outfall NN. Engineering drawing ENG-C 22720 indicates that the industrial drain receives effluent from building roof drains and building sinks. Building 46-24 was constructed in 1964. Although the activities and processes conducted in the west wing of this building were not known, a general knowledge of processes suggests that suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In 1994, the ER Project collected one surface soil sample from this site. The sample was submitted to an offsite analytical laboratory and was analyzed for organic chemicals, inorganic chemicals, and radionuclides. Three inorganic chemicals were detected above BVs but below SALs.
46-004(s)	In Progress	SWMU 46-004(s) is the outfall of a 4-in.-diameter cast-iron pipe located about 25 ft south of Building 46-1. Effluent flowed to a ditch (SWMU 46-007) that ultimately discharges to Cañada del Buey. The outfall pipe was called Outfall X in the OU 1140 RFI work plan. Engineering drawing ENG-C 3369 indicated that the floor and roof drains in the south high bay discharged through this outfall. Engineering drawing ENG-C 1811, Sheet 43, indicated that some floor drains in the south high bay were connected to a second outfall, which discharged to the east of Building 46-1. All drains reportedly are plugged. Although the activities and processes conducted in the south high bay of Building 46-1 were not known, a general knowledge of processes suggested that suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In August and September 1994, five soil and sediment samples were taken in association with SWMU 46-004(s). One sample was collected at Outfall X at a depth of

		0.5 ft and another was collected at a depth of 1 ft from the channel next to this outfall. Another three were collected at a depth of 0.5 ft in the ditch below Outfall X. All five samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs and two constituent concentrations being present above SALs. No radionuclides were detected above LANL FVs. Some PAHs were found in concentrations above SALs. At TA-46, these contaminants are believed to be derived from continuing sources, including asphalt paving and roofing tars. Because they are derived from continuing sources, they were not carried forward in the screening assessment. Inorganic contaminants that were present at levels above BVs were submitted for an MCE for noncarcinogenic effects. Results of the MCE were lower than the target value of 1.0, which indicates a low potential for adverse health effects due to exposure to this grouping of contaminants. The RFI report recommended NFA for Outfall X of SWMU 46-004(s) because contaminants were present only in concentrations that pose no unacceptable risk under current and projected land use. However, the RFI report also recommended that the SWMU remain on LANL's Hazardous Waste Facility Permit, pending sampling at the unnamed outfall.
46-004(t)	In Progress	SWMU 46-004(t) is the outfall from the industrial drain in Building 46-88. The outfall, which was identified in LANL's 1990 NPDES permit application as NPDES 04A014, is a 4-in.-diameter VCP located northeast of Building 46-88, on the west side of SWSC road. The effluent flows to a storm drain under the road that ultimately discharges to SWSC Canyon. The outfall pipe is called Outfall YY in the OU 1140 RFI work plan. Engineering drawing ENG-C 31549 indicates that all floor drains, roof drains, laboratory sinks, and a noncontact cooling water system in Building 46-88 are plumbed to this outfall. In the late 1960s and early 1970s, Building 46-88 housed a structural test laboratory used to test pressure vessels associated with Project Rover. Starting in the mid-1970s, the building was used for process chemistry work in which the nonradioactive isotopes of carbon, oxygen, and nitrogen were isolated. Suspect contaminants were organic chemicals. EPA slated SWMU 46-004(t) for Phase I investigation in 1994. However, due to funding constraints and refocused priorities, sampling was not conducted at this SWMU during the ER Project's 1994 Phase I investigation at TA-46. No sampling has been conducted at SWMU 46-004(t).
46-004(u)	In Progress	SWMU 46-004(u) was the outfall from an overflow pipe for the west concrete wet-well in Building 46-87. The outfall, now plugged, was an 8-in.-diameter cast-iron pipe located north of Building 46-86. Effluent from the outfall ultimately discharged to Cañada del Buey. The outfall pipe was called Outfall F in the OU 1140 RFI work plan. Engineering drawing ENG-C 32302 indicates that the west wet-well historically received effluent from a closed-loop cooling water system serving Buildings 46-16, -25, and -31, and currently receives industrial wastewater from two sink drains from Building 46-25. Historically, Building 46-25 was used as a battery storage facility and for small-scale painting activities in support of Project Rover. Suspect contaminants were organic chemicals and inorganic chemicals. In August and September 1994, 10 soil and sediment samples were taken in association with SWMU 46-004(u). One sample was collected at Outfall F at a depth of 0.25 ft, and two were collected at depths of 0.3 ft and 0.5 ft just below Outfall F. Two more samples were collected from each of two sample locations at the toe of the steep drainage slope, at depths of 0.5 ft, 1 ft, 1.5 ft, and 2 ft. One surface sample also was collected from this area. Two samples were collected from the drainage channel on the level bench; these samples were collected in the same location, at depths of 0.5 ft and 1.5 ft. All 10 samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs, arsenic was present in concentrations exceeding SALs. Trace levels of plutonium isotopes were detected above LANL FVs. None of the radionuclides were present at concentrations above SALs. Some PAHs were found in concentrations above SALs. At TA-46, these contaminants are believed to be derived from continuing sources, including asphalt paving and roofing tars. Because they are derived from continuing sources, they were

		not carried forward in the screening assessment. PCBs were detected above SAL in one sample, and were ascribed to SWMU 46-006(d), where it is known that PCBs were used historically. Inorganic contaminants were submitted for an MCE for noncarcinogenic effects. Results of the MCE were lower than the target value of 1.0, which indicates a low potential for adverse health effects due to exposure to this grouping of contaminants. Only plutonium isotopes were detected above FVs, but below SALs. The data indicated that the result of an MCE for plutonium isotopes would be far less than the target value of 1.0. The RFI report recommended NFA for SWMU 46-004(u) because contaminants are present only in concentrations that pose no potential unacceptable risk under current and projected land use.
46-004(v)	In Progress	SWMU 46-004(v) is the outfall for the industrial drain from Building 46-87. The outfall is a 6-in.-diameter cast-iron pipe located northwest of Building 46-87. Effluent from the outfall ultimately discharges to Cañada del Buey. The outfall pipe was called Outfall G in the OU 1140 RFI work plan. Engineering drawing ENG-C 32305 indicates that the floor and roof drains from Building 46-87 are connected to this outfall. Building 46-87 is a pump house; it also houses two sumps and the mechanical equipment associated with a cooling tower. Chemical processing activities are not believed to have ever taken place in this building, although it was used to store nonhazardous cooling tower chemicals. Suspect contaminants were organic chemicals. In August and September 1994, 10 soil and sediment samples were taken in association with SWMU 46-004(v). One sample was collected at Outfall G at a depth of 0.3 ft, and two were collected at depths of 0.3 ft and 0.5 ft just below Outfall F, located approximately 25 ft north of Outfall G. Two more samples were collected from each of two sample locations at the toe of the steep drainage slope, at depths of 0.5 ft, 1 ft, 1.5 ft, and 2 ft; one surface sample also was collected from this area. Two samples were collected from the drainage channel on the level bench; these samples were collected in the same location, at depths of 0.5 ft and 1.5 ft. All 10 samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs, arsenic was present in concentrations exceeding SALs. Trace levels of plutonium isotopes were detected above LANL FVs in six samples. None of the inorganic chemicals or radionuclides was present at concentrations above SALs. Some PAHs were found in concentrations above SALs. Although trace levels of pesticides and PCBs were detected, the source of the potential contamination is thought to be associated with SWMU 46-006(d). At TA-46, these contaminants are believed to be derived from continuing sources, including asphalt paving and roofing tars. Because they are derived from continuing sources, they were not carried forward in the screening assessment. Inspection of the data indicated that the result of an MCE for inorganic compounds or for radionuclides would be far less than the target values of 1.0. The RFI report recommended NFA for SWMU 46-004(v) because contaminants are present only in concentrations that pose no potential unacceptable risk under current and projected land use.
46-004(w)	In Progress	SWMU 46-004(w) is the outfall from the sink drain in a building (Building 46-59) used for hydraulic and structural testing of components in support of the Rover Program. The outfall is a 2-in.-diameter cast-iron pipe that discharges to a storm drain located between Building 46-59 and Building 46-76, which ultimately discharges to SWSC Canyon. The outfall pipe was called Outfall AA in the OU 1140 RFI work plan. Suspect contaminants were organic chemicals. In 1994, the ER Project collected one surface soil sample from this site. The sample was submitted to an offsite analytical laboratory and was analyzed for organic chemicals, inorganic chemicals, and radionuclides. Three inorganic chemicals were detected above BVs but below SALs.
46-004(x)	In Progress	SWMU 46-004(x) is an outfall from floor, sink, and/or roof drains in Building 46-31. The outfall is a 6-in.-diameter cast-iron pipe located northeast of Building 46-31. Effluent ultimately is discharged to Cañada del Buey. The pipe projects approximately 1 ft beyond the steep canyon slope, and a drainage channel 1 ft to 2 ft wide has formed beneath the pipe, extending to the toe of the slope. The outfall pipe was called Outfall J in the OU 1140 RFI work plan. Historical information indicates that fissionable materials

		were used in several rooms in Building 46-31. It now is primarily a laser laboratory with offices and shops. Based on general activities and process information, suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. However, further studies of the source drains conducted after the RFI work plan was written indicate that these contaminants are unlikely at Outfall J. In August and September 1994, eight soil and sediment samples were taken in association with SWMU 46-004(v). One sample was collected at Outfall J at a depth of 0.5 ft, and two plus one duplicate were collected at a depth 0.5 ft just below Outfall J. Four more samples were collected from sample locations along the drainage channel at a depth of 0.5 ft except for the distal sample, which was collected at a depth of 1 ft. All eight samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs, arsenic was present in concentrations exceeding SAL. Trace levels of uranium, plutonium, and thorium were detected above LANL FVs in three samples. None of the radionuclides were present at concentrations above SALs. Some PAHs were found in concentrations above SALs. At TA-46, these contaminants are believed to be derived from continuing sources, including asphalt paving and roofing tars. Because they are derived from continuing sources, they were not carried forward in the screening assessment. Inspection of the data indicated that the result of an MCE for inorganic compounds would be far less than the target value of 1.0. The RFI report recommended NFA for SWMU 46-004(x) because contaminants are present only in concentrations that pose no potential unacceptable risk under current and projected land use.
46-004(y)	In Progress	SWMU 46-004(y) was the historical blowdown outfall from the cooling tower that serves Building 46-31. It also received effluent from the building's floor and roof drains, as well as its laboratory sinks. The outfall itself was a 6-in.-diameter cast-iron pipe located north of Building 46-31. Effluent ultimately is discharged to Cañada del Buey. The outfall pipe was called Outfall K in the OU 1140 RFI work plan, and was identified in LANL's 1990 NPDES permit application as NPDES 03A043. The drainpipe leading to Outfall K was rerouted and connected to the LANL sanitary sewer system before 1993, and Outfall K is now inactive. Historical information indicates that fissionable materials were used in several rooms in Building 46-31. Based on general activities and process information, suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In August and September 1994, six soil and sediment samples were taken in association with SWMU 46-004(y). One sample was collected at Outfall K at a depth of 0.5 ft, and two were collected at a depth of 0.5 ft just below Outfall K. Two samples were collected from one sample location down the drainage channel, at depths of 0.5 ft and 3 ft. A final sample was collected near the end of the drainage channel on the level bench, at a depth of 0.5 ft. All six samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs, arsenic was present in concentrations exceeding SAL. Radionuclides were detected above LANL FVs in two samples. None of the radionuclides were present at concentrations above SALs. Some PAHs were found in concentrations above SALs. At TA-46, these contaminants are believed to be derived from continuing sources, including asphalt paving and roofing tars. Because they are derived from continuing sources, they were not carried forward in the screening assessment. Inspection of the data indicated that the result of an MCE for inorganic compounds or for radionuclides would be far less than the target value of 1.0. The RFI report recommended NFA for SWMU 46-004(y) because contaminants are present only in concentrations that pose no potential unacceptable risk under current and projected land use.
46-004(z)	In Progress	SWMU 46-004(z) is the outfall from an industrial drain that services the floor and roof drains for Rooms 160 through 172 in Building 46-31. The outfall itself is a 6-in.-diameter cast-iron pipe located northwest of Building 46-31. Effluent ultimately is discharged to Cañada del Buey. The outfall pipe was called Outfall L in the OU 1140 RFI work plan. As a BMP, two floor drains leading to Outfall K were rerouted to the LANL sanitary sewer system before 1993. Only two roof drains now discharge to Outfall L. Historical information indicates that fissionable materials were used in several rooms in Building

		46-31. Based on general activities and process information, suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In August and September 1994, 10 soil and sediment samples were taken in association with SWMU 46-004(z). No samples were collected at Outfall L itself, because a concrete pad lies beneath the discharge pipe. Two samples were collected from the toe of the drainage slope, at a depth of 0.3 ft. The remaining eight samples were collected from six sampling locations in the three drainage channels diverging onto the level bench; sampling depths ranged from 0.3 ft to 4 ft. All 10 samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs in isolated samples. Trace levels of uranium, plutonium, and thorium isotopes were detected above LANL FVs in five samples. Arsenic concentrations exceeded SALs. None of the radionuclides were present at concentrations above SALs. No organic chemicals were detected at SWMU 46-004(z). The result of an MCE for inorganic compounds was lower than the target value of 1.0, which indicates that the potential for adverse health effects is low. Because only trace levels of radionuclides were detected above FVs at SWMU 46-004(z), no MCE was performed for this grouping. The RFI report recommended NFA for SWMU 46-004(z) because contaminants are present only in concentrations that pose no potential unacceptable risk under current and projected land use.
46-005	In Progress	SWMU 46-005 consists of a pair of surface impoundments and the drainlines that connect them to Building 46-158. The system functions as follows: the sanitary waste line from Building 46-158 connects to the upper, southernmost lagoon. The upper lagoon has an overflow drain to the lower lagoon, which in turn has an overflow line to Outfall EPASSS12S into SWSC Canyon. The lagoon system was constructed in the late 1970s; from 1980 to 1987 the lagoons contained salt brine, and were involved in solar energy experiments. For this period of operation, there is no known evidence that contaminants were introduced into the system. Because Building 46-158 houses facilities for laser-induced chemistry experiments, suspect contaminants include organic chemicals, inorganic chemicals, and radionuclides. The OU 1140 work plan proposed sampling at SWMU 46-005 to determine the presence or absence of soil contamination. No sampling has been performed.
46-006(a)	In Progress	SWMU 46-006(a) is a concrete and asphalt pad approximately 70 ft long x 100 ft wide, located at the north end of the parking lot between Building 46-1 and Building 46-42. In 1986, fifteen 55-gal. drums containing dielectric oil reportedly were stored at this SWMU, and all the drums appeared to be oily. In addition, some of the drums were leaking, and oil had migrated into a ditch adjacent to the pad that led to a culvert and, from there to Outfall P (as it was identified in the OU 1140 work plan). Because work had been conducted around the ditch recently, it was difficult to determine visually how far the oil discharge had migrated. Suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. As a result of 1986 site conditions, three soil samples were collected in 1989 (by LANL's ESH group), one on the side of the ditch and two below it “under a pipe,” at depths of 0 in. to 6 in., and were analyzed for organic chemicals, inorganic chemicals, and radionuclides. Five inorganic chemicals were detected above LANL BVs: barium, cadmium, chromium, copper, and zinc. Uranium-234, uranium-235, and americium-241 were detected above LANL FVs. PCBs and pesticides were detected in one sample that was collected from a stained area on the side of the ditch. None of the inorganic chemicals was present at concentrations above SALs. Uranium-234 exceeded its SAL, as did PCBs and chlordane. In August and September 1994, six soil samples were collected in association with SWMU 46-006(a). Data from samples collected in association with SWMU 46-004(c2) and AOC 46-004(e2) also were used in the decision process for SWMU 46-006(a). All six samples were collected from within the boundaries of the SWMU itself; two samples were taken from the ditch and another four in a cluster around the culvert directing all drainage towards Outfall P. All samples were collected from depths ranging from 0.3 ft

		to 1 ft. All six samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Four inorganic chemicals were detected above LANL BVs: copper, lead, mercury, and zinc; the concentrations of these contaminants were below their SALs. Numerous PAHs and pesticides were detected. Moreover, several PAH compounds were found to exceed SALs, as was one pesticide. SWMU 46-006(a) receives runoff from two flat-roofed buildings and is adjacent to an asphalt-paved parking lot; PAH contamination is believed to be attributable to continuing sources, including asphalt paving and roofing tars. Similarly, the presence of dieldrin is believed to be attributable to the routine application of pesticides at TA-46 for pest management. Because PAHs and pesticides are attributable to continuing sources, they were not carried forward in the screening assessment. For inorganic compounds, inspection of the data indicated that the result of an MCE would be well below the target value of 1.0, below which the potential for unacceptable health effects is minimal. The RFI report recommended NFA for SWMU 46-006(a) because contaminants are present only in concentrations that pose no potential unacceptable risk under current and projected land use.
46-006(b)	In Progress	SWMU 46-006(b) is the site of a former storage shed (structure 46-197) approximately 40 ft long x 8 ft wide, located approximately 40 ft north of a warehouse (Building 46-41). The entire area of SWMU 46-006(b) is covered with asphalt and slopes toward storm drain Outfall QQ (as it was identified in the OU 1140 work plan), which is located approximately 30 ft southeast of the site of the former storage shed. The storage shed was constructed of plywood on three sides (the north side was open) and it had a sheet metal roof. It was used for short-term storage of oil drums, vacuum pumps, optical tables, other laboratory equipment, and electrical equipment with PCB-containing oil. Suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In August and September 1994, five soil samples were collected in association with SWMU 46-006(b). Two samples were collected from the footprint of the storage shed, another sample was collected in the drainage below the shed location, and two samples were taken at Outfall QQ. All samples were collected at a depth of 0.5 ft, and were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Two inorganic chemicals (lead and zinc) were detected above LANL BVs, but below SALs, arsenic was detected below BVs but was present in concentrations exceeding SALs. Uranium-235 was detected above its LANL FV, but not above its SAL. Organic compounds including PAHs and a plasticizer were detected. The plasticizer (a phthalate) was present at a level below its SAL. Two PAH compounds exceeded their SALs, but their presence is attributed to continuing sources, including asphalt paving and roofing tar. No MCEs were performed because no more than one contaminant from each grouping was detected above BVs. Lead was excluded from this grouping because its toxicity is based on lead uptake in children as modeled by EPA's IUBEK model, and its SAL is considered to be set at the threshold below which adverse health effects are not seen. Because lead was detected at a level well below its SAL, it was excluded from further consideration. The RFI report recommended NFA for SWMU 46-006(b) because contaminants are present only in concentrations that pose no potential unacceptable risk under current and projected land use.
46-006(c)	In Progress	SWMU 46-006(c) is a 15-ft x 30-ft stained section of asphalt located northeast of Building 46-158 and east of Building 46-208. It is part of a 25-ft-wide paved area that traverses the entire east side of Building 46-158, and which was constructed to slope downhill to the east toward a grated storm drain that emerges on the side of a steep bank. In 1986, a field survey crew noted leaking drums on this part of the asphalt, and observed oil draining into the storm drain and moving toward SWSC Canyon. The drums were removed sometime before 1994. Building 46-158 housed laser experiments, and suspect contaminants were organic chemicals and inorganic chemicals. Uranium was not used in or around the building. In August and September 1994, six soil samples were collected in association with SWMU 46-006(c). Two samples were collected from the drainage below the paved area at a depth of 0.5 ft. An additional sample was collected on the slope of the canyon at a depth of 0.5 ft, and another three samples were collected from one location toward the bottom of the canyon, at depths of 0.5 ft, 5 ft, and 6.5 ft. All samples were analyzed

		for inorganic chemicals and organic chemicals, and the four samples taken from the canyon sides and bottom also were analyzed for radionuclides. Four inorganic chemicals were detected above LANL BVs but below SALs: copper, lead, mercury, and zinc. No radionuclides were detected above FVs. One organic compound (a phthalate) was detected at levels greater than its LANL BV in two samples. This analyte is a common field and laboratory contaminant and is not identified with LANL activities at this SWMU. Inspection of the data indicates that MCE screening would yield a value less than the target limit of 1.0, below which the potential for unacceptable health risks is believed to be low. The RFI report recommended NFA for SWMU 46-006(c) because contaminants are present only in concentrations that pose no potential unacceptable risk under current and projected land use.
46-006(d)	In Progress	SWMU 46-006(d) is an unpaved area approximately 50 ft long x 350 ft wide, located north of Building 46-31. It is on a level grade where it is closest to Building 46-31 but drops steeply to the TA-46 perimeter fence. Two asphalt-paved delivery and parking areas abut SWMU 46-006(d) on its eastern and western boundaries. Oils and possibly other materials were spilled or dumped in this SWMU by personnel stationed in the building, which has housed a variety of laboratory experiments since 1954. In 1986, a field team noted 55-gal. drums, old cans, rusty chemical storage units, and a thick layer of oil on the slope of this SWMU. In addition, engineering drawing ENG-C 42679, Sheet 2, indicates that a washdown drain from Room 111A discharged to SWMU 46-006(d). Suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. As a result of the site conditions in 1986, LANL's ESH group collected six soil samples in 1989 within the boundaries of the SWMU, at locations where soil staining was evident visually. All six samples were analyzed for organic chemicals, inorganic chemicals, and radionuclides. Seven inorganic chemicals were detected above LANL BVs: chromium, copper, lead, mercury, nickel, silver, and zinc. Total uranium and isotopes of plutonium also were detected above LANL BVs. PAHs and PCBs also were detected at levels above LANL BVs. None of the radionuclides or inorganic chemicals was present at concentrations above SALs. PCB levels exceeded SALs. In August and September 1994, 34 soil samples were collected in association with SWMU 46-006(d): 13 samples were collected from within the boundaries of the SWMU, itself; 17 additional samples were collected from 5 drainage pathways down the slope behind Building 46-31; and the remaining 4 samples were collected from 2 locations in Cañada del Buey. All but three samples were collected from depths ranging from 0.5 ft to 1.5 ft. The remaining samples, all from locations within 20 ft of Building 46-31, were collected from depths of 3.5 ft, 4 ft, and 7 ft. All 34 samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Inorganic chemicals were detected above LANL BVs and SALs. Trace levels of uranium isotopes and plutonium-238 were detected above LANL FVs, but not above SALs. Organic compounds were also detected. For the noncarcinogenic inorganic compounds (chromium, copper, silver, and zinc), an MCE yielded a result of 0.9, which is less than the target value of 1.0 below which the potential for unacceptable health effects is minimal. Contamination of inorganic compounds (lead, copper, cadmium, and mercury) and organic compounds (PCBs) appears to be spotty, but widespread. The RFI report recommended Phase II sampling for SWMU 46-006(d) because Phase I sampling did not determine the extent of contamination.
46-006(e)	Administratively Complete	
46-006(f)	In Progress	SWMU 46-006(f) is a 20 ft x 30 ft metal structure located 50 ft east of Building 46-1. It was constructed in approximately 1955 as a storage building, with double doors on the west and a single door at its southeast corner. The paved floor is approximately 6 in. to 8 in. below grade. The building is bounded on its western and southern sides by asphalt pads and by unpaved land to the north and to the east. SWMU 46-006(f) and the area surrounding it have been used as a storage area, a staging area for equipment and materials awaiting disposal, and as an unloading area for new equipment. The types of equipment that passed through this area included electronic equipment and furnaces; materials may have included oils, alkali metals, asbestos products, beryllium

		alloys, potassium dichromate, lead bricks, mercury, and small amounts of PCBs. Suspect contaminants were organic chemicals, inorganic chemicals, and radionuclides. In August and September 1994, three soil samples were collected in association with SWMU 46-006(f). One sample was collected adjacent to the pavement at a depth of 0.3 ft and two additional samples were collected in the drainage below the building. Of these, one sample was taken northeast of the building at a depth of 0.4 ft, and the second was taken at a depth of 0.5 ft from a location immediately above a storm drain. All three samples collected in association with SWMU 46-006(f) were analyzed for inorganic chemicals, organic chemicals, and radionuclides. Three inorganic chemicals (lead, mercury, and zinc) were detected above LANL BVs but below SALs. No radionuclides were detected above FVs. Trace levels of PCBs were detected in one sample. Low levels of pesticides and one PAH also were detected but did not exceed SALs. The presence of the pesticides is attributed to routine use of pesticides at TA-46 for pest management, and the presence of a PAH is attributed to asphalt paving. Because both these sources are ongoing, the PAH and pesticide contamination were eliminated from further consideration. Inspection of the data indicates that MCE screening would yield a value less than the target limit of 1.0, below which the potential for unacceptable health risks is believed to be low. The RFI report recommended NFA for SWMU 46-006(f) because no contaminants are present in concentrations that pose a potential unacceptable risk under current and projected land use.
46-006(g)	In Progress	SWMU 46-006(g) is a 15-ft x 30-ft corrugated steel storage shed with an asphalt floor, located at the west end of Building 46-31. The area around the shed is level and paved. Because the doors of the shed are not weather-tight, rain and snowmelt routinely flood the floor. From 1982 to 1984, the shed housed vacuum pumps used in experiments that involved plasma vaporization of depleted uranium powder. Pump oil is known to have spilled on the floor. Suspect contaminants were organic chemicals and radionuclides. In August and September 1994, two soil samples were collected in association with SWMU 46-006(g). Both samples were collected from beneath the asphalt floor of the shed, at a depth of 1 ft; both were analyzed for organic chemicals and radionuclides. No radionuclides were detected above FVs. Trace levels of organic compounds (trichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane) were detected in one sample. No MCE screening was performed because the two organic compounds that were detected did not have SALs, which were required to conduct an MCE. The RFI report recommended NFA for SWMU 46-006(g) because contaminants are not present in concentrations that pose a potential unacceptable risk under current and projected land use.
46-007	In Progress	SWMU 46-007 is a partially paved ditch located on the south side of a warehouse (Building 46-1). The SWMU also includes the drainage path of the ditch along the east side of Building 46-1. The ditch varies from 1 ft to 3 ft deep, 3 ft to 6 ft wide, and 175 ft long. Much of the ditch is now paved with asphalt. Drainage is to Cañada del Buey by man-made watercourses and culverts. Over time, the drainage path has been altered several times to accommodate construction projects at TA-46. During the late 1950s and early 1960s, apparatus from a cesium-plasma diode operation was cleaned in the ditch using butanol and kerosene. Researchers used only natural cesium, not the radioactive isotope (cesium-137). Other substances such as solvents were discarded in the ditch. The ditch also received copper-containing waste from heat-pipe research. A green stain from this operation remains on the tuff at the head of the ditch. This SWMU may be contaminated with a variety of chlorinated and hydrocarbon solvents. Mercury was spilled at the south bay of Building 46-1 and some floor drains from this building emptied into the ditch. Potential contaminants include inorganic and organic chemicals, and radionuclides. SWMU 46-007 was sampled during the 1994 RFI. Six samples, collected from six locations, and data collected below an outfall were used in the final recommendation for the site. Samples were submitted for laboratory analysis for inorganic and organic chemicals, radionuclides, and PCB/pesticides. Inorganic chemicals were detected

		above BVs and several PAHs were detected at levels slightly greater than SALs. Samples collected downgradient from SWMU 46-007 did not indicate contaminant migration. Based on the results of data from the site, the RFI report recommended NFA for SWMU 46-007.
46-008(a)	In Progress	SWMU 46-008(a) is a former paved storage area located east of the ICONS Laboratory (Building 46-88). The storage area was approximately 20 sq ft. In March 1986, during the RFA investigation at this site, the inspection report noted 28 nitric acid drums. One drum was marked "waste" and was leaking; other drums reportedly contained cyclohexane, pump oil, and methanol. The report further states, "In back (to the east) were 30 very rusty nitric acid containers, a junk pile, 28 very rusty…55 gal. drums." Potential contaminants at this former storage area include inorganic chemicals, organic chemicals, and oils. The RFI activity proposed for this site is surface-soil sampling adjacent to the paved area. RFI activities have been partially conducted at this site. Three surface samples were collected from three locations; however, because the sampling plan called out in the OU 1140 work plan was not completed in entirety at this site, it was not included in the 1996 RFI Report.
46-008(b)	In Progress	SWMU 46-008(b) is a former unpaved storage area located near Building 46-1. The former storage area was approximately 20 sq ft and slopes east to a drainage ditch (SWMU 46-007). Also in proximity to this former storage area are two manholes (structures 46-6 and 46-15); however, any spills from this former storage area likely would not enter either manhole. Potential contaminants are petroleum products, oils, and PCBs. RFI activities for this site included collecting two surface-soil samples from within the bounds of SWMU 46-008(b) and collecting one sample at the head of the storm drain leading from the site. Samples were analyzed in an off-site analytical laboratory for inorganic and organic chemicals, radionuclides, and PCBs/pesticides. Copper, mercury, and zinc were detected above BVs but below SALs, and trace levels (less than 1 ppm) of PCBs were detected. Organic chemicals detected were PAHs that were attributed to runoff from paved areas in proximity to the SWMU. Data collected from other SWMUs in the area also were considered in the final recommendation for SWMU 46-008(b). Based on these data sets, the RFI report recommended SWMU 46-008(b) for NFA.
46-008(c)	Administratively Complete	In the SWMU Report (LANL 1990), SWMU 46-008(c) is identified as a site where barrels, cans, and drums are located "in a fenced area". The SWMU location is not provided in the maps supplied with either the 1988 or 1990 SWMU Report. There is no explicit reference in the RCRA facility assessment to such a storage area. A diligent search of TA-46 aerial photographs failed to target a candidate area for this SWMU location. TA-46 has undergone programmatic changes resulting in relocation of fences throughout the site. The investigating team was unable to locate this site from the description in the SWMU Report. SWMU 46-008(c) is appropriate for NFA under Criterion 1 because it cannot be located.
46-008(d)	In Progress	SWMU 46-008(d) is a 100-ft x 200-ft paved storage area located on the south side of Building 46-24. The site was identified during the 1986 CEARP survey, when the personnel noted the following as “outside items” at the building: ethylene glycol; butyl ether; two unmarked plastic jugs; unchained cylinders; plastic bottles of pump oil; two unmarked 55-gal. drums; old vacuum pumps; and something marked “velo site #6.” Personnel also noted an oily spill on the south side of the building. On the hill above Building 46-24, three 55-gal. drums and 2 vessels were noted that appear to have contained radioactive material. The hill is south of Building 46-24 and is included in the SWMU. Potential contaminants include inorganic and organic chemicals, radionuclides, and oils. In 1994, the ER Project collected two surface soil samples from SWMU 46-008(d). The samples were submitted to an offsite analytical laboratory and analyzed for organic chemicals, inorganic chemicals, and radionuclides. Several inorganic chemicals and one radionuclide were detected above BVs/FVs. Three organic chemicals were

		detected above SALs.
46-008(e)	In Progress	SWMU 46-008(e) is a partially paved storage area located south of a transportable (Building 46-187). The storage area is 20 ft x 35 ft, level, and covered with grasses and weeds; it drains east into a storm sewer just outside the TA-46 perimeter fence. Traces of asphalt in the soil suggest that the unpaved area may have been paved at some time. Four barrels alleged to have contained waste vacuum oil were stored here at the time of the 1986 CEARP survey. This area has been used as a storage area since the 1950s, and was the site of a storage shed removed sometime before 1988. Potential contaminants include inorganic and organic chemicals, PCBs, and oils. In 1994, the ER Project collected seven samples from SWMU 46-008(e). The samples were submitted to an offsite laboratory and were analyzed for organic chemicals, inorganic chemicals, and radionuclides. Inorganic chemicals were detected above BVs but below SALs. Radionuclides were detected above FVs but below SALs.
46-008(f)	In Progress	SWMU 46-008(f) is a paved storage area located on the southeast side of Test Building No.2 (Building 46-31). The 1990 SWMU report mentions four barrels of oil that may have been either product or waste. The 1986 CEARP survey noted “two 55 gal drums, containers labeled methanol, 3 old cans, drums, and unmarked cylinders…the whole area looks unused with much debris and a strong smell of oil.” The area is 50 ft x 100 ft, level, and paved with asphalt except for a narrow strip along the fence. No obvious staining is noticeable, although the area historically has been used for general storage. Potential contaminants include inorganic and organic chemicals, radionuclides, and oils. In 1994, the ER Project collected 5 surface soil samples from SWMU 46-008(f). The samples were submitted to an offsite analytical laboratory and were analyzed for organic chemicals, inorganic chemicals, and radionuclides. Inorganic chemicals were detected above BVs but below SALs. Six organic chemicals were detected above SALs.
46-008(g)	In Progress	SWMU 46-008(g) is a 25 ft x 50 ft, unpaved storage area located south of a warehouse (Building 46-76). The site is a broad, level, grassy area bisected by a drainage channel that drains east into SWSC Canyon. Runoff from a parking lot also drains through the channel. The 1990 SWMU report cites an earlier report, noting the storage of 20 drums directly on the ground, and that the drums contained dielectric oil. Potential contaminants include organic chemicals, PCBs, and oils. In 1994, the ER Project collected five surface soil samples from SWMU 46-008(g). The samples were submitted to an offsite analytical laboratory and were analyzed for organic chemicals and inorganic chemicals. Inorganic chemicals were detected above BVs but only one was detected above its SAL. Three organic chemicals were detected above SALs.
46-008misc	Administratively Complete	
46-009(a)	In Progress	SWMU 46-009(a) is a steep landfill located at the head of SWSC Canyon (a small tributary of Cañada del Buey), near the southeastern corner of TA-46. The landfill covers approximately 5000 sq yds, extending from the canyon rim to the floor of SWSC Canyon. The total landfill volume is not known. The landfill contains a variety of materials, including soil, asphalt, concrete, plywood, pipe, and other construction materials. There are no precise records of the origin and age of these materials, or when the use of this site as a landfill commenced. It is possible that this landfill predates the establishment of TA-46. Aerial photographs taken in 1958 show the landfill. The landfill footprint, identified in the 1958 photograph, is similar to the footprint described in the OU 1140 work plan. In 1989, the potential contaminants were described as radionuclides, inorganic chemicals, SVOCs, PCBs, and possibly asbestos. Since 1989, there have been three additional characterization efforts, all prompted by the construction of a roadway near the landfill. There have been a series of sampling events at this site conducted by other LANL groups. In 1990, soil samples were taken from the 24-ft boreholes drilled along the

		path of the proposed road. Soil samples were field-screened for radioactivity and analyzed for TCLP metals as well as VOCS, SVOCs, and PCBs. Radioactivity measurements in all samples were found to be at or below instrument background; metals were below EPA TCLP regulatory limits; no VOCs, SVOCs, or PCBs were detected. In 1992, 10 composite surface-soil samples were collected at SWMU 46-009(a) for asbestos analysis. No detectable levels of asbestos were found in any of the samples collected. Radiological screening of the samples found gross alpha and beta activity to be less than 0.25 pCi/g, with gross gamma activity ranging from 1.09 pCi/g to 1.14 pCi/g. In a separate sampling event in 1992, seven soil samples were collected at various points at or near this SWMU. Although samples were collected at the surface, the site had been disturbed recently by road construction, and at least three sample locations represented areas that previously had been subsurface. The samples were field-screened for radioactivity and submitted to an analytical laboratory. Total uranium measurements were less than BVs (less than 3.4 ppm); no target VOCs, PCBs, or asbestos was detected. One sample indicated trace amounts of SVOCs; these results were attributed to the proximity of asphalt to the sample location. All inorganic chemicals were less than EPA TCLP regulatory limits. The OU 1140 work plan proposed sampling at SWMU 46-009(a) that has not been implemented.
46-009(b)	In Progress	SWMU 46-009(b) is a site that contains sand discarded from three sand filters associated with a formerly operational sanitary lagoon (SWMU 46-002) at TA-46. Thin black plastic sheeting of unknown origin is visible at various points of the sand pile. A standard filter maintenance practice was to clean the sand filters of the sanitary lagoon every two or three months. The sludge mixed with sand (approximately 6 in. deep) was removed by a front-end loader and then transported to MDA G for disposal. The next two or three inches of sand were removed from the filters and piled at SWMU 46-009(b). The filters then were filled with fresh sand; any remaining fresh sand was also piled at SWMU 46-009(b). The sewage lagoon system operated from 1973 to 1990. The OU 1140 work plan-proposed sampling at SWMU 46-009(b) is a combination of vertical drilling and hand-augering within the bounds of the disposal area. No RFI activities have been conducted at this site.
46-010(a)	Administratively Complete	
46-010(b)	Administratively Complete	
46-010(c)	Administratively Complete	
46-010(d)	In Progress	SWMU 46-010(d) is a partially paved, covered storage area located on the south side of a warehouse (Building 46-41). An adjacent 5-ft paved walkway, which is level near the building but slopes steeply down to the SWSC road, is included in the storage area. Potential contaminants include inorganic chemicals, organic chemicals, and PCBs. RFI activities were conducted at SWMU 46-010(d) in 1994. Two samples were collected from the unpaved area below the storage shed and submitted to an off-site analytical laboratory. Samples were analyzed for inorganic and organic chemicals, PCBs/pesticides, and asbestos. Low levels of both organic and inorganic chemicals were detected; however, concentrations of these constituents were below levels that would pose an unacceptable risk to human health or the environment at the detected levels. The RFI report recommended NFA for SWMU 46-010(d), based on these data.
46-010(e)	Administratively Complete	
46-010(f)	Administratively Complete	
46-010misc	Administratively Complete	
48-001	In Progress	AOC 48-001 consists of the air exhaust system at the main radiochemistry laboratory at TA-48 (Building 48-1), which was constructed in 1957 for analysis of samples collected

		from nuclear weapons tests. Currently, radiochemical analyses are conducted there to support a variety of programs. The Building 48-1 exhaust system comprises nine stacks. Three stacks exhaust unfiltered discharges from chemical hoods, three are associated with combustion boilers, one exhausts individually filtered glove boxes, one exhausts filtered air from hot cell laboratories, and one exhausts air from a welding and degreasing booth. Discharges from the chemical hoods are not filtered because the chemicals used in the hoods (e.g., perchloric acid) can degrade filters. These hoods are, however, equipped with wet scrubbers. The glove box stack (stack FE54) is permitted and monitored under the National Emissions Standards for Hazardous Air Pollutants (NESHAP) Program of the Clean Air Act. Previous monitoring of Building 48-1 stacks has indicated routine releases of plutonium, uranium, and mixed fission products. The RFI work plan stated that monitoring data were available for stack FE54 beginning in 1967 for plutonium and beginning in 1974 for uranium and fission products. These data indicated total releases of 512 microcuries of plutonium, 207 microcuries of uranium, and 19,800 microcuries of fission products, principally cesium-137, cerium-144, and strontium-90. Previous environmental investigations at areas potentially impacted by AOC 48-001 include the collection of surface and subsurface soil samples around Building 48-1 in 1991 as part of proposed construction activities. In January 1991, seven surface and five subsurface samples were collected immediately outside the security fence east of Building 48-1 at the site of a proposed parking lot. These samples contained elevated levels of alpha radioactivity, with surface samples slightly exceeding DOE guideline levels. Trace amounts of several organic chemicals were detected, and inorganic chemicals were less than TCLP limits. In April 1991, five surface and five subsurface samples were collected northwest of Building 48-1 at the site of a proposed building. These samples had radioactivity at FVs, and inorganic chemicals were present at less than TCLP limits. Trace amounts of three organic chemicals were detected. The ER Project conducted a Phase I RFI in 1993 to confirm the presence or absence of soil contamination associated with discharges from the air exhaust system. The AIRDOS-EPA computer model was first used to estimate the areal extent of potential contamination, based on historical stack release data. This area was surveyed for radioactivity and organic vapors. Radiation levels were at background screening levels, and no organic vapors were detected. Surface soil samples were then collected at five locations, four of which were in drainage gullies at the edge of the canyon north of Building 48-1 and one of which was to the east of Building 48-1. Shallow (i.e., 6- to 12-in. deep) subsurface soil samples were also collected at 2 of the locations, along with 4 duplicates for a total of 11 samples. All samples were field-screened for radioactivity and organic chemicals and were submitted for analysis for inorganic chemicals, radionuclides, and organic chemicals using a combination of fixed and mobile laboratories. Duplicate samples were submitted for analysis using selected methods. One inorganic chemical was present above BV, but did not exceed its SAL. Inorganic chemicals that were detected, but for which BVs had not been established, did not exceeded SALs. Radionuclides were detected above FVs, none of which was present above its SAL. Radionuclides that were detected, but for which FVs had not been established, were not present above SALs. One organic chemical was detected but did not exceed its SAL. The Phase I sampling and analysis results were used to perform a human health risk-based screening assessment and an ecological screening assessment. Based on the results of these assessments, the RFI report recommended NFA for AOC 48-001. The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected industrial land use. The RFI report recommended that potential ecological contaminants of concern at this site be included in a site-wide ecological risk assessment, if one is conducted. This AOC will be included in the Integrated Sampling and Analysis Plan for the Upper Mortandad aggregate of the Mortandad Watershed. Data previously collected but not included in any report, and data already included in previous RFI reports will be

		reviewed and evaluated to determine if data gaps exist using a watershed approach. Additional samples will be collected as deemed necessary.
48-002(a)	In Progress	SWMU 48-002(a) consists of an inactive container storage area located at the southwest corner of the main radiochemistry laboratory at TA-48 (Building 48-1). The storage area was located against the south wall of Building 48-1, on an area of soil backfill between the building and an asphalt roadway. The location of SWMU 48-002(a) is approximately 50 ft west of the location of SMWU 48-002(b), another storage area along the south wall of Building 48-1. An inspection of SMWU 48-002(a) in 1986 noted the presence of approximately 200 rusty flasks in decayed and broken wooden-frame holders. Each of these flasks reportedly held about 2 qt of high-purity mercury. These flasks were estimated to have been present at SWMU 48-002(a) since about 1976 to 1981. The flasks were removed from the site in 1989. The RFI work plan reports that available documentation contained no indication of any spills or leaks associated with this site. Previous environmental investigations at areas potentially impacted by SWMU 48-002(a) include a January 1991 collection of seven surface and five subsurface samples immediately outside the security fence east of Building 48-1 at the site of a proposed parking lot. This area may have received runoff from SWMU 48-002(a), as well as from other storage areas, SWMU 48-002(b) and AOCs 48-002(c) and 48-002(e), and may also have received fallout from Building 48-1 stacks, AOC 48-001. These samples contained elevated levels of alpha radioactivity, with surface samples slightly exceeding DOE guideline levels. Trace amounts of several organic chemicals were detected and inorganic chemicals were less than TCLP limits. The ER Project conducted a Phase I RFI in 1993 to determine whether contamination was present from past storage activities. Two boreholes were hand-augered near the location of SWMU 48-002(a) and one to the east of the storage area in an area potentially impacted by runoff from the site. One borehole was augered to a depth of 2 ft and two to a depth of 3 ft. Samples were collected at the surface and at two depth intervals from each borehole. All samples were field-screened for radioactivity and organic chemicals and submitted for analysis for inorganic chemicals, radionuclides, and organic chemicals using a combination of fixed and mobile laboratories. No inorganic chemicals were detected above BVs. Radionuclides detected above FVs were plutonium-238 and plutonium-239/-240. Neither of these radionuclides was present above its SAL. Fourteen organic chemicals, acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, dibenzo[a,h]anthracene, fluoranthene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene, were detected. Six of these organic chemicals, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene, were present above SALs. Based on the results of the Phase I sampling for SWMU 48-002(a) and nearby SWMU 48-002(b), the ER Project recommended conducting an EC of these two SWMUs. The ER Project prepared an EC Plan for SWMUs 48-002(a) and 48-002(b) in 1995. The EC was implemented during 1995 and involved development of soil cleanup levels for mercury and PAHs, soil sampling and analysis to delineate the area above cleanup levels, excavation of soil contaminated above cleanup levels, confirmation sampling, and site restoration (backfilling, grading, and revegetation). The area of soil excavated during the EC was to the east of SWMU 48-002(a) and did not include the area encompassed by the three RFI boreholes for SWMU 48-002(a). Based on the results of the post-excavation soil sampling and confirmation sampling, the ER Project recommended NFA for SWMU 48-002(a). The basis for this recommendation was that the site has been remediated and characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The NFA proposal has not been accepted. This SWMU will be included in the Integrated Sampling and Analysis Plan for the Upper Mortandad aggregate of the Mortandad Watershed. Data previously collected but not

		included in any report, and data already included in previous RFI reports will be reviewed and evaluated to determine if data gaps exist using a watershed approach, additional samples will be collected as deemed necessary.
48-002(b)	In Progress	SWMU 48-002(b) consists of an inactive container storage area located at a loading dock area on the south side of the main radiochemistry laboratory at TA-48 (Building 48-1). The storage area was located against the south wall of Building 48-1, near the southeast corner of the building. The location of SWMU 48-002(b) is approximately 50 ft east of the location of SMWU 48-002(a), another storage area along the south wall of Building 48-1. An inspection of SMWU 48-002(b) in 1986 noted the presence of labeled and unlabeled drums and evidence of spills and leaks. Spills from leaky drums were also observed at the site during a November 1988 field survey. The date that materials began to be stored at this site is unknown and there is no evidence that the site was ever managed as a formal container storage area. All materials were reportedly removed from the site by July 1991. Previous environmental investigations at areas potentially impacted by SWMU 48-002(b) include a January 1991 collection of seven surface and five subsurface samples immediately outside the security fence east of Building 48-1 at the site of a proposed parking lot. This area may have received runoff from SWMU 48-002(b), as well as from other storage areas, SWMU 48-002(a) and AOCs 48-002(c) and 48-002(e), and may also have received fallout from Building 48-1 stacks, AOC 48-001. These samples contained elevated levels of alpha radioactivity, with surface samples slightly exceeding DOE guideline levels. Trace amounts of several organic chemicals were detected and inorganic chemicals were less than TCLP limits. The ER Project conducted a Phase I RFI in 1993 to determine whether contamination was present from past storage activities. Surface and subsurface soil samples were collected from two boreholes hand-augered near the location of SWMU 48-002(b). Surface soil samples were also collected at two locations at the storage area and at five downgradient locations potentially impacted by runoff from the site. One borehole was augered to a depth of 8 ft and the other to a depth of 1 ft. Samples were collected at the surface and at seven depth intervals from the deep borehole and at the surface and one depth interval from the shallow borehole. All samples were field-screened for radioactivity and organic chemicals and submitted for analysis for inorganic chemicals, radionuclides, and organic chemicals using a combination of fixed and mobile laboratories. Inorganic chemicals detected above BVs were arsenic, copper, lead, and mercury. Mercury was the only inorganic chemical detected above its SAL and droplets of mercury were observed in the soil at some sampling locations. Radionuclides detected above FVs were cesium-137, plutonium-238, plutonium-239/-240, and uranium-235. Sixteen organic chemicals, acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, carbon disulfide, chrysene, dibenzo[a,h]anthracene, dibenzofuran, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene, were detected. Six of these organic chemicals, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene, were present above SALs. Based on the results of the Phase I sampling for SWMU 48-002(b) and nearby SWMU 48-002(a), the ER Project recommended conducting an EC of these two SWMUs. The ER Project prepared an EC Plan for SWMUs 48-002(a) and 48-002(b) in 1995. The EC was implemented during 1995 and involved development of soil cleanup levels for mercury and PAHs, soil sampling and analysis to delineate the area above cleanup levels, excavation of soil contaminated above cleanup levels, confirmation sampling, and site restoration (backfilling, grading, and revegetation). The area of soil excavated during the EC included the area surrounded by one of the RFI boreholes and one of the RFI surface samples for SWMU 48-002(b). The area excavated was approximately 18 ft x 12 ft and the depth excavated ranged from 0.5 ft to 4 ft. A total of twenty-eight 55-gal. drums of soil were excavated during the EC. Based on the results of the post-excavation soil sampling and confirmation sampling, the ER Project recommended NFA for SWMU 48-002(b). The basis for this recommendation was that the site has been

		remediated and characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The NFA proposal has not been accepted. This SWMU will be included in the Integrated Sampling and Analysis Plan for the Upper Mortandad aggregate of the Mortandad Watershed. Data previously collected but not included in any report, and data already included in previous RFI reports will be reviewed and evaluated to determine if data gaps exist using a watershed approach, additional samples will be collected as deemed necessary.
48-002(c)	Administratively Complete	
48-002(d)	Administratively Complete	
48-002(e)	In Progress	AOC 48-002(e) consists of a satellite waste accumulation area located on the east side of the main radiochemistry laboratory at TA-48 (Building 48-1). AOC 48-002(e) is located just north of an assembly and checkout building (Building 48-17) constructed against the east wall of Building 48-1. The area where AOC 48-002(e) is located is almost entirely paved with asphalt, with one small area (several square ft) of exposed soil that allows access to underground utilities. The RFI work plan indicates that AOC 48-002(e) was used for many years for storage of solvents and that these materials were all removed from this site in 1989 or 1990. Since 1992, the area has been used to store a liquid nitrogen tank and compressed-gas cylinders. The date that use of AOC 48-002(e) began was not reported, but Building 48-1 was constructed in 1957, so the AOC would not have been in use before that date. Previous environmental investigations at areas potentially impacted by AOC 48-002(e) include a January 1991 collection of seven surface and five subsurface samples immediately outside the security fence at TA-48 at the site of a proposed parking lot. This area may have received runoff from AOC 48-002(e), as well as from other storage areas, SWMUs 48-002(a) and 48-002(b) and AOC 48-002(c), and may also have received fallout from Building 48-1 stacks, AOC 48-001. These samples contained elevated levels of alpha radioactivity, with surface samples slightly exceeding DOE guideline levels. Trace amounts of several organic chemicals were detected and inorganic chemicals were less than TCLP limits. The ER Project conducted a Phase I RFI in 1993 to determine the presence or absence of contamination at the area of exposed soil. This area was surveyed for radioactivity and organic vapors. Radiation levels were at background screening levels and no organic vapors were detected. Surface samples were then collected at two locations in the area of exposed soil. Two subsurface samples were also collected at one of these locations to a total depth of 3 ft, along with four duplicates, for a total of eight samples. All samples were field-screened for radioactivity and organic chemicals and submitted for analysis for inorganic chemicals, radionuclides, and organic chemicals using a combination of fixed and mobile laboratories. No inorganic chemicals were detected above BVs. Inorganic chemicals were detected, but for which BVs had not been established. None of these inorganic chemicals exceeded its SAL. Radionuclides were detected above FVs. Results from the mobile anlaytical laboratory indicated Cesium-137 was detected above its SAL. Radionuclides were detected, but for which FVs had not been established. None of these radionuclides was present above its SAL. Seven organic chemicals were detected. Two of these organic chemicals were present above SALs. The Phase I sampling and analysis results were used to perform a human health risk-based screening assessment and an ecological screening assessment. Based on the results of these assessments, the RFI report recommended NFA for AOC 48-002(e). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use, which is industrial. The RFI report also recommended NFA for AOC 48-002(e) from an ecotoxicological standpoint. Based on comments received from NMED’s review of the Phase I RFI, the Phase I

		radiological data were determined to be inadequate to meet the objectives of the Phase I RFI. As a result, the ER Project prepared a SAP for collection of additional soil samples at AOC 48-002(e). The SAP called for collection of one surface and two subsurface samples at one location near the existing Phase I sample locations. These samples, along with one duplicate, were collected in 1997 and submitted for laboratory analysis for radionuclides. No radionuclides were detected above FVs. The combined results from the 1993 and 1997 sample analyses were used to perform a human health risk-based screening assessment. Based on the results of this assessment, the RFI report addendum recommended NFA for AOC 48-002(e). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The NFA proposal has not been accepted. This AOC will be included in the Integrated Sampling and Analysis Plan for the Upper Mortandad aggregate of the Mortandad Watershed. Data previously collected but not included in any report, and data already included in previous RFI reports will be reviewed and evaluated to determine if data gaps exist using a watershed approach, additional samples will be collected as deemed necessary.
48-003	In Progress	SWMU 48-003 consists of an inactive septic system that served TA-48 from 1957 through 1986. This septic system was comprised of a septic tank (structure 48-5), a dosing chamber, a filter bed (structure 48-6), and an outfall that discharged into Mortandad Canyon. The septic tank and dosing chamber were 21 ft 7 in. in length and the filter bed measured 81 ft 2 in. long x 40 ft 7 in. wide. The outfall originally had an NPDES Serial No. 08s and EPA ID No. SSS. These were later delisted and combined with NPDES Serial No. 10s. The septic system was operated until 1986 at which time the septic tank and filter bed were decommissioned and removed. A laboratory and diagnostics facility (Building 48-45) was then constructed at the site of the septic tank and filter bed. After SWMU 48-003 was decommissioned, sanitary wastewater from TA-48 was sent to the sanitary lagoons at TA-35 and later to the consolidated treatment plant at TA-46. SWMU 48-003 primarily received sanitary wastewater from TA-48 facilities. The system was suspected, however, of having also received hazardous and radioactive materials through accidental discharges. Previous environmental investigations at SWMU 48-003 include a 1988 site reconnaissance survey, which measured elevated radioactivity near the site of the former filter bed. This reconnaissance survey also located the inactive outfall. The ER Project conducted a Phase I RFI in 1993 to determine whether surface and subsurface contamination was present at the site. Historical engineering drawings and photographs were used to determine the location of the former septic tank and filter bed with respect to Building 48-45. The septic tank location was determined to be under Building 48-45, as was a small portion of the sand filter. The location of the remainder of the sand filter was adjacent to the northeast side of Building 48-45. A radiation survey was conducted in this area and radiation levels were determined to be at background. Subsurface samples were collected at three or four depth intervals from each of six 15-ft-deep boreholes drilled at the location of the former filter bed. Surface samples were collected from five locations along Mortandad Canyon at areas likely to have been impacted by the outfall. Subsurface samples were also collected by hand auger at three or four depth intervals at each of two locations where excavated material from the sand filter had been deposited. Twenty-two field duplicate samples were also collected for a total of 55 samples. All samples were field-screened for radioactivity and organic chemicals and submitted for analysis for inorganic chemicals, radionuclides, and organic chemicals using a combination of fixed and mobile laboratories. Inorganic chemicals were detected above BVs, but none of these inorganic chemicals was detected above its SAL. Inorganic chemicals were detected, but for which BVs had not been established. None of these inorganic chemicals exceeded its SAL. Radionuclides were detected above FVs. None of these radionuclides was present above its SAL. Radionuclides were detected, but for which FVs had not been established. Results from the mobile analytical laboratory indicate Cobalt-60 was present above SALs. No

		organic chemicals were detected. The Phase I sampling and analysis results were used to perform a human health risk-based screening assessment and an ecological screening assessment. The human health screening assessment indicated that the only potential contaminants were radionuclides. As a result, the RFI report recommended NFA for SWMU 48-003 for chemical contaminants. The basis for this recommendation was that the site has only radionuclide components. The RFI report also indicated that SWMU 48-003 could be considered a candidate for VCA for radioactive contamination. The RFI report recommended that potential ecological contaminants of concern at this site be included in a site-wide ecological risk assessment, if one is conducted. Based on comments received from NMED's review of the Phase I RFI, the Phase I data were determined to be inadequate to meet the objectives of the Phase I RFI. As a result, the ER Project prepared a SAP for collection of additional soil samples at SWMU 48-003. The SAP called for collection of one surface and two subsurface samples at five locations along Mortandad Canyon below the outfall. These samples were analyzed for inorganic chemicals, radionuclides, and organic chemicals. The ER Project conducted this sampling in 1997. This SWMU will be included in the Integrated Sampling and Analysis Plan for the Upper Mortandad aggregate of the Mortandad Watershed. Data previously collected but not included in any report, and data already included in previous RFI reports will be reviewed and evaluated to determine if data gaps exist using a watershed approach, additional samples will be collected as deemed necessary.
48-004(a)-99	In Progress	Consolidated SWMU 48-004(a)-99 is comprised of former SWMUs 48-004(a), 48-004(b), and 48-004(c). These former SWMUs consist of inactive sumps and tanks formerly used to treat RLW generated in the main radiochemistry laboratory (Building 48-1) at TA-48. Former SMWUs 48-004(a), 48-004(b), and 48-004(c) were part of the process used to neutralize acidic wastewaters at Building 48-1. Caustic (sodium hydroxide) solution was automatically added to the sumps or tanks to neutralize acidic wastewaters, which were then pumped from the sumps or tanks to the RLW lines for subsequent treatment at TA-45 or TA-50. The neutralization process could cause sludge to precipitate in the sumps or tanks. Such sludge was removed and disposed of as radioactive waste. There were no drainlines or outfalls associated with these sumps and tanks and they were equipped with automatic level controls to prevent overfilling. These tanks and sumps were operational from the late 1950s until the 1970s and were abandoned in place in 1982. Some of the tanks were subsequently removed. The RFI work plan indicates that there is no documentation of past releases or spills from these sumps and tanks but that some residual contamination may remain inside them. Former SWMU 48-004(a) consists of two sumps located below the floor of the shop in Building 48-1, Room 50. One of these sumps is approximately 4 ft x 3 ft x 2 ft deep and the other is approximately 6 ft x 6 ft x 5 ft deep. No previous environmental investigations have been conducted at former SWMU 48-004(a). The sumps comprising former SWMU 48-004(a) were reportedly inspected during preparation of the RFI work plan and there was no physical evidence of releases or external contamination. Former SWMU 48-004(b) consists of three sets of tanks located in the south basement of Building 48-1 in Room 80. The numbers and size of the tanks in each set were not reported in the RFI work plan. One set of these tanks is located in a pit area where a sump is also present. Precipitates containing radioactive contamination were reportedly removed from the second set of tanks. No previous environmental investigations have been conducted at former SWMU 48-004(b). The tanks comprising former SWMU 48-004(b) were reportedly inspected during preparation of the RFI work plan and there was no physical evidence of releases or external contamination. Former SWMU 48-004(c) consists of two tanks that contained caustic (sodium hydroxide) solution and a sump that collected condensate from the caustic tanks.

		Former SWMU 48-004(c) is located in the north basement of Building 48-1. The caustic tanks have reportedly been removed. No previous environmental investigations have been conducted at former SWMU 48-004(c). The tanks comprising former SWMU 48-004(c) were reportedly inspected during preparation of the RFI work plan and there was no physical evidence of releases or external contamination. The RFI work plan recommended NFA for the three former SWMUs comprising consolidated SWMU 48-004(a)-99. The basis for the NFA recommendation in the RFI work plan was that site design, conditions, or institutional controls preclude any releases from these site that would pose a threat to human health or the environment. EPA approved this recommendation in November 1993. Former SWMUs 48-004(a), 48-004(b), and 48-004(c) were subsequently recommended for NFA in the March 1995 permit modification request. The basis for this recommendation was that no release has occurred from these sites to the environment. The request for NFA for the former SWMUs comprising consolidated SWMU 48-004(a)-99 was later withdrawn by LANL in February 2002. The NFA withdrawal indicated that these sites did not meet current regulatory standards for NFA and that they would be withdrawn until further investigation could be performed. This consolidated SWMU will be included in the Integrated Sampling and Analysis Plan for the Upper Mortandad aggregate of the Mortandad Watershed. Data previously collected but not included in any report, and data already included in previous RFI reports will be reviewed and evaluated to determine if data gaps exist using a watershed approach, additional samples will be collected as deemed necessary.
48-004(d)	Administratively Complete	
48-005	In Progress	SWMU 48-005 consists of inactive RLW lines and an associated outfall at TA-48. From 1957 through 1965, these waste lines were part of the system used to convey RLW from TA-48 to the treatment plant at TA-45 (consolidated SWMU 45-001-00). Beginning in 1963, new waste lines were installed to carry wastes to the new treatment facilities at TA-50. By 1967, the waste lines leading to TA-45 were considered to have been decommissioned. Some of the waste lines were removed in two campaigns conducted in 1981 and 1984. SWMU 48-005 contains the remaining portions of waste lines, which are all inside the TA-48 security fence. The remaining waste lines are all 3-in. diameter cast iron pipe and consist of a 200-ft section of line 34 running westward from Building 48-1, a 300-ft section of line 36 that runs southward from the north wing of Building 48-1 to line 36, and a 50-ft section of line 38 that runs southward from Building 48-1. These lines are located at depths of 10- to 11-ft and were not removed because they are beneath structures, roadways, or utilities. The remaining sections of lines 34 and 36 were surveyed during the line removal activities. Line 34 was found to have low levels of alpha activity and line 36 had no detectable activity. The remaining portion of line 38 was not surveyed. SWMU 48-005 also includes an outfall on the edge of Mortandad Canyon north of Building 48-1 that was the discharge point of line 37. Line 37 was connected to sumps in the north basement of Building 48-1 and was completely removed in 1981. Previous environmental investigations at areas potentially impacted by SWMU 48-005 included collection of surface and subsurface soil samples northwest of Building 48-1 in April 1991 at the site of a proposed building. These samples showed background levels of radioactivity and inorganic chemicals at less than TCLP limits. Trace amounts of three organic chemicals were detected. The ER Project conducted a Phase I RFI in 1993 to determine whether surface and subsurface contamination was present at the site. Historical engineering drawings were used to determine the location of the waste lines and outfall. The locations around the waste lines and outfall were surveyed for radiation and organic vapors. Radiation levels were determined to be at background and no organic vapors were detected. Subsurface samples were collected from nine boreholes drilled along the locations of the waste lines. Six of these boreholes were drilled to a depth of 15 ft and 3 to 5 samples were collected from each borehole. Two of the boreholes were drilled to a depth of 7 ft, and 2 samples were collected from each of these boreholes. The

		remaining borehole was installed to a depth of 8 ft and 1 sample was collected from this borehole. Surface samples were collected from 10 locations in Mortandad Canyon below the former outfall. Twenty-one field duplicate samples were also collected for a total of 56 samples. All samples were field-screened for radioactivity and organic chemicals and submitted for analysis for inorganic chemicals, radionuclides, and organic chemicals using a combination of fixed and mobile laboratories. No inorganic chemicals were detected above BVs. Inorganic chemicals that were detected, but for which BVs had not been established, were lithium, molybdenum, silver, and strontium. None of these inorganic chemicals exceeded its SAL. Radionuclides detected above FVs were cesium-137, plutonium-238, plutonium-239/240, thorium-228, uranium-234, uranium-235, and uranium-238. Three of these radionuclides, cesium-137, plutonium-238, and thorium-228, were present above SALs. Radionuclides that were detected, but for which FVs had not been established, were americium-241, cerium-144, cobalt-60, ruthenium-106, and thorium-230. Results from the mobile analytical laboratory indicated Cobalt-60 was the only one of these radionuclides present above its SAL. Three organic chemicals, acetone, 2-butanone, and di-n-butyl phthalate, were detected, but none of these was above its SAL. The Phase I sampling and analysis results were used to perform a human health risk-based screening assessment and an ecological screening assessment. The human health screening assessment indicated that the only potential contaminants were radionuclides. As a result, the RFI report recommended NFA for SWMU 48-005 for chemical contaminants. The basis for this recommendation was that the site has only radionuclide components. Remediation of the detected radioactive contamination was judged to be infeasible because of the ongoing operations at TA-48. The RFI report, therefore, recommended that SWMU 48-005 re-evaluated for remediation of radioactive contamination at the time that TA-48 facilities undergo decontamination and decommissioning. The RFI report recommended that potential ecological contaminants of concern at this site be included in a site-wide ecological risk assessment, if one is conducted. Based on comments received from NMED's review of the Phase I RFI, the Phase I data were determined to be inadequate to meet the objectives of the Phase I RFI. As a result, the ER Project prepared a SAP for collection of additional soil samples at SWMU 48-005. The SAP called for collection of 4 subsurface samples along line 34, 2 from a borehole and from a trench. The SAP also called for collection of surface and/or subsurface samples at 2 locations along line 36. The exact numbers of samples and methods of collection (i.e., trench or borehole) would be determined in the field based on access considerations. The SAP called for collection of 3 subsurface samples from each of 2 boreholes along line 37 and collection of 2 subsurface samples from each of 3 hand auger borings in Mortandad Canyon below the line 37 outfall. Finally, the SAP called for collection of 3 subsurface samples from each of 4 boreholes at and near line 38. These samples were analyzed for inorganic chemicals, radionuclides, and organic chemicals. The ER Project conducted this sampling in 1997 but the data has not been reported to date. This SWMU will be included in the Integrated Sampling and Analysis Plan for the Upper Mortandad aggregate of the Mortandad Watershed. Data previously collected but not included in any report, and data already included in previous RFI reports will be reviewed and evaluated to determine if data gaps exist using a watershed approach, additional samples will be collected as deemed necessary.
48-006	Administratively Complete	
48-007(a)-00	In Progress	Consolidated SWMU 48-007(a)-00 is comprised of former SWMUs 48-007(a), 48-007(d), and 48-010. These former SWMUs consist of two active outfalls and a surface impoundment that receives the water discharged from these outfalls. These former SWMUs are all associated with disposal of wastewater from the main radiochemistry laboratory at TA-48 (Building 48-1). Former SWMU 48-007(a) is an active outfall used to discharge treated cooling tower blowdown from two cooling towers located on the roof of Building 48-1. This outfall is

		located east of Building 48-1 and discharges up to 750 gal. per hour of cooling tower blowdown. The water discharged from former SWMU 48-007(a) flows to an unlined surface impoundment, former SWMU 48-010. The water used in these cooling towers is treated to control scale, corrosion, and biological growth. Additives used in these cooling towers include Garratt-Callahan (G. C.) Formula 227-L, a corrosion and scaling inhibitor, and G. C. Formula 314-T, a biocide. Specific hazardous chemicals present in these additives, if any, are not known. Approximately 60 percent of the water in the cooling towers is evaporated, causing the concentration of chemical additives to be concentrated in the blowdown. The date that this outfall began operation is not known, but Building 48-1 was constructed in 1957, so discharges should not have preceded this date. This outfall operated as NPDES-permitted Outfall 03A045/046 but was removed from the LANL NPDES permit December 6, 1999. No previous environmental investigations have been conducted at former SWMU 48-007(a). Former SWMU 48-007(d) is an active outfall used to discharge noncontact cooling water used to cool a vacuum pump housed in the south end of Building 48-1. This outfall is located east of Building 48-1 and discharges up to 4,000 gal./day of cooling water. The water discharged from former SWMU 48-007(d) flows to an unlined surface impoundment, former SWMU 48-010. The date that this outfall began operation is not known, but Building 48-1 was constructed in 1957, so discharges should not have preceded this date. This outfall operated as NPDES-permitted Outfall 04A153 but was removed from the LANL NPDES permit July 20, 1998. No previous environmental investigations have been conducted at former SWMU 48-007(d). Former SWMU 48-010 consists of an unlined surface impoundment that was constructed in 1978 by excavating into the tuff. This surface impoundment is located approximately 300 ft east of Building 48-1 and 150 ft south of Building 48-45. Former SWMU 48-010 receives cooling tower blowdown discharged from former SWMU 48-007(a), noncontact cooling water discharged from former SWMU 48-007(d), and stormwater runoff from the parking lot for Building 48-45. A wetlands area has developed around the impoundment. The impoundment and surrounding wetlands comprise an area approximately 100 ft x 150 ft. Former SWMU 48-010 discharges to the east into a side canyon that is a tributary to Mortandad Canyon. No previous environmental investigations have been conducted at former SWMU 48-010. The ER Project conducted a Phase I RFI at former SWMUs 48-007(a) and 48-007(d) in 1993 to determine whether soil or water contamination was present at the site. The outfall locations were surveyed for radiation and organic vapors. Radiation levels were determined to be at background and no organic vapors were detected. Subsequent to preparation of the RFI work plan in 1992, a parking lot was constructed east of Building 48-1 that required the outfalls to be moved so that the discharge from former SWMU 48-007(d) was combined with the discharge from former SWMU 48-007(a). Samples were, therefore, collected where the combined flows discharge to the impoundment. A surface soil sample and duplicate and an unfiltered water sample were collected at this location. These samples were field-screened for radioactivity and organic chemicals and submitted for analysis for inorganic chemicals and radionuclides using a combination of fixed and mobile laboratories. The fixed analytical laboratory was not able to complete all required analyses so that the soil and water had to be resampled in May 1995. No inorganic chemicals were detected in the soil samples above BVs. Radionuclides detected above FVs in the soil samples were cesium-137, plutonium-238, plutonium-239/-240, and uranium-235. None of these radionuclides was present above its SAL. Radionuclides that were detected in soil, but for which FVs had not been established, were cerium-144, cobalt-60, and ruthenium-106. Results from the mobile analytical laboratory indicated Cobalt-60 was present above its SAL. Mercury was the only inorganic chemical detected in the water sample and was not present above its SAL. Radionuclides detected in the water sample were americium-241, cobalt-60, ruthenium-106, and sodium-22. All these radionuclides were present above SALs. The Phase I sampling and analysis results were used to perform a human health risk-based screening assessment and an ecological screening assessment. The human health

		screening assessment indicated that the only potential contaminants were radionuclides. The RFI report recommended NFA for former SWMUs 48-007(a) and 48-007(d). The basis for this recommendation was that the sites are regulated under a different authority that addresses corrective action. Specifically, the two outfalls operated under NPDES permits and the only potential contaminants were radionuclides, which are not regulated under RCRA. No potential ecological contaminants were identified during the ecological screening assessment. Based on comments received from NMED's review of the Phase I RFI, the Phase I data were determined to be inadequate to meet the objectives of the Phase I RFI. As a result, the ER Project prepared a SAP for collection of additional soil samples. The proposed sampling would not address the active discharges from former SWMUs 48-007(a) and 48-007(d). Instead, as described below for former SWMU 48-010, samples would be collected within former PRS 48-010 to determine whether contamination existed from historical discharges. The ER Project conducted a Phase I RFI at former SWMU 48-010 in 1993 to determine whether soil or water contamination was present at the site. The locations around the impoundment and wetlands were surveyed for radiation and organic vapors. Radiation levels were determined to be at background and no organic vapors were detected. Surface samples were collected at one location on the berm around the impoundment and at two locations within the impoundment. Unfiltered water samples were also collected at two locations in the impoundment. These samples were field-screened for radioactivity and organic chemicals and submitted for analysis for inorganic chemicals and radionuclides using a combination of fixed and mobile laboratories. The fixed analytical laboratory was not able to complete all required analyses so that one soil sample location and one water sample location had to be resampled in May 1995. No inorganic chemicals were detected in the soil samples above BVs. Radionuclides detected above FVs in the soil samples were cesium-137, plutonium-238, plutonium-239/-240, and uranium-235. None of these radionuclides was present above its SAL. Radionuclides that were detected in soil, but for which FVs had not been established, were americium-241, cerium-144, cobalt-60, ruthenium-106, and thorium-230. Results from the mobile analytical laboratory indicated Cobalt-60 was present above its SAL. Inorganic chemicals detected in water were barium, mercury, manganese, lead, strontium, and zinc. Manganese was the only inorganic chemical detected in water above its SAL. Radionuclides detected in the water sample were americium-241, cobalt-60, and ruthenium-106. All these radionuclides were present above SALs. The Phase I sampling and analysis results were used to perform a human health risk-based screening assessment and an ecological screening assessment. The human health screening assessment indicated that potential contaminants were primarily radionuclides, along with manganese. The RFI report recommended NFA for former SWMU 48-010. The basis for this recommendation was that the site is regulated under a different authority that addresses corrective action. Specifically, the two outfalls discharging to the impoundment operated under NPDES permits and there were no RCRA potential contaminants. No potential ecological contaminants were identified during the ecological screening assessment. Based on comments received from NMED's review of the Phase I RFI, the Phase I data were determined to be inadequate to meet the objectives of the Phase I RFI. As a result, the ER Project prepared a SAP for collection of additional soil samples within former PRS 48-010. The SAP called for collection of two subsurface soil samples from each of four hand-auger borings in the impoundment/wetlands. The ER Project conducted this sampling in 1997. These samples were analyzed for inorganic chemicals, radionuclides, and organic chemicals. Organic chemicals, inorganic chemicals, and radionuclides were detected. This consolidated SWMU will be included in the Integrated Sampling and Analysis Plan for the Upper Mortandad aggregate of the Mortandad Watershed. Data previously collected but not included in any report, and data already included in previous RFI

		reports will be reviewed and evaluated to determine if data gaps exist using a watershed approach, additional samples will be collected as deemed necessary.
48-007(b)	In Progress	SWMU 48-007(b) is an active outfall used to discharge noncontact cooling water used to cool a magnet and laser housed in the main radiochemistry laboratory at TA-48 (Building 48-1). This outfall is located north of Building 48-1 and discharges up to 4,300 gal. per day of cooling water. The water discharged from SWMU 48-007(b) flows into Mortandad Canyon. The date that this outfall began operation is not known, but Building 48-1 was constructed in 1957, so discharges should not have preceded this date. This outfall operated as NPDES-permitted Outfall 04A016 but was removed from the LANL NPDES permit September 19, 1997. No previous environmental investigations have been conducted at SWMU 48-007(b). The ER Project conducted a Phase I RFI at SWMU 48-007(b) in 1993 to determine whether contamination associated with discharges from the outfall was present. The outfall location was surveyed for radiation and organic vapors. Radiation levels were determined to be at background and no organic vapors were detected. A surface soil sample was collected adjacent to the outfall. A 2.5-ft-deep hand auger boring was made slightly downslope of the outfall and samples were collected at the surface and two depth intervals. A water sample was also collected from the outfall. These samples were field-screened for radioactivity and organic chemicals and submitted for analysis for inorganic chemicals and radionuclides using a combination of fixed and mobile laboratories. One subsurface soil sample was also submitted for laboratory analysis for organic chemicals. Background comparisons were not made for inorganic chemicals in soil because detection limits were above BVs. No inorganic chemicals detected in the soil samples were above SALs, however. Radionuclides detected above FVs in the soil samples were plutonium-238, uranium-234, uranium-235, and uranium-238. None of these radionuclides was present above its SAL. Radionuclides that were detected in soil, but for which FVs had not been established, were americium-241, cerium-144, cobalt-60, ruthenium-106, and thorium-230. Resuluts from the mobile analytical laboratory indicated Cobalt-60 was present above its SAL. No organic chemicals were detected in the soil samples. Inorganic chemicals detected in the water sample were barium, calcium, copper, lead, lithium, magnesium, potassium, silver, sodium, strontium, and zinc. None of these inorganic chemicals was detected above its SAL. The Phase I sampling and analysis results were used to perform a human health risk-based screening assessment and an ecological screening assessment. Based on the results of these assessments, the RFI report recommended NFA for SWMU 48-007(b). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use, which is industrial. The RFI report recommended that potential ecological contaminants of concern at this site be included in a site-wide ecological risk assessment, if one is conducted. Based on comments received from NMED’s review of the Phase I RFI, the Phase I data were determined to be inadequate to meet the objectives of the Phase I RFI. As a result, the ER Project prepared a SAP for collection of additional soil samples at SWMU 48-007(b). The SAP called for collection of one surface soil sample and up to two subsurface soil samples from each of two hand auger borings. One boring would be located near the outfall, in the vicinity of the existing Phase I sample locations, and the other boring would be approximately 125 ft below the outfall on the first bench in the canyon wall. These samples would be analyzed in a fixed laboratory for radionuclides. One surface sample and one subsurface sample were collected from each boring in 1997 and submitted for laboratory analysis for radionuclides. Cesium-137 was the only radionuclide detected above FVs, but was not present above its SAL. Radionuclides that were detected in soil, but for which no FVs had been established, were europium-152 and sodium-22. Neither of these radionuclides exceeded its SAL. The combined radiological results from the 1993 and 1997 sample analyses were used to perform a human health risk-based screening assessment. Based on the results of this assessment, the RFI report addendum recommended NFA for SWMU 48-007(b). The

		basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The NFA proposal has not been accepted. This SWMU will be included in the Integrated Sampling and Analysis Plan for the Upper Mortandad aggregate of the Mortandad Watershed. Data previously collected but not included in any report, and data already included in previous RFI reports will be reviewed and evaluated to determine if data gaps exist using a watershed approach, additional samples will be collected as deemed necessary.
48-007(c)	In Progress	SWMU 48-007(c) is an active outfall that receives discharges from nine floor drains, a trench drain, and six roof drains at the main radiochemistry laboratory at TA-48 (Building 48-1). This outfall is located north of Building 48-1 and discharges into Mortandad Canyon. The sources of discharge to the floor drains include floor washings, backflow preventers, drainage and condensate from a vacuum pump, steam condensate, a boiler drain, a fire drain, and a water heater pressure relief valve. The flow rate discharged from this outfall was reported to be minimal. The date that this outfall began operation is not known, but Building 48-1 was constructed in 1957, so discharges should not have preceded this date. This outfall operated as NPDES-permitted Outfall 04A131 but was removed from the LANL NPDES permit January 14, 1998. No previous environmental investigations have been conducted at SWMU 48-007(c). The ER Project conducted a Phase I RFI at SWMU 48-007(c) in 1993 to determine whether contamination associated with discharges from the outfall was present. The outfall location was surveyed for radiation and organic vapors. Radiation levels were determined to be at background and no organic vapors were detected. A surface soil sample was collected adjacent to the outfall. A 2-ft-deep hand auger boring was made slightly downslope of the outfall and samples were collected at the surface and two depth intervals. The outfall was not discharging at the time of sampling so a water sample could not be collected. Samples were field-screened for radioactivity and organic chemicals and submitted for analysis for inorganic chemicals and radionuclides using a combination of fixed and mobile laboratories. One subsurface soil sample was also submitted for laboratory analysis for organic chemicals. Background comparisons were not made for inorganic chemicals because detection limits were above BV. However, no inorganic chemicals were detected above SALs. Radionuclides detected above FVs were plutonium-238, plutonium-239/-240, and uranium-235. None of these radionuclides was present above its SAL. Radionuclides that were detected, but for which no FVs had been established, were americium-241, cerium-144, cobalt-60, ruthenium-106, and thorium-230. None of these radionuclides was present above its SAL. Eight organic chemicals (benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, chrysene, fluoranthene, phenanthrene, and pyrene) were detected. Benzo[a]pyrene was the only organic chemical detected above its SAL. The Phase I sampling and analysis results were used to perform a human health risk-based screening assessment and an ecological screening assessment. Based on the results of these assessments, the RFI report recommended NFA for SWMU 48-007(c). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use, which is industrial. The RFI report recommended that potential ecological contaminants of concern at this site be included in a site-wide ecological risk assessment, if one is conducted. Based on comments received from NMED’s review of the Phase I RFI, the Phase I data were determined to be inadequate to meet the objectives of the Phase I RFI. As a result, the ER Project prepared a SAP for collection of additional soil samples at SWMU 48-007(c). The SAP called for collection of one surface soil sample and up to two subsurface soil samples from each of two hand auger borings. One boring would be located near the outfall, in the vicinity of the existing Phase I sample locations, and the

		other boring would be approximately 125 ft below the outfall on the first bench in the canyon wall. These samples would be analyzed in a fixed laboratory for radionuclides. This sampling was conducted by the ER Project in 1997. One surface sample and two subsurface samples (plus a duplicate) were collected from the boring near the outfall and one surface sample and one subsurface sample were collected from the other boring. These samples were submitted for laboratory analysis for radionuclides. The boring below the outfall at the bench in the canyon wall was resampled later in 1997 because of anomalous analytical results. At that time, both a surface and subsurface sample were collected from an additional boring approximately 25 ft further downslope into Mortandad Canyon. These samples were all submitted for laboratory analysis for radionuclides. Radionuclides detected above FVs in the 1997 samples were cesium-137, plutonium-238, plutonium-239/-240, and uranium-235. None of these radionuclides was detected above its SAL. Radionuclides that were detected, but for which FVs had not been established, were cobalt-60, cesium-134, europium-152 and ruthenium-106. None of these radionuclides exceeded its SAL. The combined radiological results from the 1993 and 1997 sample analyses were used to perform a human health risk-based screening assessment. Based on the results of this assessment, the RFI report recommended NFA for SWMU 48-007(c). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The NFA proposal was not accepted. This SWMU will be included in the Integrated Sampling and Analysis Plan for the Upper Mortandad aggregate of the Mortandad Watershed. Data previously collected but not included in any report, and data already included in previous RFI reports will be reviewed and evaluated to determine if data gaps exist using a watershed approach, additional samples will be collected as deemed necessary.
48-007(e)	Administratively Complete	
48-007(f)	In Progress	SWMU 48-007(f) is an inactive outfall that formerly received discharges from two sink drains in an office and laboratory building (Building 48-46). This outfall is located north of Building 48-1 and discharged into Mortandad Canyon. The date that this outfall began operation is not known, but operations in TA-48 began in 1957, so discharges should not have preceded this date. The approximate date that the outfall ceased operating is 1993. This outfall operated as NPDES-permitted Outfall 04A137 but was removed from the LANL NPDES permit December 6, 1995. No previous environmental investigations have been conducted at SWMU 48-007(f). The ER Project conducted a Phase I RFI at SWMU 48-007(f) in 1993 to determine whether contamination associated with discharges from the outfall was present. The outfall location was surveyed for radiation and organic vapors. Radiation levels were determined to be at background screening levels and no organic vapors were detected. A surface soil sample was collected adjacent to the outfall. A 1.5-ft-deep hand auger boring was made slightly downslope of the outfall and samples were collected at the surface and one depth interval. A water sample was also collected from the outfall. These samples were field-screened for radioactivity and organic chemicals and submitted for analysis for inorganic chemicals and radionuclides using a combination of fixed and mobile laboratories. The subsurface soil sample was also submitted for laboratory analysis for organic chemicals. Calcium was the only inorganic chemical detected above BV and does not have a SAL. Inorganic chemicals that were detected in soil, but for which BVs had not been established, were lithium, molybdenum, and strontium. None of these inorganic chemicals exceeded its SAL. Plutonium-238 was the only radionuclide detected above FV, but was not detected above its SAL. Radionuclides that were detected in soil, but for which FVs had not been established, were americium-241, cerium-144, cobalt-60, ruthenium-106, and thorium-230. None of these radionuclides exceeded its SAL. Three organic chemicals, acetone, fluoranthene, and pyrene, were detected in the soil samples. None of these organic chemicals exceeded its SAL. Inorganic chemicals detected in the water sample were barium, calcium, copper, lead, lithium, magnesium, manganese, potassium, silver, sodium, and

		strontium. None of these inorganic chemicals was detected above its SAL. The Phase I sampling and analysis results were used to perform a human health risk-based screening assessment and an ecological screening assessment. Based on the results of these assessments, the RFI report recommended NFA for SWMU 48-007(f). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use, which is industrial. The ecological screening assessment did not identify any potential ecological contaminants for SWMU 48-007(f). Based on comments received from NMED's review of the Phase I RFI, the Phase I data were determined to be inadequate to meet the objectives of the Phase I RFI. As a result, the ER Project prepared a SAP for collection of additional soil samples at SWMU 48-007(f). The SAP called for collection of one surface soil sample and up to two subsurface soil samples from each of two hand auger borings. One boring would be located near the outfall, in the vicinity of the existing Phase I sample locations, and the other boring would be approximately 200 ft below the outfall on the first bench in the canyon wall. These samples would be analyzed in a fixed laboratory for radionuclides. This sampling was conducted by the ER Project in 1997. One surface sample and one subsurface sample were collected from the boring near the outfall and one surface sample and two subsurface samples were collected from the other boring. Radionuclides detected above FVs were cesium-137 and uranium-235. Neither of these radionuclides was detected above its SAL. One radionuclide, europium-152, was detected in soil, but has no FV. Europium-152 was not detected above its SAL. The combined radiological results from the 1993 and 1997 sample analyses were used to perform a human health risk-based screening assessment. Based on the results of this assessment, the RFI report recommended NFA for SWMU 48-007(f). The basis for this recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The NFA proposal has not been accepted. This SWMU will be included in the Integrated Sampling and Analysis Plan for the Upper Mortandad aggregate of the Mortandad Watershed. Data previously collected but not included in any report, and data already included in previous RFI reports will be reviewed and evaluated to determine if data gaps exist using a watershed approach, additional samples will be collected as deemed necessary.
48-008	Administratively Complete	
48-009	Administratively Complete	
48-011	In Progress	AOC 48-011 consists of a 3-ft diameter x 65-ft deep shaft that was drilled into the tuff on the east side of the main radiochemistry laboratory at TA-48 (Building 48-1). This shaft was reportedly drilled in 1976 or 1977 for use in radiation-counting experiments. As part of these experiments, a 2-ft diameter x 3-ft long stainless-steel cylinder containing a sodium-iodide radiation detector was lowered into the shaft. This cylinder also contained approximately 3,000 lb of lead shielding. As the cylinder was being lowered into the shaft, the cable broke and the cylinder fell to the bottom of the shaft. The date of this incident was not reported in the RFI work plan. Efforts to retrieve the cylinder were unsuccessful and it was subsequently abandoned. No previous environmental investigations have been conducted at AOC 48-011. The 1992 RFI work plan did not address plans for investigation of AOC 48-011.
48-012	In Progress	AOC 48-012 is a small area of stained soil uncovered in August 2002, during routine trenching operations east of the main radiochemistry laboratory at TA-48 (Building 48-1). Trenching operations were shut down in the area and the site was reported to the NMED as a one-time spill. The ER Project, working collaboratively with other LANL groups, mobilized to determine

		the source of the contamination and to fully characterize the nature and extent of contamination. Lack of residual contamination in the upper 3 ft of the fill indicated a subsurface release. A preliminary sample was collected from the stained area and laboratory results indicated elevated concentrations of TPH, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene. Several organic chemicals were found at much lower but detectable concentrations including ethylbenzene, toluene, xylenes, and some PAHs. A review of engineering drawings did not reveal any potential subsurface sources for the spill. A GPR survey was conducted to verify that there were no other potential sources and to substantiate the information contained in the engineering drawings. Other ER sites in the area were reviewed to determine if these could potentially be the source of the contamination. Results of these efforts did not lead to a decisive conclusion that the contamination stemmed from an operational release or from other ER sites in the area. Using the GPR survey, a 50-sample surface grid was established to define the lateral extent of contamination. At each sampling location, soil gas was measured for VOC concentrations using EMFLUX collectors. The collectors adsorbed VOCs from the soil gas for a period of 3 days. These samplers were then collected and analyzed for VOCs following EPA Method 8020/8015B. Based on the results of the EMFLUX sampling, 3 boreholes were drilled and sampled for SVOCs and VOCs. This drilling was conducted to determine the vertical extent of the contamination. Excavation of contaminated soil began in September 2002 as a VCA and approximately 190 cubic yards of contaminated soil were excavated from the site. The area of excavation was approximately 30 ft x 37 ft and down to a depth of 6 ft in the center of the excavation. Following the excavation, confirmation samples were collected and the excavated area was filled with clean fill. The site has been cleaned up using EPA Region 6 preliminary remediation goals as the VCA criteria and warrents no further action. The site was restored to its original condition Although DOE and LANL were unable to find conclusive evidence to explain the origin or the cause of the contamination, because a source indicating routine and systematic releases was not found and because this contamination is not related to an area in which wastes were managed, DOE and LANL have proposed this site as an AOC.
49-001(a)-00	In Progress	SWMU 49-001(a)-00 consists of former SWMUs 49-001(a), 49-001(b), 49-001(c), 49-001(d), 49-001(e), 49-001(f), and 49-001(g), which collectively are known as MDA AB. All these former SWMUs except 49-001(g) were the location of underground tests involving HE and radioactive materials such as special nuclear materials (SNM) including plutonium-239 and uranium-235. Former SWMU 49-001(g) refers to radionuclide contaminated surface soil north and east of MDA AB deposited from the two releases from MDA AB. All former SWMUs in this unit are associated with hydronuclear and related experiments conducted at TA-49 from late 1959 through mid-1961. These experiments were conducted in underground shafts (typically 6 ft in diameter) drilled into the tuff at MDA AB. Prior to the experiments that used radioactive materials, some of the shafts were used to conduct containment shots. These tests used HE but not radioactive materials. The containment shots were designed to characterize tuff fracturing that resulted from the underground explosions and to provide data needed to ensure that releases of radioactivity would not occur as a result of experiments that used radioactive materials. This included determining the required spacing between the experimental shafts so that contamination would not be encountered when a new shaft was drilled adjacent to one that had been used. In one incident at former SWMU 49-001(a)-00, such contamination was encountered during drilling, which caused contamination to be released to surface soils at the site [SWMU 49-001(g)]. Experimental packages that contained explosives and radioactive materials were placed in the bottom of the shafts, which were backfilled with sand or crushed tuff to provide containment and prevent release of radioactivity. Some experiments were

		configured to collect samples of radioactive particulates entrained in the explosion-generated gases. For these experiments, short, horizontal side drifts were installed at the bottom of the shafts; pipes routed gases from the drifts to sealed, steel sampling boxes near the surface. After exiting the sampling boxes, the gases were routed back underground through shafts known as gas expansion holes. After an experiment, subsidence caused by the explosion was backfilled using sand or crushed tuff. Shafts used in SNM experiments generally were capped with concrete. If gas-sampling boxes were used, they generally were filled with concrete and left in place. Sample pipes were disposed of in smaller (3-ft-diameter) boreholes known as pipe dump holes. Investigations at MDA AB include a 1987 environmental survey known as the A411 survey. This survey, which was the most extensive environmental study done at MDA AB, included sampling and analyzing surface soils and sediments, vegetation, groundwater, and available surface runoff. Results of this survey are summarized in the unit description of former SWMUs 49-001(a-g) in the RFI Work Plan for former OU 1144. No investigations were directed at characterizing the subsurface contamination associated with the experimental shafts. Due to the nature of radioactive materials used in these shafts, the inventory of radioactive materials in each shaft is well documented. Former SWMU 49-001(a), known as Area 1, is an area of experimental shafts within MDA AB. Area 1 is approximately 100 ft x 100 ft in size. This area was designed to contain a maximum of 25 shafts on a uniform 5-ft x 5-ft grid (25-ft shaft spacing). Before the experimental shafts were drilled, a 500-ft-deep borehole was drilled near the center of Area 1 to collect data on the geologic and hydrologic characteristics of the tuff. This borehole, designated core hole 1 (CH-1), then was cased using a 2-in.-diameter galvanized steel pipe. Twenty-three experimental shafts were drilled at this site. Six of these shafts were used for containment shots. Six shafts were used for experiments involving plutonium and four shafts were used for experiments with uranium-238. The shafts used for shots with radioactive materials ranged in depth from 31 ft to 80 ft. Six other shafts, 50 ft to 58 ft deep, were backfilled without use and one 50-ft-deep shaft was used as a gas expansion hole. Radioactive materials used in experiments at Area 1 include 1.06 kg plutonium and 62.3 kg uranium-238. No uranium-235 was used at this site. Substantial amounts of lead generally were present in the experimental packages, and small amounts of beryllium may have been used in some experiments. Former SWMU 49-001(b), known as Area 2, is an area of experimental shafts within MDA AB. Area 2 is approximately 100 ft x 100 ft in size. This area was designed to contain a maximum of 25 shafts on a uniform 5-ft x 5-ft grid (25-ft shaft spacing). Before the experimental shafts were drilled, a 500-ft-deep borehole was drilled near the center of Area 2 to collect data on the geologic and hydrologic characteristics of the tuff. This borehole, designated core hole 2 (CH-2), then was cased using a 2-in.-diameter galvanized-steel pipe. Twenty-two experimental shafts were drilled at this site. Four of these, 52 ft to 68 ft deep, were used for containment shots or shots with small amounts of uranium tracer. Sixteen shafts were used for other experiments involving radioactive materials. Twelve of these used plutonium, one used uranium-235, and three used uranium-238 as the principal radioactive materials. The experiments using plutonium also used uranium-238 and, in some cases, uranium-235. Similarly, the experiment with uranium-235 also used uranium-238. The shafts used for shots with radioactive materials were 57 ft deep, except for one that was 78 ft deep. One 58-ft-deep shaft was backfilled without being used and one 35-ft-deep shaft was used as a gas expansion hole. Area 2 also contained four 3-ft-diameter x 30-ft-deep pipe dump holes. Radioactive materials and quantities used in experiments at Area 2 include 12.62 kg plutonium, 47.4 kg uranium-235, and 52.5 kg uranium-238. Some experiments used downhole neutron sources that expended a total of a few curies of tritium. Some experiments at Area 2 may have used liquid scintillation detectors containing organic chemicals, including p-terphenylene, toluene, polystyrene, and zinc stearate. These organic chemicals are thought to have been consumed during the explosions. Substantial amounts of lead were present in the experimental packages, and small amounts of beryllium were reportedly used in some experiments. Some experiments

		used portable pulse neutron sources. Large portable concrete radiation shields provided shielding during these experiments. An asphalt pad was placed over Area 2 in 1961 in response to radioactive contamination around shaft 2-M. In March 1975, the asphalt pad collapsed over shaft 2-M, creating a hole approximately 6 ft long x 3 ft wide by 3 ft to 4 ft deep in the asphalt and underlying fill. This hole apparently allowed snowmelt to enter well CH-2, which is located approximately 10 ft from shaft 2-M. This infiltrating water apparently carried contamination from shaft 2-M into CH-2, and samples of the water that accumulated in CH-2 contained plutonium-239 above BV. In September 1976, the opening over borehole 2-M was filled with crushed rock and clay and the entire pad covering Area 2 was repaved with another 4 in. to 6 in. of asphalt. Monitoring from 1980 through 1987 showed no standing water in CH-2. In May 1991, cracks were noted in the asphalt pad, with vegetation growing through some of these cracks; standing water was detected again in CH-2. In November 1991, these cracks were sealed with asphalt. Standing water continued to be detected in CH-2 after the asphalt pad was repaired. The source of this water had not been determined when the RFI work plan was prepared in 1992. Former SWMU 49-001(c), known as Area 2A, is an area of experimental shafts within MDA AB. Area 2A is adjacent to the west side of Area 2 [former SWMU 49-001(b)], and occupies an area approximately 100 ft x 30 ft. Six experimental shafts were installed in this area in a single row, spaced 25 ft apart. These shafts were installed after Area 2 was closed in response to the contamination release at shaft 2-M. Four shafts in Area 2A were used for experiments involving radioactive materials. Three of these used plutonium and one used uranium-235 as the principal radioactive materials. The shafts used for shots with radioactive materials were 57 ft and 58 ft deep. Two shafts, both 58 ft deep, were backfilled without being used. Lead was used in the experimental packages, and small amounts of beryllium were reportedly used in some experiments. Radioactive materials and quantities used in experiments at Area 2A include 3.75 kg plutonium, 9.8 kg uranium-235, and 10.6 kg uranium-238. Former SWMU 49-001(d), known as Area 2B, is an area of experimental shafts within MDA AB. Area 2B is south of Area 2 and occupies an area approximately 200 ft x 100 ft. Shafts at Area 2B were aligned on a staggered grid with 11 shafts installed and another 15 proposed but not drilled. Six shafts were used for experiments with radioactive materials. Five of these shafts, the 57 ft and the 58 ft deep shafts, used plutonium as the principal material and the other, a 78 ft deep shaft, used uranium-235. One 60-ft-deep shaft was used as a gas expansion hole and four others, 58 ft and 78 ft deep, were backfilled without being used. Two pipe dump holes were installed approximately 100 ft south of the shaft area. Radioactive materials and quantities used in experiments at Area 2B include 5.67 kg plutonium, 6.4 kg uranium-235, and 14.7 kg uranium-238. Substantial amounts of lead were present in the experimental packages, in addition to small amounts of beryllium in some experiments. Former SWMU 49-001(e), known as Area 3, is an area of experimental shafts within MDA AB. Area 3 is approximately 100 ft x 100 ft in size. This area was designed to contain a maximum of 25 shafts on a uniform 5-ft x 5-ft grid (i.e., 25-ft shaft spacing). Before the experimental shafts were drilled, a 300-ft-deep borehole was drilled near the center of Area 3 to collect data on the geologic and hydrologic characteristics of the tuff. This borehole, designated core hole 3 (CH-3), then was cased using a 2-in.-diameter galvanized steel pipe. Area 3 was used exclusively to develop confinement and sample-recovery techniques used in the other experimental areas. In total, thirteen shafts were prepared for use. Four shafts were used for confinement shots and seven for shots using radioactive tracers (uranium-235 and uranium-238). These shafts were 57 ft to 142 ft deep. Two shafts, 88 ft and 108 ft deep, were backfilled without being used. Radioactive materials and quantities used in experiments at Area 3 include 0.005 kg uranium-235 and 0.03 kg uranium-238. Former SWMU 49-001(f), known as Area 4, is an area of experimental shafts within

		MDA AB. Area 4 occupies an area approximately 100 ft x 125 ft. This area was designed to contain 25 shafts on a uniform 5-ft x 5-ft grid (i.e., 25-ft shaft spacing) with one additional shaft installed 25 ft north of this grid. Before the experimental shafts were drilled, a 300-ft-deep borehole was drilled near the center of Area 4 to collect data on the geologic and hydrologic characteristics of the tuff. This borehole, designated core hole 4 (CH-4), then was cased using a 2-in.-diameter galvanized steel pipe. Eighteen experimental shafts were drilled at this site. One 58-ft-deep shaft was used for a containment shot. Thirteen shafts were used for experiments involving radioactive materials. Plutonium was used in 11 shafts, uranium-235 was used in one shaft, and uranium-238 was used in one shaft. Uranium-238 and, in some cases, uranium-235 were used in experiments conducted with plutonium as the primary radionuclide. Similarly, uranium-238 was used in the experiment conducted primarily with uranium-235. The shafts used for shots with radioactive materials were 78 ft to 88 ft deep. Three shafts, 88 ft to 108 ft deep, were backfilled without being used and one 70-ft-deep shaft was used as a gas expansion hole. Area 4 also contained three pipe dump holes installed approximately 25 ft east of the shaft grid. Radioactive materials and quantities used in Area 4 experiments include 17.04 kg plutonium, 29.4 kg uranium-235, and 29 kg uranium-238. Some experiments used downhole neutron sources that expended a total of a few curies of tritium. Some Area 4 experiments may have used liquid scintillation detectors containing organic chemicals, including p-terphenylene, toluene, polystyrene, and zinc stearate. These organic chemicals are thought to have been consumed during the explosions. Substantial amounts of lead were present in the experimental packages, in addition to small amounts of beryllium. Former SWMU 49-001(g) refers to contaminated surface soils north and east of MDA AB. One incident during construction of a new shaft and three incidents during the experiments resulted in releases of radioactivity to the surface. The most significant of these releases occurred during construction of shaft 2-M in Area 2 [former SWMU 49-001(b)]. This incident occurred in December 1960 after the side drift was constructed at the bottom of shaft 2-M. Contamination was encountered that apparently had been driven into the tuff by an experiment previously conducted in adjacent shaft 2-L. Alpha contamination was detected in shaft 2-M, as well as at the surface and on clothing, tools, and vehicles. Contaminated surface soil was removed and placed in shaft 2-M, along with equipment that was expendable or could not be decontaminated. In January 1961, all open shafts in Area 2 were filled with sand and crushed tuff and the surface of Area 2 was capped with up to 6 ft of compacted clay and gravel. The cap was extended 12.5 ft beyond the outermost shafts. In September 1961, the cap was paved with 4 in. to 6 in. of asphalt. As at former SWMU 49-001(b), the asphalt cap has been repaired and replaced in the past. This was the only incident at TA-49 when contamination was encountered during drilling. Three other smaller releases occurred when sampling boxes were opened and surface soil around the shaft and sampling box was contaminated. Two of these releases occurred in Area 2 [former SWMU 49-001(b)] in January and March 1960 and one in Area 2B [former SWMU 49-001(d)] in March 1961. Response actions for these releases involved covering the affected soils with concrete. The two releases at Area 2 subsequently were covered by the asphalt cap installed in response to the release at shaft 2-M. The release at Area 2B is covered by a 30-ft x 40-ft concrete slab. Another potential source of soil contamination was the burning of radioactively contaminated structures. Area 3 was used to burn several structures that were slightly contaminated with radioactivity. In 1969, low levels of alpha contamination were discovered in a structure at Area 3 that subsequently was burned in place. This contamination is believed to have come from elsewhere at MDA AB. Area 3 also was used to burn slightly contaminated structures removed from other areas of MDA AB. For example, in 1969, a skid-mounted structure with alpha contamination was moved from Area 4 to Area 3 and burned. The exact location of this burning area is unknown, but it is believed to have been at the southwest corner of Area 3.

		Investigations of soil contamination at MDA AB include the 1987 A411 survey, during which surface soil and vegetation samples were collected from the experimental areas. Samples collected in Area 1 indicated negligible surface contamination. Results from samples collected in Areas 2, 2A, and 2B showed elevated levels of plutonium and americium near the northeast corner of the asphalt pad at Area 2. Samples at Area 3 were collected from the shaft area and from the area believed to have been used for burning contaminated structures. No significant contamination was detected. At Area 4, samples were collected from the experimental shaft grid and also from a leveled area immediately southeast of the shaft area. Several discrete areas with elevated levels of americium-241 and plutonium-239,-240 were detected. Based on the contamination detected at Area 2 during the A411 survey, additional soil and vegetation sampling and radiological surveys were conducted in September 1987 near the northeast corner of the asphalt pad. Results indicated contamination in a drainage channel flowing from this site. In a 1991 study, samples of pocket-gopher soil diggings were collected from this area. Elevated radiation levels were detected, with some indication that contaminated soil had been transported a short distance along a drainage channel north toward Water Canyon. The RFI work plan proposed Phase I sampling for MDA AB, including collecting shallow and deep soil/tuff samples and installing deep boreholes to evaluate the potential for groundwater contamination. Phase I RFI activities were conducted at SWMU 49-001(a)-00 in 1993 and 1994 including the installation and sampling of four shallow and three deep boreholes and the collection of surface samples at Area 2. An RFI report has not been prepared since the RFI is not yet complete. In 1999, the ER Project implemented a stabilization plan that involved interim measures and BMPs at former SWMUs 49-001(b), 49-001(c), 49-001(d), and 49-001(g). These activities were designed to stabilize contamination beneath the asphalt cap and prevent any further moisture infiltration or biological intrusion. These activities included plugging and abandoning borehole CH-2, removing the existing asphalt cap, regrading the site with crushed tuff, placing topsoil over the site, installing erosion controls and biological intrusion barriers, and replacing the security fence around the site. Monthly moisture monitoring has been conducted at the site since 1999, and the data are presented in ER Project Quarterly Reports. Erosion-control BMPs and the cover are routinely inspected and remain in good condition.
49-002	In Progress	AOC 49-002 is an inactive underground experimental chamber and two associated shafts located in Area 10. This site was used for calibration tests associated with hydronuclear experiments performed elsewhere at TA-49 in 1960 and 1961. Site use after 1961 was minor and was not associated with hydronuclear experiments. Each shaft is approximately 6 ft to 7 ft in diameter and 64 ft deep. One is an elevator shaft that was used to transport personnel and equipment; the elevator building previously located over the elevator shaft has been removed. The other shaft is known as the calibration shaft. The shafts are connected at the bottom by a tunnel or gallery that is 4 ft wide x 7 ft high x 12 ft long. The calibration shaft was used to place a portable pulse neutron source over calibration samples that were placed in the calibration room, which is 14-ft-diameter x 10-ft-high and lined with 8 in. of reinforced concrete faced with 1-in. steel plate. A hydraulic lift platform at the bottom of the calibration room was connected to a hydraulic oil reservoir at the surface. Concrete radiation shields at the top of the calibration shaft are still in place. A concrete pad around the top of both shafts served as a foundation for the elevator building and shielding wall, and is still in place. The entrance to both shafts is covered with concrete blocks. The elevator shaft is believed to still be open, while the calibration shaft was reportedly backfilled with soil and crushed tuff. Other surface features, including the hydraulic oil reservoir, have been removed. Materials used in calibration tests at this site include uranium, beryllium, and lead shielding. Small amounts (e.g., milligram quantities) of enriched uranium were occasionally released through spallation from critical assemblies during tests, though this material generally was cleaned up. Operation of the pulse neutron source may have activated surrounding soils and structures, but activation products should be decayed to undetectable levels. The total volume of hydraulic oil in the lift system was estimated to be less than 100 gal. and reportedly did not contain PCBs. Use of the site

		after 1961 did not involve hazardous materials except perhaps small radioactive sources used for radiochemical counting. The ER Project conducted a Phase I RFI at AOC 49-002 in 1995 to determine the presence of contamination associated with historic site operations. Phase I RFI activities consisted of a site radiological survey and collection of surface samples from 13 locations. Twelve of these locations were determined using a sampling grid around the pads at the tops of the shafts. All 12 samples were field-screened for radioactivity and submitted for laboratory analysis for radionuclides; 6 also were submitted for laboratory analysis for inorganic chemicals. The thirteenth sample was collected at the location of the former hydraulic oil reservoir. This sample was field-screened for radioactivity and submitted for laboratory analysis for radionuclides and inorganic and organic chemicals. No radionuclides were present above BVs or FVs. Inorganic chemicals greater than BVs were antimony, copper, lead, mercury, silver, and zinc; none was present above its SAL. No organic chemicals were detected. Phase I RFI sample results were assessed in a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for AOC 49-002. The basis for the NFA recommendation was that the site had been characterized and available data indicated that contaminants are not present or are present in concentrations that do not pose unacceptable risk under the projected industrial/restricted access land use. The RFI report indicated that this site would be evaluated for ecological risk concerns when an ecological risk assessment methodology had been approved. EPA Region 6 reviewed the RFI report in October 1997 and concurred with the NFA recommendation for AOC 49-002; however, determination of nature and extent will be confirmed and the data used to assess potential ecological risks.
49-003	In Progress	SWMU 49-003 is an inactive leach field and drainlines in Area 11 at TA-49. The leach field received wastewater from former Building 49-15, which housed a radiochemistry laboratory and change house (Building 49-15). The radiochemistry operations were associated with hydronuclear experiments conducted at TA-49 from 1959 through 1961. The leach field is located approximately 20 ft to 25 ft east of the former location of Building 49-15 and was connected to the building by a drainline. The leach field was reportedly constructed of vitrified clay pipe installed in gravel bedding. The laboratory in Building 49-15 was used to analyze samples collected during the experiments conducted in the shafts at Areas 2, 2A, 2B, and 4 [former SWMUs 49-001(b), 49-001(c), 49-001(d), and 49-001(f)]. Laboratory processes included sample dissolution in various acids (nitric, hydrochloric, hydrofluoric, sulfuric, and perchloric) and solvent extraction using methyl isobutyl ketone, ammonium hydroxide, and sodium hydroxide. The principle radionuclides in the samples included plutonium, americium, uranium, and cesium. Waste generated during radiochemical operations generally were collected in containers and taken to radioactive waste disposal facilities elsewhere at LANL. Former site radiochemists estimated the total volume of wastes discharged to the leach field to be less than 50 gal. of organics and less than several hundred gal. of water. The radiochemistry structures in Area 11 were decontaminated, demolished, and removed in 1970 and 1971. Previous site investigations include a 1987 environmental survey known as the A411 survey, which included the collection and analysis of soil and vegetation samples from Area 11. Soil-sample results showed elevated levels of plutonium, americium, and uranium east of the former location of Building 49-15. Vegetation samples showed no elevated radioactivity levels. Soils in the leach field were sampled in 1988 as part of a DOE environmental survey, and results showed elevated levels of uranium, plutonium, americium, and gross alpha radioactivity. The ER Project conducted a Phase I RFI at SWMU 49-003 in 1995 to determine the presence of contamination associated with historic site operations. Phase I activities involved the collection of 13 shallow (i.e., less than 4.3 ft) subsurface samples from 12 locations within the leach field footprint [surface samples were collected at these same locations as part of the Phase I RFI for AOC 49-008(c)]. The samples were field-screened for radioactivity and submitted for laboratory analysis of radionuclides. Seven subsurface samples from six locations also were submitted for laboratory analysis of

		inorganic chemicals. A notable deviation from the RFI work plan was the fact that none of the subsurface samples was submitted for organic chemical analysis, which was an oversight. Inorganic chemicals detected above BVs included aluminum, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, silver, and vanadium; none was present above its SAL. Americium-241 was present above FV, but did not exceed its SAL. Phase I RFI sample results were evaluated by a human health risk-based screening assessment. Based on screening assessment results, the RFI report recommended NFA for SWMU 49-003. The basis for the NFA recommendation was that the site has been characterized and available data indicated that residual contamination did not pose an unacceptable risk under the projected industrial/restricted land use. The RFI report indicated that this site would be evaluated for ecological risk concerns after an ecological risk assessment methodology had been approved. EPA Region 6 reviewed the RFI report in October 1997 and did not concur with the NFA recommendation for SWMU 49-003. The basis for EPA's nonconcurrence included the omission of organic analyses for the subsurface samples collected from the leach field. EPA recommended collecting additional subsurface samples and analyzing them for organic chemicals. A supplemental RFI SAP to complete the RFI of SWMU 49-003 will be prepared and implemented in FY03.
49-004	In Progress	SWMU 49-004 is an inactive open-burning area and landfill in Area 6 at TA-49. This site was used from late 1959 through mid-1961 for open-pit burning of construction wastes and to dispose of solid wastes generated by experimental activities conducted elsewhere at TA-49. Wastes disposed of at this site reportedly were screened for radioactivity before burial to verify that they were not contaminated. However, disposal of hazardous chemicals at this site is documented. SWMU 49-004 was reopened in 1971 for the disposal of uncontaminated wastes generated during a cleanup of TA-49; most of this waste was from Area 11 at TA-49. Similarly, the site was reopened during a 1984 general cleanup of TA-49 that involved excavating a disposal trench within the landfill to dispose of uncontaminated solid wastes. The trench was 30 ft wide x 100 ft long x 15 ft deep. Previous investigations at Area 6 include a 1987 environmental survey known as the A411 survey, for which surface soil and vegetation samples were collected and analyzed. Soil sample results showed elevated levels of some radionuclides, lead, and beryllium. These elevated concentrations were localized and discontinuous. A geophysical survey conducted in 1991 better defined the location of the landfill trench, indicating that the disposal area footprint was approximately 35 ft wide x 330 ft long and extended north almost to the edge of Water Canyon. The survey confirmed that the 1987 A411 investigation was conducted northwest of the actual disposal area. The RFI work plan describes four open trenches that, although not part of SWMU 49-004, are located directly west and southwest of SWMU 49-004. The work plan also states that these previously undocumented trenches were identified from a review of historical aerial photographs. The trenches were not present in photographs taken in 1935, but were present in photographs taken in 1954, 1965, and 1977. Construction of these trenches, therefore, appears to predate activities at TA-49. The trenches were examined during a 1991 field inspection and described as approximately 10 ft wide x 4 ft to 6 ft deep x 50 ft to 100 ft long. One trench appeared to have been backfilled and one passed through prehistoric ruins. No evidence of debris was present in or around the trenches. The work plan also stated that interviews and archival searches had identified no additional information concerning these trenches. The ER Project conducted a Phase I RFI at SWMU 49-004 in 1995 to determine the presence or absence of contamination associated with historic site operations. Phase I activities included conducting a radiological site survey and collecting 27 surface samples from 26 locations on a sampling grid; the grid was established on the disposal area that was defined by the 1991 geophysical survey. The samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for radionuclides. Thirteen of these samples were selected randomly for laboratory analysis for inorganic chemicals. In addition, boreholes were drilled at seven locations approximately 50 ft apart along the longitudinal axis of the disposal area. Boreholes

		were advanced to a depth of 15 ft or until undisturbed tuff was encountered, whichever occurred first. Cores were collected for each 5-ft interval; samples were collected from each core interval for analysis. All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for radionuclides. Ten samples (at least one from each borehole) also were submitted for laboratory analysis for inorganic and organic chemicals. The Phase I RFI also addressed the four open trenches west of the site. A radiological survey of the trench site was performed; nine surface samples were collected from eight locations on a grid. Samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for radionuclides. Five samples from four locations were submitted for analysis for inorganic chemicals. Radionuclides detected above BVs or FVs included total uranium, americium-241, cesium-137, and plutonium-239,-240; none exceeded its SAL. One organic chemical, 2-chloronaphthalene, was detected but did not exceed its SAL. Inorganic chemicals detected above BVs included aluminum, barium, calcium, chromium, copper, lead, magnesium, manganese, mercury, nickel, potassium, vanadium, and zinc; none exceeded its SAL. Phase I RFI results were used to perform a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 49-004 because the site had been characterized and available data indicate that contaminants were not present or were present in concentrations that pose no unacceptable risk under projected land use. The RFI report stated that this site would be evaluated for ecological risk concerns after an ecological risk assessment methodology had been approved. EPA Region 6 reviewed the RFI report in October 1997 and did not concur with the NFA recommendation for SWMU 49-004, based on the elevated uranium and cesium-137 levels detected in samples collected from the open-trench area. EPA recommended Phase II sampling in this area to better characterize this contamination. A supplemental RFI SAP to complete the RFI of SWMU 49-004 will be prepared and implemented.
49-005(a)	In Progress	SWMU 49-005(a) is an inactive landfill located east of Area 10 at TA-49. The landfill, described as a small pit, was constructed north of the road that runs east from Area 10 and is approximately 50 ft to 100 ft northeast of the Area 10 experimental chamber and shafts (AOC 49-002). SWMU 49-005(a) reportedly was constructed in 1984 as a disposal area for nonradiologically contaminated debris that resulted from the 1984 general surface cleanup of TA-49. The wastes reportedly consisted primarily of wood and small pieces of metal. The ER Project conducted a Phase I RFI at SWMU 49-005(a) during 1995 and 1996 to determine the presence of contamination associated with site operations. Phase I efforts consisted of a radiological site survey and installation of two boreholes, one to a depth of 9 ft bgs and the other to a depth of 10 ft bgs. Two samples were collected from each borehole. Each sample was field-screened for radioactivity and submitted for laboratory analysis of radionuclides, inorganic chemicals, and organic chemicals. Total uranium was the only radionuclide present above BVs or FVs; however, it did not exceed its SAL. Inorganic chemicals detected above BVs were aluminum, barium, beryllium, calcium, chromium, cobalt, copper, iron, magnesium, nickel, potassium, and vanadium; none exceeded its SAL. No organic chemicals were detected. Phase I RFI results were used to perform a human health risk-based screening assessment and human health risk assessment. Based on these assessments, the RFI report recommended NFA for SWMU 49-005(a). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants were not present or were present in concentrations that did not pose an unacceptable risk under projected land use scenarios. The RFI report indicated that this site would be evaluated for ecological risk concerns once an ecological risk assessment methodology had been approved. EPA Region 6 reviewed the RFI report in October 1997 and concurred with the NFA recommendation for SWMU 49-005(a); however, additional work is anticipated at the site to assess potential ecological risks.
49-005(b)	Administratively Complete	

49-006	In Progress	SWMU 49-006 is the former location of a sump in Area 5 of TA-49, which was the main control area for hydronuclear tests conducted at TA-49 from 1959 through 1961. During that time, several permanent and transportable structures (e.g., trailers) were located at Area 5. Most of these structures were removed or destroyed between 1961 and 1984. Historic engineering documents discuss the construction of two sumps in Area 5 in 1959, though no other existing records or drawings confirm the presence of these sumps. The primary source of liquid waste that may have been discharged to a sump is a trailer that housed a darkroom. Photographic wastes may have been discharged to a sump via a drainline from the trailer. A radiochemistry laboratory in one of the trailers was another potential liquid waste source at Area 5, although this waste was reportedly disposed of off site. Previous environmental investigations at this site involved routine health physics monitoring activities during site operations (1959 to 1961) and TA-49 cleanups in 1971 and 1984. The ER Project conducted a Phase I RFI at SWMU 49-006 during 1995 to determine the presence of contamination associated with historic site operations. Phase I efforts consisted of performing a radiological survey of the site and installing a borehole at the expected sump location. Because no records defined the sump location, the sample location was based on the presence of vegetation believed to indicate increased infiltration associated with a sump. This location was also near the former location of the photography trailer. One 10-ft-deep borehole was drilled at this location and samples were collected at the surface and from the depth interval of 5 ft to 10 ft. Each sample was field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for radionuclides and inorganic chemicals. The subsurface sample also was submitted for laboratory analysis for organic chemicals. No radionuclides were present above BVs or FVs. No organic chemicals were detected. Inorganic chemicals detected above BVs were chromium, copper, lead, magnesium, and zinc; none exceeded SALs. The results of the Phase I RFI sampling were used in a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for SWMU 49-006 because the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report indicated that this site would be evaluated for ecological risk concerns when an ecological risk assessment methodology had been approved. EPA Region 6 reviewed the RFI report in October 1997 and concurred with the NFA recommendation for SWMU 49-006; however, determination of nature and extent will be confirmed and the data used to assess potential ecological risks.
49-007(a)	Administratively Complete	
49-007(b)	Administratively Complete	
49-008(a)	In Progress	AOC 49-008(a) consists of contaminated surface soil within the portion of TA-49 known as Area 5. Area 5 originally consisted of an approximately 250 ft-x 300-ft fenced area that was the main control area for hydronuclear testing at TA-49 from 1959 through 1961. This area later was expanded by adding an additional 90-ft x 150-ft area to the northeast corner of the site. A 1960 site sketch shows 25 structures (mostly transportables such as trailers). Most of these structures were removed or destroyed between 1961 and 1984. This occurred primarily during routine equipment removal in 1964 and during major TA-49 cleanup campaigns in 1971 and 1984. Combustible structures also were destroyed during the La Mesa forest fire in 1977. Hazardous or radioactive materials used within several Area 5 structures constitute potential sources of soil contamination. These structures include a trailer that housed a darkroom, a radiochemistry trailer, and a calibration facility. The darkroom generated photographic wastes, which may have discharged to a sump (SWMU 49-006). Operations in the radiochemistry trailer included dissolving samples in perchloric, hydrofluoric, and hydrochloric acids and extraction with organic solvents. Radioactive wastes from these operations were reportedly disposed of elsewhere at LANL. The calibration facility used sealed radioactive sources, including cobalt-60 and polonium-beryllium. The RFI work plan describes two former transformer stations that were located outside the northeast

		and northwest corners of Area 5. It is not known whether the transformer oil contained PCBs. The RFI work plan described oil staining on the concrete pad that housed the northwest transformer station (structure 49-14). The only environmental investigations at this site were routine health physics monitoring activities during operations (1959 to 1961) and two TA-49 cleanups (1971 and 1984). The ER Project conducted a Phase I RFI at AOC 49-008(a) in 1995 to determine the presence of contamination associated with historic site operations. Phase I RFI activities consisted of a radiological site survey at 54 points on a 40-ft grid within Area 5. No radiation levels exceeding instrument background were detected. Surface-soil samples were then collected from the 54 grid points (plus 3 replicates for a total of 57 samples). Each sample was field-screened for radioactivity and organic chemicals and submitted for laboratory analysis of radionuclides. In addition, samples from 25 percent of the sample locations (14 samples) were selected randomly for laboratory analysis of inorganic chemicals. Surface samples were collected at two locations at each former transformer station, as well as a duplicate for a total of five samples. These samples were field-screened for radioactivity and submitted for laboratory analysis of PCBs. Inorganic chemicals detected above BVs were antimony, copper, lead, mercury, silver, thallium, and zinc. Copper and lead were the only inorganic chemicals detected above SALs. No radionuclides were present above BVs or FVs. PCBs were detected above SALs. Phase I RFI results were used in a human health risk-based screening assessment and human health risk assessment. Based on the assessment results, the RFI report recommended NFA for AOC 49-008(a). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report indicated that this site would be evaluated for ecological risk concerns once an ecological risk assessment methodology had been approved. EPA Region 6 reviewed the RFI report in October 1997 and did not concur with the NFA recommendation for AOC 49-008(a). This nonconcurrence was related to the presence of lead above SAL at one location within Area 5 and the presence of PCBs above SAL at one transformer station. EPA recommended additional characterization of lead and PCB contamination at these sites. In 2002, a Supplemental Sampling and Analysis Plan (SAP) for Areas 5, 6, and 10 was prepared that describes the remaining radiological field screening and surface soil sampling to be conducted to address remaining data gaps and complete the characterization of the site, and define the nature and extent of contamination at AOC 49-008(a).
49-008(b)	Pending	AOC 49-008(b) consists of contaminated surface soil within the portion of TA-49 known as Area 6. Area 6 occupies an approximately 150-ft x 700-ft area that was developed as a general support area for hydronuclear testing at TA-49 from 1959 through 1961. Area 6 included storage and office buildings and structures used by carpenters and electricians. A small lead-casting shop may also have operated at Area 6. All these structures reportedly were removed by 1977. A day-room building (structure 49-115) was constructed later at Area 6. This structure and several trailers currently are used to support microwave research. Materials formerly stored at Area 6 included cables, pipes, and sand for backfilling experimental shafts. In addition, a “boneyard” area of approximately 400 sq ft was used to store lumber, fencing, and steel. Some materials formerly stored at Area 6 may have been radioactively contaminated. The only known contamination incident described in the RFI work plan was related to a 1960 release from an experimental shaft at MDA AB [SWMU 49-001(a)-00]. Some of this contamination reportedly was tracked into Area 6 structures, but likely was cleaned up soon after it was discovered. The only environmental investigations conducted at this site were routine health physics monitoring activities performed as part of operations. The ER Project conducted a Phase I RFI for AOC 49-008(b) in 1995 to determine the presence of contamination associated with site operations. Phase I efforts consisted of a radiological site survey. The survey was conducted at 75 points located on a 40-ft

		grid within Area 6. No radiation levels above instrument background were detected. Surface soil samples then were collected from 19 grid points (plus 2 replicates for a total of 21 samples). Each sample was field-screened for radioactivity and submitted for laboratory analysis for radionuclides. In addition, 12 samples from 10 locations were selected randomly for laboratory analysis for inorganic chemicals. Inorganic chemicals detected above BVs were mercury, silver, and thallium; none was present above its SAL. No radionuclides were present above BVs or FVs. The results of the Phase I RFI sampling were used in a human health risk-based screening assessment. Based on this assessment, the RFI report recommended NFA for AOC 49-008(b). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report indicated that this site would be evaluated for ecological risk concerns once an ecological risk assessment methodology was approved. EPA Region 6 reviewed the RFI report in October 1997 and concurred with the NFA recommendation for AOC 49-008(b). Phase I RFI results were further confirmed during a 2001 review of the site engineering notebook in which no documented release was reported. The absence of contaminants of concern during RFI sampling is consistent with the historic site usage confirming that no release has or will occur at AOC 49-008(b). The site was recommended for NFA in an FY02 RFI Report.
49-008(c)	In Progress	AOC 49-008(c) consists of contaminated soil in Area 11 of TA-49. Area 11 is an approximately 220-ft x 300-ft area 700 ft west of MDA AB [SWMU 49-001(a)-00]. Activities conducted at Area 11 from 1959 to 1961 supported hydronuclear experiments conducted elsewhere at TA-49. Principal support activities consisted of radiochemistry operations and small-scale containment experiments. The radiochemistry operations were conducted in a former laboratory and change house (Building 49-15) that was the main structure at Area 11. Other structures included a small storage building, latrines, and butane and propane tanks. The Building 49-15 laboratory was used to analyze samples collected during experiments in the experimental shafts at Areas 2, 2A, 2B, and 4 [SWMU 49-001(a)-00]. Laboratory processes included sample dissolution in acids (nitric, hydrochloric, hydrofluoric, sulfuric, and perchloric) and solvent extraction using methyl isobutyl ketone, ammonium hydroxide, and sodium hydroxide. Principle radionuclides present in samples included plutonium, americium, uranium, and cesium-137. Waste generated during radiochemical operations were typically collected in containers and taken to radioactive waste disposal facilities elsewhere at LANL. Interim waste storage boxes were reportedly stored south of Building 49-15. Some liquid wastes reportedly discharged to a leach field (SWMU 49-003). Small-scale containment experiments were conducted in 13 underground shafts located on the west side of Area 11. These shafts were drilled to a depth of 12 ft and lined with 10-in.-diameter steel casing. HE was placed in the shafts, which were backfilled to contain the explosions. Small amounts of irradiated uranium-238 tracer were used in some experiments. The total amount of uranium used was 10.5 g. The structures in Area 11 were decontaminated, demolished, and removed in 1970 and 1971. Contamination was detected in sinks, ducts, and blowers in Building 49-15. Contaminated debris was removed and disposed of at TA-54 and uncontaminated debris (approximately 2160 cubic ft) was taken to the open burning/landfill area at Area 6 (SWMU 49-004). Investigations at this site include a 1987 environmental survey known as the A411 survey, which included collection and analysis of soil and vegetation samples from Area 11. Results showed elevated levels of plutonium, americium, and uranium east of the former Building 49-15, where the leach field was located. Vegetation samples did not reveal elevated radioactivity. The ER Project conducted a Phase I RFI for AOC 49-008(c) during 1995 to determine the presence of contamination associated with historic site operations. Phase I RFI activities at AOC 49-008(c) were directed at three areas: surface soils over the leach field, the interim waste storage area, and the small-scale shot area. Phase I RFI activities consisted of radiation surveys at these areas and collecting surface and subsurface samples. At the leach field, 27 surface samples were collected from 25

		locations on a sampling grid established on the leach field. These samples were field-screened for radioactivity and submitted for laboratory analysis for radionuclides. In addition, 14 samples from 13 locations were submitted for laboratory analysis for inorganic chemicals. At the interim waste storage area, two surface samples and one shallow (less than 3 ft) subsurface sample were collected from two locations; all three samples were field-screened for radioactivity and submitted for laboratory analysis for radionuclides. One surface sample also was submitted for laboratory analysis for inorganic chemicals; the subsurface sample was submitted for laboratory analysis for inorganic and organic chemicals. At the small-scale shot area, six surface samples and two subsurface samples were collected at six locations. The subsurface samples were collected from boreholes advanced to a depth of 12 ft, which corresponds to the depth of the test shafts. Samples were collected from the depth interval of 7 ft to 12 ft. All eight small-scale shot area samples were field-screened for radioactivity and submitted for laboratory analysis for radionuclides. Two surface samples also were submitted for laboratory analysis for inorganic chemicals and both subsurface samples were submitted for laboratory analysis for inorganic and organic chemicals and HE. Inorganic chemicals detected above BVs were calcium, copper, manganese, and silver; none was present above its SAL. Radionuclides detected above BVs or FVs were total uranium, americium-241, plutonium-238, and plutonium-239,-240. Of these, plutonium-239,-240 was detected above its SAL. Two organic chemicals were detected, bis(2-ethylhexyl)phthalate and di-n-octylphthalate; neither was present above its SAL. HE was not detected in any samples. The results of the Phase I RFI sampling were used to perform a human health risk-based screening assessment and a human health risk assessment. Based on these assessments, the RFI report recommended NFA for AOC 49-008(c). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report indicated that this site would be evaluated for ecological risk concerns once an ecological risk assessment methodology had been approved. EPA Region 6 reviewed the RFI report in October 1997 and did not concur with the NFA recommendation for AOC 49-008(c). EPA's nonconcurrence was based on the concentrations of americium-241 and plutonium-239,-240 detected in surface soils at the leach field. EPA indicated that these concentrations may be high enough to warrant corrective measures. A Supplemental Sampling and Analysis Plan (SAP) for Area 11 is being prepared to address remaining data gaps and the characterization of the site, and define the nature and extent of contamination at AOC 49-008(c).
49-008(d)	In Progress	AOC 49-008(d) is an area of contaminated soil in Area 12 at TA-49. Area 12 is an approximately 100-ft x 200-ft area immediately east of MDA AB [SWMU 49-001(a)-00]. Area 12 was used in 1960 and 1961 to conduct confinement experiments related to the hydronuclear experiments conducted at MDA AB. These experiments involved HE detonations in sealed metal "bottles." The bottles were up to 5-ft in diameter x 16-ft long and were placed in a 10-ft-diameter x 30-ft-deep underground shaft during the experiments. Building 49-23, known as the bottle house, was constructed over the shaft. Approximately 26 confinement experiments were conducted at Area 12. Kilogram amounts of uranium-238 were used in several experiments. Six experiments used microcurie amounts of irradiated uranium tracer. These tracers typically consisted of 3.5 g uranium-238, although 10.6 g of uranium-235 was used in one instance. Up to 7 tons of road salt were used in each experiment as an energy absorbent in the containment vessel. After each experiment, the vessel was unsealed and the salt was removed and sent to TA-54 for disposal. Retired containment vessels also were disposed of off site, presumably at TA-54. After the confinement experiments were completed, Area 12 was used in tests to determine the strength of cables used in other experiments. The cable pull test facility (Building 49-121) was constructed approximately 60 ft south of Building 49-23 to perform these tests. The shaft in Building 49-23 was backfilled with crushed tuff and a hydraulic system was installed in the building. Underground hydraulic lines were run to Building 49-121. The total fluid

		capacity of the hydraulic system is estimated to be less than 10 gal. Labels indicating the absence of PCBs were observed during a 1991 inspection. All structures at Area 12 have been removed except Buildings 49-23, 49-121, and 49-144. Previous investigations at this site include an environmental survey conducted in 1987, known as the A411 survey, which included collection and analysis of soil and vegetation samples at Area 12. Results showed slightly elevated levels of radionuclides. Soil samples collected from the dirt road between Buildings 49-23 and 49-121 in 1990 were found to have radioactivity above BVs. An air-monitoring and dosimetry station that is part of LANL's environmental surveillance network is located approximately 100 ft northwest of Building 49-23. Monitoring results typically are at BVs, although elevated levels of plutonium-239,-240 were detected in 1987. The source of this radioactivity is suspected to be contaminated soil at adjacent MDA AB [SWMU 49-001(a)-00]. The ER Project conducted Phase I RFI sampling at AOC 49-008(d) in 1995 to determine the presence of contamination associated with historic site operations. Phase I efforts were directed at three specific areas: the soil inside and around Building 49-23, the soil around Building 49-121, and a small area of stained soil approximately 80 ft south of Building 49-121. Radiation surveys were conducted at each of these areas. No radiation above BVs was detected around Building 49-121 or at the stained-soil site. Four radiation survey points around Building 49-23, however, showed radiation levels above BVs. Soil samples then were collected at the three areas of investigation. At Building 49-23, surface soil samples were collected at each of 18 locations and 7 shallow (0.5-ft- to 1-ft-deep) subsurface samples were collected at 6 of these locations. These sample locations included points on a sampling grid as well as biased locations based on the results of the radiation survey. All samples were field-screened for radioactivity and submitted for laboratory analysis for radionuclides. Six surface samples and seven subsurface samples also were submitted for laboratory analysis for inorganic chemicals. One additional surface sample, collected near the location of the hydraulic system in Building 49-23, was submitted for laboratory analysis for inorganic chemicals, organic chemicals, and PCBs. At Building 49-121, nine surface samples were collected from four locations. All samples were field-screened for radioactivity. One sample from each location, plus a duplicate, was submitted for laboratory analysis for radionuclides and organic chemicals. In addition, one sample from each location was submitted for laboratory analysis for PCBs. At the stained-soil site, two surface samples were collected from one location. Both samples were field-screened for radioactivity. One was submitted for laboratory analysis for radioactivity and organic chemicals and the other for PCBs. Inorganic chemicals detected above BVs were copper and silver, neither of which was detected above its SAL. Radionuclides were detected above BVs or FVs and uranium was present above SALs. Five organic chemicals were detected, but all were below SALs. Phase I RFI results were used in a human health risk-based screening assessment. The results of the sampling and screening assessment indicated the presence of localized "hot spots" of uranium contamination outside Building 49-23. The soils inside Building 49-23, at Building 49-121, and at the stained area were found to present no unacceptable human health risk. Based on these results, a VCA was proposed for the soils around Building 49-23. The ER Project conducted a VCA at AOC 49-008(d) in 1997 to remove soil contaminated with uranium-234, uranium-235, and/or uranium-238 above cleanup levels. Cleanup levels for the uranium isotopes were developed based on industrial exposure factors. Areas to be excavated were identified using hand-held radiation survey meters. Contaminated soils were excavated by hand, placed in lined 5-gal. buckets, and transferred to 55-gal. drums. Soils were typically removed to a depth of 6 in. or less, though some soil was removed to a depth of 9 in. to 12 in. The total area of soil removal was estimated to be 70 square ft. After soil removal, confirmatory samples were collected from the two locations with the highest post-cleanup radioactivity, based on surveys with hand-held instruments. A sample was collected at each location and submitted for laboratory analysis for isotopic uranium. The results of these analyses

		were below the industrial-use cleanup goals established for the VCA. Based on these results, the VCA report recommended NFA for this AOC. However, additional soil removal was performed in 1998 and confirmation sample results were above cleanup levels. A supplemental sampling and analysis plan (SAP) for Area 12 is being prepared to address remaining data gaps and the characterization of the site, and to define the nature and extent of contamination at AOC 49-008(d).
49-009	Administratively Complete	
50-001(a)	In Progress	SWMU 50-001(a) is an active radioactive liquid waste treatment plant (Building 50-1) that has operated continuously since its construction in 1963. Building 50-1 is designed to treat 250 gal./min of wastewater, primarily to remove TRU elements through neutralization, flocculation and clarification, pH control, ion exchange, and filtration. Building 50-1 treats only low-level liquid wastes from many TAs to remove target contaminants and then monitors and discharges treated effluent to NPDES-permitted Outfall 051 in Mortandad Canyon [SWMU 50-006(d)]. Treatment sludges subsequently are managed at TA-54, MDA G. Building 50-1 housed a container storage area in Room 59 [AOC 50-003(a)], and a second container storage area is located in a storage locker [structure 50-114, which was former AOC 50-003(d)]. A system of drainlines [SWMU 50-001(b)] and tanks [SWMUs 50-002(a) and 50-002(b)-00] is used to transfer, treat, and temporarily store the liquid waste and treatment sludge associated with Building 50-1. In July 1990, core samples collected from boreholes drilled through the floor around the pH adjustment tank or “grit chamber” indicated that the inlet line or the chamber leaked. Influent wastes subsequently were rerouted to flow directly into the pH adjustment tank in Building 50-2. This SWMU was proposed for NFA in an August 2000 permit modification request based on its active status and because the hazardous waste container storage areas within Building 50-1 are listed in Module VIII of LANL’s Hazardous Waste Facility Permit. No additional RFI activities have been conducted at this SWMU.
50-001(b)	In Progress	AOC 50-001(b) is the active underground drainline system through which liquid waste is transferred to a radioactive liquid waste treatment facility (Building 50-1). A manhole (structure 50-72) is the central collection area for most incoming liquid waste. Three lines feed into structure 50-72. A major line connecting several TAs to this manhole was constructed in 1982 to replace an old line [SWMU 50-004(a)-00]. The new line is a double polyethylene pipe that enters structure 50-72 from the north side of Pecos Drive. Another waste line into structure 50-72, completed in 1982, transports low-level radioactive liquids from structure 50-73, which receives wastes from Building 50-69 (a volume reduction facility, AOC 50-008) and Building 50-37 (the incinerator complex, AOC 50-007). This line is a 6-in. polyethylene line encased in a 10-in. polyethylene line that has leak monitor and vacuum test capabilities. A third line, also installed in 1982, transports low-level radioactive waste from TA-55 to structure 50-72 through manholes 50-016 and 50-78. The line consists of an inner stainless steel pipe encased in a PVC pipe and has leak-monitor and vacuum test capabilities. All manholes that transport wastewater to Building 50-1 are monitored continuously. A single drainline carried all influent from structure 50-72 into the grit tank at Building 50-1 until a leak around the grit tank was detected in 1990. The line now bypasses the grit chamber and passes through the neutralization chamber before it connects to the Building 50-2 tank farm [SWMU 50-002(a)]. The line consists of an inner 8-in. schedule 40 stainless steel pipe and an outer 10-in. schedule 10 stainless steel pipe. Structure 50-7, another component of the influent waste system, is connected to the waste line from the tank truck unloading station (structure 50-77). Structure 50-7 has been out of service since the early 1990s. Four other waste lines run from TA-55 to Building 50-1 through structure 50-106 to tanks in an underground vault (structure 50-66). Three of the lines are 1.5-in. stainless steel lines, each encased in 3-in. PVC. Two of the three lines carry caustic and acid wastes with high radioactivity; the third line is a spare that has never been used. The fourth line, which is for industrial waste, is a 2-in.-diameter stainless steel line encased in 3-in. PVC. The lines operate by gravity flow, and the end of each is continuously

		monitored at TA-55, at structure 50-57, and at structure 50-66 by a drip-tray and conductivity-probe system wired to a computer for continuous readout. The three nonindustrial waste lines were replaced in 1994; however, the new lines have not yet been put into service. Soil sampling was scheduled to determine if contaminants had leaked from the pipes. According to the 1990 SWMU report, there was some concern about contamination from the waste lines carrying TA-55 effluent because the original vacuum seals had lost their integrity; however, the drip pans have never collected fluid that indicated the inner lines were leaking. The area where the lines run into Building 50-1 and the area west and north of the tank farm (Building 50-2) were sampled in August 1990. Sample results showed no radionuclides above BVs. No RFI activities have been conducted at this PRS.
50-002(a)	In Progress	SWMU 50-002(a) consists of an underground, reinforced-concrete tank vault (Building 50-2) housing six flow-through process tanks, an equipment room, and waste-transfer lines associated with a radioactive liquid waste treatment facility (Building 50-1). The floor of the vault is 17 ft below ground. Holding tanks located within the vault (Building 50-2) include two incoming raw-waste tanks (25,000 gal. and 75,000 gal.); one 25,000-gal. low-level sludge tank; and two 25,000-gal. tanks used to store treated waste before discharge to NPDES-permitted Outfall 051 [SWMU 50-006(d)], which discharges to Mortandad Canyon. One of these tanks is used to store waste during D&D activities. Wastes are transported to the vault (Building 50-2) through the system of transfer lines. Waste-transfer lines include six cast-iron lines (including waste lines 55 and 67) connecting Building 50-1 to the equipment room in Building 50-2; four steel lines added in 1984 to connect Room 61 in Building 50-1 to the equipment room in Building 50-2; five cast-iron lines from drains in Building 50-1 to the D&D tank in Building 50-2; a cast-iron line from a sink in the vehicle-decontamination facility to the D&D tank in Building 50-2; an influent line connecting Building 50-2 to a 100,000-gal. emergency holding tank (structure 50-90); and an effluent line connecting structure 50-90 to one of the 25,000-gal. influent tanks in Building 50-2. Two unintended operational releases occurred from the overflow of a sump in Building 50-2, causing untreated wastewater to be discharged to waste lines 55 and 67 (the waste lines for treated effluent) and into the outfall area at the head of Ten Site Canyon [see SWMU 50-006(a)]. The releases occurred in July and September 1974. In February 1975, waste line 67 was plugged at its outfall. The integrity of the tank farm and the pipelines tied to Building 50-1 were checked in 1990, and no leaks were found. The 75,000-gal. influent tank and 25,000-gal. sludge tank were taken offline in June 2001 and are scheduled for decontamination in FY2002. One sample was collected at this SWMU in 1995; no additional RFI activities have been conducted at this site.
50-002(b)-00	In Progress	Consolidated SWMU 50-002(b)-00 consists of former SWMUs 50-002(b) and 50-002(c), two active waste tanks (structures 50-67 and 50-68) and their associated inlet and outlet lines housed in an underground, reinforced-concrete tank vault (structure 50-66) at the radioactive liquid waste treatment facility [Building 50-1, SWMU 50-001(a)]. The concrete vault measures 18 ft x 16 ft x 14 ft deep and is located about 30 ft from the southwest corner of Building 50-1. The tanks and vault were constructed exclusively to store radioactive caustic waste (structure 50-67) and acidic waste (structure 50-68) from TA-55, where TRU wastes are generated. TRU wastes are processed separately from other wastes. The inlet lines consist of four stainless steel pipes encased in PVC. One line is a capped backup. The second line carries radioactive acid waste to the acid waste tank. The third line carries radioactive caustic waste to the caustic tank. Wastes are transferred from the tanks through two double stainless steel lines to Room 60, Building 50-1. The operation is monitored for criticality hazards, and necessary adjustments are made before treatment; from 10 to 12 containers of treated TRU waste are generated annually. The fourth line carries radioactive liquid wastes to a manhole (structure 50-72) [see AOC 50-001(b)]. No documented releases are associated with SWMU 50-002(b)-00. No RFI activities have been conducted at this SWMU.

50-002(d)	In Progress	AOC 50-002(d) is a decommissioned aboveground 5000-gal. stainless steel tank (structure 50-5) previously used for the storage of unused product (nitric acid). The storage tank was part of the ion-exchange column system, which was designed to remove any radioisotopes not removed by the clariflocculator system at the radioactive liquid waste treatment facility (Building 50-1). Because the clariflocculator system was successful in removing radioisotopes from wastewater to levels consistently below DOE limits, the ion-exchange column was rarely used and the tank was never filled to capacity. The tank (structure 50-5) is located adjacent to the north wall of Room 60D at Building 50-1 and replaced the original nitric acid tank in late 1964 after the original rubber-lined carbon steel tank reportedly leaked. The new tank (structure 50-5) is supported on concrete saddles that extend 5 ft below ground surface. A concrete sump filled with limestone chips (structure 50-12) was installed beneath the new tank. The tank was vented to the sump to neutralize any nitric acid vapors emitted when the tank was filled. Retaining walls and a concrete slab were installed in 1988 to contain any spillage. The tank was decommissioned (emptied, triple rinsed, and all piping disconnected) in 1996. The original tank was replaced after a reported leak, and the new tank (structure 50-5) was managed in accordance with LANL's Spill Prevention Control and Countermeasures Plan. No documented releases have occurred from structure 50-5. AOC 50-002(d) was recommended for NFA in a 2000 RFI report.
50-003(a)	In Progress	AOC 50-003(a) is a RCRA interim status mixed-waste container storage area located in Room 59 of the radioactive liquid waste treatment facility (Building 50-1). This unit will not be permitted, but will be closed. Room 59 was constructed with steel framing and insulated metal roofing and siding; the design capacity is the equivalent of twenty-seven 55-gal. containers of solid mixed low-level, mixed TRU, and hazardous waste. The area has been used to store containers of solid cemented mixed TRU sludge resulting from waste treatment activities in Room 60A; waste containing free liquids cannot be stored in Room 59. The cementation process is generator treatment being performed in a less-than-90-day storage area. Following cementation, containers of mixed TRU waste have been temporarily stored in Room 59 in accordance with the permit requirements. The waste containers are subsequently transported to other LANL RCRA-permitted mixed-waste management facilities for storage. AOC 50-003(a) is designed and operated in accordance with 20 NMAC 4.1 Subpart V and 40 CFR 264 Subpart B, C, and I requirements. Collectively, these requirements address the active management of the waste. AOC 50-003(a) was recommended for NFA in a 1999 RFI report.
50-003(b)	Administratively Complete	
50-003(c)	Administratively Complete	PRS 50-003(c) is a temporary (less-than-90-day) storage area located on the asphalt paving immediately south of the tank farm at TA-50-1. The waste is hauled by truck to TA-50 in 200- to 300-gal polyethylene tanks from other technical areas. These polyethylene tanks, enclosed in heavy-gauge steel and expanded metal cages, are trade-named "Tuff Tanks." The waste from these tanks is emptied into the tank farm and this storage site is inspected weekly for leaks. There are no documented releases from this storage site. Another storage area listed as part of PRS 50-003(c) is located between the north wall of the Vehicle Decontamination Facility and the south wall of east wing of TA-50-1. This is a temporary storage area, completely paved with asphaltic concrete, for mixed wastes generated from the treatment of industrial waste from many technical areas. No TRU waste is stored at this site. The waste is processed in Building 1: it is mixed with calcium hydroxide and ferric sulfate and then de-watered by a vacuum and filtering process until it is in the form of filter cake. The filter cake is about 30% solids and 70% water and has the consistency of a damp clay. The filter cake is packed into 55-gal. Drums, stored temporarily on site, and then hauled to TA-54 for landfill disposal. The area is monitored periodically for contamination on the storage pad, and the drums are checked for any signs of leakage before they are moved onto the pad. There have been no documented releases from this portion of the PRS either. PRS 50-003(c) is recommended for NFA under the Laboratory's Criterion 4.

50-003(d)	Administratively Complete	PRS 50-003(d) is used for greater-than-90-day storage of chemical waste, primarily acidic waste generated at the ICONS (isotopes of carbon, oxygen, nitrogen, and sulfur) laboratory. It comprises two structures: one is a canvas building about 12-ft wide and 14-ft deep, whose floor had an inflatable berm. The building is located on asphalt pavement and is against the south wall of the east wing of Building 1, adjacent to the filter-cake drum storage area. The second structure is a modular 9-ft-x-24-ft steel shed set on a concrete pad. Designated TA-50-114, WM-114, this shed is located about 25-ft east of the northeast corner of the tank farm. Both of these storage areas are inspected frequently for possible leaks. No contaminant releases have ever been documented from either of these sites. PRS 50-003(d) is recommended for NFA under the Laboratory's Criterion 4.
50-003(e)	Administratively Complete	
50-004(a)-00	In Progress	Consolidated SWMU 50-004(a)-00 consists of former SWMUs 50-004(a), 50-004(b), and 50-004(c), all former components of the radioactive liquid waste treatment facility, Building 50-1. Former SWMU 50-004(a) includes locations through which underground radioactive liquid waste and industrial waste lines were routed to the TA-50 radioactive liquid waste treatment facility from LANL technical areas located along Pajarito Road. The majority of these waste lines were decommissioned and removed in 1975; excavated soils were characterized for radioactive constituents and remediated to meet ALARA levels. Former SWMU 50-004(b) is the location of a decommissioned underground vault (structure 50-3) that housed three stainless steel-lined concrete storage tanks, ranging in volume from 1000 to 4500 gal., used to collect and store wastewater from the Omega Reactor. Waste lines and manholes to the collection tank structure included waste line 49 from TA-35 and waste line 50 from Building 50-1. Waste line 49, the vault, and the tanks were removed in 1989. Soil sampled during decommissioning was screened for radionuclides and chemical constituents. No elevated concentrations were detected. Former SWMU 50-004(c) consists of 13 industrial waste lines (44, 45, 45a, 46, 47, 48, 48a, 49, 54, 55, 56, 65, and 67) and three associated manholes (structures 50-6, -55, and -56) that discharged to the decommissioned underground vault (structure 50-3). All of the waste lines and manholes associated with former SWMU 50-004(b) were removed between 1981 and 1989, with the exception of waste line 56, which remains in service. Radionuclide contamination discovered during decommissioning of the waste lines and manholes was remediated to ALARA levels through removal of pipe and affected soil to approximately 19 ft below grade. Field screening for radionuclides confirmed that ALARA levels had been met; however, no samples were analyzed for hazardous constituents. In 1994, an RFI was conducted at former SWMUs 50-004(a) and 50-004(c), with the objective of filling data gaps identified in the RFI work plan and to determine the presence and/or absence of radionuclides and hazardous constituents from historical operational releases. The RFI at former SWMU 50-004(a) included the trench and manholes through which a 520-ft section of the original 6-in. VCP waste line passed. Part of the waste line was removed in 1975 to clear the area for construction of Building 50-37 (a new line, acid waste line 45, bypassed the Building 50-37 construction zone and replaced the decommissioned line until 1984, when the recently installed waste line also was removed). Five vertical boreholes located approximately 100 ft apart were advanced along the waste line trench to the contact between trench fill and trench bottom. Eleven samples, collected from the five locations, were field-screened for radionuclides and organic vapors. Radionuclide screening results were all at or near BVs and organic vapor results were below 1 ppm. The samples were subsequently submitted to an off-site laboratory for analysis for inorganic chemicals, organic chemicals, and radionuclides. Elevated levels of beryllium, plutonium-238, and plutonium-239 were detected at levels above BVs, but none of the detects exceeded

		SALs. At former SWMU 50-004(c), 67 samples were collected from depths up to approximately 14 ft in 29 locations. Samples were field-screened for radionuclides and organic vapors and submitted for off-site laboratory analysis for organic chemicals, inorganic chemicals, and radionuclides. Analytical results showed elevated levels of beryllium, copper, chromium, lead, mercury, calcium, potassium, nickel, zinc, plutonium-238, plutonium-239, and uranium-235. The human health risk assessment, documented in the RFI report, indicated that the contaminants identified above background values were not considered COPCs when compared with risk-based SALs. An ecological screening assessment was not completed for either of the former SWMUs. Former SWMUs 50-004(a) and 50-004(c) were recommended for NFA in the RFI report, which is currently under review by the NMED. No additional RFI activities have been conducted at former SWMU 50-004(b). Based on common operational history, waste streams, geographical proximity, contaminant transport mechanisms, and the investigation required to assess nature and extent of contamination, all three former SWMUs were consolidated during the FY2000 annual unit audit. Based on the current SAL screening, presented in table above, only arsenic exceeds SALs at a maximum detected value of 6.5 mg/kg.
50-005	Administratively Complete	
50-006(a)	In Progress	SWMU 50-006(a) is the outfall area at the head of Ten Site Canyon impacted by two accidental operational releases when a sump in a pumping station (Building 50-2) overflowed, causing untreated wastewater to be discharged to waste lines 55 and 67 (the waste lines for treated effluent). The releases occurred in July and September 1974. In February 1975, waste line 67 was plugged at its outfall. A soil sample collected from the outfall area when waste line 67 was plugged showed elevated levels of gross-alpha radioactivity. Analysis of additional soil samples collected below the waste line 67 outfall in September 1976 showed elevated levels of gross-alpha radioactivity extending 984 ft downgradient from the outfall. In 1981, both waste lines were completely removed. During the waste line removal operation, elevated levels of radionuclides, including plutonium-239, ruthenium-106, cesium-137, strontium-89, and yttrium-90, were detected. As a result, the outfall area was partially decontaminated by the removal of 70 cubic meters of contaminated soil [see description for SWMU 50-004(a)-00)]. The contaminated outfall area in Ten Site Canyon was subsequently marked with signs and tape. The ER Project conducted an RFI at SWMU 50-006(a) in 1993 to determine the nature and extent of radionuclide and hazardous chemical contamination in and around the Ten Site Canyon outfall area. Sample locations were sited below the former waste line outfalls, on both banks of the drainage channel, and in the canyon drainage channel at regular intervals over a distance of approximately 1300 ft downstream from the TA-50 boundary. Samples were field-screened for organic vapors and radioactivity. Elevated gross-alpha radiation was found at one screening sample location, resulting in the selection of additional sample locations upstream and downstream from the area with elevated gross-alpha radiation. A total of 134 samples were collected from 53 locations during the RFI. Samples were analyzed for inorganic chemicals, VOCs, SVOCs, PCBs/pesticides, and radionuclides. Analytical results showed concentrations of PAHs, lead, mercury, nickel, silver, thallium, PCBs, thorium-232, cesium-137, cobalt-60, plutonium-238; plutonium-239/240, and strontium-90 above their respective BVs and/or SALs. Samples collected from a hummock in the stream channel approximately 500 ft downgradient of the outfall area showed the highest levels of cesium-137, plutonium-238, plutonium-239/240, and strontium-90. Because the hummock could be dislodged in a rain event, the 1995 RFI report recommended an interim action to remove the contaminated sediment. The ER Project implemented an interim action to remove the hummock in November 1996. Approximately 0.72 cubic yards of radioactively contaminated soil was excavated

		and removed from the location in the stream channel where the highest levels of radionuclides had been detected during the RFI. Ten confirmation samples were collected from the excavated area and analyzed for gross-alpha and -beta radioactivity. Results reported in the 1997 interim action report showed gross-alpha radiation levels ranging from 8.91 pCi/g to 23.5 pCi/g, and gross-beta levels ranging from 0.0 pCi/g to 23.8 pCi/g, indicating that the interim action cleanup levels had been met.
50-006(b)	Administratively Complete	
50-006(c)	In Progress	SWMU 50-006(c) refers to surface soil contamination from the deposition of radioactive contaminants (primarily plutonium and americium) from historical stack emissions from operations at TA-50. Emission sources included seven exhaust stacks that ventilated hoods for specific operations at the facility. A previous investigation showed slightly elevated plutonium levels in nearby soils. The only stack emission at TA-50 that has an Air Quality Permit is the Portable Flash Evaporation System. That permit is not held by LANL but by an independent firm called HydroChem Industrial Services (permit number: 2310-REV-1). Buildings 50-1, 50-37, and 50-69 are all monitored for radioactive emissions, and resulting data are reported to EPA Region VI. The ER Project conducted an RFI at SWMU 50-006(c) in the summer of 1993 to confirm results from previous surface soil samples and to determine the nature and extent of any radionuclides and RCRA-listed chemicals for which data were lacking when the OU 1147 work plan was written. The RFI included AOCs 50-007 and 50-008, surface soil contamination from airborne releases from the incinerator complex (Building 50-37) and the volume reduction facility (Building 50-69), respectively. The one SWMU and two AOCs were investigated as an aggregate because their boundaries were indistinguishable. Samples were collected from surface soils from five unpaved areas around Buildings 50-1, 50-37, and 50-69. Sample locations were biased toward natural drainage channels, and soil samples were collected from a total of 51 locations. The samples were analyzed for inorganic and organic chemicals, PCBs, and radionuclides. Analytical results showed elevated concentrations of beryllium, cadmium, chromium, nickel, and silver near a pipe rack. Because the pipe rack was still in use at the time of the RFI, the RFI report recommended that the area be recharacterized when the pipe rack was removed. In addition, cobalt-60, radium-226, several PAHs, and PCBs (Aroclor 1254) were detected above their respective BVs and/or SALs. The RFI report indicated that these contaminants were not considered COPCs when compared with risk-based SALs and/or PRGs. An ecological screening assessment was not completed for the SWMU. The RFI report recommended NFA for SWMU 50-006(c).
50-006(d)	In Progress	SWMU 50-006(d) consists of a drainline (structure 64) and NPDES-permitted Outfall 051 in Mortandad Canyon for treated wastewater from the radioactive liquid waste treatment facility (Building 50-1). Structure 64 is a 6-in.-diameter iron discharge pipe that was rerouted in 1983 to accommodate construction of the target fabrication facility (Building 35-213). In 1985, EPA Region VI issued an administrative order to DOE requiring modification of the outfall to mitigate ongoing stream bank erosion caused by the discharge pipe ending 25 ft short of the stream channel. DOE extended the pipe into the stream channel, and the order was subsequently closed by EPA in 1986. At the time the OU 1147 RFI work plan was prepared in 1992, 13 NPDES permit violations had been issued for Outfall 051 for exceedances of permit levels for iron and copper. The work plan stated that the nature and extent of contaminants in Mortandad Canyon would be addressed as part of the Canyons Focus Area investigations. No RFI activities have been conducted at SWMU 50-006(d).
50-006(e)	Administratively Complete	
50-007	In Progress	AOC 50-007 was an incinerator complex housed in Building 50-37. The complex was

		constructed in 1975 and consisted of the incinerator, various waste-feed components, and two waste-feed tanks. The incinerator was conceived as a research and development project to demonstrate the application of commercially available incineration technology for the safe treatment of TRU-containing wastes. The incinerator was located in Room 112, and the former solid and liquid waste-feed system was in Room 115. The liquid feed system preparation room was bermed and had no floor drains. The maximum waste inventory allowed in Room 115 was 600 gal. in two waste-feed tanks. The incinerator complex was equipped with an off-gas treatment unit, and the exhaust air system from the incinerator included two HEPA filters. Liquid effluent generated by the off-gas aqueous scrub system was filtered to remove solids before transfer to a double instrument-monitored pipeline to the radioactive liquid waste treatment facility (Building 50-1). Ash was stabilized in concrete. From 1978 to 1987, 23 test burns were successfully conducted for RCRA and TSCA wastes. EPA issued a permit for the incineration of PCBs in 1984, and NMED included the incinerator in a 1989 Hazardous Waste Facility Permit. Actual waste streams incinerated at Building 50-37 after the permits were issued included radioactively contaminated PCBs and scintillation cocktails. Operation of the incinerator was discontinued in 1987 to allow for system upgrades. A previous investigation showed slightly elevated plutonium levels in nearby soils. The incinerator complex was removed and underwent RCRA closure in 1998. According to Part A of the Laboratory's Hazardous Waste Facility Permit, Building 50-37 currently houses one container storage area consisting of rooms 112, 115, 117 and 118. This unit will not be permitted, but will be closed. It operated under RCRA interim status and staged waste undergoing characterization and verification. The ER Project conducted an RFI at AOC 50-007 in the summer of 1993 to confirm results from previous surface soil samples to determine the nature and extent of any radionuclides and RCRA-listed chemicals that were lacking data when the OU 1147 work plan was written. The RFI included SWMU 50-006(c) and AOC 50-008, surface soil contamination from airborne releases from Building 50-1 and the volume reduction facility (Building 50-69), respectively. The two AOCs and one SWMU were investigated as an aggregate because their boundaries were indistinguishable. Data collected during these activities are associated with SWMU 50-006(c). An ecological screening assessment was not completed for the PRS. The RFI report recommended NFA for AOC 50-007.
50-008	In Progress	AOC 50-008 is the volume reduction facility (now called the waste characterization, reduction, and repackaging facility) located in Building 50-69. The facility was constructed in 1979 to size-reduce large TRU-contaminated metallic items (e.g., glove boxes, metal ducts, and plenums) and repackage them into standard-sized containers for ultimate disposal at WIPP. The facility was first used to size-reduce TRU waste in 1982. Previous swipe samples indicated that Building 50-69 may be moderately contaminated with radionuclides. No outfalls are associated with Building 50-69; all liquid wastes are processed at the radioactive liquid waste treatment facility (Building 50-1). Operations at Building 50-69 were stopped in 1991, while upgrades were made to allow for continued long-term operation. A previous investigation showed slightly elevated plutonium levels in nearby soils. The ER Project conducted an RFI at AOC 50-008 in the summer of 1993 to confirm results from previous surface soil samples and to determine the nature and extent of any radionuclides and RCRA-listed chemicals that were lacking data when the OU 1147 work plan was written. The RFI included SWMUs 50-006(c) and AOC 50-007, surface soil contamination from airborne releases from Building 50-1 and the incinerator complex (Building 50-37), respectively. The two AOCs and one SWMU were investigated as an aggregate because their boundaries were indistinguishable. Data collected during these activities are associated with SWMU 50-006(c). An ecological screening assessment was not completed for the AOC. The RFI report recommended NFA for AOC 50-008. According to Part A of LANL's Hazardous Waste Facility Permit, the waste characterization, reduction, and repackaging facility (Building 50-69) currently houses

		one interim status mixed waste operation.
50-009	In Progress	SWMU 50-009 is inactive MDA C, established in May 1948 to replace MDA B (SWMU 21-015). MDA C covers 11.8 acres and consists of 7 pits, 107 shafts, and 1 unnumbered shaft that was used for a single strontium-90 disposal. Pits and shafts were used for burial of hazardous chemicals, uncontaminated classified materials, and radioactive materials. TRU waste also was buried in unknown quantities in the pits. The landfill was used until April 1974 but received waste only intermittently from 1968 to 1974. COPCs include inorganic chemicals, VOCs, SVOCs, and radionuclides. According to the OU 1147 work plan, most of the radioactivity at MDA C is associated with tritium. Pits 1 through 5 are located in the eastern half of MDA C. Pits 1 through 4 are approximately 610 ft x 40 ft x 25 ft deep; pit 5 is 110 ft x 705 ft x 18 ft deep. Pit 1 operated from 1948 to 1951, pit 2 operated from 1950 to 1951, pit 3 operated from 1951 to 1953, pit 4 operated from 1951 to 1955, and pit 5 operated from 1953 to 1959. Pits 6 and 7 are located in the northwestern part of MDA C. Pit 6 is 100 ft x 505 ft x 25 ft deep and operated from 1956 to 1960. Pit 7, the chemical pit, is 25 ft x 180 ft x 12 ft deep and operated from 1960 to 1964. Pit 7's designation and use as a chemical disposal pit was spurred by several chemical fires, first at MDA B and later at MDA C. The pit was fenced off from the rest of MDA C and was used to bury chemicals, pyrophoric metals, natural uranium powders and hydrides, sealed vessels containing sodium-potassium alloy, compressed gases, and unspecified equipment. According to the OU 1147 work plan, some radioactively contaminated materials were disposed of in pit 7. The shafts are grouped chronologically and were used to dispose of radioactively contaminated waste from TA-35 and elsewhere. Group 1 consisted of 12 shafts that were used from February through October 1959. Group 1 shafts are located between pits 4 and 5 and measure 2 ft in diameter x 10 ft deep. The shafts originally were numbered 1 through 12 and were renumbered 56 through 67 in 1962. Group 2 shafts, numbered 1 through 55, were used from November 1959 to May 1967. The shafts were located between pits 1 and 3 and are 2 ft in diameter x 15 ft deep. Group 3 shafts, numbered 68 through 107, are located along the western edge of pits 1 through 5 and were used from October 1962 to February 1966. Shafts 68 through 97 are unlined 2-ft-diameter shafts that vary in depth from 20 ft to 25 ft. Shafts 98 through 107 are lined with 12-in.-thick concrete and have an inner diameter of 1 ft. The strontium-90 shaft (no assigned number) was used in the 1950s or 1960s to bury a single strontium-90 source. This shaft is located a few feet from the south fence near the entrance gate at MDA C. Water infiltration tests were performed at LANL, including MDA C, by the US Geological Survey from 1956 to 1961. In 1976, 1977, and 1980 to 1983, soil and vegetation sampling confirmed the presence of radionuclides in localized areas on the surface of MDA C. In 1984, as part of an interim action to cover the contaminated soil surface, a new soil cover was placed over most of MDA C. In 1985 and 1986, a field-instrument and soil-sampling effort took place at MDA C. Readings taken at 18 locations in 1985 were all near BVs. Tritium concentrations were at or below the average LANL BVs in about half the samples and above that level in the remaining samples. Samples from the north and east perimeter and the western third of the site exceeded BVs for tritium, whereas samples from the east-central portions of MDA C were consistently low in tritium. In many cases, tritium levels increased with sampling depth. In 1986, more samples were collected to confirm 1985 sample results. RFI activities were conducted at MDA C from 1993 through 1996. Surface soil sampling was conducted during the summer of 1993; a subsurface investigation was performed during parts of 1994, 1995, and early 1996. Only one contaminant was found in surface soil samples at concentrations exceeding SALs. PCBs exceeded SALs in 4 out of 183 surface soil samples analyzed for

		pesticides/PCBs. Several inorganic chemicals and radionuclides were found to exceed BVs in surface soil samples. Out of 69 surface soil samples analyzed for inorganic chemicals, lead concentrations exceeded BVs in 6 and silver concentrations exceeded background in 2. In the 69 surface soil samples analyzed for radionuclides, several had exceedances of BVs for americium-241, plutonium-238 and -239, and uranium-235 and -238. In subsurface samples, several inorganic chemicals were detected at concentrations greater than BVs. Each of the following inorganic analytes exceeded BVs in at least 2 of the 81 subsurface soil samples analyzed for inorganic chemicals: aluminum, antimony, barium, cadmium, calcium, chromium, cobalt, copper, cyanide, lead, magnesium, selenium, silver, and vanadium. The following seven organic chemicals, including acetone, bis(2-ethylhexylphthalate, 1,1-dichloroethene, hexachlorobutadiene, 2-methylphenol, methylene chloride, and toluene, were detected in isolated core samples out of the 70 samples analyzed for organic chemicals. Americium-241, cesium-137, cobalt-60, plutonium-238 and -239, strontium-90, and tritium were all measured above the minimum detectable activity in at least 1 of the 81 subsurface samples analyzed for radionuclides. Only isotopic uranium has a subsurface BV, and uranium-234, -235, and -238 all exceeded their respective BVs in at least one subsurface sample. A data gap was identified by the ER Project after conducting 1995 RFI fieldwork at MDA C. The ER Project learned from work at TA-54 that VOCs do not adsorb to the tuff but are present in the pore gas. To complete the RFI, data were needed to determine whether there is a VOC vapor-phase plume from the chemical pit (pit 7) at MDA C. The first of two vapor-monitoring boreholes was installed in FY2000 to collect pore-gas samples. The ER Project field-screens 10 sampling ports quarterly from this monitoring borehole; the deepest is 315 ft below ground surface. Based on field-screening data, two samples are collected quarterly for analysis by a fixed analytical laboratory. The second borehole was installed in June 2001 to provide a second reference point to delineate the plume. The pore-gas monitoring project is being conducted in parallel with similar characterization activities at MDAs G and L at TA-54, and results are reported in ER Project quarterly reports. The data will be used to complete the MDA C RFI, and the RFI results will feed into the corrective measures study for MDA C to determine if remedial action is required. A geophysical investigation was conducted in 2001 to confirm the locations of the disposal pits and shafts at MDA C, as well as estimate the thickness of cover materials at the site. To achieve this objective, an integrated geophysical survey was performed using terrain conductivity, high-sensitivity metal detector, and digital ground-penetrating radar techniques. The results of this investigation indicate that the actual locations of disposal pits 1 through 4 are offset approximately 40 ft to the east relative to the historically reported locations of the pits. The thickness of cover materials at MDA C ranges from 0.0 ft to 8.76 ft.
50-010	In Progress	AOC 50-010 is an inactive vehicle decontamination area located in Room 34B of the radioactive liquid waste treatment facility (Building 50-1). The area was used to clean radioactive contamination from vehicles and large objects used to transport radioactive liquid waste to TA-50. Liquid wastes generated during decontamination activities were transferred to tanks at Building 50-2 through a floor drain and waste line. The decontamination bay was operated from 1963 through October 1999. It was enclosed in 1983. According to the OU 1147 work plan, there is no documented evidence of contaminant releases from this facility.
50-011(a)	In Progress	SWMU 50-011(a) is the location of decommissioned septic system that was installed in 1964 at the south end of the radioactive liquid waste treatment facility (Building 50-1). The system consisted of an influent line from Building 50-1 that discharged to a manhole (structure 50-9) and then to a septic tank (structure 50-10). The effluent line from the tank tied to a distribution box (structure 50-11), which discharged to four parallel perforated pipes traversing a leach field. A 4-ft-diameter x 50-ft-deep shaft was drilled at the east end of the leach field in 1978 to address problems with standing

		water on the ground surface. A 4-in. perforated pipe was installed in the shaft, and the annulus was backfilled to within 4 ft of the ground surface (seepage pit). The outlets of the four parallel pipes were then tied into the 4-in. perforated pipe. The septic system, except for the perforated pipe (seepage pit), was removed in 1983. Currently, the former location of the leach field and the section of the effluent line between the former septic tank and the leach field are the only portions of the old system not covered by a storage building (Building 50-83). These areas are beneath an asphalt pad located between the pumping station (Building 50-2) and Building 50-83. The 50-ft-deep shaft is currently located beneath the southeast corner of Building 50-83. Previous investigations of the areas surrounding this SWMU were conducted in 1986, during decommissioning of the radioactive liquid waste line; excavated soils were characterized for radioactive constituents and remediated to meet ALARA levels. The ER Project conducted an RFI at SWMU 50-011(a) in 1994 to determine the presence of and define the nature and extent of any contamination from previous operational releases. The investigation involved the collection of seven soil samples from four 10-ft-deep vertical boreholes. The samples were analyzed for inorganic and organic chemicals, PCBs, and radionuclides. No elevated chemical concentrations were detected, and the RFI report recommended NFA for SWMU 50-011(a). In a May 1997 RSI, NMED approved the drilling of an additional borehole adjacent to the seepage pit to a depth of 60 ft. In December 2001, geotechnical and waste characterization samples were collected from eight boreholes, including one adjacent to the seepage pit, to determine the feasibility of constructing a new pump house and influent storage tank vault at TA-50.
50-011(b)	In Progress	AOC 50-011(b) is composed of two active sanitary wastewater lift stations (structures 50-91 and 50-92) and approximately 400 ft of piping that transport sanitary wastewater from the radioactive liquid waste treatment facility (Building 50-1) to the main line that serves the SWSC plant. The lift stations are located on the north and south sides of Building 50-1. This sanitary wastewater system, AOC 50-011(b), was installed as part of a utility upgrade in 1983. At that time, the septic tank and drainfield [SWMU 50-011(a)] that had served Building 50-1 since 1963 were removed. One lift station serves the north end of Building 50-1, and a second lift station serves the south end of the building. This sanitary wastewater system is still active and is approximately 16 years old. The 400 ft of piping that runs between the lift stations and out to Pecos Drive was also installed in 1983. Effluent lines exit near the southwest and the northwest corners of Building 50-1 and drain to the lift stations. The wastewater is pumped through 4-in. laterals at each lift station to a 6-in. main on the west side of the building. The 6-in. main runs across Pecos Drive to a sanitary sewer manhole; then it joins the 5-in. gravity main to the SWSC Plant at TA-46. This AOC was recommended for NFA in a 1999 RFI report. The SWSC Plant, which is the ultimate repository for the sanitary waste handled by these lift stations, is operated in accordance with the Laboratory's NPDES Permit, NM0028355, for Outfall 13S. To support the treatment and discharge standards specified by the NPDES Permit, the SWSC Plant requires detailed evaluation of all incoming waste streams, and all incoming wastes are required to meet the waste acceptance criteria specified for sanitary liquid waste (Chapter 19 of the LANL Waste Acceptance Criteria, Sanitary Liquid Waste, March 1999). Samples are collected from the SWSC Plant outfall on a regular basis to demonstrate the effectiveness of the program, as specified in the permit. The Water Quality and Hydrology Group at LANL (ESH-18) also periodically collects samples from this permitted outfall as a quality assurance and quality control measure. Collectively, these requirements comprise a program that addresses the active management and treatment of the sanitary wastewater generated at TA-50.
51-001	In Progress	AOC 51-001 is an inactive septic system that served the EETF, which supports research to develop effective isolation techniques for burying wastes in semiarid climates. The EETF was built in 1980; staff-support offices were built in 1986. The septic system was installed in 1988 to provide sanitary sewer service to the environmental science laboratory (Building 51-11), a building occupied by a

		greenhouse and a laboratory (Building 51-12), and an office building (Building 51-26). The system consists of a 1000-gal. concrete septic tank (structure 51-03), drainlines, and a seepage pit (structure 51-31). The seepage pit is 4 ft in diameter and 50 ft deep; it is connected to the septic tank (4-ft. x 8-ft. x 5-ft.) by a 4-in.-diameter VCP buried in a trench that is 2 ft, 6 in. deep. The VCP connects to a 4-in.-diameter perforated PVC drop pipe that extends to within 2 ft of the bottom of the pit. The pit is backfilled with screened gravel to between 40 ft bgs and 50 ft bgs. The system was decommissioned in 1993 when the sanitary sewer line was installed as part of LANL's SWSC. The ER Project conducted RFI sampling at AOC 51-001 in 1995. The nature and extent of potential contamination were not determined during the RFI and the data were not assessed or presented in an RFI report. The septic tank contents were sampled and analyzed. Also, a borehole was advanced through the center of the seepage pit to about 60 ft bgs, but the drill could not collect a sample in the gravel layer at the base of the seepage pit. One tuff sample and a duplicate sample were collected from the borehole. The samples were analyzed for radionuclides, PCBs, organic chemicals, and inorganic chemicals. Data are insufficient from the 1995 sampling to determine if radionuclides are above FVs. The data show low concentrations of VOCs in the sludge and tuff samples, the duplicate sample, and the rinsate sample from equipment that was used for sampling. No inorganic chemicals were detected above LANL BVs. The ER Project sampled the septic tank in July 2000. The ER Project submitted a VCA plan to characterize, remove, and dispose of the waste remaining in the septic tank; collect confirmatory subsurface soil samples, if necessary; determine the nature and extent of soil contamination, if any; assess potential human health and ecological risks presented by the septic system; and remediate the septic system as necessary. DOE approved the plan on August 31, 2000. The VCA was completed in FY 2001, at which time the septic tank was removed. Seven samples were collected from two depth intervals at three locations in the tank imprint and additional samples were collected beneath the inlet pipe. The top of the seepage pit was excavated to verify the pit's location. Two boreholes were drilled 7.5-ft. from the center of the pit and two samples were collected from each borehole in the tuff interval at an approximate depth of 49-50 ft. The VCA completion report subsequently recommended NFA for this site.
51-002(a)	Administratively Complete	
51-002(b)	Administratively Complete	
52-001(a)	Administratively Complete	SWMUs 52-001 (a, b, and c) are equipment that was associated with the filter and cooling systems of the Ultra-High-Temperature Reactor Experiment (UHTREX) reactor. These sites underwent D&D in 1989 and were decontaminated to levels below DOE guidelines for radioactivity. No process-related source for nonradioactive hazardous constituents exists at these sites. SWMUs 52-001(a, b, andc) are appropriate for NFA under Criterion 2 because they have never been used for the management of RCRA solid or hazardous wastes and/or constituents.
52-001(b)	Administratively Complete	SWMUs 52-001 (a, b, and c) are equipment that was associated with the filter and cooling systems of the Ultra-High-Temperature Reactor Experiment (UHTREX) reactor. These sites underwent D&D in 1989 and were decontaminated to levels below DOE guidelines for radioactivity. No process-related source for nonradioactive hazardous constituents exists at these sites. SWMUs 52-001(a, b, and c) are appropriate for NFA under Criterion 2 because they have never been used for the managment of RCRA solid or hazardous wastes and/or constituents.
52-001(c)	Administratively Complete	SWMUs 52-001 (a, b, and c) are equipment that was associated with the filter and cooling systems of the Ultra-High-Temperature Reactor Experiment (UHTREX) reactor. These sites underwent D&D in 1989 and were decontaminated to levels below DOE guidelines for radioactivity. No process-related source for nonradioactive hazardous constituents exists at these sites. SWMUs 52-001(a, b, and c) are appropriate for NFA under Criterion 2 because they have never been used for the management of RCRA

		solid or hazardous wastes and/or constituents.
52-001(d)	Pending	SWMU 52-001(d) is the historical site of contaminated equipment inside the reactor development building (Building 52-1) that was associated with the UHTREX reactor. Specifically, the equipment includes the sump pump room, hot cells, and duct work. The sump pump was located in Room 303 and probably received contaminated wastes. Hot cells were in Rooms 104, 211, 212, and 213. UHTREX was intended for the advancement of high-temperature, gas-cooled reactor technology and research and development of new fuels. Plans to operate UHTREX with uranium-thorium fuel elements and other fuels with high yield of fission products did not materialize. UHTREX was used for reactor experiments from 1965 to 1968. Criticality was attained in August 1967, and the reactor operated for about one year. In 1970, the reactor was shut down and the fuel was removed. The contaminated equipment was removed in 1989 and the building was decontaminated. Building 52-1 currently houses the N-Division offices and laboratories. This SWMU was recommended for NFA in the March 1995 permit modification request because it was remediated in accordance with applicable regulations, and available data indicate that contaminants pose no unacceptable level of risk under current and projected future land use. The recommendation was not accepted. Additional documentation will be provided to the NMED in support of the NFA recommendation.
52-002(a)	In Progress	SWMU 52-002(a) is the original septic system for the historical UHTREX facility (Building 52-1). The system consisted of a 2580-gal. tank (structure 52-3) and the associated distribution box (structure 52-4), which were installed in 1965. The system was located north of Building 52-1, approximately 30 ft north of Puye Road and 10 ft east of former Building 52-2 [former waste neutralization and pumping facility, SWMU 52-003(a)]. Overflow from the tank flowed to a 300-ft-long tile drainfield trench that turns west and then east near the edge of Ten Site Canyon. The tank was to receive only sanitary waste; however, hazardous constituents and/or radionuclides may historically have been sent to the tank. SWMU 52-002(a) was recommended for Phase I sampling to determine if subsurface soil contamination is present at the former site of the septic system. RFI sampling was conducted at this site in 1995. Twenty-six samples were collected from six locations down to a depth of 20 feet below ground surface and submitted for organic and inorganic chemical and radionuclide analyses. Chemicals in the subsurface soils were present at concentrations below SALs.
52-002(b)	Administratively Complete	SWMUs 52-002(b and f) are active septic systems, installed in the early 1980s. These septic systems serve office buildings that have never used or managed hazardous or radioactive materials. SWMUs 52-002(b and f) are appropriate for NFA under Criterion 2 because they have never been used for the management of RCRA solid or hazardous wastes and/or constituents.
52-002(c)	Administratively Complete	The SWMU Report (LANL 1990) identifies SWMU 52-002(c) as a septic system designated by number TA-52-46 and SWMU 52-002(d) as a septic system designated by structure number TA-52-47. However, these structure numbers cannot be located on engineering drawings of septic systems at TA-52. In addition, neither Group ENG-7 nor Johnson Controls Northern New Mexico has any information on septic systems with these structure numbers. Therefore, SWMUs 52-002(c and d) represent septic systems that apparently were planned but never constructed. These SWMUs are appropriate for NFA under Criterion 1 because they have been shown not to exist.
52-002(d)	Administratively Complete	The SWMU Report (LANL 1990) identifies SWMU 52-002(c) as a septic system designated by number TA-52-46 and SWMU 52-002(d) as a septic system designated by structure number TA-52-47. However, these structure numbers cannot be located on engineering drawings of septic systems at TA-52. In addition, neither Group ENG-7 nor Johnson Controls Northern New Mexico has any information on septic systems with these structure numbers. Therefore, SWMUs 52-002(c and d) represent septic systems that apparently were planned but never constructed.
52-002(e)	Administratively Complete	In the SWMU Report (LANL1990), SWMU 52-002(e) is described as an active 1,000-gal. septic tank, TA-52-49, and its associated seepage pit, TA-52-50. The septic tank/seepage pit were locaed in the western portion of TA-52. In May of 1989, the

		western portion of TA-52 was reassigned as TA-63; septic tank TA-52-49 and its associated seepage pit, TA-52-50, were consequently reassigned as structures TA-63-12 and TA-63-13. The Structure Number Log maintained by LANL's Facility Engineering Department recorded that structures TA-52-49 and TA-52-50 were renumbered as TA-63-12 and TA-63-13. The SWMU Report, however, failed to consider the resassigned area as a portion of TA-52, but it also included that same area under its new designation of TA-63. As a component of TA-63, the 1,000-gal. septic tank and its associated seepage pit, TA-63-12, was assigned a second SWMU number, 63-001(a). Thus, the septic tank/seepage pit received two different SWMU numbers, 52-002(e) and 63-001(a). The Field Unit opted to retain the number 63-001(a) for investigating the SWMU. SWMU 52-002(e) is appropriate for NFA under Criterion 1 because it is a duplicate SWMU and has been investigated as SWMU 63-001(a) in the RFI Work Plan for OU 1129 (LANL 1992). Copies of the SWMU Report descriptions of both SWMUs and Engineering Records verify the error in duplication.
52-002(f)	Administratively Complete	SWMUs 52-002(b and f) are active septic systems, installed in the early 1980s. These septic systems serve office buildings that have never used or managed hazardous or radioactive materials. SWMUs 52-002(b and f) are appropriate for NFA under Criterion 2 because they have never been used for the management of RCRA solid or hazardous wastes and/or constituents.
52-002(g)	Administratively Complete	
52-003(a)	In Progress	AOC 52-003(a) is the former waste neutralization and pumping facility (former Building 52-2) for liquid wastes from the historical UHTREX facility (Building 52-1). Building 52-2 was designed for caustic pretreatment of UHTREX liquid acid wastes, to neutralize them, before they were piped to TA-50. Building 52-2 had two stories: a basement and a ground-level floor. The treatment facility included five tanks. Two 5000-gal. concrete waste holding tanks on the north side of the building were recessed into the ground at basement level. In addition, two tanks were located in the basement of Building 52-2; the size and purpose of one of those tanks is unknown, and the other tank was a mixing basin of less than 50-gal. capacity that was used to neutralize caustics. A 150-gal. tank on the building's ground-level floor stored sodium hydroxide. Building 52-2 was located about 200 ft north of the UHTREX facility on the north side of Puye Road. The entire building and all associated tanks were removed in 1989 during the UHTREX D&D activities performed by HSE-7. Soils beneath the foundation were excavated to solid tuff, and the area was backfilled, graded, and revegetated. Confirmation soil samples were taken to demonstrate compliance with radiological standards. The soils were not analyzed for nonradiological contaminants. AOC 52-003(a) was recommended for Phase I sampling to determine if subsurface soil contamination is present. In 1995, nine samples were collected from three locations, down to a depth of approximately 20 feet in the backfill material and submitted for organic and inorganic chemical and radionuclide analyses. Chemicals were detected at concentrations below SALs.
52-003(b)	Administratively Complete	AOC 52-003(b) is composed of 3-in. cast-iron industrial waste lines through which liquid wastes entered and were discharged from the waste neutralization and pumping facility (former Building 52-2). Line 66 ran northward and transported wastes from the UHTREX Reactor Building (Building 52-1) to Building 52-2. Line 65 ran west along the edge of Ten Site Canyon, behind the north fence line of TA-50 MDA C (SWMU 50-009), and transported wastes from Building 52-2 to TA-50. Engineering drawings for the installation of Building 52-2 show a short section of line 66 (line 66A) running northward from Building 52-2 to an outfall in Ten Site Canyon; however, exploratory excavations performed in 1989 did not reveal the pipe. Also, the sump in Building 52-2 that was supposed to feed line 66A did not exist. Therefore, the canyon outfall and line 66A were probably never installed. Lines 65 and 66 were removed during D&D activities in 1989 by HSE-7. This AOC was recommended for NFA because it was characterized and remediated in accordance with applicable regulations. Available data indicate that contaminants pose no unacceptable level of risk under current and projected future land use. However,

		the ER Project has determined that verification sampling is required to confirm potential contaminants were removed during the D&D activities.
52-004	Administratively Complete	
53-001(a)	In Progress	SWMU 53-001(a) consists of an inactive waste accumulation area located outside the north side of the equipment test laboratory, Building 53-2. This area was reportedly located just east of a covered concrete and asphalt pad that currently serves as a drum storage area for Building 53-2. Materials currently stored at the covered storage area include non-PCB dielectric oil and waste oil. The current storage area is surrounded by a concrete curb to provide secondary containment and a drain valve is located in the northwest corner of the area to allow release of accumulated rainwater to the surface. This curbed storage area was reportedly constructed in 1992 in response to concerns raised during the DOE Tiger Team assessment. The satellite hazardous waste accumulation area adjacent to the current storage area was in use until 1992 and the current storage area has reportedly never been used to store hazardous wastes. The 1990 SWMU Report describes the satellite area as a 55-gal. steel drum located on a concrete and asphalt pad and notes that stains had previously been observed on this pad. The site was inspected during preparation of the RFI work plan in 1993 and no evidence of staining or releases was noted. No previous environmental investigations have been conducted at SWMU 53-001(a). The ER Project conducted a Phase I RFI at SWMU 53-001(a) during 1995 to determine whether potential contaminants were present at this site. Two surface samples were collected at each of four locations along the north side of the current storage area. All samples were field-screened for radioactivity and organic chemicals. One sample from each location was submitted for laboratory analysis for inorganic chemicals and organic chemicals, including PCBs. The other sample from each location was submitted for laboratory analysis for organic chemicals using an alternate method. Inorganic chemicals detected slightly above BVs were copper and mercury. One sample was submitted for analysis of isotopic uranium and analytical results showed that uranium isotopes were below FVs. Organic chemicals/analytes detected were alpha-chlordane, Aroclor-1260, total petroleum hydrocarbons, trichloroethene, toluene, endosulfan II, and endrin aldehyde but all were below SALs except Aroclor-1260 which was detected above its SAL. The results of the Phase I sampling and analysis were used to perform a human health risk-based screening assessment and human health risk assessment. Based on these assessments, the RFI report recommended NFA for SWMU 53-001(a). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The RFI report stated that this SWMU would be included in the ecological risk assessment that will be performed once an approach has been approved. In response to an NOD received from NMED, the ER Project conducted additional Phase I sampling at SWMU 53-001(a) during 1997 to better define the vertical and horizontal extent of PCB contamination. The sample location where Aroclor-1260 was detected above its SAL in 1995 was resampled, with samples being collected at the surface, at depths from 24 to 36 in., and at the soil/tuff interface. Surface samples were also collected from two additional locations adjacent to the pad and at four locations in a drainage downgradient of the pad. These samples were all submitted for laboratory analysis for PCBs. Aroclor-1260 was the only PCB type detected and was detected above its SAL. Based on the results of this sampling, the ER Project implemented a VCA at SWMU 53-001(a) in 1997 to remove soil having PCB contamination in excess of 1 mg/kg. Twenty-three confirmatory samples were collected during the VCA. Seventeen of these were surface samples collected around the excavation and six were tuff samples collected at the bottom of the excavation. All confirmatory samples were analyzed for PCBs and the sampling results showed that all soils containing PCBs above the 1 mg/kg industrial PRG cleanup level had been removed. A total of four metal B-25 boxes and four 55-gal. drums of soil were removed. Based on the results of the confirmatory sampling, the VCA report recommended NFA for SWMU 53-001(a).

53-001(b)	In Progress	SWMU 53-001(b) consists of an active less-than-90-day hazardous waste storage area located on the asphalt parking lot outside the south side of the equipment test laboratory (Building 53-2). Prior to 1990, this area consisted of drum racks that were used to store drums of products and wastes associated with maintenance activities conducted in Building 53-2. These wastes included spent trichloroethene, Freon, other solvents and acidic waste. Engineering drawings indicate this area was constructed in 1971. A photograph taken in 1989 showed that the area was not bermed but did not identify any evidence of spills or leakage. In 1990, the drum racks were removed and replaced with four lockable, flammable material storage cabinets. The site was inspected during preparation of the RFI work plan in 1993 and no evidence of staining or releases was noted. No previous environmental investigations have been conducted at SWMU 53-001(b). The ER Project conducted a Phase I RFI at SWMU 53-001(b) during 1995 to determine whether potential contaminants were present in the drainage channel downstream of this site. This drainage channel collects surface runoff from the parking lot upon which the waste storage area is located. Five surface samples and two subsurface samples were collected from two locations in the drainage channel. All samples were field-screened for radioactivity and organic chemicals. Three of the surface samples were submitted for laboratory analysis for inorganic chemicals and organic chemicals, including PCBs. The remaining two surface samples and two subsurface samples were submitted for laboratory analysis for organic chemicals using an alternate method. Inorganic chemicals detected above BVs were copper, lead, and zinc. None of these inorganic chemicals was present above its SAL. The only organic chemical/analyte detected was total petroleum hydrocarbons. The results of the Phase I sampling and analysis were used to perform a human health risk-based screening assessment. Based on these assessments, the RFI report recommended NFA for SWMU 53-001(b). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The RFI report stated that this SWMU would be included in the ecological risk assessment that would be performed once an approach has been approved. The NMED indicated in a NOD that the NFA request would be deferred until the site was decommissioned.
53-001(c)	Administratively Complete	AOC 53-001(c) consists of an inactive satellite waste accumulation area located on the asphalt parking lot outside the south side of a machine shop (Building 53-16). A photograph taken in 1989 showed this area to consist of a single 55-gal. drum and two flammable materials storage cabinets. No evidence of spills or releases was visible in the photograph. The 1990 SWMU report indicated that the site was used to store solvent-contaminated rags and drums of ethylene glycol, organic solvents, and epoxy resins. The epoxy resins were reported to be leaking onto the ground at the site. The site was inspected during preparation of the RFI work plan in 1993 and could not be located. A waste storage area tracking system maintained by EM-8 was reviewed during preparation of the RFI work plan and indicated that the storage area had been removed. The exact dates of operation of this AOC are unknown. No previous environmental investigations have been conducted at AOC 53-001(c). The RFI work plan recommended deferring investigation of AOC 53-001(c) until decommissioning of the site where this AOC was located. The basis for this recommendation was the infeasibility of conducting an investigation. Specifically, it would be necessary to collect soil samples from beneath existing pavement or buildings and no sediment catchments exist near enough the site to rule out the potential for contamination from numerous other sources.
53-001(d)	Administratively Complete	
53-001(e)	Administratively Complete	AOC 53-001(e) consists of a former waste accumulation area located outside the south side of a technical shop (Building 53-25) associated with the LANSCE accelerator facility. This storage site was apparently located on a gravel area approximately 30 ft south of Building 53-25. A 1989 photograph showed this site to contain one drum each of used ethanol, vacuum pump oil, and Freon. No evidence of spills or releases was

		noted in the photograph. This site was apparently used from 1981 until approximately 1992. During the preparation of the RFI Work Plan, the site was visited to confirm the location of the waste accumulation area. Nothing was found either on the east side of Building 53-25 or on the gravel 30 ft south of the building. A new accumulation area was located on asphalt pavement immediately south of Building 53-25. No previous environmental investigations have been conducted at AOC 53-001(e). The ER Project conducted a Phase I RFI at AOC 53-001(e) during 1995 to determine whether potential contaminants were present at this site. Two surface samples were collected at each of four locations around the gravel area. All samples were field-screened for radioactivity and organic chemicals. One sample from each location was submitted for laboratory analysis for organic chemicals. The other sample from each location was submitted for laboratory analysis for organic chemicals using an alternate method. The only organic chemical/analyte detected was total petroleum hydrocarbons. Based on the results of the Phase I sampling and analysis, the RFI report recommended NFA for AOC 53-001(e). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use.
53-001(f)	Administratively Complete	
53-001(g)	In Progress	AOC 53-001(g) consists of a storage shed (structure 53-1031) located approximately 400 ft southeast of Building 53-30 within a locked, fenced area. This shed is enclosed on all sides and has a concrete floor with secondary containment curbing. The shed has been used to store various wastes and products, including acetone, ethanol, hydraulic oil and fluid, vacuum pump oil, and various lead objects (e.g., bricks, sheet, shot). There is a drain in the floor with a locked discharge valve. This valve was reportedly used in the past to discharge accumulated rainwater to the ground surface before the shed was totally enclosed. This site was inspected in 1993 during preparation of the RFI work plan and drums of pump oil and hydraulic oil were noted to be leaking. Sorbent had been placed on the floor of the shed to absorb these leaks. No evidence of stains or contamination was observed at the discharge from the floor drain. This shed has been in use since the early 1980s. No previous environmental investigations have been conducted at AOC 53-001(g). The ER Project conducted a Phase I RFI at AOC 53-001(g) during 1995 to determine whether potential contaminants were present at this site. Two surface samples were collected at each of four locations around the shed, plus one duplicate for a total of nine samples. All samples were field-screened for radioactivity and organic chemicals. One sample from each location (plus the duplicate) was submitted for laboratory analysis for inorganic chemicals and organic chemicals. The other sample from each location was submitted for laboratory analysis for organic chemicals using an alternate method. No inorganic chemicals were detected above BVs. The only organic chemicals/analytes detected were bis(2-ethylhexyl) phthalate and total petroleum hydrocarbons. The results of the Phase I sampling and analysis were used to perform a human health risk-based screening assessment. Based on these assessments, the RFI report recommended NFA for AOC 53-001(g). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The RFI report stated that this AOC would be included in the ecological risk assessment that would be performed once an approach has been approved.
53-001(h)	Administratively Complete	
53-001(i)	Administratively Complete	
53-001(j)	Administratively Complete	
53-001(k)	Administratively	

	Complete	
53-001(l)	Administratively Complete	
53-001(m)	Administratively Complete	
53-001(n)	Administratively Complete	
53-001(o)	Administratively Complete	
53-002(a)-99	In Progress	Consolidated SWMU 53-002(a)-99 consists of former SWMUs 53-002(a) and 53-002(b). These former SWMUs are three surface impoundments, collectively identified as structure 53-166, that are located near the east end of TA-53. These impoundments received sanitary, industrial, and radioactive wastewaters generated at TA-53. Sanitary wastewaters were generated from the various office and laboratory facilities within TA-53. Industrial wastewaters included discharges from sinks and floor drains in laboratories and shops. Radioactive wastewaters were primarily generated in the LANSCE accelerator facility and contained tritium and activation products. Former SWMU 53-002(a) consists of two surface impoundments known as the northeast (NE) and northwest (NW) impoundments. These impoundments were constructed in 1969 and each is 210 ft x 210 ft x 6 ft with a capacity of 1.6 million gal. The dikes comprising the sidewalls of the impoundments were constructed of compacted tuff lined with 4 to 6 in. of gunite. The bottoms of the impoundments are lined with 4 in. of bentonite clay. These impoundments were originally constructed to contain all sanitary, industrial, and radioactive wastewaters generated in TA-53 with no discharge. Because wastewater flows exceeded the evaporative capacity of the impoundments, however, it became necessary to discharge wastewater from the impoundments to an unlined drainage channel leading to Los Alamos Canyon. Discharges occurred on a batch basis through an NPDES-permitted outfall 09S. The impoundments also had an emergency overflow that discharged to the south of the impoundments, near a tributary to Sandia Canyon. In 1989, all radioactive wastewaters from TA-53 were discharged to a third impoundment [former SWMU 53-002(b)]. The NE and NW impoundments continued to receive all sanitary and industrial wastewaters until 1993, when the impoundments were taken out of service. The water in the impoundments was then allowed to evaporate. The NE and NW surface impoundments were originally included as treatment, storage, and disposal (TSD) units in LANL's 1991 RCRA Part A permit application. LANL had intended to close these units under RCRA interim status and submitted a closure plan to NMED in 1994. Subsequent to this, LANL conducted investigations to determine the source of hazardous materials detected in the impoundments. Based on these investigations and sampling results, a determination was made that the contents of the impoundments were not hazardous waste. As a result, in 1997, NMED changed the status of the impoundments from TSD units to corrective action units. A number of previous environmental investigations have been conducted at former SWMU 53-002(a). Sludge and/or water in the impoundments were sampled by the DOE Environmental Survey in 1988 and by the LANL Environmental Protection Group in 1991 and 1992. Various inorganic chemicals, organic chemicals, and radionuclides were detected at low concentrations. The drainage channel below the impoundment outfall was sampled annually by LANL from 1979 through 1985. Radionuclides were detected, with concentrations decreasing with distance from the outfall. Biological sampling around the impoundment outfall was also conducted by LANL during 1981 and 1982 in indicated low biological magnification of radionuclides. Former SWMU 53-002(b) consists of a surface impoundment known as the south (S) impoundment. This impoundment was constructed in 1985 and is 305 ft x 148 ft x 6 ft with a capacity of 2.6 million gal. The dikes comprising the sidewalls of the impoundments were constructed of compacted tuff. The sidewalls and bottom of the impoundments are lined with a 36-mil Hypalon® membrane liner. This impoundment was installed to increase the capacity of the TA-53 wastewater system. From 1985 until

		1989, the S impoundment received wastewater from the NE and NW impoundments when they were approaching capacity. This wastewater consisted of all sanitary, industrial, and radioactive wastewater from TA-53. Beginning in 1989, the S impoundment was operated as a total retention impoundment for radioactive wastewater and received only radioactive wastewater from TA-53, while sanitary and industrial wastewaters were sent to the NE and NW impoundments. Because the S impoundment was operated as a total retention impoundment, wastewaters were allowed to evaporate and there were no discharges. The S impoundment also received potable water as needed to keep the impoundment from evaporating completely and exposing sludge at the bottom of the impoundment. The S impoundment was operated until 1999 when it was replaced with the new RLW system for TA-53. The S surface impoundment was originally included as treatment, storage, and disposal (TSD) unit in LANL's 1991 RCRA Part A permit application. LANL had intended to close this unit under RCRA interim status and submitted a closure plan to NMED in 1994. Subsequent to this, LANL conducted investigations to determine the source of hazardous materials detected in the impoundment. Based on these investigations and sampling results, a determination was made that the contents of the impoundment were not hazardous waste. As a result, in 1997, NMED changed the status of the impoundment from a TSD unit to a corrective action unit. Two previous environmental investigations have been conducted at former SWMU 53-002(b). Sludge and water in the impoundments were sampled by the LANL Environmental Protection Group in 1991 and 1992. Various inorganic chemicals, organic chemicals, and radionuclides were detected at low concentrations. The ER Project conducted sampling of the NE and NW surface impoundments during 1994 and 1995 as part of RCRA closure activities. Samples were collected from the sludge in the impoundments, the bentonite clay lining the impoundments, the tuff below the bentonite liner, and the tuff below the gunite sidewall liners. Samples of sludge, clay liner, and tuff below the clay liner were collected from each of 17 locations in each impoundment (plus one duplicate from each impoundment). Samples of the tuff below the gunite liner were collected from each of eight locations at each impoundment (plus one duplicate from the NE impoundment). All samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Fourteen inorganic chemicals were detected in sludge samples above soil BVs. None of these inorganic chemicals was present above SALs for soil. Six inorganic chemicals were detected in clay liner samples above soil BVs. None of these inorganic chemicals was present above SALs for soil. Eight inorganic chemicals were detected in tuff samples above BVs. None of these inorganic chemicals was present above SALs for soil. Eleven radionuclides were detected in sludge samples above soil FV. Of these radionuclides, four were detected above SALs for soil. Nine radionuclides were detected above soil FV in clay liner samples. Of these radionuclides, three were detected above SALs for soil. Eleven radionuclides were detected in tuff samples above FV. Of these radionuclides, three were detected above SALs for soil. Twelve organic chemicals were detected in sludge samples. Four of these organic were detected above SALs for soil. Twelve organic chemicals were detected in clay liner samples. Only one of these organic chemicals exceeded SALs for soil. Thirteen organic chemicals were detected in tuff samples. None of these organic chemicals was detected above SALs for soil. An IA was undertaken in 1996 to cover the exposed sludge with geotextile fabric to prevent release of airborne contamination and contact with wildlife. Subsequent to the 1994/1995 sampling, the regulatory status of the three impoundments was changed from TSD units to corrective action units. As a result, additional data were needed to define the nature and extent of contamination at the site and to support preparation of human health and ecological risk assessments. The ER Project conducted additional investigations in 1999/2000, 2001 and 2002 to address these data gaps. This effort included resampling the sludge, clay liner, and tuff beneath the clay liner at the same locations as the 1994/1995 sampling. These samples were submitted for laboratory analysis for organic chemicals. In addition, tuff samples were

		collected at some of these locations at deeper depth intervals (up to 15 ft). These samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Soil and tuff samples were also collected at depths up to 29 ft at locations around the surface impoundments to define the lateral extent of contamination. These samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Surface samples were collected from locations around the tributary to Sandia Canyon to characterize contamination associated with the former emergency overflow. These samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. Similarly, surface samples were collected from locations around the decommissioned outfall area. These samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and organic chemicals. The outfall and subsequent drainage areas that led to the Los Alamos Canyon tributary were also sampled and submitted for laboratory analysis for organic chemicals, inorganic chemicals, and radionuclides. The results from analysis of the 1999/2000 sludge and clay liner samples were similar to those for the 1994/1995 samples. The results from the two sampling events were combined and used to conduct a human health risk-based screening assessment. The results of this assessment indicated unacceptable risk due to the concentrations of inorganic chemicals, organic chemicals, and radionuclides in the sludge and clay liner. As a result, the ER Project recommended IAs for the three impoundments comprising consolidated former SWMU 53-002(a)-99. An IA consisting of the removal of sludge was implemented on the southern impoundment in 2000; additional material was removed in 2002. The sludge and liner were removed from the northern two impoundments in an IA conducted in May/June 2002. A final RFI report is in preparation for this site.
53-003	Administratively Complete	
53-004	Administratively Complete	
53-005	In Progress	SWMU 53-005 consists of a disposal pit located east of the equipment test laboratory (Building 53-2). This pit was reportedly excavated into the tuff and used to dispose of waste oils, acids, and solvents. The approximate dimensions of the pit are 8 ft x 8 ft x 6 ft deep. The pit was constructed in approximately 1970 and used until 1986. Information from historical engineering drawings suggests that solvent wastes (trichloroethene and Freon) and acidic wastes were piped from Building 53-2 to the pit. Other wastes may also have been dumped into the pit. The 1986 working draft CEARP report describes the pit as being full of a thick, brownish liquid and notes the presence of a metal grate over the pit. In 1986, the pit contents were reportedly removed and the pit sides scraped clean. No previous environmental investigations have been conducted at SWMU 53-005. The contents of the pit were reportedly sampled during the 1986 removal, but sampling data were not available. The ER Project conducted a Phase I RFI at SWMU 53-005 during 1995 to determine whether potential contaminants were present at this site. A reconnaissance-type geophysical survey was conducted at the general location of the pit to identify sampling locations. No geophysical anomalies were noted and subsurface conditions at this site were found to consist of two to four inches of soil over tuff bedrock. Additional historical research was conducted to better determine the location of the pit. An expanded geophysical survey was then conducted and a new location was identified. The RFI report stated that this location would be sampled.
53-006(b)-99	In Progress	Consolidated SWMU 53-006(b)-99 consists of former SWMUs 53-006(b) and 53-006(c), and AOC 53-006(a). These former SWMUs and AOC are three inactive underground tanks associated with the former RLW system at TA-53. Former AOC 53-006(a) is a tank (structure 53-59) that was used to store spent ion-exchange resin from the LANSCE accelerator facility. This steel tank is 28 in. in diameter and 65 ft long and has a capacity of approximately 138 gal. It was installed

		vertically with the top of the tank 15 ft below grade. This tank is south of Building 53-3, approximately 15 ft northeast of former SWMUs 53-006(b) and 53-006(c). Spent ion-exchange resins were generated from operation of the water purification system located in Building 53-3M. Resins were flushed into the tank from this area approximately twice per year through a buried 4-in. drainline and allowed to settle. After the resins settled, the water in the tank would be discharged to former SWMUs 53-006(b) and 53-006(c). This tank was operated from 1972 until the early 1980s. No previous environmental investigations have been conducted at former AOC 53-006(a). Former SWMUs 53-006(b) and 53-006(c) are two identical tanks identified as structures 53-68 and 53-69, respectively. Each of these steel tanks is approximately 12 ft long x 6 ft in diameter, with a capacity of approximately 2,500 gal. The tanks are situated next to each other and are approximately 18 ft below grade. These tanks are located directly south of Building 53-3S and were used to store RLW generated in Building 53-3 during operation of the LANSCE accelerator. Most of this RLW consists of tritiated DI water collected in floor drains along the length of the accelerator tunnel. These tanks also received wastewater from a sink, shower, and clothes washer in Building 53-502. Wastes flowed into the tanks through a buried 4-in. drainline. The tanks were primarily used as holding tanks to allow short-lived activation products to decay before discharging the RLW to the TA-53 surface impoundments [consolidated SWMU 53-002(a)-99]. These tanks were installed in 1973 and operated until 1999 when the new TA-53 RLW system became operational. No previous environmental investigations have been conducted at former SWMUs 53-006(b) and 53-006(c), though the contents of the tanks were occasionally sampled. The RFI work plan originally recommended deferring investigations at former SWMUs 53-006(b), and 53-006(c) and AOC 53-006(a). The basis for deferring investigation of former AOC 53-006(a) was that intrusive investigations would disrupt ongoing operations at nearby facilities. Deferred investigation of former SWMUs 53-006(b) and 53-006(c) was recommended because these units were active at the time that the RFI work plan was prepared. Although the RFI work plan recommended deferring intrusive investigations, the work plan did recommend conducting nonintrusive, nondestructive evaluation of the integrity of each tank to determine whether leakage was occurring. These evaluations were, however, deferred. After the RFI work plan was prepared, the operating group at TA-53 made plans to replace the RLW system, including taking former SWMUs 53-006(b) and 53-006(c) out of service. At that time, the ER Project prepared a work plan and SAP for the existing RLW system, including the former SWMUs and AOC comprising consolidated SWMU 53-006(b)-99. The SAP called for installation of a borehole adjacent to former AOC 53-006(a) and collection of subsurface samples at 5-ft intervals along the length of the tank and at a 10-ft interval below the bottom of the tank. Similarly, the SAP called for installation of boreholes adjacent to former SWMU 53-006(b) and former SWMU 53-006(c) and collection of subsurface samples at 5-ft intervals from the surface to the bottom of each tank and at a 10-ft interval below the bottom of each tank. Subsurface samples would also be collected at two depths beneath the drainline tie-in locations for each tank. Eight boreholes would also be installed along the drainlines and samples collected at two depths below the drainline at each location. All samples would be analyzed for inorganic chemicals, radionuclides, and organic chemicals. These sampling activities were to be coordinated with intrusive activities associated with deactivation of the RLW system, including cutting and capping the drainlines to isolate the tanks. The TA-53 operating group also removed the contents from former SWMUs 53-006(b), and 53-006(c) and AOC 53-006(a).
53-006(d)-99	In Progress	Consolidated SWMU 53-006(d)-99 consists of former SWMUs 53-006(d) and 53-006(e)(structures 53-144 and 53-145, respectively). These former SWMUs comprise two compartments in an inactive underground tank associated with the RLW system at TA-53. This tank consists of a reinforced concrete structure that is approximately 20 ft long x 12 ft wide x 10 ft high. This structure is constructed of 1-ft thick reinforced concrete with a 1-ft thick reinforced concrete divider wall between the two compartments. This tank is approximately 10 ft below grade. Former SWMUs 53-006(d)

		and 53-006(e) are located directly south of Building 53-622 and were used to store RLW generated in the WNR facility. Wastes received by these tanks included drainage from floor drains in the beam-line, target, and experimental areas in Building 53-7; drainage from beneath a contaminated DI pump stand in Building 53-8; drainage from contaminated floor drains and sink drains in Building 53-30; drainage from the DI water system in Building 53-30; and discharges from an equipment room floor drain in Building 53-368. A buried 4-in. waste line conveyed RLW into the tanks. The tanks were primarily used as holding tanks to allow short-lived activation products to decay before discharging the RLW to the TA-53 surface impoundments [consolidated SWMU 53-002(a)-99]. These tanks were installed in 1977 and operated until 1999 when the new TA-53 RLW system became operational. No previous environmental investigations have been conducted at former SWMUs 53-006(d) and 53-006(e), though the contents of the tanks were occasionally sampled. The TA-53 operating group also reportedly removed the contents from former SWMUs 53-006(d) and 53-006(e). The RFI work plan originally recommended deferring investigations at former SWMUs 53-006(d) and 53-006(e). Deferred investigation of former SWMUs 53-006(d) and 53-006(e) was recommended because these units were active at the time that the RFI work plan was prepared. Although the RFI work plan recommended deferring intrusive investigations, the work plan did recommend conducting nonintrusive, nondestructive evaluation of the integrity of the tank to determine whether leakage was occurring. After the RFI work plan was prepared, the operating group at TA-53 updated systems replace the RLW system, including taking former SWMUs 53-006(d) and 53-006(e) out of service. At that time, the ER Project prepared a work plan and SAP for the then-existing RLW system, including the former SWMUs comprising consolidated SWMU 53-006(d)-99. In 1999, 10 samples were collected from 5 locations and analyzed for organic chemicals, inorganic chemicals, and radionuclides; a report detailing the results of this sampling is in preparation.
53-006(f)	In Progress	SWMU 53-006(f) is an inactive 3,000-gal. underground tank located beneath the basement of D Wing of an office and laboratory building (Building 53-1). This tank was operated from 1972 until 1996 and was used to store neutralized RLW generated in the radiochemistry laboratories in Building 53-1. The sources of these wastes were cup drains, an emergency eye wash/shower drain, and a floor sink drain. These wastes were collected in a neutralization tank [SWMU 53-007(a)], located in the basement of D Wing, and neutralized with sodium hydroxide. The neutralized wastes were then drained to SWMU 53-006(f). When sufficient wastes had accumulated in SWMU 53-006(f), they were removed by LANL waste management staff for treatment or disposal. The liquid waste was removed by pumping it to a transfer pad located outside the south side of Building 53-1 for loading into tanker trucks. The transfer pad had a spill-collection sump that drained back into the tank. The tank was intended only for management of radioactive waste and was not intended for management of hazardous or mixed waste. A 1990 RCRA inspection by NMED, however, identified the potential for SWMUs 53-006(f) and 53-007(a) to have received mercury from a spill in one the radiochemistry laboratories in Building 53-1. As a result, the contents of SWMUs 53-006(f) and 53-007(a) were sampled and found to contain listed and characteristic RCRA wastes. The contents of the tanks were subsequently removed and the tanks decontaminated by steam cleaning. Review of waste profile forms by the ER Project indicated that wastes removed from the tank in 1993 were designated as hazardous and wastes removed in 1996 were designated as mixed. No previous environmental investigations have been conducted at SWMU 53-006(f) other than waste sampling. The RFI work plan originally recommended deferring investigation of SWMU 53-006(f) until decommissioning of Building 53-1. The basis for deferring investigation was that intrusive investigations would disrupt ongoing operations at Building 53-1.
53-007(a)	In Progress	SWMU 53-007(a) is an inactive 50-gal. aboveground tank located in the basement of D Wing of an office and laboratory building (Building 53-1). This tank was operated from 1972 until 1996 and was used to neutralize RLW generated in the radiochemistry laboratories in Building 53-1. The sources of these wastes were cup drains, an emergency eye wash/shower drain, and a floor sink drain. These wastes were collected

		in SWMU 53-007(a) and neutralized with sodium hydroxide. A wall-mounted tank located above SWMU 53-007(a) was used to store the sodium hydroxide. The neutralized wastes were then drained to an underground tank located beneath the basement floor [SWMU 53-006(f)]. When sufficient wastes had accumulated in SWMU 53-006(f), they were removed by LANL waste management staff for treatment or disposal. SWMU 53-007(a) was intended only for management of radioactive waste and was not intended for management of hazardous or mixed waste. A 1990 RCRA inspection by NMED, however, identified the potential for SWMUs 53-006(f) and 53-007(a) to have received mercury from a spill in one the radiochemistry laboratories in Building 53-1. As a result, the contents of SWMUs 53-006(f) and 53-007(a) were sampled and found to contain listed and characteristic RCRA wastes. The contents of the tanks were subsequently removed and the tanks decontaminated by steam cleaning. Review of waste profile forms by the ER Project indicated that wastes removed from the tank in 1993 were designated as hazardous and wastes removed in 1996 were designated as mixed. No previous environmental investigations have been conducted at SWMU 53-007(a) other than waste sampling. The RFI work plan recommended NFA for SWMU 53-007(a) because there was no evidence of past releases and because any releases from SWMU 53-007(a) would be contained within Building 53-1, with little potential for environmental contamination. The status of this NFA request was not documented.
53-007(b)	Administratively Complete	SWMU 53-007(b) is identified as two tanks located in Building TA-53-3. One tank, built in 1974, is stainless steel and measures 4-ft. in diameter by 4-ft. high. Both tanks were located below the hot cell room in Experimental Area A. The tanks contained waste solvents, organics, and carcinogens. These wastes were reportedly picked up by EM-7. The tanks were located during an on-site inspection. Both are inactive and have been disconnected from waste lines. Laboratory staff indicated that the tanks would be removed. Because no release to the environment has occurred at this site, SWMU 53-007(b) is appropriate for NFA under Criterion 3.
53-008	In Progress	AOC 53-008 is a boneyard used to store old materials and equipment associated with experiments conducted at TA-53. This storage area is irregularly shaped, approximately three to four acres in size, and located north, east, and south of the inactive TA-53 surface impoundments [consolidated SWMU 53-002(a)-99]. AOC 53-008 is unpaved and is accessible by road only through a locked gate. This site was inspected in September 1993 during preparation of the RFI work plan and found to contain shielding blocks (magnetite concrete and steel), concrete, steel, other metallic debris, two trailers, and other miscellaneous items. No hazardous materials or chemicals were observed, other than lead, which was stored in a shed (structure 53-621) at the south end of the site. AOC 53-008 has been used for storage from approximately 1972 until the present. No previous environmental investigations have been conducted at AOC 53-008. The ER Project conducted a Phase I RFI at AOC 53-008 during 1995 to determine whether potential contaminants were present at the site. The Phase I RFI included conducting a radiation survey of the site, followed by collection of 11 surface samples at locations determined by the results of the radiation survey. All samples were submitted for laboratory analysis for inorganic chemicals and radionuclides. The RFI report did not present specific results of the Phase I RFI. The RFI report stated that no RCRA chemicals were retained as potential contaminants, but that radionuclides were detected above SALs. As a result, the RFI report recommended NFA for RCRA chemicals. Because radionuclides were detected above SALs, the RFI report recommended performing a VCA to address radioactive contamination. This VCA Plan was prepared; because the site is still active, VCA activities were deferred until the site is no longer in use by the operating group. In 1998, 3 samples were collected from 3 locations at this AOC, no report has been written.
53-009	In Progress	AOC 53-009 is an area used to store liquid scintillation oil used in experiments conducted at TA-53. This area is located north of the inactive TA-53 surface impoundments [consolidated SWMU 53-002(a)-99]. The 1990 SWMU report describes this storage area as an earth-bermed area containing three aboveground storage

		tanks. This original earthen-bermed area was later replaced with two steel containment structures, each of which measures 30 ft x 60 ft x 3 ft high. These containment structures are identified as structures 53-1071 and 53-1072. Both containment structures are lined with one-eighth-in.-thick butyl rubber to prevent release of spills. This storage area was inspected in 1993 during preparation of the RFI work plan. At that time, the western structure (structure 53-1071) contained three large aboveground tanks, each containing 30,000 gal. liquid scintillation oil. In addition, there were 30 55-gal drums that collectively contained 165 gal. of liquid scintillation oil. These drums were covered with a canvas tarp. The eastern structure (structure 53-1072) contained four large, empty tanks and 141 55-gal. drums that collectively contained 7,755 gal. of liquid scintillation oil. These drums were also covered with a canvas tarp. At the time that this area was inspected, there was no evidence of spills or releases. The operating dates of this storage area are unknown. No previous environmental investigations have been conducted at AOC 53-009. The RFI work plan recommended deferring investigation of AOC 53-009. The basis for deferring investigation was that the site was active and investigations would disrupt ongoing operations. Specifically, the area of interest for the investigation would be soil potentially contaminated by releases prior to construction of the containment structures. This soil is located beneath the current containment structures and it would not be possible to collect samples without damaging the rubber liner.
53-010	In Progress	AOC 53-010 is a former earthen-bermed storage area used to store scintillation liquid in tanks and drums. This storage area is located approximately 90 ft southeast of Building 53-1031 [AOC 53-001(g)]. The storage area was 30 ft x 35 ft and surrounded by 2-ft-high soil berms. The bottom and sidewalls of the storage area were lined with a reinforced, welded geomembrane, which was covered with soil. The 1990 SWMU report notes that this site was used in 1989 and 1990 to store scintillation liquid in two 3,000-gal. tanks and eighteen 55-gal. drums. The scintillation liquid was mineral-oil based containing a small fraction of pseudocumene (1,2,4-trimethylbenzene). The tanks and drums were reportedly removed in 1990 when the site was closed. Two small areas of stained soil were reportedly removed at that time. The storage area was inspected in 1993 during preparation of the RFI work plan. The cover soil at the top of the berms had been eroded in some places, exposing the membrane liner and causing deterioration. No evidence of staining or of any releases was noted during the inspection, however. Several circular indentations were noted in the soil, possibly caused by drum storage. No previous environmental investigations have been conducted at AOC 53-010. The ER Project conducted a Phase I RFI at AOC 53-010 during 1995 to determine whether potential contaminants were present at the site. The Phase I RFI included collecting six surface samples from within the bermed area. These samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis for radionuclides and organic chemicals. The RFI report did not present specific results of the Phase I RFI. The RFI report did state that TPH was detected in soil and recommended that a VCA be conducted at AOC 53-010. The ER Project prepared a VCA plan and implemented the plan during 1995. The VCA was conducted to remove soil contaminated with TPH. The VCA activities included removing the cover soil from above the membrane liner, removing the membrane liner, inspecting the soil beneath the liner for evidence of staining (none was found), collecting six confirmatory samples of soil from beneath the liner, removing the soil berms, and regrading and reseeding the site. The cover soil and liner were field-screened for radioactivity and organic chemicals prior to being placed in two 20-cu-yd roll-off boxes for disposal. Field-screening did not indicate readings above instrument background. Confirmatory soil samples were submitted for laboratory analysis for organic chemicals. No pseudocumene was detected in any of the samples. Based on analytical results, NFA was prosposed for this site.
53-011(a)	Administratively Complete	
53-011(b)	Administratively	

	Complete	
53-011(c)	Administratively Complete	
53-011(d)	Administratively Complete	
53-011(e)	Administratively Complete	
53-012(a)	Administratively Complete	
53-012(b)	Administratively Complete	
53-012(c)	Administratively Complete	
53-012(d)	Administratively Complete	
53-012(e)	In Progress	AOC 53-012(e) is a drainline and outfall associated with the equipment test lab (Building 53-2). The drainline runs southwest from the southwest corner of Building 53-2 under an asphalt parking lot approximately 140 ft and then runs northwest approximately 50 ft to the outfall near the edge of Sandia Canyon. The drainline receives discharges from 12 trench drains, 2 sink drains, and a floor drain in Building 53-2. The primary source of wastewater is blowdown from the Building 53-2 cooling tower, which is discharged to one of the trench drains. Historically, chemicals added to the cooling water included sodium molybdate and hydroxyethylidene diphosphonic acid as corrosion inhibitors, 1-bromo-3-chloro-5,5'-dimethylhydantoin as a microbicide, and sodium bisulfite as an oxygen scavenger. The trench drains also receive equipment-flushing and floor-washing wastewater. This outfall has been used since approximately 1970 and operates under LANL's NPDES permit as outfall 03A114. No previous environmental investigations have been conducted at AOC 53-012(e). Sampling of this outfall was not required by the LANL NPDES permit. The ER Project conducted a Phase I RFI at AOC 53-012(e) during 1995 to determine whether potential contaminants were present at the site. The Phase I RFI included performing a geomorphic survey downstream of the outfall to identify sediment catchments. Two samples were then collected at each of three locations in sediment catchments. These samples were field-screened for radioactivity and organic chemicals and one sample from each location was submitted for laboratory analysis for inorganic chemicals and organic chemicals. The other sample from each location was submitted for laboratory analysis for organic chemicals using an alternate method. Inorganic chemicals detected above BVs were chromium, copper, lead, mercury, nickel, and zinc. None of these inorganic chemicals was detected above its SAL. Five organic chemicals (Aroclor-1248, Aroclor-1254, Aroclor-1260, alpha-chlordane, and total petroleum hydrocarbons) were detected. None of these organic chemicals exceeded its SAL, but the sum of the concentrations of the individual Aroclor species exceeded the SAL for total PCBs. The Phase I sampling and analysis results were used to perform a human health risk-based screening assessment and human health risk assessment. Based on these assessments, the RFI report recommended NFA for AOC 53-012(e). The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under the projected land use. The RFI report stated that this AOC would be included in the ecological risk assessment that would be performed once an approach has been approved.
53-012(f)	Administratively Complete	
53-012(g)	Administratively Complete	
53-012(h)	Administratively Complete	
53-013	In Progress	AOC 53-013 consists of an area, referred to as Lead Shot Site I, where lead shot is present on the ground surface. This site is located near the east end of TA-53,

		northeast of the Buildings 53-10 and 53-315, which are part of the LANSCE accelerator facility. The lead shot is present within two fenced areas located on the edge of Los Alamos Canyon. These fenced areas are approximately 50 ft x 80 ft and 60 ft x 180 ft. These areas are used as a storage area (small bone yard) and an experimental staging area for equipment used in beam experiments. Lead shot was noted to be present on the ground in two locations in each of the two areas. The lead shot was apparently used as radiation shielding for experiments conducted in Building 53-10. The shot reportedly ranges from 1.5- to 4-mm in diameter. The ground surface at each area is described as sandy. The exact dates that the shot was used or placed on the ground surface is unknown. The shot may date as far back as the late 1960s/early 1970s when operation of the accelerator began. Previous sampling of the lead shot and sand at the site reportedly detected up to 110,000 mg/kg total lead. The exact details of this sampling were not reported and no other previous environmental investigations have reportedly been conducted at AOC 53-013. AOC 53-013 was not originally identified in the 1990 SMWU report or in the 1994 RFI work plan for OU 1100. This site was identified by the ER Project and reported to NMED in June 1996. The 1996 notification to NMED indicated that cleanup of this site as a VCA was anticipated. Cleanup was expected to be accomplished using an industrial vacuum loader.
53-014	Administratively Complete	
53-015	In Progress	AOC 53-015 consists of the RLW management system for TA-53. This system consists of two lift stations, three 30,000-gal. double-walled tanks in an underground vault, two evaporation basins, and underground double-walled waste piping. AOC 53-015 was constructed to replace the former TA-53 RLW system, which included underground tanks [former SWMUs 53-006(b), 53-006(c), 53-006(d), and 53-006(e)] and a surface impoundment [former SWMU 53-002(b)]. AOC 53-015 also includes some of the existing underground waste piping from the former RLW system. AOC 53-015 began operation in October 1999. No previous environmental investigations have been conducted at AOC 53-015. Because AOC 53-015 did not begin operation until 1999, it was not originally identified in the 1990 SMWU report or in the 1994 RFI work plan for OU 1100. LANL and DOE agreed with NMED to notify NMED of the existence of this system as a new AOC, with the understanding that it not be subject to a compliance schedule for corrective action. When this system ceases operation, it will be evaluated to determine whether releases have occurred.
54-001(a)	In Progress	SWMU 54-001(a) is within an active RCRA-permitted hazardous waste storage area that also operates in accordance with RCRA interim status requirements for the storage of mixed waste. The 150-ft x 40-ft bermed storage area is situated on the paved surface of Area L directly over the location of pit A, and currently is covered by a storage dome (structure 54-215). The storage area capacity is 100,000 gal.
54-001(b)	In Progress	AOC 54-001(b) is part of the active RCRA-permitted hazardous waste storage area that also operates in accordance with RCRA interim status requirements for the storage of mixed waste. The area is located inside structure 54-31 at Area L. The structure is 13.5 ft x 14.5 ft; the floor is paved, sealed, and bermed. The structure's storage capacity is 440 gal. Secondary containment mechanisms consist of three 6-in.-deep sumps, one measuring 7 ft x 6 ft and the other two measuring 6 ft x 4 ft. A paved drainage diversion ditch surrounds the outside of the building to prevent stormwater run-on. No releases have been identified at AOC 54-001(b). This operational waste management unit is not included in Module VIII of LANL's Hazardous Waste Facility Permit.
54-001(c)	Administratively Complete	When the SWMU Report (LANL 1990) was written, a portable, inflatable temporary berm containing a steel tank was proposed for the storage of waste oil and hazardous materials at MDA L. It was designated SWMU 54-001(c). However, the tank collected only rainwater and it was never used to store waste oil or hazardous materials. The inflatable berm and tank have been removed. SWMU 54-001(c) is appropriate for NFA under Criterion 2 because it has never been used for the management of RCRA solid or hazardous wastes and/or constituents.

54-001(d)	In Progress	AOC 54-001(d) is part of the operational waste storage area situated on the paved surface of Area L. Radioactive and PCB waste is managed here in accordance with a TSCA approval letter issued by EPA and interim status requirements. EPA issued the initial approval letter in June 1980; renewal authorization is pending. The area consists of an enclosed PCB storage building (Building 54-39), and a PCB storage pad (structure 54-81). The building is equipped with a bermed concrete floor that forms a sump with ramps at all entrances and a foam fire-suppression system with temperature sensors. The storage pad consists of bermed and sealed concrete measuring 59 ft x 17 ft; it has a roof, sheet-metal back wall, and secondary containment system. Typical materials handled at the facilities include PCB-contaminated transformer and capacitor oil, carcasses from transformers and capacitors, debris, protective clothing, PCB-contaminated soil, and stormwater from secondary containment systems around aboveground tanks. Wastes are stored in accordance with TSCA requirements. No known releases are associated with AOC 54-001(d).
54-001(e)	In Progress	AOC 54-001(e) is part of the operational RCRA-permitted hazardous waste storage unit (structure 54-32), which also contains solid waste, situated on the paved surface of Area L. The storage area consists of a bermed and sealed concrete pad that is divided into six cells, each equipped with a secondary containment collection sump. Containers are elevated several inches above the floor by fiberglass or metal grating. The 15.5 ft x 116.5 ft storage area was built in 1987 and has a storage capacity of 17,220 gal. A 117.75-ft x 25.75-ft canopy covers the storage area. Containers are inspected weekly and no releases have been identified. This active waste management unit is not included in Module VIII of LANL's Hazardous Waste Facility Permit.
54-001(f)	Administratively Complete	
54-002	In Progress	AOC 54-002 is part of the operational RCRA-permitted hazardous waste storage unit where gas cylinders are stored. The unit also operates in accordance with interim status requirements for the storage of mixed waste. The storage area (structure 54-216) is situated on the paved surface of Area L and has a capacity of 1950 gal. Cylinders are stored beneath a canopy in racks or baskets along the southern and eastern fence lines in the eastern part of Area L. The cylinders are staged here before they are transported to an off-site location for final disposition. The gases are classified as mixed, hazardous, and solid wastes and are managed in accordance with RCRA and LANL safety requirements. This active waste management unit is not included in Module VIII of LANL's Hazardous Waste Facility Permit.
54-004	In Progress	SWMU 54-004 is MDA H, a 0.3-acre site on Mesita del Buey that contains nine inactive shafts that were used for disposal of LANL classified waste such as weapon-component mock-up shapes, detonators, papers, and tritium-contaminated items. Much of the classified waste was nonhazardous; however, scraps and shapes were contaminated with depleted uranium, fuel elements, residual plutonium, and HE. One shaft, shaft 9, received hazardous waste after July 26, 1982 and is therefore considered a RCRA-regulated landfill. Each shaft is 6 ft in diameter and 60 ft deep. The shafts were capped when waste came to within 6 ft of the surface. Shafts 1 through 8 are capped with 3 ft of crushed tuff followed by 3-ft-thick concrete caps; shaft 9 is capped solely by a 6-ft-thick layer of concrete. The surface area of MDA H has been reseeded. The nine shafts at MDA H were used from 1960 to 1986. Tritiated water was encountered at a depth of 40 ft in shaft 8 in 1969 during a LANL-wide effort to determine the background value for tritium in tuff. To determine the extent of tritium at MDA H, the investigation was expanded to include sampling and analysis of air and soil in and around the disposal shafts. The highest tritium concentrations were measured around shaft 8. Additional soil and flora samples were collected in 1973 and analyzed for tritium. Plants growing in the area were found to have concentrations of tritium 3 orders of magnitude higher than species in uncontaminated areas. Surface soils near the shafts had measured concentrations of tritium two to three times the concentration measured in background samples outside the area. Data from the historic tritium investigation were used to support the conceptual model for fate and transport of tritium at MDA H.

		The RFI report for sediment pathways from MDAs G, H, J, and L describes the Phase I RFI of drainage channels associated with those MDAs. This RFI was part of the Phase I characterization of TA-54. Complete characterization of the MDAs includes analysis of samples from surface water and sediment, air, and subsurface vapor. This investigation focused on the MDAs collectively rather than on individual disposal cells, shafts, or pits. The objective of this RFI was to determine if chemicals were migrating from the MDAs through the drainage channels by way of surface sediment transport, and if so, to determine if concentrations likely would adversely impact human health or the environment. Seventeen drainage channels were selected for sediment sampling, based on their potential for having collected sediment run-off from the four MDAs. Fourteen drainage channels originate near MDA G; the other three MDAs each have only one significant drainage channel. Sample locations were selected within depositional areas as determined by an on-site geomorphic analysis of each channel. Samples were screened for radioactivity. Samples with gross gamma levels greater than three standard deviations above the mean value of a set of background sediment samples were sent for off-site laboratory analysis of TAL inorganic chemicals, PCBs, pesticides, cyanides, and radionuclides. Analytical results first were compared to background sediment concentrations from TA-39 and sediment concentrations from TA-54 drainage channels that have no history of receiving contaminated run-off. Chemicals with concentrations greater than background and chemicals with no background levels then were compared to SALs. All chemicals detected in MDA-related drainages were below their respective SALs. An ecological assessment of each MDA-related drainage consisted of an evaluation of the landscape condition for potential receptor access. The drainage channels associated with each MDA were determined not to be of ecological concern because there was little receptor access. The sediment pathway RFI report stated that the ecological risk assessment process would be undertaken for the area when regulators approved the ecological exposure unit approach and recommended NFA for the drainage channels from MDAs G, H, J, and L. In January 2000, NMED, DOE, and LANL formed the MDA HPT to work on the TA-54 RFI report. In September 2000, the HPT were directed to expedite implementation of a corrective measure alternative at one MDA. The HPT selected MDA H and narrowed the scope of its effort to accommodate the change. The RFI for MDA H subsequently was separated from the RFI reports for MDAs G and L to expedite the evaluation and implementation of a corrective measure at MDA H. The ER Project reissued the RFI report for just MDA H in May 2001. The RFI fieldwork included the collection of 4 storm drainage sediment samples and 33 core samples from 4 boreholes. Channel sediment samples were analyzed for inorganic chemicals, cyanides, PCBs, pesticides, tritium, and radionuclides. Core samples were analyzed for TAL metals, cyanide, VOCs, SVOCs, PCBs, pesticides, tritium, and radionuclides. Background comparisons (inorganic chemicals and radionuclides) and data evaluations (organic chemicals) identified methoxychlor and tritium in channel sediments and copper, selenium, several organic chemicals, and tritium in subsurface tuff as COPCs. None of the VOCs or inorganic chemicals was detected above its SALs. The maximum reported tritium concentration of 777,000 pCi/mL at a depth of 52.5 ft bgs is equivalent to approximately 1543 pCi/g based on the sample soil moisture of 0.2%. This concentration is an order of magnitude greater than the SAL of 880 pCi/g. The maxiumum concentration of tritium at 10 ft bgs was 5890 pCi/mL, which is equivalent to 182 pCi/g based on the sample soil moisture of 3%. Methoxychlor was not disposed of at MDA H and its presence most likely is due to routine application. Copper and selenium do not appear to be related to a release from the PRS. Tritium and VOCs are related to a release from MDA H. Tritium is in the form of water vapor. Data gathered during the RFI identified the nature and partial extent of contamination in the surface and subsurface media. Analytical results from the RFI were used to assess the present-day impacts to ecological and human health receptors. The present-day risk assessment concluded that existing contamination does not exceed applicable EPA risk thresholds.

		To address the remaining data gaps regarding the extent of tritium and VOC contamination and at the request of NMED, the ER Project prepared and implemented a supplemental RFI SAP in 2001. Supplemental RFI activities completed during 2001 included collecting additional subsurface samples to further define the lateral extent of tritium and organic chemical contamination from borehole 54-1023 and from two newly drilled boreholes, installing an air-monitoring station adjacent to the southeastern boundary of MDA H to monitor for tritium in air at the MDA H fence line, and collecting a sediment sample near sample location 54-5132 at the interface of the alluvial sediments and bedrock to collect data where all the sediment accumulated over time. An RFI addendum will be issued in April 2002. The report will summarize the 2001 data and assess whether there are changes to the present-day risk assessment presented in the MDA H RFI report. In a letter dated December 27, 2000, NMED directed LANL to prepare a CMS plan for MDA H because NMED believes that hazardous wastes at MDA H may present a future threat to human health and the environment over the life of the buried wastes. In this letter, NMED stated that shaft 9 would be included in a near-future permit modification to remove it from the interim status portion of the LANL's Hazardous Waste Facility Permit and the requirements for closure of Shaft 9 could be met by the corrective measures evaluated in the CMS. Therefore, the unit would remain subject to corrective action along with the other eight shafts. Pursuant to DOE orders, LANL also planned to complete a CMS to address the potential for adverse impacts from future releases of radionuclides (tritium). The CMS plan identified corrective action objectives, preliminary corrective measure alternatives that address potential unacceptable future risks, and the methodology to be followed in evaluating the alternatives during the CMS. The CMS plan was approved by NMED in December 2001. The CMS is being conducted in accordance with RCRA requirements and will meet the intent of DOE Order 5400.5, "Radiation Protection of the Public and the Environment."
54-005	Pending	SWMU 54-005, MDA J, is an inactive 5.5-acre facility consisting of six pits and four shafts. The site was opened in 1961. Waste disposed of in the pits at MDA J consisted of treated barium sand and administratively controlled waste. Surface sites at MDA J previously included a small land-farming project for aeration of soil contaminated with petroleum products, a transfer facility for containers of asbestos awaiting transport to a licensed off-site facility, and two container storage areas. All pits and shafts at MDA J are closed and covered with crushed tuff. The RFI report for channel sediment pathways from MDAs G, H, J, and L describes the Phase I RFI of drainage channels associated with those MDAs. This RFI was part of the Phase I characterization of TA-54. Complete characterization of the MDAs includes analysis of samples from surface water and sediment, air, and subsurface vapor. This investigation focused on the MDAs collectively rather than on individual disposal cells, shafts, or pits. The objective of this RFI was to determine if chemicals were migrating from the MDAs through the drainage channels by way of surface sediment transport, and if so, to determine if concentrations likely would adversely impact human health or the environment. Seventeen drainage channels were selected for sediment sampling based on their potential for having collected sediment runoff from the four MDAs. Fourteen drainage channels originate near MDA G, and the other three MDAs each have only one significant drainage channel. Sample locations were selected within dispositional areas determined by on-site geomorphic analysis of each channel. Samples were screened for alpha, beta, and gamma radiation. Samples with gross gamma levels greater than three standard deviations above the mean value of a set of background sediment samples were sent for off-site laboratory analysis of TAL metals, PCBs, pesticides, cyanides, and radionuclides. Analytical results first were compared to background sediment concentrations from TA-39 and sediment concentrations from TA-54 drainage channels that had no history of receiving contaminated runoff. Chemicals with concentrations greater than background and chemicals with no background levels then were compared to SALs. All chemicals detected in MDA-related drainages were below their respective SALs. In total, 4 sediment channel samples were collected from MDA J during this sampling event. The pesticide, methoxychlor, was

		detected in one of the channel sediment samples. Am-241, Cs-137, and Po-210 concentrations were reported below SALs. In May 1995, soil samples were collected from four boreholes at MDA J. A total of 16 soil samples were collected at 5-ft intervals from angled Borehole 54-1019, located on the east side of Pit 1, and analyzed were analyzed in the mobile laboratory for gravimetric moisture, tritium, and gross alpha, beta, and gamma radiation. Eight additional soil samples were collected at 10-ft intervals in this borehole and were submitted for analysis for inorganic chemicals, pesticides and PCBs, and organic chemicals at a fixed laboratory. The other three vertical boreholes were sampled at 5-ft intervals for analysis by the rad van, and at 20-ft intervals for analysis by a fixed analytical laboratory for inorganic compounds, pesticides and PCBs, and organic compounds. Eight screening samples were collected from Borehole 54-1020, located on the east side of Pit 2 for analysis by the mobile laboratory and another 2 samples were submitted for analysis by a fixed laboratory. Eight soil samples were collected from the other two boreholes. In total, 18 samples were collected from core in the four boreholes and submitted to a fixed analytical laboratory for analysis. Twenty inorganic chemicals were detected and, of these, seven were detected above background values (BVs). Of the six inorganic chemicals detected above BVs, only arsenic exceeded SALs. Four organic chemicals were detected, but none exceeded SALs. MDA J currently is undergoing closure in accordance with New Mexico Solid Waste Regulations, 20 NMAC 9.1, Subpart V.
54-006	In Progress	SWMU 54-006 (also called MDA L) is included in Module VIII of LANL's Hazardous Waste Facility Permit. Area L is a 2.5-acre fenced area that includes MDA L, which consists of 1 inactive subsurface disposal pit (pit A); 3 inactive subsurface treatment and disposal impoundments (impoundments B, C, and D); and 34 inactive disposal shafts (shafts 1 through 34). Although no longer in use, impoundments B, D, and shafts 1, 13-17, and 19-34 are considered regulated units until RCRA closure is certified and approved by NMED. The entire fenced surface area of Area L is an active RCRA-permitted hazardous waste unit. Disposal pit A is located in the eastern portion of MDA L beneath a Dome 54-215. The pit is 200 ft long x 12 ft wide x 12 ft deep. It received chemical waste from the late 1950s until December 1978. Initial waste disposal practices included disposal of uncontainerized chemical wastes and liquids in drums without added sorbents. The pit also was used as an evaporative pit. Pit A was filled with waste to within approximately three feet of the surface between 1964 and 1978, and then was covered with crushed, consolidated tuff. The three impoundments (impoundments B, C, and D) are located northwest of pit A. Impoundment B was excavated in 1978 and is 60 ft long x 18 ft wide x 10 ft deep. It had a capacity of 7,560 cubic feet (asssuming it was filled to within 3 ft of the surface) and operated from January 1979 to June 1985 to evaporate treated salt solutions and electroplating wastes. Impoundment C was closed in the early 1978. This impoundment, which is 35 ft long x 12 ft wide x 10 ft deep, was used for the same disposal purposes as impoundment B. Impoundment C had a capacity of 2940 cubic feet (asssuming it was filled to within 3 ft of the surface). Impoundment D is approximately 75 ft long x 18 ft wide x 10 ft deep and had a capacity of 9450 cubic feet (asssuming it was filled to within 3 ft of the surface). It was used to treat small quantities of lithium hydride by reaction with water. This practice began in 1972 and was discontinued in 1984. Impoundment D later was used as secondary containment for used oil storage tanks (see AOC 54-021). All three impoundments are covered with crushed tuff. The 34 disposal shafts at MDA L were drilled directly into the subsurface tuff. Shafts 1 through 28 are located south of pit A. Shafts 29 through 34 are located northwest of impoundments B, C and D. Three feet of crushed tuff were placed in the bottom of each shaft to fill cracks and joints. The shafts range from 15 ft to 65 ft deep and vary in diameter from 3 ft to 8 ft. Groups of shafts were constructed as needed. When in use,

		the shafts were covered with a steel cap that could be opened or removed, depending on design, to allow placement of waste. The operational dates of the shafts vary, but collectively the shafts were operated from February 1975 to August 1985. The shafts were used to dispose of containerized and bulk liquid chemical wastes. Before 1982, containerized liquids were disposed of without adding absorbents to the containers. Space around the drums was filled with crushed tuff and a 6-in. layer of crushed tuff was placed between each layer of drums. After 1981, uncontainerized waste was no longer disposed of in the shafts. From 1982 to 1985, wastes were accumulated on the site and packaged in drums until sufficient quantity had accumulated to put the drum in a shaft. When filled, the shafts were covered with a concrete plug approximately 3 ft thick. Early disposal practices at MDA L resulted in a subsurface volatile organic vapor plume that extends beneath the facility and beyond its boundary. Several previous investigations have taken place at MDA L. Since 1982, channel sediments have been collected from permanent stations in the main drainages surrounding TA-54 to monitor the potential transport of radionuclides by stormwater run-off. In 1985 NMED issued a compliance order to LANL that required quarterly pore-gas monitoring at MDAs G and L. Nine boreholes were drilled between 1985 and 1988 to monitor the subsurface VOC plume. Analytical data from the pore-gas monitoring shows that 1,1,1-trichloroethane is the primary plume constituent; it is present to at least 200 ft below the mesa surface, and concentrations vary across the plume. In 1986, additional boreholes were drilled to measure air permeability in the tuff. The data were used to evaluate the nature and extent and fate and transport of subsurface contamination at MDA L. The ER Project conducted RFI fieldwork at MDA L from 1993 to 2001 to determine if releases had occurred and to characterize the nature and extent of the releases. The 1996 RFI report for channel sediment pathways from MDAs G, H, J, and L describes the Phase I RFI of drainage channels associated with those MDAs. This RFI was part of the Phase I characterization of TA-54. Complete characterization of the MDAs includes analysis of samples from surface water and sediment, air, and subsurface vapor. This investigations focused on the MDAs collectively rather than individual disposal cells, shafts or pits. The objective of this RFI was to determine if chemicals were migrating from the MDAs through the drainage channels by way of surface sediment transport, and if so, to determine if concentrations likely would adversely impact human health or the environment. Seventeen drainage channels were selected for sediment sampling based on their potential for having collected sediment run-off from the four MDAs. Four sample locations were selected for sampling at MDA L, within depositional areas as determined by an on-site geomorphic analysis of each channel. Samples were screened for alpha, beta, and gamma radiation. Samples with gross gamma levels greater than three standard deviations above the mean value of a set of background sediment samples were sent for off-site laboratory analysis of TAL metals, PCBs, pesticides, cyanides, and radionuclides. Analytical results first were compared to background sediment concentrations from TA-39 and sediment concentrations from TA-54 drainage channels that had no history of receiving contaminated run-off. Chemicals with concentrations greater than background and chemicals with no background levels then were compared to SALs. All chemicals detected in MDA-related drainages were below their respective SALs. An ecological assessment of each MDA-related drainage consisted of an evaluation of the landscape condition for potential receptor access. Each MDA-related drainage was determined not to be an ecological concern because there was little receptor access. The channel sediment pathway RFI report stated that the ecological risk assessment process would be undertaken for the area when regulators approved the ecological exposure unit approach and recommended NFA for the drainage channels from MDAs G, H, J, and L. An RFI report for MDAs G, H, and L was issued in 2000. The report was a collaborative effort (high performing team) between the NMED and LANL. In September 2000, the high performing team received direction from senior management to expedite the

		implementation of a preferred remedy at one MDA. The team selected MDA H and narrowed the scope of its effort to accomodate the change. The high performing team agreed that HWB would not review the 2000 combined RFI Report and that LANL would submit individual RFI reports on each of the MDAs. The first of the three RFI reports was submitted in May, 2001. The next scheduled submittal is for MDA L, (SWMU 54-006) in August, 2003. RFI fieldwork at MDA L included the collection and analysis of 4 drainage sediment samples, over 180 core samples from 16 boreholes, VOC and tritium surface flux samples, and ambient air sampling. The sediment samples were analyzed for inorganic chemicals, cyanide, PCBs/pesticides, herbicides, radionuclides, and tritium. The ambient air samples were analyzed for VOCs. The core samples were analyzed for VOCs, SVOCs, inorganic chemicals, PCBs/ pesticides, herbicides, cyanide, and radionuclides. The RFI data were supplemented by environmental surveillance surface water data, VOC emissions data from passive extraction tests, and quarterly VOC pore-gas monitoring samples. Analytical results showed the presence of tritium at elevated levels in the surface flux samples and the subsurface tuff samples and organic chemicals in the subsurface and ambient air samples, which indicated a subsurface release. The primary VOCs identified are 1,1,1-trichloroethane and trichloroethene. Barium, cobalt, copper, chromium, mercury, nickel, uranium, and zinc were detected at concentrations greater than BVs in subsurface tuff samples. The pesticide methoxychlor and plutonium-238 are present at concentrations below SALs in site channel sediments. Quarterly pore-gas sampling of the vapor phase VOC plume at MDA L is ongoing; sampling results are reported in the ER quarterly reports.
54-007(a)	Pending	SWMU 54-007(a) is an inactive septic system located within Area G at TA-54. The system was constructed in 1976 and consists of a 1000-gal. concrete septic tank (54-16), concrete distribution box, and VCP drainlines. The outlet line from the distribution box discharged to a drainfield. The system served the former compactor building [Building 54-2, SWMU 54-012(a)] and the waste management control facility for Area G (Building 54-11). The septic system received sanitary wastes, but historically may have received radioactive constituents, based on previous activities conducted in the buildings it served. The septic system was left in place in 1998 when the buildings it served were tied into LANL's SWSC. In accordance with ER Project BMPs, a VCA/VCM is scheduled for this SWMU during fiscal year 2002 to characterize and remove the septic tank and its contents and the distribution box. Samples were collected from the tank and distribution box excavations to determine if there has been a release and the nature and extent of any release. Characterization/confirmation samples will be collected within and around the drainfield to determine the nature and extent of any release. Human health and ecological screening risk assessments will be conducted on analytical data from the confirmation samples to determine if additional excavation of soil is required and results will be reported in a VCA/VCM completion report.
54-007(b)	Administratively Complete	PRS 54-007(b) is an inactive septic system and associated seepage pit west of TA-54. The septic system was installed and permitted with the State of New Mexico in 1987. The septic tank served the lavatories of a transportable office building from 1987 until 1992. Sanitary wastewater from the toilets and sinks was the only discharge to the septic system. The septic system still remains in place for possible reuse to manage sanitary wastewater. SWMU 54-007(b) was never used for the management of RCRA solid or hazardous wastes and/or constituents.
54-007(c)-99	Administratively Complete	SWMU 54-007(c)-99 consists of former SWMU 54-007(c) and former AOC 54-007(e). Former SWMU 54-007(c) was an inactive septic system that served an office building (Building 54-34) and the Radioassay and Nondestructive Testing (RANT) Facility (Building 54-38). The septic system consisted of a fiberglass tank 4 ft in diameter and 12 ft long, a drainline, and a drainfield formed by three parallel-buried lines of slotted PVC pipe, approximately 4 ft below ground surface. The septic system was constructed in the late 1980s and decommissioned in 1992. Former AOC 54-007(e) was an inactive septic system that served an animal holding facility (Building 54-1015) from the time of

		construction in the mid-1960s until the late 1980s. In 1992, the facility was remodeled as an analytical laboratory for environmental samples. The septic system consisted of a 1500-gal. concrete septic tank (structure 54-9) and a 4-in. PVC drainline connected to a drainfield formed by two parallel lines of 4-in. slotted PVC pipe. The two septic system drainfields were interconnected. Both septic systems were left in place in 1992 when the buildings they served were tied to a new sewer line installed as part of LANL's SWSC. Because the two septic system drainfields were connected, received similar waste streams (sanitary wastewater), and were located adjacent to each other, they were consolidated during the 1999 AUA with NMED HWB. During the 1995 Phase I RFI, 4 subsurface soil samples (3 RFI samples and 1 duplicate) were collected adjacent to drainlines (5 ft bgs) in each of the two septic system drainfields; the contents of each septic tank were sampled and analyzed. All samples were screened for radioactivity and analyzed for VOCs, SVOCs, PCBs, pesticides, and inorganic chemicals. Results showed elevated gross beta levels in soils around the drainfield of former SWMU 54-007(c) and extremely low concentrations of several VOCs and SVOCs in the contents of both septic tanks and soils adjacent to the connected drainfields. No inorganic chemicals were detected above LANL BVs; however, DLs for antimony and cyanide were greater than SAL and 0.1 SAL, respectively. Because the nature and extent of potential contamination were not determined, a Phase I RFI report was not prepared. VCA activities were implemented at SWMU 54-007(c)-99 in 2000/2001 that involved resampling both septic tank contents for waste characterization purposes. The sludge samples from both tanks were analyzed for VOCs, SVOCs, inorganic chemicals, PCBs, pesticides, isotopic plutonium and uranium, gamma spec, and tritium. Both septic tanks and their contents were removed. The contents of both septic tanks were disposed of at SWSC (after waste characterization data were determined to meet the SWSC WAC) and the septic tanks were excavated and removed. Inlet and outlet drainlines were plugged and left in place. Six confirmation samples were collected from two depths at three locations within each septic tank footprint and two samples were collected from two depths at a single location beneath each tank inlet line connection. Twelve confirmation samples were collected from two depths at six locations within each drainfield. The drainfield sample locations were selected to supplement the 1995 Phase I RFI data. The confirmation sample analytical suite was based on the 2000 waste characterization results for the contents of both septic tanks and included screening for radioactivity, and fixed laboratory analysis for VOCs and SVOCs. Results showed consistently low concentrations of organic COPCs, most at concentrations below their EQLs; the EQLs decreased with depth. Acetone was the only organic chemical detected in both the septic tank sludge samples and confirmatory soil samples. A VCA completion report was submitted to NMED in September 2001. In the human health screening assessment, maximum concentrations of COPCs were less than 0.1 SAL for noncarcinogens and less than SAL for carcinogens. The detected COPECs did not result in an HQ greater than 0.3 for ecological receptors at this PRS. SWMU 54-007(c)-99 was recommended for NFA.
54-007(d)	In Progress	AOC 54-007(d) is a former septic system that served the Radiation Exposure Facility (Buildings 54-1001, 54-1002, 54-1003, and 54-1004). The septic system consisted of a 972-gal. concrete septic tank (structure 54-4), drainlines, a distribution box, and a split drainfield. A 4-in. drainline from the septic tank connected to a reinforced concrete distribution box that diverted effluent east and west into the drainfield. The drainfield consists of two 60-ft-long, 4-in.-diameter tile drainlines that run east and west from the former location of the distribution box. The Radiation Exposure Facility operated from 1962 to the mid-1970s and was used for biomedical research on the exposure of animals to gamma radiation from sealed cobalt-60 sources. The sources were removed from the facility when the research was terminated and the facility was used for research on the exposure of animals to nitrogen oxides. The septic system was left in place in 1993 when the buildings it served were tied to a new sewer line installed as part of LANL's SWSC. Effluent now flows to a new manhole (structure 54-151), which is located south of the former septic tank location.

		During the 1995 Phase I RFI, 4 subsurface soil samples (3 RFI samples and 1 duplicate) were collected adjacent to drainlines (5 ft bgs) in the two septic system drainfields and the contents of the septic tank were sampled and analyzed. All samples were screened for radioactivity and analyzed for VOCs, SVOCs, PCBs, pesticides, and inorganic chemicals. Results showed extremely low concentrations of several VOCs in the septic tank contents soils adjacent to the drain field. Because the nature and extent of potential contamination were not determined, a Phase I RFI report was not prepared. The ER Project characterized the contents and removed the septic tank in a VCA that was conducted in 2000 and 2001. During 2000, the liquid and sludge in the septic tank were sampled and analyzed for pesticides/PCBs, inorganic chemicals, organic chemicals, gamma-emitting radionuclides, tritium, isotopic plutonium, and isotopic uranium. Waste characterization results meet the SWSC WAC. The contents of the septic tank were disposed of at the SWSC and the septic tank was excavated and removed. Inlet and outlet drainlines were plugged and left in place. Seven confirmation samples were collected from two depths at three locations within the septic tank footprint and two samples were collected from two depths at a single location beneath the tank inlet line connection. Drainfield sample locations were selected to supplement the 1995 RFI data and to ensure determination of the nature and extent of contamination. A total of 24 subsurface soil samples were collected from 12 locations in the in the drainfield. The confirmation sample analytical suite was based on the 2000 waste characterization results for the septic tank contents and included screening for gross alpha, beta, and gamma radiation and fixed laboratory analysis for VOCs and SVOCs. Results showed no elevated gross radiation screening levels, and no VOCs or SVOCs above their respective SALs. AOC 54-007(d) was recommended for NFA.
54-008	Administratively Complete	
54-009	In Progress	AOC 54-009 consists of two aboveground, open-top RCRA-permitted treatment tanks situated on the paved surface of Area L. The tanks are not included in Module VIII of LANL's Hazardous Waste Facility Permit. The carbon steel tanks each have a capacity of 1660 gal. and are 9 ft in diameter and 3.5 ft high. The tanks are located on a bermed concrete pad with a containment capacity of 3554 gal. Installed in 1988, the tanks were last used to treat barium-contaminated sand from burn pads at other LANL areas; they are not in use currently. Barium was precipitated in the tanks as barium sulfate, a nonhazardous salt, and was drummed and shipped to MDA J. The treatment sand also was disposed of at MDA J. Two additional open-top treatment tanks and a 210-gal. mixing tank previously were included as part of this AOC, but were removed in the 1990s. Historically, the tanks were used to treat ammonium bifluoride, neutralize acids and bases, and oxidize reactive wastes. The tanks have been removed by the operating group and closure certification is being provided to the NMED. No releases have been identified from AOC 54-009.
54-010	Administratively Complete	
54-012(a)	In Progress	AOC 54-012(a) was a drum compactor formerly located inside Building 54-2. The compactor was used to compact radioactive solid waste. The compactor was removed in the mid-1990s and replaced with a new compactor located in Building 54-281. Building 54-2 was decontaminated and currently is used to store, assemble, and repair tools in support of Area G operations.
54-012(b)	In Progress	SWMU 54-012(b) is the former and current location of a drum compactor in the central portion of the surface of Area L. The compactor is used to crush empty, discarded 30- and 55-gal. drums. The compactor uses hydraulic pressure to move, ram and crush the drums. Prior to crushing, all containers are inspected to ensure they met the RCRA definition of “empty.” The drum compactor, which was included in Module VIII of LANL's Hazardous Waste Facility Permit, was situated on bare soil prior to relocation to the current SWMU 54-012(b)location. The compactor was relocated to a concrete containment pad (structure 54-82) at Area L in late 1989 or early 1990, and the stained soil from the previous location was removed. The compactor currently is inactive.
54-013(a)	Administratively	At the time the SWMU Report (LANL 1990) was written, LANL planned to build a truck-

	Complete	washing pit at TA-54 West. This area was designated in the SWMU Report as SWMU 54-013(a) in anticipation of its construction. Plans to build the facility were subsequently canceled. SWMU 54-013(a) is appropriate for NFA under Criterion 1 because it was shown not to exist.
54-013(b)-99	In Progress	SWMU 54-013(b)-99, MDA G, consists of former SWMUs 54-013(b), 54-014(b), 54-014(c), 54-014(d), 54-015(k), 54-017, 54-018, 54-019, and 54-020. The MDA G former SWMUs are inactive subsurface units within TA-54 Area G; they no longer receive waste. Portions of MDA G began operation in 1957. DOE initially authorized MDA G for the disposal of low-level radioactive waste and certain radioactively contaminated infectious waste, asbestos-contaminated material, and PCBs, and for the temporary placement of TRU waste. Area G is located on Mesita del Buey between Pajarito Canyon to the south and Cañada del Buey to the north. Current disposal activities at Area G include only DOE-authorized disposal of LLW and EPA-authorized disposal of PCB waste. RCRA interim status mixed waste and DOE-authorized, RCRA interim status mixed TRU waste are stored in surface structures erected over many of the subsurface SWMUs. Former SWMU 54-013(b) was a vehicle monitoring/decontamination area located in the central portion of Area G on the surface of pit 19. The area was used to decontaminate trucks and TRU waste drums but is no longer in use and is included in Module VIII of LANL's Hazardous Waste Facility Permit. Former SWMU 54-014(b) is pit 9, which is included in Module VIII of LANL's Hazardous Waste Facility Permit. It is 30 ft wide x 400 ft long by 20 ft deep. Pit 9 received retrievable TRU and mixed TRU waste from 1974 to 1978, and remains inactive. Once filled, the pit was covered with 3.3 ft of consolidated crushed tuff and 4 in. of topsoil, and reseeded with native grasses. The TRU wastes in pit 9 will be retrieved and processed for disposal at the Waste Isolation Pilot Plant (WIPP). Former SWMU 54-014(c) consists of retrievable TRU waste storage shafts 200 through 233 and is located in the northeastern quadrant of Area G. Former SWMU 54-014(c) is included in Module VIII of LANL's Hazardous Waste Facility Permit. The shafts each measure 1 ft in diameter, 18 ft deep; they are lined with concrete and contain TRU waste. Some of the shafts began receiving TRU waste in 1978 and were closed between 1979 and 1987, and remain inactive. Shafts were used for wastes that required special packaging (primarily tritium), special handling (e.g., highly active metals), or segregation. Once filled, the shafts typically were filled with waste to within 3 ft of the ground surface, backfilled with crushed tuff, and covered with a concrete dome. The TRU wastes in these shafts will be retrieved and processed for disposal at the WIPP. Former SWMU 54-014(d), which consists of retrievable TRU waste storage trenches A, B, C, and D, is located in the south-central portion Area G and is included in Module VIII of LANL's Hazardous Waste Facility Permit. These trenches began receiving TRU and mixed LLW in 1974. Trenches A, B, and C vary in size from 219 ft to 262.5 ft long by 13 ft wide by 6 ft to 8 ft deep. Trench D is 60 ft long x 13 ft wide x 6 ft deep. TRU waste placed in trenches was packaged in 30-gal. containers inside concrete casks. Once filled, the trenches were backfilled with 3.3 ft of crushed tuff followed by 4 in. of topsoil. The surface was reseeded with native grasses. The TRU wastes in these trenches will be retrieved and processed for disposal at the WIPP. Former SWMU 54-015(k) consists of a layer of retrievable TRU waste in cement-filled sections of corrugated pipe located inside a mound of fill material that was placed on top of closed pit 29 in the northeast quadrant of Area G; the site is included in Module VIII of LANL's Hazardous Waste Facility Permit. These TRU wastes will be retrieved and processed for disposal at the WIPP. Former SWMU 54-017 consists of inactive disposal pits 1 through 8, 10, 12, 13, 16 through 22, and 24. Former SWMU 54-018 consists of disposal pits 25 through 33 and

		35 through 37. Only pit 29 (although no longer in use) is considered a regulated unit until RCRA closure is certified and approved by NMED. Pits 11, 14, 23, and 24 were never excavated. Both sites are included in Module VIII of LANL's Hazardous Waste Facility Permit. Pits 1 through 24 were operational between 1959 and 1980 and received radioactive, mixed, and TRU wastes in the form of wing tanks, dry boxes, building debris, sludge drums, lab waste, contaminated soil, D&D waste, filter plenums, and uranium. Pits 1 through 24 are located in the eastern portion of Area G with volumes ranging from 1371 to 56,759 cubic yards. Pits 25 through 28 and 30 through 36 were operational between 1979 and 1980 and received radioactive, mixed, and TRU waste in the form of reactor control rods, D&D waste, contaminated soil, transformers, gloveboxes, asbestos, and lab waste and range in volume from 20,957 to 59,930 cubic yards. Pit 29 operated until 1986. Pit 37 operated from 1990 to 1997 and primarily received circuit boards and contaminated soil. Once filled, the pits were covered with 3.3 ft of consolidated crushed tuff and 4 in. of topsoil, and reseeded with native grasses. Former SWMU 54-019 consists of disposal shafts 1 through 20, 24 through 34, 38 through 92, 96, 109 through 112, and 150. These 92 shafts are included in Module VIII of LANL's Hazardous Waste Facility Permit and were operational between 1966 and 1980. The shafts received LLW and hazardous and mixed waste. They range in size from 1 ft to 6 ft in diameter and 25 ft to 60 ft deep and are located primarily in the northeast quadrant of Area G. Disposal shafts typically were filled with waste to within 3 ft of the ground surface, backfilled with crushed tuff, and covered with a concrete dome. Former SWMU 54-020 consists of disposal shafts C1 through C10, C12, C13, 22, 35 through 37, 93 through 95, 99 through 108, 114, 115, 118 through 136, 138 through 140, 151 through 160, 189 through 192, and 196. These shafts are included in the Module VIII of LANL's Hazardous Waste Facility Permit and were operational between 1970 and the early 1990s. Only shaft 124 (although no longer in use) is considered active until RCRA closure is certified and approved by NMED. The shafts contain one or a combination of the following waste types: PCB residues, LLW, hazardous and mixed waste. The shafts range in size from 1 ft to 8 ft in diameter and 25 to 65 ft deep, and are located throughout the eastern portion of Area G. Disposal shafts were typically filled with waste to within 3 ft of the ground surface, backfilled with crushed tuff, and covered with a concrete dome. Sampling of sediment and surface water runoff downgradient from MDA G has been part of LANL environmental surveillance activities since 1982. From 1982-1992, analyses of sediment at nine sampling stations indicated plutonium concentrations above background in most of the drainages. Additional sediment sampling along the perimeter of MDA G is part of the ongoing LANL environmental surveillance program. Data indicated low levels of tritium, plutonium, and cesium at concentrations above background levels but below SALs. The ER Project conducted Phase I RFI fieldwork at MDA G from 1993 to 2001 to determine if releases had occurred and to characterize the nature and extent of the releases. RFI fieldwork at MDA G included the collection and analysis of over 50 drainage sediment samples, core samples from 20 boreholes, VOC and tritium surface flux samples, and ambient air sampling. The sediment samples were analyzed for inorganic chemicals, cyanide, PCBs/pesticides, herbicides, radionuclides, and tritium. The ambient air samples were analyzed for VOCs. The core samples were analyzed for VOCs, SVOCs, inorganic chemicals, PCBs/pesticides, herbicides, cyanide, and radionuclides. Analytical results from subsurface tuff samples showed the presence of americium-241, cesium-137, europium-152, lead-210, plutonium-238, plutonium-239, strontium-90, uranium-235, and tritium at elevated concentrations. Cadmium, cyanide, molybdenum, selenium, silver, thallium, and vanadium were also detected at concentrations higher than their respective BVs. Numerous organic chemicals were detected in subsurface tuff samples. Analytical results from subsurface pore-gas samples showed the presence of multiple VOCs and tritium. The RFI data were

		supplemented by environmental surveillance surface water data, VOC emissions data from passive extraction tests, and quarterly VOC pore-gas monitoring samples. Americium-241, plutonium-238, plutonium-239, uranium-234, uranium-235, uranium-238, and tritium were detected at elevated concentrations in ambient air samples. VOCs were also detected. The dominant VOC detected in ambient air was TCA. The RFI report for channel sediment pathways from MDAs G, H, J, and L describes the Phase I RFI of drainage channels associated with those MDAs. This RFI was part of the Phase I characterization of TA-54. Complete characterization of the MDAs includes analysis of samples from surface water, sediment, air, and subsurface vapor. This investigation focused on the MDAs collectively rather than on individual disposal cells, shafts, or pits. The objective of this RFI was to determine if chemicals were migrating from the MDAs through the drainage channels by way of surface-sediment transport, and if so, to determine if concentrations likely would adversely impact human health or the environment. Seventeen drainage channels were selected for sediment sampling based on their potential for having collected sediment runoff from the four MDAs. Fourteen drainage channels originate near MDA G. Sample locations were selected within depositional areas determined by an on-site geomorphic analysis of each channel. Samples were screened for radioactivity. Samples with gross gamma levels greater than three standard deviations above the mean value of a set of background sediment samples were sent for off-site laboratory analysis of TAL metals, PCBs, pesticides, cyanides, and radionuclides. Analytical results from the sediment samples showed the presence of americium-241, plutonium-238, plutonium-239, and cobalt-60 at elevated concentrations. Also detected at elevated concentrations were beryllium, cobalt, mercury, selenium, and silver. Methoxychlor was also detected in sediment samples. In 1997, the ER Project submitted an RFI status report that addressed the tritium distribution in surface soils at MDA G. The report presented the results of environmental surveillance data available from 57 samples that ESH-19 collected from 53 locations. These data showed the tritium distribution in mesa-top surface soils. Tritium concentrations were compared with a SAL of 260 pCi/g for tritium in soil. Comparisons with baseline data collected from the expansion area at MDA G (the west end of the site) indicated that tritium concentrations throughout MDA G are greater than background concentrations but only one location exceeded SAL (2191 pCi/ g). Because the physical site model has unique characteristics not captured in the SAL calculation, the SAL was determined to be inadequate as a screening tool for the human health risk assessment. The RFI status report stated that further assessment of tritium must incorporate surface-soil data and consider the possibility that tritium flux from buried waste is the likely source of the observed surface-soil concentrations. The RFI status report recommended integrating information from each MDA G status report into a multipathway assessment that will be incorporated into a final report. Recommendations about any additional site investigations or other RFI-related activities were deferred until the final RFI report for MDA G. An RFI report for MDAs G, H, and L was issued in 2000. The report was a collaborative effort (high performing team) between the NMED and LANL. In September 2000, the high performing team received direction from senior management to expedite the implementation of a preferred remedy at one MDA. The team selected MDA H and narrowed the scope of its effort to accommodate the change. The high performing team agreed that HWB would not review the 2000 combined RFI Report and that LANL would submit individual RFI reports on each of the MDAs. Quarterly pore-gas sampling of the vapor phase VOC plume at MDA G is ongoing. Sampling results are reported in the ER Project quarterly reports. In September 2003, the ER Project submitted a work plan for additional investigation at of MDA G. The work plan was approved by NMED in November 2004 and field investigations were started in January 2005. The investigation report is scheduled for

		submittal to NMED in September 2005.
54-014(a)	In Progress	AOC 54-014(a) refers to the lead stringer storage shafts (shafts 36 and 37) located adjacent to the northwest corner of Area L that are currently operated under RCRA interim status requirements for storage of mixed waste. The lead stringers were placed in storage in the mid-1980s. Lead stringers are steel rods filled with irradiated lead and concrete. Shaft 36 is 30 in. in diameter and 27.5 ft deep, and shaft 37 is 48 in. in diameter and 35.75 ft deep, each with a storage capacity of 300 gal. Both of the shafts are constructed of corrugated metal pipe and equipped with a 1-ft-thick concrete plug at the bottom of the shaft. Each shaft is capped with a steel cap and concrete shielding block. AOC 54-014(a) is not included in Module VIII of LANL's Hazardous Waste Facility Permit.
54-015(a)	In Progress	AOC 54-015(a) is a mixed-waste container storage area operated under RCRA interim status requirements. The storage area is located in structure 54-8, a 15-ft x 40-ft x 12-ft-high metal shed. The structure was previously used for the storage of mixed TRU waste containers before being sprayed with a corrosion inhibitor for placement in retrievable storage on the TRU pads. The structure is currently used to store TRU drums retrieved during TWISP activities, before the corrosion inhibitor is removed from them in Building 54-33, and before they are placed in a storage dome pending disposal at WIPP. This AOC is not included in Module VIII of LANL's Hazardous Waste Facility Permit.
54-015(b)	In Progress	AOC 54-015(b) is pit 39, an active low-level radioactive waste disposal area at Area G. At the time the RFI work plan was written, the surface of AOC 54-015(b) was the location of an aboveground TRU waste container storage area; however, the TRU waste was subsequently moved and placed in a storage dome. Pit 39 is located approximately 100 ft southwest of the Area G waste management control facility (Building 54-11). The OU 1148 work plan proposed sampling groupings of related SWMUs to focus on contaminant identification and the nature and extent of migration. The ER Project, in collaboration with other LANL divisions, is investigating Area G.
54-015(c)	In Progress	AOC 54-015(c) is TRU pad 1, one of four TRU waste storage areas located in the northwest corner of Area G. The pad overlies the western ends of inactive disposal pits 2, 4, and 5 [SWMU 54-013(b)-99]. The pad stores three levels of retrievable contact-handled TRU waste in 55-gal. containers inside a dome (structure 54-226) with a total storage capacity of 960,000 gal. The pad was partially filled with drums and partly covered with tuff when the RFI work plan was written. The dome was constructed directly over pad 1 for use in the retrieval of TWISP drums being moved from pads to storage domes. The TRU waste containers are destined for disposal at WIPP. This is an active waste management unit that is not included in Module VIII of LANL's Hazardous Waste Facility Permit.
54-015(d)	In Progress	AOC 54-015(d) is the former location of TRU pad 2, one of four TRU waste storage areas in the northwest corner of Area G. The pad previously stored six levels of retrievable contact-handled TRU waste in 55-gal. containers with a total storage capacity of 430,000 gal. The pad was completely filled and covered with tuff when the RFI work plan was written. All of the TRU containers previously stored at pad 2 were retrieved and moved to a TRU storage dome during the TWISP activities and are destined for disposal at WIPP. The former pad location is currently unoccupied and overlies inactive disposal pits 2, 4, and 5 [SWMU 54-013(b)-99]. This is an active waste management unit that is not included in Module VIII of LANL's Hazardous Waste Facility Permit.
54-015(e)	In Progress	AOC 54-015(e) is TRU pad 3, one of four TRU waste storage areas located in the northwest corner of Area G. The pad overlies inactive disposal Pits 2, 4, and 5 [SWMU 54-013(b)-99]. The pad stores three levels of retrievable contact-handled TRU waste in 55-gal. containers inside a dome (structure 54-48) with a total storage capacity of 300,000 gal. The dome was constructed directly over pad 3 for use in the retrieval of TWISP drums being moved from pads to storage domes. The TRU waste containers are destined for disposal at WIPP. This is an active waste management unit that is not included in Module VIII of LANL's Hazardous Waste Facility Permit.

54-015(f)	In Progress	AOC 54-015(f) is the former location of TRU pad 4, one of four TRU waste storage areas in the northwest corner of Area G. The pad previously stored six levels of retrievable contact-handled TRU waste in 55-gal. containers with a total storage capacity of 970,000 gal. The pad was partially filled and covered with tuff when the RFI work plan was written. All of the TRU containers previously stored at pad 4 were retrieved and moved to a TRU storage dome during the TWISP activities and are destined for disposal at WIPP. The former pad location is currently unoccupied and overlies inactive disposal pits 2, 4, and 5 (SWMU 54-013(b)-99). This is an active waste management unit that is not included in Module VIII of LANL's Hazardous Waste Facility Permit.
54-015(g)	Administratively Complete	
54-015(h)	Administratively Complete	PRS 54-015(h) is a drum storage area located inside Building TA-54-38, the Non-destructive Testing Facility. From 1988 to 1990, drums containing transuranic waste were stored at the facility prior to x-ray and neutron activation assay (non-destructive) testing. Swipe testing assured the integrity of each drum prior to placement in the storage area and no drums were ever opened within the building. The PRS is not known or suspected of releasing contaminants to the environment. Therefore, SWMU 54-015(h) is appropriate for NFA under Criterion 3.
54-015(i)	Administratively Complete	
54-015(j)	In Progress	AOC 54-015(j) is an active mixed waste storage area operated under RCRA interim status. The bermed storage area is situated on top of pit 32 [SWMU 54-013(b)-99] and is currently covered by a storage dome (structure 54-49). This AOC is not included in Module VIII of LANL's Hazardous Waste Facility Permit.
54-016(a)	Administratively Complete	
54-016(b)	In Progress	AOC 54-016(b) is a sump at Area G located within the TRU waste drum facility (Building 54-33). The sump was designed to collect wash water from the removal of the corrosion inhibitor that is sprayed on TRU waste drums [see AOC 54-015(a)]; however, there has never been any release to the sump. This AOC is not listed in Module VIII of LANL's Hazardous Waste Facility Permit.
54-021	Administratively Complete	AOC 54-021 is the former location of six aboveground fiberglass oil storage tanks that were located at Area L. Four of the tanks had a capacity of 771 gal. each. The other two tanks had capacities of 5650 gal. and 5086 gal., respectively, and were situated within the dirt berms of former impoundment D at Area L (for containment purposes). The tanks, which stored waste oil, were pumped out in 1989 and moved from Area L to Area G to make room for new facilities. The tanks were closed in 1990 under RCRA regulations, and a closure report was submitted to NMED in 1991. Any associated contaminated soil that may be at MDA L will be addressed during closure of the RCRA-permitted surface treatment and storage units currently located on the surface of MDA L or during corrective action.
54-022	Administratively Complete	
55-001	Administratively Complete	
55-002(a)	Administratively Complete	
55-002(b)	Administratively Complete	
55-002(c)	Administratively Complete	
55-003	Administratively Complete	
55-004	Administratively Complete	

55-005	Administratively Complete	
55-006	Administratively Complete	
55-007	Administratively Complete	
55-008	In Progress	SWMU 55-008 consists of sumps, tanks, and pumps in the basement of the plutonium building (Building 55-4), which is the primary site for plutonium processing, fabrication, and research at LANL. Six sumps/pumps collect spills and mop-water generated in the building; the sump/pump capacity of each is 3 cubic feet. Four 8-in.-diameter x 4-ft-long condensate tank pumps receive condensate from cooling coils. Eight 8-in.-diameter x 4-ft-long blowdown tanks receive condensate from cooling coils. The liquids discharged to these units may have contained small amounts of hazardous and/or radioactive constituents. All liquids collected and contained within these units are transferred via direct pipeline to the radioactive liquid waste treatment facility at TA-50, and none of these units release liquids to the environment. SWMU 55-008 was recommended for NFA in the RFI work plan. The site design of Building 55-4 precludes contaminant migration. Any contamination that may exist beneath the building is considered to be under institutional control and will be addressed when Building 55-4 undergoes decontamination and decommissioning.
55-009	Pending	SWMU 55-009 is an inactive sanitary sewer monitoring station (structure 55-263) consisting of a concrete-lined pit (9 ft x 9 ft x 6 ft deep) located in the LANL high-security, highly access-controlled TA-55 plutonium complex. The walls and floor of the monitoring station consist of 6-in.-thick reinforced concrete. The TA-55 sanitary waste line runs through this structure and carries sanitary wastewater from Buildings 55-3 and 55-4 to the LANL sanitary wastewater treatment facility located at TA-46. The TA-55 Operations Center (Building 55-3) functions as a general support facility and contains a chemical laboratory. Building 55-4 is the main plutonium-processing facility at TA-55. The 1990 SWMU report identified SWMU 55-009 as an inactive monitoring “sump.” The term "sump" denotes an engineered, below-ground-level containment reservoir that receives liquid before it is pumped (or drained) to another location. However, this unit not only has never contained a drain, it has never served as a reservoir to manage liquids of any type; therefore, the SWMU report’s identification of this unit as a sump is incorrect. In actuality, this unit was designed and installed solely as a station to house radiological monitoring equipment and to shield the equipment from adverse weather conditions. The monitoring equipment and surrounding concrete structure were installed in approximately 1975, when the TA-55 complex was originally constructed. The monitoring equipment was installed at this portion of the sanitary waste line solely as a security measure to prevent the theft of valuable radioactive materials (such as plutonium) from the TA-55 complex. This equipment was intended to detect any stolen radioactive materials covertly targeted to leave the TA-55 complex by flushing them down sanitary drains such as sinks or toilets. Should any stolen radiological materials be detected in the sewer pipe, the monitoring device was designed to activate a compressor (housed within the concrete structure) that controlled a cut-off valve within the pipe. The activated valve was intended to immediately block passage of the stolen materials further through the pipe, thus thwarting the attempted theft. However, the monitoring equipment never functioned as originally intended. It failed because of high humidity caused by moisture condensation in the concrete structure in which it was housed. After several failed attempts to make the detection equipment perform properly, in May 1983, DOE and TA-55 personnel agreed to discontinue further attempts to monitor the waste line. The monitoring equipment was removed later that year, but the concrete-lined pit was left in place. The structure was used solely for security monitoring purposes and it is not known or thought to have received contaminants or released contaminants to the environment. In 1997, 13 soil samples were collected from six locations in the vicinity of PRS 55-009 and submitted to an off-site laboratory for analysis for inorganic chemicals, organic chemicals, and radionuclides. Analytical results were used to provide supplemental

		information to support FSS-6 construction activities. After a site visit by the NMED in 2001 and review of the radiological screening data collected at this site, this SWMU was recommended for NFA. Hazardous wastes were not generated, treated, stored, or disposed at the site, and radioactivity was never detected in the waste stream. In 2002, NMED concurred with NFA determination.
55-010	Administratively Complete	
55-011(a)	Administratively Complete	The storm drainage system for TA-55 consists of catch basins equipped with storm drains that discharge to outfalls. The storm drains manage storm water collected from TA-55-4, the plutonium facility, and may contain very low levels of TRU radionuclides, solvents, or metals that may have settled on the TA-55 facility roof or parking area from air emissions. Contaminants may be concentrated in the catch basins or at the outfall discharge points.
55-011(b)	Administratively Complete	PRSs 55-011(a-e) are drains and outfalls. The storm drainage system for TA-55 consists of catch basins equipped with storm drains that discharge to outfalls. The storm drains manage storm water collected from TA-55-4 and may contain very low levels of TRU radionuclides, solvents, or metals that may have settled on the TA-55 facility roof or parking area from air emissions. Contaminants may be concentrated in the catch basins or at the outfall discharge points.
55-011(c)	Administratively Complete	PRS 55-011(c) is storm drain TA-55-83, located northeast of TA-55-4. The drain collects storm water from surrounding parking lots and discharges to an outfall in Mortandad Canyon which is a separate PRS. The storm drain is operated in accordance with the Laboratory's NPDES Storm Water Discharge Permit.
55-011(d)	Administratively Complete	PRSs 55-011(a-e) are drains and outfalls. The storm drainage system for TA-55 consists of catch basins equipped with storm drains that discharge to outfalls. The storm drains manage storm water collected from TA-55-4 and may contain very low levels of TRU radionuclides, solvents, or metals that may have settled on the TA-55 facility roof or parking area from air emissions. Contaminants may be concentrated in the catch basins or at the outfall discharge points.
55-011(e)	Administratively Complete	PRSs 55-011(a-e) are drains and outfalls. The storm drainage system for TA-55 consists of catch basins equipped with storm drains that discharge to outfalls. The storm drains manage storm water collected from TA-55-4 and may contain very low levels of TRU radionuclides, solvents, or metals that may have settled on the TA-55 facility roof or parking area from air emissions. Contaminants may be concentrated in the catch basins or at the outfall discharge points.
55-012	Administratively Complete	
55-013(a)	Administratively Complete	
55-013(b)	Administratively Complete	
57-001(a)	Administratively Complete	AOC 57-001(a) consists of the drilling mud pits at Fenton Hill, the site of geothermal energy experiments in the Jemez Mountains. Records do not indicate whether a separate pit was dug for each of the five drilling operations. However, since a pit would have had to be located within 50 ft of the well collar, each well likely had its own pit. A comprehensive list of the drilling muds and additives used at Fenton Hill was reviewed, and many of the muds and additives were found to contain no hazardous constituents. Although barium was used extensively, it was in the form of barium sulfate, which is not soluble in water and therefore would not have leached out of the mud. The usual practice for closing a mud pit after drilling was complete was to pump any standing water into a settling pond, excavate any remaining drilling mud until the pit was visually clean, and backfill the pit with clean soil. The excavated mud was disposed of off the site at a sludge pit. Construction and subsequent restoration of the drilling mud pits were regarded as part of drilling operations and therefore were subject to the regulations of the oil and gas division of the New Mexico Energy, Minerals, and Natural Resources Department. No drilling mud pits remain; all pits were cleaned to the oil and gas division’s closure standards. Any hazardous constituents would have remained with the mud. The cleaned pits pose no threat to human health or the environment.

		Drilling fluids, produced waters, and other wastes associated with exploration, development, or production of geothermal energy are not hazardous wastes as defined under the New Mexico Hazardous Waste Act [74-4-3.I(2)]. Therefore, this AOC is not listed in Module VIII of LANL's Hazardous Waste Facility Permit. AOC 57-001(a) was recommended for NFA in May 1994 because site designs, conditions, or institutional controls prohibit releases from the AOC that would pose a threat to human health or the environment. DOE granted the NFA petition; however, because ecological risk and other ARARs had not been addressed in 1994, this site remains under investigation.
57-001(b)	In Progress	AOC 57-001(b) is composed of two settling ponds, designated GTP-3E (east) and GTP-3W (west). These settling ponds contained a homogeneous mix of cuttings, drilling mud, additives, and dissolved materials leached into injected water from the hot rock formations found at great depth at Fenton Hill. Fenton Hill was the site of geothermal energy experiments in the Jemez Mountains. The drilling mud included barium sulfate, bentonite clay or gel, lignite (a low-grade coal), cottonseed hulls, walnut shells, dispersants and surfactants, and sawdust. This homogeneous mix of materials settled as solids to the pond bottom. Supernatant liquid from the ponds was sampled and analyzed during operations and, if it met NPDES water quality standards, was discharged to Burn's Swale, located just below settling pond GTP-3W. As the settling ponds filled and solids accumulated, the ponds were "mucked out" and the solids were transported to the sludge pit (AOC 57-002). Following decommissioning and cleaning, the settling ponds were backfilled with boulders and clean soil to the level of the surrounding terrain. The depth from the current surface to the bottom of the ponds is estimated to be 16 ft. Drilling fluids, produced waters, and other wastes associated with exploration, development, or production of geothermal energy are not hazardous wastes as defined under the New Mexico Hazardous Waste Act [74-4-3.I(2)]. Therefore, this AOC is not listed in Module VIII of LANL's Hazardous Waste Facility Permit. The ER Project conducted an RFI at this AOC in August 1994. One sample was taken at each of three different depths within the area of former pond GTP-3W, which was the larger and most-used of the two ponds that compose the AOC. (It was assumed that the contents of this pond would be representative of the contents of Pond GTP-3E.) An additional sample was collected at each of two locations within Burn's Swale. One co-located sample was taken also. Samples were analyzed for inorganic chemicals, organic chemicals, and total uranium. Based on sampling results, the Burn's Swale was recommended for Phase II investigation.
57-001(c)	In Progress	AOC 57-001(c) consists of settling pond GTP-2 at Fenton Hill, the site of geothermal energy experiments in the Jemez Mountains. This AOC contained circulation fluids that consisted of water injected into the deep well. This water contained tracer compounds and dissolved, naturally occurring minerals leached during contact with the hot rock formations. The circulation fluids also contained constituents of drilling mud, such as barium sulfate, bentonite clay or gel, lignite (a low-grade coal), cottonseed hulls, walnut shells, dispersants and surfactants, and sawdust. This homogeneous mix of materials settled as solids to the pond bottom. After geothermal testing ceased, the settling pond was decommissioned, cleaned, and filled with clean soil to the level of the original ground surface. The current depth to the bottom of this filled-in pond is estimated to be 9.5 ft. Drilling fluids, produced waters, and other wastes associated with exploration, development, or production of geothermal energy are not hazardous wastes as defined under the New Mexico Hazardous Waste Act [74-4-3.I(2)]. Therefore, this AOC is not listed in Module VIII of LANL's Hazardous Waste Facility Permit. The ER Project conducted an RFI at this AOC in August 1994. One subsurface soil sample was taken at a depth of 4.5 ft to 5 ft and was analyzed for inorganic chemicals, organic chemicals, and total uranium. Based on sampling results, AOC 57-001(c) was recommended for NFA.
57-002	In Progress	Fenton Hill was the site of geothermal energy experiments in the Jemez Mountains. AOC 57-002 is a sludge pit that received all solids removed from the bottom of the

		Fenton Hill settling ponds and mud from the drilling mud pits. The sludge pit contained a homogeneous mix of cuttings, drilling mud, additives, and dissolved materials leached into injected water from the hot rock formations found at great depth at Fenton Hill. The components of the drilling mud included barium sulfate, bentonite clay or gel, lignite (a low-grade coal), cottonseed hulls, walnut shells, dispersants and surfactants, and sawdust. The pit is located about 2 mi west of the main compound at Fenton Hill. It is divided into two sections: the western section is reported to be 15 ft to 20 ft deep and the eastern section is reported to be 6 ft to 8 ft deep. The entire pit is approximately 200 ft long x 100 ft wide.Drilling fluids, produced waters, and other wastes associated with exploration, development, or production of geothermal energy are not hazardous wastes as defined under the New Mexico Hazardous Waste Act [74-4-3.I(2)]. Therefore, this AOC is not listed in Module VIII of LANL's Hazardous Waste Facility Permit. The ER Project conducted an RFI at this AOC in August 1994. A total of three subsurface soil samples were taken from two boreholes and analyzed for inorganic chemicals, organic chemicals, and total uranium. Based on sampling results, AOC 57-002 was recommended for a VCA.
57-003	Administratively Complete	AOC 57-003 is a container storage facility (structure 57-56) at Fenton Hill, the site of geothermal energy experiments in the Jemez Mountains. Structure 57-56 contains a temporary storage section for materials regulated under RCRA and is managed under LANL's hazardous waste generator requirements and another section for fuel oils, lubricating oils, and other substances that are not hazardous waste. The building is a three-sided metal structure approximately 10 ft x 40 ft and 10 ft high. It rests on a concrete slab that has raised edges to contain liquid spills. Although minor lubricating-oil spills have been observed on the soil beside the building, no significant spills of materials stored in the building are known to have occurred. The managed area of the facility is recommended for NFA because it is managed under the Laboratory's hazardous waste generator requirements. The fuel oil tanks were recently replaced at this site with newer fire-resistant tanks.
57-004(a)	In Progress	AOC 57-004(a) consisted of two settling ponds (GTP-1E and GTP-1W) at Fenton Hill, the site of geothermal energy experiments in the Jemez Mountains. Settling pond GTP-1E was originally excavated for use as a disposal pit during the drilling of well EE-1. GTP-1E was enlarged in several stages as operations advanced and also was used for settling and recycling fluids from the circulation loop. Settling pond GTP-1E contained a homogeneous mix of cuttings, drilling mud, additives, and dissolved materials leached into injected water from the hot rock formations found at great depth at Fenton Hill. The drilling mud included barium sulfate, bentonite clay or gel, lignite (a low-grade coal), cottonseed hulls, walnut shells, dispersants and surfactants, and sawdust. This homogeneous mix of materials settled as solids to the pond bottom. The area occupied by settling pond GTP-1E was decommissioned, cleaned of sludge and backfilled with clean soil to original ground level (depth unknown). Before it was decommissioned, settling pond GTP-1E was enlarged several times, and the western portion is now the site of settling pond GTP-1W. Settling pond GTP-1W was excavated and lined with plastic in 1983 to 1984 and lined again in 1990, after the original lining deteriorated. Settling pond GTP-1W is an active 1 million-gal.-capacity pond. Drilling fluids, produced waters, and other wastes associated with exploration, development, or production of geothermal energy are not hazardous wastes as defined under the New Mexico Hazardous Waste Act [74-4-3.I(2)]. Therefore, this AOC is not listed in Module VIII of LANL's Hazardous Waste Facility Permit. The ER Project conducted an RFI at the AOC in August 1994. One subsurface soil sample was collected at each of two depths in a core hole within the area formerly occupied by settling pond GTP-1E. Both samples were analyzed for inorganic chemicals, organic chemicals, and total uranium. Based on sampling results, Pond

		GTP-1E was recommended for NFA.
57-004(b)	In Progress	AOC 57-004(b) is a 5-million-gal., plastic-lined settling pond at Fenton Hill, the site of geothermal energy experiments in the Jemez Mountains. AOC 57-004(b) is an active unit and shows no evidence of a release. It contains a homogeneous mix of cuttings, drilling mud, additives, and dissolved materials leached into injected water from the hot rock formations found at great depth at Fenton Hill. The components of the drilling mud included barium sulfate, bentonite clay or gel, lignite (a low-grade coal), cottonseed hulls, walnut shells, dispersants and surfactants, and sawdust. This homogeneous mix of materials settled as solids to the pond bottom. Drilling fluids, produced waters, and other wastes associated with exploration, development, or production of geothermal energy are not hazardous wastes as defined under the New Mexico Hazardous Waste Act [74-4-3.I(2)]. Therefore, this AOC is not listed in Module VIII of LANL's Hazardous Waste Facility Permit. Investigation of this AOC is deferred until the pond is decommissioned.
57-005	Administratively Complete	
57-006	In Progress	AOC 57-006 was a plastic-lined, 55-gal. drum that was buried in the ground beneath a trailer that served as an analytical chemistry laboratory at Fenton Hill. Fenton Hill was the site of geothermal energy experiments in the Jemez Mountains. Chemicals that were considered too dangerous to be disposed of through the wastewater system were poured into a special drain, which was connected to the 55-gal. drum. When the drum was full, its contents were transported to LANL for disposal. The drum and its residual contents were removed as a VCA on September 15, 1994. One sample was taken of the soil beneath the former site of the drum and analyzed for inorganic and organic chemicals. Based on sampling results, AOC 57-006 was recommended for NFA.
57-007	In Progress	AOC 57-007 is a leach field at Fenton Hill, the site of geothermal energy experiments in the Jemez Mountains. The leach field was located approximately 20 ft southeast of the trailer and drained wastewater from a trailer used as an analytical chemistry laboratory. A sink in the trailer provided fresh water from an on-site fresh-water supply well. The open-bottom leach field was about 8 ft to 10 ft deep, constructed with cinder blocks and filled with gravel. Chemists working in the trailer used a special drain that was connected to a plastic-lined, 55-gal. drum to dispose of toxic or dangerous chemicals (AOC 57-006). Wastewater from other activities in the trailer drained to the leach field. Potential contaminants at AOC 57-007 are inorganic and organic chemicals. The ER Project conducted an RFI at AOC 57-007 in August 1994. One sediment sample was taken from the area beneath the end of the drainline and was analyzed for inorganic chemicals, organic chemicals, and total uranium. Based on sampling results, AOC 57-007 was recommended for NFA.
59-001	Administratively Complete	PRS 59-001 is a decommissioned septic system (including a septic tank, associated piping and drain field) which served Buildings TA-59-1 and TA-59-3. The septic system was installed during the construction of TA-59-1 in 1964 and continued to serve both buildings until 1979. In 1979, the septic system was disconnected and removed when the buildings were connected to the new Laboratory-wide sanitary sewer waste line. Subsequent construction activities excavated and removed all soils in the area to a level well below the location of the former septic system. These activities would have removed any soil potentially contaminated from the septic system. Therefore, SWMU 59-001 is appropriate for NFA under Criterion 1 because it and the surrounding soil no longer exist.
59-002	Administratively Complete	
59-003	Administratively Complete	
59-004	In Progress	AOC 59-004 is a former NPDES-permitted outfall that received once-through cooling

		water and water from floor drains and sinks in the occupational health laboratory building (Building 59-1). Effluent emptied into a rock-lined ditch underlain with a cloth-type liner. The ditch was about 4 ft wide and 50 ft long, and effluent flowed down a narrow channel to the outfall south of a portable office building (Building 59-2) south of Building 59-1. The outfall discharged to Twomile Canyon and was permitted on LANL's NPDES permit as Outfall 03A098. Discharges to this outfall were eliminated in 1995. The rock lined outfall channel was removed prior to the Cerro Grande fire and the area was restored to its natural state. Building 59-1 houses laboratories and offices for the industrial hygiene group. Facilities in the building also include a machine shop, storage for radioactive sources, and photographic darkrooms. Laboratories at Building 59-1 analyze radionuclides, organic chemicals, and inorganic chemicals. Drains in the laboratories have always been connected to the acid-waste line. Exhaust hoods have a scrubber in the ventilation system. Water from the scrubber was routed to the outfall. Other effluent sources for the outfall included drains from equipment rooms in the basement of the building, sinks, fire-suppression system water, blowdown from the boiler room, and hot and cold water pumps. The outfall also received cooling tower blowdown. Suspect contaminants were organic chemicals and radionuclides. Effluent at the outfall point was monitored periodically for flow rate, total suspended solids, pH, total chlorine, and total phosphorus in compliance with the NPDES permit. The ER Project conducted an RFI at AOC 59-004 in summer 1994 to determine if discharges to the outfall had resulted in release of any contaminants to the drainage ditch. Four soil samples were taken from three locations at the outfall and downgradient from the outfall. Samples were field-screened for organic chemicals. All samples were analyzed for organic chemicals, inorganic chemicals, and radionuclides. Cadmium, chromium, lead, mercury, nickel, and bis(2-ethylhexyl)phthalate were detected at concentrations above background but below SALs. None of the chemicals was determined to pose an unacceptable human health risk, and the RFI report recommended NFA at AOC 59-004.
60-001(a)	Administratively Complete	
60-001(b)	Administratively Complete	
60-001(c)	Administratively Complete	
60-001(d)	Administratively Complete	
60-002	In Progress	SWMU 60-002 consists of three storage areas on Sigma Mesa. The first area is 200 ft x 300 ft and is located about 900 ft southeast of a warehouse (Building 60-02) on the north side of the unimproved road that traverses the mesa. The storage area contains piles of concrete blocks, cured asphalt chunks, and cables. A large mound, mainly soil with some asphalt and concrete, extends to the north. The second area is 120 ft northwest of the Pesticide Storage Facility (Building 60-29). It is a 50-ft diameter mound of soil about 10 ft high and contains soil, rocks, concrete fence post supports, pipe, metal strips, wood, and similar debris. The third area is on the south side of the unimproved road about 100 ft west of a surface impoundment [SWMU 60-005(a)] near the end of the mesa. About 50 piles of broken cured-asphalt chunks were deposited here in anticipation of recycling. At the time that the OU 1114 work plan was written, the asphalt was scheduled to be moved to the Los Alamos County landfill for disposal. The OU 1114 work plan proposed NFA for SWMU 60-002. The March 1995 permit modification request proposed NFA at SWMU 60-002 because hazardous wastes were not generated, stored, or disposed of at the site and the site contains no radioactivity, however NFA was not granted as NMED requested further investigation of the site. The ER Project conducted sampling at SWMU 60-002 in 2001 to help support the NFA proposal. Five samples from 4 locations were collected and submitted to an off-site

		analytical laboratory for inorganic and organic chemical analyses. No report has been written for this sampling event.
60-003	Administratively Complete	
60-004(a)	Administratively Complete	Originally numbered 03-005(a), was renumbered to 60-004(a) in the 1990 SWMU Report.
60-004(b)	In Progress	AOC 60-004(b) (originally numbered 03-005(b), was renumbered to 60-004(b) in the 1990 SWMU Report) is a former storage site for 12 containers of diesel sludge from USTs that were removed from the Western Steam Plant. The containers were stored at AOC 60-004(b) in 1988. The storage site is located northeast of the geothermal well mud pit at the east end of Sigma Mesa and is contained within AOC 60-004(d). Suspect contaminants were oil and petroleum products. The ER Project conducted an RFI at AOC 60-004(b) in 1994 to determine if contaminants were present. Two soil samples were collected from two locations. The samples were analyzed in the field using PCB test kits. One sample was field screened for radionuclides and submitted for laboratory analysis of inorganic chemicals, organic chemicals, and PCBs/pesticides. Bis(2-ethylhexyl) phthalate and phenol were detected but did not exceed their respective SALs. None of the other detected chemicals exceeded BVs or SALs. The RFI report recommended NFA for AOC 60-004(b) because the site was characterized in accordance with applicable state and federal regulations and available data indicate that the site does not pose an unacceptable level of risk under current and projected future land use. The RFI report remains an open action item awaiting disposition.
60-004(c)	In Progress	AOC 60-004(c) (originally numbered 03-005(c), was renumbered to 60-004(c) in the 1990 SWMU Report) is a former container storage area inside the fence surrounding the Sigma Mesa pond. It is located east of the pond. In 1985, about 125 empty, used 55-gal. containers were stacked in a pyramid along the east fence for about 8 months. During a 1986 field investigation, the container storage was reported as part of an ongoing EPA RCRA compliance investigation. It was noted that there appeared to be stains at the site. The containers were returned to TA-54, crushed, and disposed of at TA-54, Area J (SWMU 54-005). The ER Project conducted an RFI at AOC 60-004(c) in 1994 to determine if contaminants had been released to the soil. Ten samples were collected from four locations at stained areas, including one duplicate sample and one collocated sample. Two samples were collected from each shallow hole: one from the 0 in. to 12 in. interval and one from the 12 in. to 18 in. interval. Samples were submitted for laboratory analysis of organic chemicals, PCBs/pesticides, and radionuclides. Radionuclides were detected at concentrations less than their respective BVs/FVs. No other chemicals were detected. The RFI report recommended NFA at AOC 60-004(c) because the AOC was characterized in accordance with applicable state and federal regulations, and available data indicate that contaminants are not present in concentrations that pose an unacceptable level of risk under current and projected future land use. The RFI report remains an open action item awaiting disposition.
60-004(d)	In Progress	AOC 60-004(d) is a 60 sq ft site that was used to dismantle decommissioned USTs and to temporarily store drums containing fluids removed from the USTs. The area was first developed in 1979 during a drilling project for a geothermal well. Oil stains were visible in the area at the time the OU 1114 work plan was written. The northern edge of the area was used to dispose of building rubble, concrete, and rebar. The site is located northeast of the geothermal well mud pit at the east end of Sigma Mesa. Suspect contaminants were oil and petroleum products. The ER Project conducted an RFI at AOC 60-004(d) in 1994 to determine if contaminants were present. Five soil samples were collected from five locations in the stained areas and from where a piece of steel tank was found. The samples were analyzed in the field using PCB test kits. Two samples were field screened for radionuclides and submitted for laboratory analysis of inorganic chemicals, organic chemicals, and PCBs/pesticides. Mercury was detected at concentrations greater than

		BV but below SAL. PCBs, bis(2-ethylhexyl)phthalate, and phenol were detected but did not exceed their SAL. The RFI report recommended NFA for AOC 60-004(d) because the site was characterized in accordance with applicable state and federal regulations and available data indicate that the site doen not pose an unacceptable level of risk under current and projected future land use. The RFI report remains an open action item awaiting disposition.
60-004(e)	In Progress	AOC 60-004(e) is a former outdoor storage area near the east end of Sigma Mesa. It was 100 sq ft and was used to store transformers containing PCB-contaminated oil. Oil-containing equipment stored on Sigma Mesa was tested for PCBs in 1991 and found to have concentrations less than 5 ppm. The area was remediated in 1992, by the maintenance contractor that stored the transformers at the site, but no sampling was performed to confirm removal of all contamination. The ER Project conducted an RFI at AOC 60-004(e) in 1994 to determine if PCBs remained in the surface soils following the 1992 remediation. In all, 16 soil samples were collected from 12 locations. The samples were analyzed in the field using PCB test kits. Results from the PCB test kits indicated that PCB concentrations were below 4 ppm. All sample locations were screened for organic chemicals using an organic vapor monitor. Concentrations of organic chemicals ranging from 0.1 to 17.0 ppm were detected at all sampling locations; however, moisture was the suspected cause of false positive equipment readings. Six samples were field screend for radionuclides and submitted for laboratory analysis of inorganic chemicals, organic chemicals, and PCBs. Selenium and thallium were detected at concentrations greater than BVs but below SALs. Acetone, 2-butanone, 2-hexanone, methyl-2-pentanone[4-], toluene, and xylenes (o+m+p) (mixed) were detected, and none that had SALs were found at concentrations exceeding their respective SALs. 2-hexanone has no SAL but its presence in two samples at concentrations less than 1 mg/kg was not expected to pose an unacceptable health risk. The RFI report recommended NFA for AOC 60-004(e) because the site was characterized in accordance with applicable state and federal regulations and available data indicate that the site poses no unacceptable human health risk under current and projected future land use. The RFI report remains an open action item awaiting disposition.
60-004(f)	In Progress	AOC 60-004(f) (formerly AOC C-60-005, changed to 60-004(f) in Notice of Deficiency Response dated 2/18/94) consists of two unpaved, bermed storage pads, Pad 2 and Pad 3, which were used for new product storage. Pad 2 was 12 ft x 65 ft and Pad 3 was 12 ft x 40 ft. The pads were constructed when the maintenance warehouse (Building 60-02) was built in 1978. The pads were located southeast of Building 60-02. Both pads stored 55-gal. containers from which Stoddard solvent, antifreeze, motor oil, grease, transmission fluid, and window-washing fluid were dispensed, and were visually inspected weekly. In 1985, 6-in. asphalt berms were built at the open ends of both pads to mitigate rainfall run-on and runoff problems. All containers were removed from the pads in 1990. At the time of the OU 1114 work plan, both pads were discolored and had a petroleum odor. Samples collected in 1990 detected trichlorotrifluoroethane, methylene chloride, carbon disulfide, naphthylene, and 1,3,5-trimethlybenzene. The ER Project conducted an RFI at AOC 60-004(f) in 1994 to determine if the containers stored on the pads resulted in contaminant releases greater than SALs to the site. Thirteen samples were collected from five locations at Pad 2. Eleven samples were collected from five locations at Pad 3. Organic chemicals were detected in field screening using a PID. Eleven samples from each pad were field screened for radionuclides and submitted for laboratory analysis of inorganic chemicals, organic chemicals, PCBs, and pesticides. Mercury and zinc were detected at concentrations above BVs but below SALs. PCBs were detected at concentrations above the EQL but below SAL. No other chemicals were detected. The RFI report recommended NFA for AOC 60-004(f) because the site was characterized in accordance with applicable state and federal regulations and available data indicate that the site poses no unacceptable human health risk under current and projected future land use. The RFI report remains an open action item awaiting disposition.
60-005(a)	In Progress	SWMU 60-005(a) is an inactive Hypalon-lined solar pond on the east end of Sigma

		Mesa, about 1.2 mi east of the NTS building (Building 60-19). A 6-ft security fence surrounds the pond. The pond, built in 1979, is a failed evaporation experiment that contained treated liquid radioactive effluent from the TA-50 industrial waste water treatment plant. A total of 140,000 gal. of treated effluent from the final holding tanks at TA-50 were trucked to the pond between August 1979 and June 1981. During this two-year period, the pond was monitored with a leak detection system. No leakage was detected beneath the pond as of January 1981, but leak-detection monitoring ceased after 1981. At the time of the pond's 1989 cleanup, the liner was intact. The pond also was sampled from 1979 to 1981 for radionuclides, metals, nitrate, fluoride, and cyanide. Radionuclides detected in the pond were americium-241, cesium-137, plutonium-238, plutonium-239, strontium-90, and uranium. The experiment was discontinued in 1981. Between 1981 and 1989, quarterly visual inspections were performed to check on the water level and the pond liner. HSE-7 began pond cleanup in 1989. Liquid that remained in the pond was pumped into a nearby waste line through the air bleed-off valves in the pipe running from TA-21 to TA-50. After the pond had dried, the dirt and debris remaining in the liner (400 kg of material) was put into containers and moved to TA-54. The Hypalon liner was rinsed and the rinse water was pumped into the waste line for disposal. At the time that the OU 1114 work plan was written, the Hypalon liner, still in place, had partially disintegrated. The site remained fenced and posted as a radioactive hazard. The ER Project conducted an RFI at SWMU 60-005(a) in 1994 to determine if any contamination from the pond was deposited outside the pond. Samples were collected from six locations outside of the pond and five locations within the pond. The samples collected from locations outside the pond were field screened for organic chemicals and radionuclides. No elevated organic chemicals or radionuclides were detected. In all, 23 samples were collected from outside and within the pond, including a field split, a duplicate, and a collocated sample. Samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and radionuclides. Antimony and lead were detected at concentrations greater than BVs but below their respective SALs. Cesium-137 was detected at concentrations that exceeded its FV and SAL. Americium-241 was detected but has no FV, and was carried forward to the screening assessment, where it exceeded its SAL. Butyl benzyl phthalate and carbon disulfide were the only detected organic chemicals. Carbon disulfide was detected in a sludge sample; however, because contact with the sludge material is unlikely, the result was not further considered in the screening assessment. Butyl benzyl phthalate was detected at concentrations above its EQL but below its SAL. The RFI report recommended NFA at SWMU 60-005(a) for hazardous constituents because nonradionuclide potential contaminants are not present in concentrations that would pose an unacceptable risk under the projected future land use. The report also stated that radionuclide contamination would be further evaluated under DOE Order 5400.5.
60-005(b)	Administratively Complete	
60-006(a)	In Progress	SWMU 60-006(a) is an inactive septic system located about 32 ft northeast of the northeast corner of the fence surrounding the NTS Test Rack Fabrication Facility (Building 60-17) and test tower (Building 60-19) on Sigma Mesa. The system served Buildings 60-17 and 60-19 and consists of a 1,000-gal. septic tank and associated seepage pit that is about 4 ft wide x 50 ft deep. No outfall is associated with the system. The facility began operating in 1986 to fabricate equipment for testing activities carried out at NTS. Wastewater generated from facility bathrooms and seven floor drains, including one in a paint booth, was discharged to the septic system from 1986 to 1989. The septic system became inactive and was left in place in 1989, when the facility was connected to the sanitary sewer and the TA-03 wastewater treatment plant. No documentation exists that indicated the tank ever was pumped out after its use was discontinued. Potential contaminants were inorganic chemicals and organic chemicals. The ER Project conducted an RFI at SWMU 60-006(a) in 1994 to determine if the tank had been drained after use was discontinued, to determine if the tank contained RCRA constituents that might be present in concentrations that were hazardous to the

		environment, and to determine if the septic tank was structurally sound. The tank was found to be full and samples were collected from the tank sludge. Two waste characterization samples each of the liquid and the sludge in the tank were collected. The samples were submitted for laboratory analysis of organic chemicals, PCBs, and inorganic chemicals. The tank atmosphere was continually sampled for organic vapors while the other samples were collected; no organic vapors were detected. Inorganic chemicals detected in the samples are aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium, and zinc. Eight organic chemicals were detected: benzoic acid, benzyl alcohol, bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, 1,1-dichloroethane, 2,4-dimethylphenol, and 2-methylphenol. No screening assessment was performed because the sampling objective was to determine if any hazardous wastes were present in the septic tank. The RFI report stated that the inorganic and organic chemicals and associated concentrations detected in the tank did not constitute a RCRA hazardous waste. Because there was no evidence that the septic system did not operate according to its design, it was assumed that the solids and sludge accumulated only in the septic tank. The seepage pit received no sludge, where the detected chemicals were concentrated, and the RFI report recommended NFA for the seepage pit. The report stated that a VCA plan would be developed to remove the contents of the septic tank and to close it under the appropriate New Mexico regulations.
60-006(b)	Administratively Complete	
60-006(c)	Administratively Complete	
60-007(a)	In Progress	SWMU 60-007(a) is a 50-ft x 100-ft storage area near the east end of Sigma Mesa. The area was used to store equipment for drilling the geothermal well. Oil, hydraulic fluid, and other materials were reported to have been released in this area, and the ground surface was stained. In July 1992, the stained areas were excavated, placed in containers, and disposed of by the user group. The remediated areas were covered with gravel. No sampling was conducted to confirm removal of the contamination. The ER Project conducted an RFI at SWMU 60-007(a) in 1994 to determine if contamination remained in the surface soils after the 1992 remediation. Eleven soil samples were collected from eight locations. The samples were analyzed for PCBs in the field and were field-screened for organic chemicals. Results from the PCB test kits indicated that PCB concentrations were below 0.5 ppm for all samples but one, for which the reading was 4.0-15.0 ppm. Organic chemicals were detected at concentrations ranging from 0.2 to 16.5 ppm. Moisture interference was suspected as the reason for most of the elevated readings. Eight samples were field screened for radionuclides and submitted for laboratory analysis for inorganic chemicals, organic chemicals, and PCBs. No inorganic chemicals were detected at concentrations above BVs. PCBs were detected in one sample and were carried forward to the screening assessment. The PCB concentration did not exceed its SAL. The RFI report recommended NFA at SWMU 60-007(a) because the site was characterized in accordance with current state and federal regulations and potential contaminants that are present pose no unacceptable human health risk under current and projected future land use. The RFI report remains an open action item awaiting disposition.
60-007(b)	In Progress	SWMU 60-007(b) is a storm drainage ditch that starts north of the Motor Pool Building, Building 60-01. The ditch extends about 600 ft from a paved area directly north of Building 60-01 to the bottom of Sandia Canyon. Two parking lots located east of Building 60-01 drain to a ditch that eventually joins SWMU 60-007(b). Other sources of potential contamination to the ditch are a steam-cleaning pad, a used-oil storage tank, and an oil/water separator. Equipment that used PCB-containing oil was stored on an asphalt area east of Building 60-01. The area of the ditch visibly affected by these sources was remediated in 1986, by the user group, by removing the stained soil down to the bedrock channel in the ditch. The ER Project conducted an RFI at SWMU 60-007(b) in 1994 to determine if

		contamination remained in the sediments after the 1986 soil removal. Eight samples were collected from seven locations in the east/west drainage ditch north of Building 60-1. The samples were tested in the field for PCBs; no PCBs were detected above the 0.5 ppm detection limit. In the north/south drainage ditch east of Building 60-1, seven locations were field screened for organic chemicals. No organic chemicals were detected. Six samples from four locations were field screened for radionuclides and submitted for laboratory analysis of inorganic chemicals, organic chemicals, and PCBs. The organic samples were not properly preserved before submittal to the analytical laboratory. A second sampling event occurred for the organic samples to ensure they were properly collected and preserved prior to submittal to the analytical laboratory. All inorganic chemicals were reported at concentrations less than BVs. Bis(2-ethylhexyl) phthalate was detected at concentrations above EQL but below SAL. The RFI report recommended NFA for SWMU 60-007(b) because the site was characterized in accordance with applicable state and federal regulations and available data indicate that the site poses no unacceptable human health risk under current and projected future land use. The RFI report remains an open action item awaiting disposition.
61-001	Administratively Complete	
61-002	In Progress	SWMU 61-002 is a storage area east of the Radio Repair Shop (Building 61-23) on East Jemez Road. It was used to store PCB-containing equipment and containers and had documented PCB contamination. The SWMU is part of a fenced area that measures 81 x 91 ft. The area was historically used to store capacitors and transformers and contained unmarked containers and several oil-filled containers. Prior to 1985, the area was a soil surface on which containers with PCB-contaminated oil were stored. The containers were known to have leaked. Thirty-two soil samples were taken at this area in 1986 by LANL's ESH group and elevated PCB concentrations were detected. The area was excavated and resampled. Confirmatory sampling following the excavation showed that cleanup was successful and the area was backfilled with clean soil and paved over with asphalt. After the 1986 remediation, the east side of the storage area was again used to store electrical equipment, some of which contained PCBs. Storage operations were discontinued in 1992. There was staining on the surface of the asphalt at the time the OU 1114 work plan was written. Suspect contaminants are PCBs and possibly lead. The ER Project conducted an RFI at SWMU 61-002 in the summer of 1994 to determine if PCBs were present in the stains on the asphalt or in surface soils downgradient from the site. Sample locations were selected using the stained areas and a minor drainage area as reference points. Eighteen samples were collected from 16 locations. Samples were field-screened for organic chemicals. Samples were analyzed for organic chemicals, PCBs, and inorganic chemicals. Zinc was detected above BV but below SAL. Butyl benzyl phthalate concentrations were greater than detection limits but below SAL. PCBs were found above SAL. The elevated PCB concentrations were found in two samples in the drainage pathway at the furthest downgradient locations that were sampled. The RFI report recommended further investigation at SWMU 61-002 to identify the extent of contamination. In 1997, 42 samples were collected and submitted to an off-site analytical laboratory for analysis for PCBs. No report has been written for this sampling event.
61-003	Administratively Complete	
61-004(a)	Administratively Complete	PRS 61-004(a) is an inactive septic tank located northeast of Building TA-61-23 (formerly designated as TA-3-282). Engineering drawings and archival records show that the septic tank received only sanitary waste from this building. During the 1950s, the building was used as a radio repair shop, in the 1960s as a shop for constructing museum exhibits and for project planning, and from the 1970s to the present, again as an audio repair shop. Engineering drawings and archival records confirm that the septic tank was abandoned in place in 1970. No documentation exists regarding the final disposition of the tank. SWMU 61-004(a) is appropriate for NFA under Criterion 2 because it was never used for the management of RCRA solid or hazardous wastes and/or constituents.

61-004(b)	Administratively Complete	
61-004(c)	Administratively Complete	AOC 61-004(c) includes an inactive- septic tank, drainlines, lift station, and foundation that were uncovered at the Los Alamos County landfill in 1991. EM-8 collected tank content samples. Analytical results indicated that benzoic acid was present at less than 16 parts per billion. Levels of beta radioactivity and trace levels of strontium-90 were detected. The liquid in the lift station and tank was removed and the tank was excavated. Soil samples were collected from the tank, the excavation, and the surrounding area. Samples were analyzed for organic chemicals, inorganic chemicals, and radionuclides. Results indicted that no contamination was present. The tank, drainlines, lift station, and foundation were disposed of at the Los Alamos County landfill. The OU 1114 work plan recommended NFA at AOC 61-004(c) because there is no evidence that the AOC presents a potential unaccptable risk to potential receptors. The September 1995 permit modification request proposed NFA for the AOC because it was characterized and remediated in accordance with current applicable state or federal regulations and available data indicate that contaminants are not present.
61-005	In Progress	SWMU 61-005 is the active Los Alamos County municipal landfill. The landfill is located on the rim of Sandia Canyon near East Jemez Road. It consists of 400 ft square pits that are excavated into tuff. The pits are designed so runoff does not enter the canyon. Waste is deposited into the active pit and covered with soil daily. When full, the pit is capped and a new pit is put into service. The landfill was established in 1974 and is owned by DOE and operated by Los Alamos County for use by the public, the county, and LANL. It has a permit to manage non-hazardous solid waste and is regulated by NMED. The OU 1114 work plan recommended deferred action at SWMU 61-005 because it is an active site that is regularly monitored in compliance with its permit requirements.
61-006	In Progress	SWMU 61-006 is an active oil recycling area located at the Los Alamos County municipal landfill (SWMU 61-005). The unit is a lined pit about 10 ft x 20 ft x 7 ft deep that has a 2,500 gal. holding tank. An 8-ft long pipe leads to a filling bin at ground level. According to the 1990 SWMU report, historically there were three underground tanks in the pit. Two of the tanks were given to a recycler as scrap metal in 1989. The third tank was moved to an open, lined pit (SWMU 61-006). The area where the tanks were formerly located was excavated as a large disposal pit for use at the landfill. The OU 1114 work plan recommended deferred action at SWMU 61-006 because there is no drainage to the canyon from the pit. At the time the OU 1114 work plan was written, renovation plans were underway to include covering the pit, installing leak detection on the tank, and relining the pit with an improved liner. Conversations with Los Alamos County landfill employees confirmed that the upgrades to the waste oil recycling center were completed in 2000.
61-007	In Progress	SWMU 61-007 was a transformer-staging site along the south side of East Jemez Road about one mile east of Diamond Drive. The site was cleaned up under TSCA in 1992 by LANL's ESH group and regulatory closure was approved by EPA Region 6. NFA was recommended at SWMU 61-007 in the September 1995 permit modification request because the site has undergone regulatory closure under another authority.
63-001(a)	In Progress	SWMU 63-001(a) is an inactive 1000-gal. septic tank (structure 63-12, formerly designated as structure 52-49) and its associated seepage pit and drainline (formerly designated as structure 52-50). The seepage pit is 4 ft in diameter and 50 ft deep. The system served structures 63-3, -4, -5, and -6. The system was removed from service in 1993 when the lines were connected to the TA-46 SWSC system. Structure 63-3 is a single-story concrete-block building that contains carpentry, welding, plumbing, and paint shops and two offices. Structure 63-4 is a modular office building. Structures 63-5 and 63-6 are trailers that are subdivided into offices. The area now designated as TA-63 has undergone several redesignations. It was part of TA-4 in the 1950s and part of TA-0 in the 1960s and 1970s. In 1983, nine structures on the site had TA-0 building

		designations. The site also has been defined as part of TA-52. The western part of TA-52 was redesignated as TA-63 in 1989. The dates of the redesignations from TA-4 to TA-0 and from TA-0 to TA-52 are unknown. Suspect contaminants at SWMU 63-001(a) are solvents and other unspecified chemicals. No documentation of spills, releases, or incidents at TA-63 has been found. Sampling was conducted in 1995 at SWMU 63-001(a). A total of 31 samples were collected from 4 locations by ER Project personnel in 1995 and submitted for laboratory analysis of inorganic chemicals, radionuclides, and organic chemicals. Arsenic was the only inorganic chemical detected above its SAL but below the BV. Silver was detected slightly above the BV but below the SAL. Three inorganic chemicals with no established BVs were detected below their respective SALs: boron, lithium, and strontium. Nitrate (as NO3), nitrite (as NO2), and nitrogen dioxide were also detected; however, there are no BVs or SALs established for these chemicals. Cesium-134 was detected in one sample; there are no established BV or SAL for this radionuclide. Plutonium-238 and -239 were detected below their surface BVs and also below their associated SALs; however, since these compounds were detected at depth these results are considered greater than background. No organic chemicals were detected above BVs or SALs. Two organic chemicals with no established BVs, xylene and di-n-bytylpthalate, were detected below their respective SALs. Based on the analytical results, the former SWMU poses no unacceptable human health risk under current or projected future land use.
63-001(b)	In Progress	SWMU 63-001(b) is a 920-gal. inactive septic tank (structure 63-14) and its associated drainlines and seepage pit. The seepage pit is 4 ft in diameter and 50 ft deep. The tank and seepage pit formerly were designated structure 52-154 and structure 0-462, respectively. SWMU 63-001(b) served Building 63-1 and received only sanitary waste water. Building 63-1 is a single-story building that houses offices, an electronics shop, and a machine shop. The building formerly was designated structure 0-155. The area, now designated as TA-63, has undergone several TA redesignations. It was part of TA-4 in the 1950s and part of TA-0 in the 1960s and 1970s. In 1983, nine structures on the site had TA-0 building designations. The site also has been defined as part of TA-52. The western part of TA-52 was redesignated to TA-63 in 1989. The dates of the redesignation from TA-4 to TA-0 and from TA-0 to TA-52 are unknown. Suspect contaminants at SWMU 63-001(b) are solvents and other unspecified chemicals. No documentation of spills, releases, or incidents at TA-63 has been found. Septic system 63-14 was registered as an Unpermitted Individual Liquid Waste System, NMED Registration Number LA-09. Samples were collected by ER Project personnel in 1995. A total of 31 samples were collected from 4 locations and submitted for laboratory analysis of inorganic chemicals, radionuclides, and organic chemicals. Arsenic was the only inorganic chemical detected above its SAL but below the BV. Five inorganic chemicals with no established BVs were detected below their respective SALs: lithium, molybdenum, nitrate (as NO3), nitrite (as NO2), and strontium. Plutonium-238 was detected above the BV but below the SAL. No organic chemicals were detected above BVs or SALs. Two organic chemicals with no established BVs, benzo(a)athracene and di-n-bytylpthalate, were detected below their respective SALs. Based on the analytical results, the former SWMU poses no unacceptable human health risk under current or projected future land use.
63-002	Administratively Complete	
64-001	Administratively Complete	
69-001	In Progress	SWMU 69-001 is the Twomile Mesa incinerator. The incinerator consists of two inactive incineration units in Building 69-3, the Incinerator Building, (formerly Building 00-139). This area was designated as TA-69 in 1989; prior to then, the site was designated as the part of TA-00. Building 69-3 is a 20 x 28 x 15 ft metal structure that was built in 1959. The incinerator was used to destroy classified documents. This incinerator replaced an older document incinerator that was located at the airport (TA-73). The

		incinerator at Building 69-3 operated until the late 1970s when a shredder at TA-52 assumed the destruction function. Only classified documents were destroyed in Building 69-3. Stacks of documents and computer paper were manually fed into the incinerator units to ensure complete combustion. The ashes were carried from the building and were wet down in a small pond behind Building 69-3. A pipe that protrudes from the northeast side of Building 69-3 is part of a drain for the secondary chamber cleanout system for the older of the two incinerators. Cleanout water from the pipe discharged into the pond. The newer incinerator did not have a secondary chamber. Pieces of glass from viewgraphs, metal paper fasteners, and other small noncombustible debris were found in the former pond area. The soil dike that once contained the pond was breached by erosion. The OU 1157 work plan stated that action on the incinerator would be deferred for characterization until decommissioning and the pond would be investigated in Phase I. The ER Project conducted a VCA at the incinerator pond bed at SWMU 69-001 in 1995. The VCA followed 1994 Phase I RFI sampling results that showed barium (16,200 mg/kg versus a SAL of 5600 mg/kg in sample AAB0900) and lead (7330 mg/kg versus a SAL of 400 mg/kg in sample AAB0900) concentrations that exceeded SALs and cadmium (9.5 versus BV of 2.7 mg/kg in sample AAB0901), copper (62.5 versus BV of 15.7 mg/kg in AAB0900), manganese (1420 versus BV of 1030 mg/kg in AAB0901), nickel (44.5 versus BV of 26.7 mg/kg in AAB0900), and antimony (23.4 versus BV of 2.5 in AAB0900) above BVs. During the VCA, visual observations and field screening identified a larger area of contamination than anticipated. Depth of the ash was greater than expected. Samples taken from the drainage channel showed lead and barium levels above PRGs. Based on sampling, a 30 ft x 160 ft area of contamination was identified in the drainage channel bottom and on the west side of the pond bed. After excavating soil within the newly defined area of contamination, 15 screening samples were taken. Samples from the northern berm and downgradient from the northern berm contained several analytes above PRGs. The upper 6 in. of soil were removed from the top and side of the northern berm. Visible areas of ash were removed in their entirety. Additional samples were collected from points below the breach, in the trees below the pond area and just above the stream at the canyon bottom. Sample analysis results indicated that the area of contamination extends northeast into the forest and canyon below the pond. The cleanup was terminated because of the increase in the size of the project, equipment access problems due to the steep grade, and the presence of trees.
69-002(a)	Administratively Complete	
69-002(b)	Administratively Complete	
72-001	In Progress	AOC 72-001 is a small arms firing and training range used by the LANL security force. The site has been operational since 1966. It includes a 175 ft x 250 ft firing range surrounded by earth berms, an adjacent skeet shooting range, and administrative buildings. It is located in Sandia Canyon at the west end of TA-72. Lead is known to be present in the firing range because bullets are scattered at the base of the berms and cliffs. Lead shot from skeet shooting is visible on the ground. The ER Project conducted an RFI at AOC 72-001 in 1995. After performing a geomorphic survey to locate sediment catchments in the downstream drainage, eight soil samples were collected from seven locations at sediment catchments downstream of the site and in the drainage channel that passes through the site. Samples were field-screened for HE and radioactivity; no HE was detected and no radiation levels above BVs were detected. Samples were analyzed only for inorganic chemicals. No inorganic chemicals were detected above BVs, and no chemicals that did not have BVs were detected. The RFI report recommended deferred action for assessment and remediation until the site is decommissioned.
72-002	Administratively Complete	
72-003(a)	Administratively	

	Complete	
72-003(b)	Administratively Complete	
73-001(a)-99	In Progress	Consolidated SWMU 73-001(a)-99 consists of former SWMUs 73-001(a) and 73-004(d). The former SWMUs are associated with disposal activities near the TA-73 airport landfill. Former SWMU 73-004(d) was physically incorporated into, and is indistinguishable from, former SWMU 73-001(a), and is not separately discussed in ER Project documents post-consolidation into SWMU 73-001(a)-99. The area encompassing consolidated SWMU 73-001(a)-99 is currently part of the Los Alamos County airport. Former SWMU 73-001(a) is the inactive main landfill. It is situated north of the airport runway and has a surface area of about 12 acres. LANL and townsite use of the area as a landfill is believed to have begun in 1943. LANL deposited sanitary wastes in the landfill. A hot-mix asphalt batch plant operated in this area from about the mid-1940s until 1954. The plant was located east of the airport terminal building along the canyon rim in an area that subsequently was assimilated into the main landfill. The volume of wastes in the landfill is estimated to be about 489,500 cubic yards. Initially, the landfill consisted of a natural, hanging valley into which municipal waste was deposited after first being burned. The intentional burning ceased in 1965 when Los Alamos County assumed operation of the landfill. As more capacity was required, trenches were excavated into the tuff adjacent to the original hanging valley. Los Alamos County operated the landfill from 1965 until the landfill was closed in 1973. From 1984 to 1986, the western portion of the landfill was excavated and moved to the debris disposal pit [former SWMU 73-001(d), now part of consolidated SWMU 73-001(b)-99] to allow construction of existing hangars and tie-down areas. Clean fill was used to replace the excavated area. Former SWMU 73-004(d) is a former septic system that served the landfill office. It was located east of the present airport terminal building and within the footprint of former SWMU 73-001(a). A 4-in. VCP connected the building's toilet to the septic tank, which was located about 20 ft northeast of the building. Based on aerial photographs, the landfill office is believed to have been used between 1960 and 1973. The building and septic tank were removed during decommissioning in the early 1970s. Former SWMU 73-004(d) was proposed for NFA in a 1997 RFI report because it is located within former SWMU 73-001(a) and would be investigated as part of that former SWMU. At the time that the subsequent 1998 RFI report was written, LANL had not received comments or concurrence from the administrative authority relative to the NFA request for former SWMU 73-004(d), so LANL continued to address this as a unique SWMU. The ER Project conducted an RFI at the former SWMUs in this consolidated unit between 1994 and 1997. The RFI focused on defining the nature and extent of potential contamination to determine an appropriate plan for an in situ corrective action. RFI activities included site surveys, radiological surveys, infrared photography surveys, geophysical surveys, geomorphologic mapping, geodetic surveys, and sampling. Sampling included soil gas sampling, surface soil and sediment sampling, interior and perimeter borehole drilling, subsurface soil and tuff sampling, cone penetrometer testing, monitoring well installation, pore water, and leachate sampling. Analysis of samples collected at the landfill indicated the presence of organic and inorganic chemicals. The types of chemicals and concentrations observed are typical of those reported for most other municipal landfills. The primary compounds detected in the soil gas samples included methane, trichloroethene, tetrachloroethene, and vinyl chloride. Surface sampling analytical results detected organic chemicals, and also indicated the presence of inorganic chemicals and radionuclides above BVs/FVs. Results of a surface radiological survey indicated that no significantly elevated levels of beta or gamma activity were present on the surface of the landfill area. The subsurface sampling program was completed in three separate field investigations, including a drilling program that was conducted around the perimeter of the main landfill in 1994, a

		cone penetrometer testing investigation conducted within the interior of the main landfill in 1995, and a drilling program conducted in the interior of the main landfill in 1997. In addition, routine sampling of the vadose zone monitoring network was conducted at the landfill between 1994 and 1997. Subsurface soil samples detected organic chemicals, and indicated the presence of inorganic chemicals and strontium-90 above BVs/FVs. Based on a review of laboratory QA/QC procedures, the results for strontium-90 were considered to be questionable. The presence of strontium-90 was attributed to airborne disposition from historic stack emissions at the plutonium-processing facilities at TA-21, which are in close proximity to the airport landfill. Pore water samples detected organic chemicals, and showed inorganic chemicals above BVs. Soil gas samples detected organic chemicals. RFI results indicated the presence of methane and carbon dioxide in the subsurface associated with decomposing refuse. The RFI report recommended an in situ remedial strategy. The airport landfill HPT agreed in March 2000 to use a phased VCM at consolidated SWMU 73-001(a)-99 to address the drainages and the airport landfill investigation and cover design. An IM was proposed to complete cleanup of drainages associated with landfill activities. Completion of the landfill investigation and subsequent cover design and construction would be completed as a VCM. The VCM plan is scheduled to be submitted to NMED for review. A site tour of the landfill drainage debris disposal area was conducted in September 2001 to understand and discuss available options for addressing federal and state stormwater regulations. The tour included representatives from NMED, LANL, and DOE. NMED documented the recommendations in a letter dated October 3, 2001. LANL submitted a supplemental SAP developed by the HPT in October 2001. The purpose of the supplemental SAP is to acquire data necessary to proceed with the conceptual design of covers for the two landfill areas: the main landfill [former SWMU 73-001(a)] and the debris disposal area [former SWMU 73-001(d)]. NMED approved the supplemental SAP in November 2001.
73-001(b)-99	In Progress	Consolidated SWMU 73-001(b)-99 consists of former SWMUs 73-001(b), 73-001(c), and 73-001(d), former structures at the Los Alamos airport. Former SWMUs 73-001(b) and 73-001(c) were destroyed by trench excavation for former SWMU 73-001(d) and lie within its boundary. Former SWMU 73-001(b) was a pit that was used to dispose of waste oil. The pit was located west of the bunker area [former SWMU 73-001(c)] and northeast of the end of the airport runway. The pit is estimated to have been about 100-ft x 25-ft with an unknown depth; its center is estimated to have been located near the center of the south trench in the debris disposal area [former SWMU 73-001(d)]. The pit, operated by the Zia Company, was used to dispose of waste oils from the motorpool, craft shops, and a vehicle shop. Operation dates for the pit are estimated to be from 1947 to 1974. Clean sand was reportedly placed in the pit by the Zia Company to solidify its contents. At the time of the RFI work plan, there was no visible indication of the waste oil pit at the estimated location. Former SWMU 73-001(c) consists of four former bunkers that were used to store HE. The bunkers were located along the north canyon rim east of the airstrip. The concrete bunkers, built in 1947, were each 46-ft 8-in. sq, were built on four pads, and were covered with earth. The Zia Company acquired three of the bunkers in 1948 and one bunker reportedly continued to be used by LANL's protective force from 1948 to 1964, at which time it was transferred to the Zia Company. Contamination surveys were conducted in 1973. The surveys showed that the bunkers were free of radioactive contamination and there was no significant chemical or toxic contamination. In 1974, the bunkers were demolished. According to aerial photographs taken in 1974, rubble from the demolition may have been placed in two pits adjacent to the site and in a trench currently beneath the northeast corner of the airport runway. The debris was covered with fill. Former SWMU 73-001(c) was investigated as part of the airport landfill

		areas RFI. RFI results indicated that the disposal pits adjacent to the bunker sites were incorporated into former SWMU 73-001(d) when the disposal trenches were excavated. Former SWMU 73-001(d) is a former landfill debris disposal area that operated from 1984 to 1986. The disposal area consisted of two roughly parallel, unlined trenches dug to a depth of 35-ft. To the west, the trenches extend to within about 150-ft of the windsock; to the east, they extend about 800-ft beyond the end of the runway. The north and south boundaries extend to within about 50-ft of the security fence and the asphalt runway, respectively. The site was used in 1984 to bury debris excavated from the western portion of former SWMU 73-001(a) [now part of consolidated SWMU 73-001(a)-99] and from former SWMUs 73-001(b) and 73-001(c). The trenches are estimated to contain 126,000 cubic yards of debris. The debris disposal area was covered with soil in 1986 and reseeded. Former SWMU 73-001(d) was investigated as part of the airport landfill areas RFI. The ER Project conducted an RFI at former SWMU 73-001(b) in 1995 to locate the pit. A site survey, geophysical survey, soil gas survey, and cone penetrometer testing were undertaken to locate it, but none proved successful. Because former SWMU 73-001(b) is one component of contamination within the larger surrounding area of landfill-type debris associated with the debris disposal area, the RFI report recommended NFA at former SWMU 73-001(b) because the site is located within another SWMU, and stated that the area including former SWMU 73-001(b) would be investigated as part of former SWMU 73-001(d). The ER Project conducted an RFI (the Airport Landfill Areas RFI) at the former SWMUs in this consolidated unit between 1994 and 1997. The waste oil pit and the bunker debris pits were combined with the debris disposal area for the purposes of the RFI report. The RFI focused on defining the nature and extent of potential contamination to determine an appropriate plan for an in situ corrective action. RFI activities included site surveys, radiological surveys, infrared photography surveys, geophysical surveys, geomorphologic mapping, geodetic surveys, and sampling. Sampling included soil gas sampling, surface soil and sediment sampling, interior and perimeter borehole drilling, subsurface soil and tuff sampling, cone penetrometer testing, monitoring well installation, pore water, and leachate sampling. Sampling activities and analysis of samples collected indicated the presence of organic and inorganic chemicals. The types of chemicals and concentrations observed are typical of those reported for most other municipal landfills. The primary compounds detected in the soil gas samples included methane, trichloroethene, tetrachloroethene, and vinyl chloride. The RFI report recommended an in situ remedial strategy. The airport landfill HPT agreed in March 2000 to use a phased VCM at consolidated SWMU 73-001(b)-99 to address the drainages and the airport landfill investigation and cover design. An IM was proposed to complete cleanup of drainages associated with landfill activities. Completion of the landfill investigation and subsequent cover design and construction would be completed as a VCM. The VCM plan is scheduled to be submitted to NMED for review. A site tour of the landfill drainage debris disposal area was conducted in September 2001 to understand and discuss available options for addressing federal and state stormwater regulations. The tour included representatives from NMED, LANL, and DOE. NMED documented the recommendations in a letter dated October 3, 2001. LANL submitted a supplemental SAP developed by the HPT in October 2001. The purpose of the supplemental SAP is to acquire data necessary to proceed with the conceptual design of covers for the two landfill areas: the main landfill and the debris disposal area. NMED approved the supplemental SAP in November 2001.
73-002-99	In Progress	Consolidated SWMU 73-002-99 consists of former SWMUs 73-002, 73-004(a), 73-004(b), and 73-006 and AOC 73-003. The SWMUs and AOC are associated with former structures and activities for the airport landfill [consolidated SWMU 73-001(a)-

		99]. Former SWMU 73-002 is an incinerator/surface disposal area located slightly west and north of the Los Alamos Airport terminal. The incinerator began operations in 1947, but because of problems with incomplete combustion, operated only for a short period of time. The incinerator was used to destroy municipal trash from the town site in addition to classified documents from LANL. The incinerator equipment and stack were removed; no information on the removal operation is available. The building is currently used for storage. Associated with the incinerator is an ash disposal area located north of the building, immediately below the south rim of Pueblo Canyon. A sizeable deposit of noncombustibles, primarily composed of rusted tin cans, is located on a ledge below the top of the canyon. From this ledge, the ash deposit extends approximately 140 ft to the top of the canyon at a slope of approximately 40 degrees. The width of the ash deposit is narrowest at the top (approximately 65 ft) and fans out, becoming widest at the ledge (approximately 160 ft). Below the ledge, accumulations of ash and other noncombustibles continue downslope to an irregular manner for some distance, but terminate at least 700 ft from the bottom of the canyon. The Zia Company acquired the building in 1948, which it held until 1973. Former AOC 73-003 was a steam-cleaning facility for garbage trucks, cans, and dumpsters that were used to collect municipal waste from the Los Alamos townsite. The facility was made of concrete block on a concrete slab and had overall dimensions of 50-ft x 30-ft. It consisted of a drive-through bay for cleaning garbage trucks, a fully enclosed and automated system for cleaning garbage cans, a patio area for unloading garbage cans to be cleaned, a heater room, and an office. A 50-ft x 20-ft gravel storage yard, used to store garbage cans, was connected to the west side of the facility. Wash water entered one of three 14-in. diameter floor drains that connected to the septic tank, former SWMU 73-004(b), and was discharged through a 6-in. VCP to Pueblo Canyon. The facility was used from 1949 to 1970 and was demolished in 1971. The site is now overlain by the asphalt parking lot for the Los Alamos airport. Former SWMU 73-004(a) was a concrete septic tank that received sanitary waste from toilets and showers in the adjacent incinerator building (Building 73-2). The tank was located about 90-ft northwest of the steam-cleaning facility and discharged to Pueblo Canyon through a 6-in. VCP. Former SWMU 73-004(b) was a concrete septic tank that discharged wash water from the steam-cleaning plant through a 6-in. VCP to an outfall in Pueblo Canyon. Former SWMU 73-006 consists of the two drainlines that discharged to Pueblo Canyon from the incinerator building (Building 73-2). The west drainline, constructed of 5-in. diameter cast iron pipe, originates at two floor drains, now plugged with concrete, one on the west side of the charging floor and the other on the west side of the stoking floor. The east drainline, also constructed of 5-in. diameter cast iron pipe, originates at similar concrete-plugged drains located on the east side of the charging and stoking floors. The drains are presumed to have handled wash water and to have operated concurrently with the incinerator. The drainlines discharged directly onto the ash disposal area, former SWMU 73-002. The ER Project conducted an RFI at former SWMU 73-002 in 1996 and 1997 and documented the results in a Phase II SAP. Ash and soil were sampled from 18 locations within and downgradient from the ash disposal area. Samples were submitted for analysis of organic chemicals, PCBs/pesticides, dioxins/furans, and were screened for radioactivity. Analysis results showed the ash samples had a high percentage of noncombustible metal and glass fragments. Barium, cadmium, copper, lead, silver, and thallium were present at concentrations greater than SALs. Eighteen organic chemicals were detected; of those, Aroclor-1254 was detected at concentrations above SAL. The field or laboratory screening identified no radiological constituents. BMPs were installed at the site to prevent run-on. LANL proposed a Phase II SAP for former SWMU 73-002

		to define the lateral and downgradient extent of the ash disposal area. The LANL ER Project submitted a SAP for former AOC 73-006 in 1998 to determine the areal extent of contamination at the site. A Phase I RFI was conducted at former SWMU 73-004(a) in 1996 and 1997 and the results were documented in a 1998 SAP. Following the Phase I sampling results, the decision was made to remove the tank and its contents and abandon the inlet and outlet drainlines in place. The tank was removed during a VCA in 1996. Based on sample analysis results, the VCA recommended NFA for former SWMU 73-004(a). It was subsequently determined that additional sampling was required to define the extent of contaminants at the site, and a SAP was submitted to NMED in 1998. A VCA was conducted in 1996 at SWMU 73-004(b) to remove the septic tank and its associated piping. The inlet and outlet lines were not removed as part of the VCA. The area currently is paved and is used as a parking lot. Based on sample analysis results, the VCA recommended NFA for former SWMU 73-004(b). It was subsequently determined that additional sampling was required to define the extent of contaminants at the site, and a SAP was submitted to NMED in 1998. In 1997, a Phase I RFI was conducted at SWMU 73-006. The west drainline was removed as part of this RFI. The east drainline was not located during the Phase I RFI despite efforts to locate it. A SAP was submitted to NMED in 1998 to determine the horizontal and vertical extent of contamination.
73-004(c)	Pending	SWMU 73-004(c) is a former septic system that served two restrooms in the former airport terminal starting in 1946. The former airport terminal was located about 75 ft directly east of the existing terminal building. A 4-in. diameter VCP connected the building toilets to the septic tank. The tank discharged to the south edge of Pueblo Canyon. The terminal building was connected to a gravity flow sewer main leading to the Bayo sewage treatment plant in 1964, and the Pueblo Canyon outfall was abandoned. Based on the known activities that took place in the terminal building, the septic tank apparently received only sanitary waste. Investigation into the tank location has been unsuccessful; however, it is believed that the tank was removed prior to or during the 1984 airport expansion. The area of the former terminal building and septic tank was capped with 9-in. thick concrete pavement as part of the airport expansion. The ER Project conducted an RFI at SWMU 73-004(c) in 1996, during which a site survey and a geophysical survey were conducted to locate the former septic tank. The search for the septic tank was not successful. If the septic tank does exist, it is covered by several inches of concrete, and it was determined that cutting and trenching through the concrete was not practical without some guarantee of locating the septic tank. The RFI report recommended NFA because the septic tank could not be located and because it was not used to manage hazardous waste or hazardous waste constituents.
73-005-99	Administratively Complete	Consolidated SWMU 73-005-99 consists of former SWMU 73-005 and AOCs 73-007, C-73-005(a), C-73-005(b), C-73-005(c), C-73-005(d), C-73-005(e), and C-73-005(f). The former SWMU and AOCs are located in an area formerly known as Contractors' Row, which operated from about 1947 to 1951 as an area for construction-related operations like dispatch offices, material storage sheds, parking areas for heavy equipment, and aggregate stockpiles. Contractors' Row was located directly south of the airport terminal building between State Road NM 502 and the southern edge of East Mesa above DP Canyon. The area extends from near the west end of the runway eastward for about 2800 ft. No records are available describing maintenance activities, cleaning and storing of equipment, waste management practices, or any processes and chemicals that may have been used. Former SWMU 73-005 is a surface disposal area near the north edge of DP Canyon. The area is about 400 ft x 200 ft, extending from the NM 502 right-of-way fence line to the north rim of DP Canyon. The area is bounded on the east and west by two drainages. Debris at the site is scattered concrete, asphalt, and other construction and

		demolition debris that probably originated from demolition activities associated with the relocation of Contractors Row in 1951. Former AOC 73-007 is a cylindrical steel septic tank about 4.3 ft in diameter and 5 ft deep with a cast iron inlet pipe and VCP that probably discharged into DP Canyon. It was discovered during RFI work at former SWMU 73-005 in 1996, and is contained within the boundary of former SWMU 73-005. Former AOCs C-73-005(a-f) were discovered during site reconnaissance at Contractors' Row in 1996. The sites are shallow unlined pits that were excavated into the tuff. The pits ranged in dimension from 3 to 6 ft wide, 5 to 12 ft long, and 2.5 to 6 ft deep. At least two of the pits had inlet and/or outlet drainlines [C-73-005(a) and C-73-005(b)]. The pits were assumed to have received sanitary waste from facilities within Contractors' Row. The ER Project conducted a VCA at these former SWMUs in 1996 to backfill each pit. In 1996, the ER Project conducted a VCA at AOC 73-007 to remove the tank and its contents. The inlet and outlet lines were later removed as part of a Phase II RFI. The ER Project conducted a VCA at former AOCs C-73-005(a-f) in 1996 to backfill each pit. The ER Project conducted an RFI at this consolidated SWMU in several phases from 1996 to 1999 to determine if contamination was present and if so, the nature and extent of the contamination. RFI activities included a site survey and initial and subsequent field investigations. A total of 106 samples were collected from 65 locations where operational activities were known to have occurred. In addition, the NMED/DOE Oversight Bureau collected 5 soil samples, and results from the Oversight Bureau sampling were added to LANL's RFI sample data. Samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, PCBs/pesticides, and radionuclides. Data analysis indicated that inorganic chemicals, organic chemicals, and one radionuclide were detected above BVs/FVs. Only benzo[a]pyrene exceeded its SAL. The human health and ecological screening assessments determined that potential contaminants posed no unacceptable human health risk because the potential contaminant levels either were less than SALs or were within EPA's target risk range. Based on sample data, the nature and extent of contamination at this consolidated SWMU have been well defined. Sampling data have shown that most of the contamination has remained on the mesa top and the potential for erosion and migration into DP Canyon is minimal; as corroborated by samples collected from drainage areas leading into the canyon. The RFI report recommended NFA at consolidated SWMU 73-005-99 because the SWMU was characterized in accordance with current applicable state or federal regulations, and the available data indicate that contaminants of concern are present in concentrations that pose no unacceptable level of risk under current and projected future land use.
C-00-001	In Progress	AOC C-00-001 consists of the Guaje Canyon system. Guaje Canyon heads on the flanks of the Sierra de los Valles on USFS land at an elevation of approximately 10,500 ft. The canyon extends south-southeast across USFS land for approximately 14 mi before entering San Ildefonso Pueblo land. The canyon then continues another 2.3 mi before joining Los Alamos Canyon (AOC C-00-006) at an elevation of approximately 5660 ft. Guaje Canyon has a watershed area of 16.9 sq mi, a channel length of 16.4 mi, and a mean elevation of 8118 ft. Two springs in the upper part of Guaje Canyon on USFS land produce a reach that has perennial flow. A reservoir was constructed within this reach and served as a municipal water supply for Los Alamos from 1947 to 1959. From 1972 to 1992 the reservoir was used as a source of irrigation water by Los Alamos County. Guaje Canyon has three named tributaries, all of which head on the Sierra de los Valles and trend southeast. The northernmost tributary is Aqua Piedra Canyon, which heads on Santa Clara Pueblo land and is approximately 3.0 mi long. Aqua Piedra Spring, in the middle of Aqua Piedra Canyon, results in a short perennial reach. South of Aqua Piedra Canyon is Caballos Canyon, which is approximately 2.8

		mi long and contains the third tributary, Vallecitos Canyon. Vallecitos Canyon is the westernmost tributary of Guaje Canyon and is approximately 1.7 mi long. Both Caballos and Vallecitos Canyons are ephemeral, with streamflow due to runoff from snowmelt and rainfall. The two unnamed tributaries of significance in the middle and lower sections of Guaje Canyon are referred to as the south fork and north fork of Guaje Canyon, respectively. The Guaje well field, a series of supply wells, is located in the middle and lower parts of Guaje Canyon. These wells provide a significant portion of the Los Alamos County municipal water supply. Previous environmental investigations at AOC C-00-001 include studies conducted in 1970 to assess the concentrations and movement of plutonium and radioactivity in stream channels in the LANL vicinity. Sediment samples were collected in Guaje Canyon above the confluences with Rendija Canyon (AOC C-00-002), Barrancas Canyon (AOC C-00-003), and Los Alamos Canyon (AOC C-00-006). Results indicated plutonium concentrations within the range of FVs. Sediment has been sampled in Guaje Canyon at the confluence with Los Alamos Canyon since 1973 as part of the LANL Environmental Surveillance Program. This sampling has not detected radionuclides above FVs. In addition, the alluvial and regional aquifers in Guaje Canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Guaje Canyon does not pass through nor is it adjacent to any former or active TAs. However, one AOC is associated with TA-00 in Guaje Canyon. This AOC [AOC 00-029(c)] is a transformer located near one of the Guaje well field wells. The ER Project has developed a work plan for investigating the Guaje Canyon system. The planned sediment investigation focuses on one reach, designated G-1, located in the middle of Guaje Canyon. Reach G-1 is downstream of AOC 00-029(c). This reach was selected to evaluate the potential for contamination associated with this AOC. If significant contamination is detected, an additional reach downstream near the confluence with Los Alamos Canyon (AOC C-00-006) may be sampled. The sediment investigation will include geomorphic surveys to identify sediment age and physical characterization. Sediment samples will be collected and analyzed. Analyses may include full-suite, limited-suite, and key-contaminant analyses. The full-suite analyses will include radionuclides, inorganic chemicals, and organic chemicals. If necessary, limited-suite analyses would focus on the chemicals and radionuclides detected above BV/FVs in the full-suite analyses. Key-contaminant analyses will include constituents shown to be the primary risk drivers. The investigation may also include collection and analysis of surface water samples at areas of persistent surface water, if any are encountered.
C-00-002	In Progress	AOC C-00-002 consists of the Rendija Canyon system. Rendija Canyon heads on the flanks of the Sierra de los Valles on USFS land northwest of the Los Alamos townsite at an elevation of approximately 9830 ft. The canyon extends east, passing along the north side of the townsite and enters GSA land north of Barranca and Deer Trap Mesas. The canyon continues east and enters USFS land before joining Guaje Canyon (AOC C-00-001) at an elevation of approximately 6300 ft. Rendija Canyon has a watershed area of 9.5 sq mi, a channel length of 9.0 mi, and a mean elevation of 7581 ft. Streamflow in Rendija Canyon is ephemeral and results from snowmelt and rainfall runoff. Rendija Canyon has one named tributary, Cabra Canyon, which heads on USFS land and flows south-southeast to join Rendija Canyon. Also, three unnamed tributaries to Rendija Canyon are located west of Cabra Canyon on USFS land. Previous environmental investigations at AOC C-00-02 include studies conducted in 1965 and 1970 to assess the concentrations and movement of plutonium and radioactivity in stream channels in the LANL vicinity. Sediment samples were collected at three locations in Rendija Canyon above their confluences with Guaje Canyon (AOC C-00-001). Results indicated plutonium concentrations within the range of FVs. In addition, the alluvial and regional aquifers in Rendija Canyon are monitored as part of LANL's Groundwater Protection Management Program.

		Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Rendija Canyon does not pass through nor is it adjacent to any former or active TA. However, several SWMUs/AOCs are associated with TA-00 in or adjacent to Rendija Canyon, including three known and one suspected mortar impact areas, a former asphalt batch plant, two small-arms firing ranges, and a cistern. The ER Project has developed a work plan for investigation of the Rendija Canyon system. For the sediment investigation, the canyon was divided into three reaches (R-1 through R-3). The reach locations were selected to collect data needed to assess current and future risk associated with potentially contaminated sediments. Reach R-1 is located in upper Rendija Canyon on USFS land and consists of three subreaches. These subreaches were selected to evaluate potential contamination associated with SWMU 00-016, a former small-arms range, and AOC C-00-041, a former asphalt batch plant. Reach R-2 is on GSA land and was selected to evaluate potential contamination associated with SWMU 00-011(e), a mortar impact area. Reach R-3 is in middle Rendija Canyon on GSA land and was selected to evaluate potential contamination from SWMU 00-011(a), a mortar impact area, as well as potential contamination from upstream sources. If significant contamination is detected in Reach R-3, an additional reach downstream near the confluence with Guaje Canyon (AOC C-00-001) may be sampled. The sediment investigations will include geomorphic surveys to identify sediment age and physical characterization. Sediment samples will be collected and analyzed. Analyses may include full-suite, limited-suite, and key-contaminant analyses. The full-suite analyses will include radionuclides, inorganic chemicals, and organic chemicals. If necessary, limited-suite analyses would focus on chemicals and radionuclides detected above BV/FVs in the full-suite analyses. Key-contaminant analyses will include constituents shown to be the primary risk drivers. The investigation may include collection and analysis of surface water samples at areas of persistent surface water, if any are encountered.
C-00-003	In Progress	AOC C-00-003 consists of the Barrancas Canyon system. Barrancas Canyon heads in a residential area in Los Alamos County, north of LANL, at an elevation of approximately 7280 ft. The canyon extends east-southeast across Los Alamos County before entering LANL property in TA-74. The canyon continues east and enters San Ildefonso Pueblo land before joining Guaje Canyon (AOC C-00-001) at an elevation of approximately 5910 ft. Barrancas Canyon has a watershed area of 4.9 sq mi, a channel length of 5.5 mi, and a mean elevation of 6606 ft. This parcel of land is slated for transfer to San Ildefonso in 2002. Streamflow in Barrancas Canyon is ephemeral and primarily results from stormwater runoff. The Barrancas Canyon watershed has three small tributaries. The southernmost tributary is known as the south fork of Barrancas Canyon; it is approximately 0.6 mi long and heads on LANL property. The two other tributaries (middle fork Barrancas Canyon and the north fork of Barrancas Canyon) are north of the main canyon and head on Deer Trap Mesa in Los Alamos County. These tributaries extend east approximately 2.8 mi before joining in USFS land. The combined tributaries then continue east and enter San Ildefonso Pueblo land before joining the main canyon after approximately 1.9 mi. Previous environmental investigations at AOC C-00-003 include studies conducted in 1965 and 1970 to assess the concentrations and movement of plutonium and radioactivity in stream channels in the LANL vicinity. Sediment samples were collected above their confluences with Guaje Canyon. Results indicated plutonium concentrations within the range of FVs. In addition, the alluvial and regional aquifers in Barrancas Canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Barrancas Canyon passes through TA-74; however, TA-74 contains no SWMUs/AOCs. One AOC associated with TA-00 is adjacent to Barrancas Canyon. This AOC is a landfill on Otowi Mesa. Parts of

		Barrancas Canyon are adjacent to Bayo Canyon (AOC C-00-004) and may have been impacted by firing sites at former TA-10 in Bayo Canyon. The ER Project has developed a work plan for investigating the Barrancas Canyon system. The planned sediment investigation focuses on one reach, designated BR-1, located in the middle of Barrancas Canyon. Reach BR-1 is downstream of side drainages that are located near firing sites in former TA-10 in Bayo Canyon. This reach was selected to evaluate potential contamination associated with the firing tests at former TA-10. If significant contamination is detected, an additional reach downstream near the confluence with Guaje Canyon may be sampled. The sediment investigation will include geomorphic surveys to identify sediment age and physical characterization. Sediment samples will be collected and analyzed. Analyses may include full-suite, limited-suite, and key-contaminant analyses. The full-suite analyses will include radionuclides, inorganic chemicals, and organic chemicals. If necessary, limited-suite analyses would focus on chemicals and radionuclides detected above BV/FVs in the full-suite analyses. Key-contaminant analyses will include constituents shown to be the primary risk drivers. The investigation also may include collection and analysis of surface water samples at areas of persistent surface water, if any are encountered.
C-00-004	In Progress	AOC C-00-004 consists of the Bayo Canyon system. Bayo Canyon heads in a residential area in Los Alamos County, north of LANL, at an elevation of approximately 7400 ft. The canyon extends east-southeast across Los Alamos County with Barranca Mesa and Otowi Mesa on the north and North Mesa and Kwage Mesa on the south. The canyon then enters LANL in TA-74 east of the Los Alamos townsite and continues east entering San Ildefonso Pueblo land before joining Los Alamos Canyon (AOC C-00-006) at an elevation of approximately 5790 ft. This parcel of land is slated for transfer to San Ildefonso Pueblo in 2002. Bayo Canyon has a watershed area of 4.0 sq mi, a channel length of 8.2 mi, and a mean elevation of 6625 ft. Streamflow in Bayo Canyon is ephemeral and most streamflow is associated with runoff from rain storms. Bayo Canyon has two small tributaries. The first is referred to as the north fork of Bayo Canyon and heads in the Barranca Mesa residential area in the townsite. The second tributary is known as the south fork of Bayo Canyon and heads LANL property. Previous environmental investigations at AOC C-00-004 include studies conducted in 1965 and 1970 to assess the concentrations and movement of plutonium and radioactivity in stream channels in the LANL vicinity. Sediment samples were collected between former TA-10 and the confluence with Los Alamos Canyon. Results indicated plutonium concentrations within the range of FVs. Sediment has been sampled in Bayo Canyon since 1973 as part of the LANL Environmental Surveillance Program. This sampling is conducted at the confluence with Los Alamos Canyon and has not detected radionuclides above FVs in sediments. DOE conducted sediment sampling in the 1970s as part of the FUSRAP, during remedial activities conducted at former TA-10. In addition, the alluvial and regional aquifers in Bayo Canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Bayo Canyon passes through or is adjacent to former TA-10 and TA-74. TA-74 contains no SWMUs/AOCs. Several SWMUs/AOCs associated with TA-00 also are in or adjacent to Bayo Canyon. These include several mesa-top landfills or surface disposal areas, a firing impact area in upper Bayo Canyon, and areas on North Mesa that were irrigated with wastewater from the former Pueblo Canyon WWTP. Former TA-10 is the principal contamination source in the Bayo Canyon system. TA-10 was located in middle Bayo Canyon and was used as a firing site from 1944 through 1963; a radiochemistry laboratory processed radioactive materials used in experiments conducted at the site. Other facilities included sanitary and radioactive liquid waste lines, septic tanks, seepage pits, and solid waste disposal pits. D&D of the site occurred from 1960 to 1963 and ownership of the property was transferred to Los Alamos County in 1967. The FUSRAP investigated the site in 1976 and 1977 to

		determine whether further remedial actions were needed. Radioactivity above background was detected, but dose assessments indicated that additional cleanup was not needed. The ER Project has developed a work plan for investigating the Bayo Canyon system. For the sediment investigation, the canyon was divided into three reaches (BY-1 through BY-3). The reach locations were selected to collect data needed to assess current and future risk associated with potentially contaminated sediments. Reach BY-1 is near the head of Bayo Canyon on Los Alamos County land. This reach was selected to evaluate potential contamination associated with SWMU 00-011(d), a former mortar impact area. Reach BY-2 is in middle Bayo Canyon downstream of former TA-10 in an area scheduled for transfer to the DOI in trust for San Ildefonso Pueblo. This reach was selected to evaluate potential contamination in the proposed land transfer parcel. If significant contamination is detected, an additional downstream reach may be sampled to determine the extent of contamination. Reach BY-3 is located in lower Bayo Canyon on San Ildefonso Pueblo land. This reach was selected to evaluate the nature and inventory of contamination in lower Bayo Canyon. The sediment investigations will include geomorphic surveys to identify sediment age and physical characterization. Sediment samples will be collected and analyzed. Analyses may include full-suite, limited-suite, and key-contaminant analyses. The full-suite analyses will include radionuclides, inorganic chemicals, and organic chemicals. If necessary, limited-suite analyses would focus on chemicals and radionuclides detected above BV/FVs in the full-suite analyses. Key-contaminant analyses will include constituents shown to be the primary risk drivers. The investigation also will include sampling and analysis of vegetation to evaluate contaminant uptake by vegetation in the land transfer parcel collection and may include analysis of surface water samples at areas of persistent surface water, if any are encountered.
C-00-005	In Progress	AOC C-00-005 consists of the Pueblo Canyon system. Pueblo Canyon heads on the flanks of the Sierra de los Valles on USFS land at an elevation of approximately 9160 ft. The canyon extends across land owned by Los Alamos County and crosses the northeast corner of LANL to its confluence with Los Alamos Canyon (AOC C-00-006) at an elevation of approximately 6300 ft. Pueblo Canyon has a watershed area of 8.3 sq mi, a channel length of 10.5 mi, and a mean elevation of 7301 ft. Streamflow in Pueblo Canyon has included both ephemeral runoff from rain storms and snowmelt and extended discharges of treated effluent from three WWTPs. The westernmost plant was the Pueblo WWTP upstream of Acid Canyon, a small tributary of Pueblo Canyon. The Pueblo WWTP operated from 1951 until 1991. The central WWTP was located farther east on the east rim of Pueblo Canyon and operated from 1947 until 1966. The Bayo Canyon WWTP, located between lower Pueblo Canyon and Bayo Canyon, began operating in 1963 and is the active sewage treatment plant for the Los Alamos townsite, producing frequent flow in lower Pueblo Canyon. Storm runoff provides the largest streamflow and the highest potential for erosion and sediment transport in Pueblo Canyon. However, effluent discharges have provided longer periods of lower flow, which may have been particularly effective at maintaining high water tables that (1) allowed denser vegetation to become established and (2) provided more opportunity for subsurface contaminant transport. Previous environmental investigations at AOC C-00-005 included many studies associated with contaminant releases from former TA-45 on the rim of Acid Canyon. The first sediment sampling (performed in 1946) documented the presence of plutonium along the full length of Pueblo Canyon downstream of Acid Canyon. Pueblo Canyon has been monitored regularly since 1970 as part of LANL’s Environmental Surveillance Program. In addition, LANL and DOE conducted more intensive studies in the 1970s as part of the FUSRAP. In addition, the alluvial and regional aquifers in Pueblo Canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Pueblo Canyon was in or adjacent to former

		TA-01, former TA-31, former TA-45, and TA-73. Former TA-01 was located in the Los Alamos townsite and housed many of the original LANL facilities, some of which were constructed as early as 1943 during the Manhattan Project. No SWMUs/AOCs in TA-01 are located in the Pueblo Canyon watershed, however. TA-31 was known as the east receiving yard, and PCBs at levels above SALs were found at the mouth of a former septic tank outfall pipe (SWMU 31-001) on the south rim of Pueblo Canyon. The principal contamination source in Pueblo Canyon was outfalls in TA01 in what later bacame TA-45, site of LANL's first radioactive liquid waste treatment facility (SWMU 45-001-00). Effluent from TA-01 and TA-45 released into Acid Canyon included untreated liquid waste from 1943 to 1951 and treated liquid waste from 1951 to 1964. Operations at TA-73 included incinerating classified documents and disposing of various types of waste; steam-cleaning garbage cans, trucks, and dumpsters; operating a landfill and burning municipal and laboratory waste; disposing of waste oil; storing HE; operating a surface disposal facility; and operating an asphalt batch plant. All these operations were located on the south rim of Pueblo Canyon. Some SWMUs/AOCs associated with TA-00 are also located in the Pueblo Canyon watershed, including septic tanks and outfalls that discharged into Pueblo Canyon. The ER Project evaluated sediment contamination in Pueblo Canyon from 1996 through 1998 in accordance with an RFI work plan. For the investigation, the canyon was divided into four reaches. The reach locations were selected to identify variations in contaminant concentrations, contaminant inventory, and risk along the length of the canyon and to improve understanding of transport processes. Reach P-1 includes the confluence of Acid Canyon and Pueblo Canyon. Contaminant concentrations are expected to be highest in this area due to its proximity to TA-45, the primary source of contaminants in the watershed. Reach P-2 is an area downstream of P-1 where the channel becomes less steep and the canyon floor begins to broaden, enhancing the opportunity for sediment deposition. Reach P-3 includes the Bayo Canyon WWTP area. Reach P-4 includes the lowest part of Pueblo Canyon, a geomorphically complex area where the channel elevation has varied greatly since 1942 due to the deposition of large amounts of sediment and subsequent channel incision. Activities conducted at all reaches included geomorphic surveys to identify sediment age and physical characterization. Field radiological surveys were conducted and sediment samples were collected and analyzed. Analyses included full-suite, limited-suite, and key-contaminant analyses. The full-suite analyses included radionuclides, inorganic chemicals, and organic chemicals. Limited-suite analyses focused on chemicals and radionuclides detected above BV/FVs in the full-suite analyses. Key-contaminant analyses were for plutonium, which was shown to be the primary risk driver. For the four reaches of Pueblo Canyon, 306 samples were collected from 121 locations. Sixteen samples were submitted for full-suite analyses and the remainder for limited-suite and key-contaminant analyses. The most common analyses were for isotopic plutonium, gamma spectroscopy, TAL metals, and pesticides and PCBs. Nine inorganic chemicals were detected above BV and retained as potential contaminants. Six radionuclides were detected above FVs and retained as potential contaminants. Twenty-nine organic chemicals were detected and retained as potential contaminants. Available data indicate the primary sources for most potential contaminants are discharges from former TA-01 ans TA-45, the Pueblo Canyon WWTP, and runoff from the Los Alamos townsite.

		The results of the sediment analyses were used to perform preliminary human health and ecological risk assessments for Pueblo Canyon. These assessments indicated that sediment contamination levels in Pueblo Canyon do not require immediate remedial actions with respect to present-day risk. In addition, geomorphic assessments indicated that the concentrations of contaminants carried by floods have been stable or have declined for decades and the redistribution of contaminated sediments will not result in future increases in contaminant concentrations in downstream areas. Additional risk assessments will be required to incorporate surface water and/or groundwater exposure pathways. Therefore, no remedial actions were proposed although future remedial actions may be warranted following additional assessments. The ER Project also has characterized surface water and alluvial groundwater in Pueblo Canyon although these data have not yet been reported. In 1999, the ER Project conducted additional sediment sampling in the south fork of Acid Canyon, an Acid Canyon tributary that received discharges of treated and untreated radioactive liquid waste from former TA-01 and TA-45. This sampling was conducted in response to stakeholder concerns over possible radioactive contamination in the canyon. Sediment samples (31) and duplicates (2) were collected from 13 locations and submitted for laboratory analysis for radionuclides. Independent sampling and analysis was also conducted by NMED (9 samples) and EPA (11 samples). The results of the radiological analyses of samples collected by the ER Project, NMED, and EPA were used to perform a preliminary human-health radiation dose assessment. The results of this assessment indicated that maximum concentrations of two radionuclides were present above SRSGs calculated using the RESRAD software for extended backyard- and trail-user scenarios for a dose of 15 mrem/yr. Calculated doses using average concentrations along the south fork of Acid Canyon were less than 15 mrem/yr. Based on this assessment, the DOE directed that plans for an IA should be developed. Although the estimated doses did not exceed guidelines, the IA would reduce potential dose to recreational users of the south fork of Acid Canyon following ALARA guidelines. In 2000, the ER Project resampled some of these areas and collected 20 samples to further evaluate contaminants other than plutonium. In June 2001, the ER Project collected 12 additional sediment samples to obtain data needed to support a risk assessment for post-IA conditions. In July 2001, the ER Project collected 42 additional samples to better define the contaminated area and to plan the IA. Finally, in August 2001, the ER Project collected six samples for characterizing wastes that would be generated during the IA. The ER Project prepared an IA plan in August 2001 that included removing sediments containing plutonium-239,-240 in excess of the SRSG. The IA was implemented in 2001 and involved removal of approximately 483 cu yd of sediment. Thirty confirmation samples were collected and confirmed that the cleanup goal had been met.
C-00-006	In Progress	AOC C-00-006 consists of the Los Alamos Canyon system. Los Alamos Canyon originates northwest of LANL in the Sierra de los Valles on USFS land below the north side of Pajarito Mountain at an elevation of approximately 10,450 ft. The canyon extends southeast and enters LANL property at its northwest corner, near the Los Alamos townsite. The canyon then runs east across the northern portion of LANL and is joined by DP Canyon (AOC C-00-021) in the north central portion of LANL. Los Alamos Canyon exits LANL at the eastern boundary and enters San Ildefonso Pueblo land downstream of the confluence with Pueblo Canyon (AOC C-00-005). Further downstream, Los Alamos Canyon is joined by Bayo Canyon (AOC C-00-004) and Guaje Canyon (AOC C-00-001). Tributaries to Guaje Canyon include Barrancas Canyon (AOC C-00-003) and Rendija Canyon (AOC C-00-002). Los Alamos Canyon then enters the Rio Grande at an elevation of approximately 5500 ft. Los Alamos Canyon has a watershed area of 14.1 sq mi, a channel length of 18.9 mi, and a mean elevation of 7773 ft. The total watershed area, including all tributary canyons, is 57.7 sq mi. The width of the top of the canyon varies from 600 ft to 2500 ft and the depth varies from 360 ft to 800 ft. The portion of the canyon upstream of the confluence with Pueblo Canyon is referred to as upper Los Alamos Canyon and the remainder of the canyon is referred to as lower Los Alamos Canyon. Streamflow in upper Los Alamos Canyon

		includes snowmelt runoff from the Sierra de los Valles and runoff from rainstorms. A reservoir in the canyon, Los Alamos Reservoir, is located northwest of LANL and provides a relatively constant flow of water in the upper portion of the canyon. Lower Los Alamos Canyon receives snowmelt and runoff from tributaries and also includes a short perennial reach that is fed by discharges from Basalt Springs. Previous environmental investigations at AOC C-00-006 include regular environmental monitoring that has been conducted in Los Alamos Canyon since 1966. Contamination of surface sediments with radionuclides, including americium-241, cesium-137, strontium-90, plutonium-238, plutonium-239,-240, and uranium, has been detected in the canyon. Monitoring of alluvial groundwater in Los Alamos Canyon has detected contamination with cesium-137, strontium-90, and tritium. In addition, the alluvial and regional aquifers in Los Alamos Canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Los Alamos Canyon passes through or is adjacent to former TA-01, TA-02, TA-03, TA-21, TA-41, TA-43, TA-53, TA-62, TA-72, and TA-73. The most significant potential sources of contamination for Los Alamos Canyon are former TA-01 and current TA-02, TA-21, TA-41, and TA-53, which are all in or adjacent to upper Los Alamos Canyon. Former TA-01 is located on the mesa north of Los Alamos Canyon and is the location of many of the original LANL facilities. Potential contamination sources include outfalls located on the north rim of Los Alamos Canyon that discharged wastewater from laboratory buildings and septic tanks from 1943 to 1965 [SWMU 01-001(a)-99]. These discharges potentially contained a variety of radionuclides and chemicals. TA-02 is located within upper Los Alamos Canyon and was used to operate several research nuclear reactors from 1944 to 1993. Soils and sediments at TA-02 are known to have been contaminated with radionuclides and inorganic chemicals, and alluvial groundwater is known to have received tritium from leakage at one of the reactors. TA-21 is located on the mesa between DP and Los Alamos Canyons and housed plutonium and uranium processing facilities and research laboratories. One of the most significant contamination sources at TA-21 is SWMU 21-011(k), which is an outfall that discharged effluent from radioactive liquid waste treatment plants into DP Canyon from 1956 to 1985. Other potential contaminant sources at TA-21 include SWMU 21-018(a)-99, which received radioactive laundry effluent and sometimes overflowed into Los Alamos Canyon, and septic tanks and outfalls located on the north rim of Los Alamos Canyon. TA-41 is located within upper Los Alamos Canyon upstream of TA-02 and is used for nuclear weapons component development and testing. Potential contaminants at TA-41 include plutonium, tritium, and uranium. TA-53 is located on the mesa between Los Alamos and Sandia Canyons and is the site of a high-energy linear accelerator. Sanitary, industrial, and radioactive wastewaters from accelerator facilities formerly were stored in surface impoundments that operated from 1969 to 1999 and occasionally discharged into Los Alamos Canyon. The upper portion of lower Los Alamos Canyon is located on LANL within TA-72, which has no SWMUs/AOCs in the Los Alamos Canyon watershed. The lower portion of upper Los Alamos Canyon is located on LANL within TA-73, which has no SWMUs/AOCs in the Los Alamos Canyon watershed. The remainder of Los Alamos Canyon is located on San Ildefonso Pueblo land. Potential contamination sources within lower Los Alamos Canyon are minimal and there is only one SWMU and one AOC in this area. Both are electrical transformers [AOCs 00-029(a) and 00-029(b)] that had leaked PCB-containing oil. The most significant sources of potential contamination for lower Los Alamos Canyon are located in upper Los Alamos Canyon and in tributary

		canyons. The tributary canyons include Pueblo Canyon, which received discharges from former TA-01 and a former radioactive liquid waste treatment plant at TA-45 from 1944 to 1964, and Bayo Canyon, which was the location of a radiochemistry laboratory in TA-10 from 1943 to 1963. The ER Project conducted an evaluation of sediment contamination in Los Alamos Canyon from 1996 through 1998 in accordance with an RFI work plan. For the investigation, the canyon was divided into five reaches. Reach locations were selected to identify variations in contaminant concentrations, contaminant inventory, and risk along the length of the canyon and to improve understanding of transport processes. Reach LA-1 is located downstream of the Los Alamos Canyon bridge and includes five subreaches that may have received contamination from a number of SWMUs/AOCs in TA-01, TA-02, TA-03, TA-21, TA-41, and TA-43. Reach LA-2 includes the confluence with DP Canyon (AOC C-00-021), a subreach upstream of the confluence, and a subreach downstream of the confluence, where contamination from SWMUs/AOCs in TA-21 that discharged into DP Canyon is expected to be highest. Reach LA-3 is located a short distance upstream from State Highway 4, near the LANL eastern boundary. Reach LA-4 is located between the confluences of Los Alamos Canyon with Pueblo Canyon and Bayo Canyon. This reach was separated into two subreaches and includes the first area of significant sediment deposition downstream of the confluence with Pueblo Canyon. Reach LA-5 is located between the confluence with Guaje Canyon and the Rio Grande. Activities conducted at all reaches included geomorphic surveys for sediment age identification and physical characterization. Field radiological surveys were conducted and sediment samples were collected and analyzed. Analyses included full-suite analyses, limited-suite analyses, and key-contaminant analyses. Full-suite analyses included radionuclides, inorganic chemicals, and organic chemicals. Limited-suite analyses focused on chemicals and radionuclides detected above BVs/FVs in the full-suite analyses. Key-contaminant analyses included constituents shown to be the primary risk drivers. Data collection and analysis were conducted separately for the upper and lower canyons. For the three reaches of upper Los Alamos Canyon, 208 samples were collected from 89 locations during 4 sampling events. Eighteen samples were submitted for full-suite analyses and the remainder for limited-suite and key-contaminant analysis. The most common analyses were for isotopic plutonium, gamma spectroscopy, strontium-90, inorganic chemicals, and isotopic uranium. Nine inorganic chemicals were detected above BVs and retained as potential contaminants. Twelve radionuclides were detected above FVs and retained as potential contaminants. Twenty-three organic chemicals were detected and retained as potential contaminants. Available data indicate that the primary sources for most potential contaminants are discharges from the SWMU 21-011(k) outfall into DP Canyon and outfalls in former TA-01 [SWMU 01-001(a)-99]. Other potential sources include other SWMUs/AOCs in TA-21 and TA-53. For the two reaches of lower Los Alamos Canyon, a total of 125 samples were collected from 54 locations during 4 (2x2) sampling events. Full-suite analyses were conducted on seven samples and limited-suite and key-constituent analyses were conducted on the remainder. The most common analyses were for isotopic plutonium, gamma spectroscopy, strontium-90, inorganic chemicals, and pesticides and PCBs. Eleven inorganic chemicals were detected above BVs and retained as potential contaminants. Four radionuclides were detected above FVs and were retained as

		potential contaminants. Two other radionuclides were detected and were retained as potential contaminants because there were no FVs. Two organic chemicals were detected. In no cases did maximum concentrations of inorganic, radionuclide, or organic potential contaminants exceed PRGs for trail users, resource users, construction workers, or residential users. The results of the sediment analyses were used to perform preliminary human health and ecological risk assessments for upper and lower Los Alamos Canyons. These assessments indicated that sediment contamination levels in upper and lower Los Alamos Canyons do not require immediate remedial actions with respect to present-day risk. In addition, geomorphic assessments indicated that the concentrations of contaminants carried by floods have been stable or have declined for decades and the redistribution of contaminated sediments will not result in future increases in contaminant concentrations in downstream areas. Additional risk assessments will be required to incorporate surface water and/or groundwater exposure pathways. In addition, the need for additional sediment data was identified, including additional radiological and organic chemical data. Therefore, no remedial actions were proposed although remedial actions may be warranted in the future following additional assessments. The ER Project also has developed plans for characterization of surface water and alluvial groundwater in Los Alamos Canyon. Note that sediment with highest levels of radionuclides in Los Almaos Canyon was removed in 200 following the Cerro Grande fire.
C-00-007	In Progress	AOC C-00-007 consists of the Sandia Canyon system. Sandia Canyon originates on LANL property within TA-03 at an elevation of approximately 7470 ft and trends east-southeast across LANL. Sandia Canyon crosses the east LANL boundary and briefly crosses Bandelier National Monument property before entering San Ildefonso Pueblo land. The canyon continues east-southeast across San Ildefonso Pueblo land before joining the Rio Grande in White Rock Canyon at an elevation of approximately 5490 ft. Sandia Canyon has a watershed area of 5.5 sq mi, a channel length of 10.0 mi, and a mean elevation of 6636 ft. Streamflow in upper Sandia Canyon is continuous due to discharges from the TA-03 power plant. These discharges have created a wetland area in upper Sandia Canyon. Other contributions to flow in the canyon are surface runoff from rainfall and snowmelt. Also, a small reach with continuous flow in lower Sandia Canyon is fed by discharges from Sandia Spring. The width of the canyon on LANL property ranges from approximately 1700 ft to 2500 ft and the canyon is up to 200 ft deep. Two municipal water supply wells (PM-1 and PM-3) are located within Sandia Canyon. Previous environmental investigations at AOC C-00-007 include regular environmental monitoring that has been conducted in Sandia Canyon since approximately 1970 as part of the LANL Environmental Surveillance Program. This program includes monitoring surface water and sediments in the canyon and groundwater discharged from Sandia Spring. In addition, the alluvial and regional aquifers in Sandia Canyon are monitored as part of LANL's Groundwater Protection Management Program. Past investigations have detected trace amounts of PCBs in wetland sediments in upper Sandia Canyon. In addition, several inorganic chemicals (cadmium, lead, silver, and zinc) and radionuclides (plutonium-238, plutonium-239,-240, and uranium) have been detected slightly above BVs/FVs in Sandia Canyon sediments at the eastern LANL boundary. Elevated chromium levels were detected in surface water in upper Sandia Canyon in the 1970s and were believed to be associated with historical use of chromates in cooling towers, which has been discontinued. Tritium was detected in regional groundwater in Sandia Canyon (wells PM-1 and PM-3) in 1981, but has not been detected since. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Sandia Canyon passes through or is adjacent to TA-03, former TA-20, TA-53, TA-60, TA-61, and TA-72. Historically, LANL has used Sandia Canyon for disposal of industrial and sanitary wastewaters. The largest discharges have been from the outfall at the TA-03 power plant (up to 300,000 gal. per day) and cooling towers at TA-53 (seasonally up to 200,000 gal. per day). The outfall receives effluent from the SWSC at TA-46, which is used as cooling water.

		TA-03 is located on the mesa around the upper end of Sandia Canyon. TA-03 contains numerous potential. SWMUs/AOCs at TA-03 include outfalls discharging into Sandia Canyon, material and equipment storage areas, electrical equipment containing PCBs, fuel storage tanks, and releases to the ground surface from spills and stacks. These SWMUs/AOCs s may have released contaminants to Sandia Canyon either by direct discharge or by contaminating surface runoff entering the canyon. Former TA-20 is located within the middle portion of Sandia Canyon, south of current TA-53. TA-20 was used during the 1940s as a firing site. SWMUs/AOCs at TA-20 include the former firing sites, which used HE and radioactive materials, and associated facilities including small landfills and septic tanks. TA-53 is located on a mesa between Sandia Canyon and Los Alamos Canyon and is the site of a high-energy linear accelerator. SWMUs/AOCs at TA-53 include outfalls, material and equipment storage areas, electrical equipment containing PCBs, radioactive waste storage tanks, and decommissioned surface impoundments that received sanitary, industrial, and radioactive liquid wastes. These SWMUs/AOCs may have released contaminants to Sandia Canyon either by direct discharge or by contaminating surface runoff entering the canyon. The surface impoundments represent the most significant potential source of contamination at TA-53. Most discharges from the surface impoundments went to a tributary to Los Alamos Canyon, although historically some may have entered Sandia Canyon. TA-60 is located on a narrow mesa between upper Sandia Canyon and Mortandad Canyon (AOC C-00-008) and houses LANL support and maintenance operations and contractor service facilities. Potential sources of contamination include spills from a fuel storage yard. TA-61 is located on the north rim of upper Sandia Canyon and is the location of the Los Alamos County municipal solid waste landfill, a residential trailer park, a private concrete batch plant, a LANL-owned asphalt batch plant, and a former PCB equipment storage area. TA-72 is located within Sandia Canyon and is the location of the small arms firing range used by the LANL security force, which is the only AOC in TA-72 currently under investigation. The ER Project has developed a work plan for investigating the Sandia Canyon system. For the investigation, the canyon was divided into six reaches. The reach locations were selected to collect data needed to assess current and future risk associated with potentially contaminated sediments and to improve understanding of transport processes. Reach S-1 is near the head of Sandia Canyon between TA-03 and the wetland area and was selected to help evaluate potential contamination from SWMUs/AOCs in TA-03. This reach was separated into two subreaches corresponding to two tributary channels. Reach S-2 is located in the wetland area and was selected to evaluate concentrations of contaminants in wetland sediments. Reach S-3 is located west of TA-53 and was selected to help evaluate contaminant dilution downstream of Reach S-2. Reach S-4 is located in middle Sandia Canyon south of TA-53. This reach was separated into three subreaches that were selected to evaluate contaminant dilution from upstream sources and the potential contaminant contribution from SWMUs/AOCs in former TA-20 and TA-53. Reach S-5 extends from TA-53 to the LANL boundary. This reach was separated into

		three subreaches that were selected to evaluate contaminant dilution from upstream sources, the potential contaminant contribution from SWMUs/AOCs in TA-53 and TA-72, and the contaminant inventory at the eastern LANL boundary. Reach S-6 is located on San Ildefonso land and is divided into two subreaches selected to evaluate potential contaminant contribution to the Rio Grande. Activities conducted at all reaches will include geomorphic surveys to identify sediment age and physical characterization. Sediment samples will be collected and analyzed. Analyses will include full-suite analytes, limited-suite analyses, and key-contaminant analyses. The full-suite analyses will include radionuclides, inorganic chemicals, and organic chemicals. Limited-suite analyses will focus on radionuclides and chemicals detected above BV/FV in the full-suite analyses. Key-contaminant analyses will include constituents shown to be the primary risk drivers. The investigation also will include sampling and analyzing surface water; measuring surface water flow; installing alluvial and regional aquifer wells; sampling and analyzing alluvial, perched, and regional groundwater; and, as necessary to support ecological risk assessment, sampling and analyzing biota. The ER Project implemented the investigation of Reaches S-1 and S-2 first because of the past detection of PCBs in wetland sediments and the presence of PCBs at many of the SWMUs/AOCs in the upper portion of the Sandia Canyon watershed. The SAP for this investigation included sediment investigations and quarterly surface water base flow and stormwater runoff sampling. These investigations began in 1998 and were reported on in 2000.
C-00-008	In Progress	AOC C-00-008 consists of the Mortandad Canyon system. Mortandad Canyon originates on LANL property within TA-03 at an elevation of approximately 7420 ft and trends east-southeast across LANL. Mortandad Canyon then crosses the eastern LANL boundary and enters San Ildefonso Pueblo land. The canyon crosses San Ildefonso Pueblo land and is joined by Cañada del Buey (AOC C-00-009) before reaching the Rio Grande in White Rock Canyon at an elevation of approximately 5610 ft. Mortandad Canyon has a watershed area of 6.0 sq mi, a length of 9.8 mi, and a mean elevation of 6698 ft. Tributaries to Mortandad Canyon on LANL property include Ten Site Canyon and Effluent Canyon. Ten Site Canyon heads at the south side of TA-50 at an elevation of approximately 7250 ft and includes a small tributary, locally referred to as Pratt Canyon, that originates in TA-35. Ten Site Canyon extends east approximately 1.5 mi and joins Mortandad Canyon in TA-05. Effluent Canyon heads at the east side of TA-48 at an elevation of approximately 7300 ft and extends east approximately 0.6 mi before joining Mortandad Canyon. Streamflow in the canyon is entirely ephemeral, with no perennial springs or natural perennial reaches. Flow in the canyon is due to snowmelt and stormwater runoff as well as discharges from LANL outfalls. Discharges from TA-48 into Effluent Canyon support a small wetlands area. The primary contamination source in the Mortandad Canyon system is discharges of LANL wastewaters, which have occurred since at least 1951 and possibly as early as 1943. SWMUs located within Mortandad Canyon itself are the Mortandad Canyon sediment traps (SWMU 00-001) and the Mortandad Canyon garden plot (SWMU 00-005). The sediment traps consist of three basins excavated into the stream channel and surrounded by U-shaped berms; they are located approximately 1.7 mi downstream of the RLWTF outfall and were constructed in 1976 to capture streamflow and prevent downstream migration of contaminated sediments. SWMU 00-005 is a former experimental garden plot that was used from 1976 to the early 1980s to study the transport of radionuclides to plants. Regular environmental monitoring has been conducted in Mortandad Canyon since approximately 1970 as part of the LANL Environmental Surveillance Program. This program includes monitoring surface water and sediments in the canyon. In addition,

		the alluvial and regional aquifers in Mortandad Canyon are monitored as part of LANL's Groundwater Protection Management Program. Past sediment sampling has shown elevated levels of americium-241, cesium-137, plutonium-238, plutonium-239,-240, and strontium-90, with the highest concentrations in or downstream of Effluent Canyon. Concentrations at the southeast LANL boundary are generally at or near background. Americium-241, plutonium-238, plutonium-239,-240, and tritium have been detected in surface water and alluvial groundwater. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Mortandad Canyon is in or adjacent to TA-03, former TA-04, TA-05, TA-35, former TA-42, TA-48, TA-50, TA-52, TA-55, TA-60, and TA-63. TA-03, which is located on the mesa at the head of Mortandad Canyon, contains numerous potential contaminant sources. SWMUs/AOCs at TA-03 include outfalls discharging into Mortandad Canyon, material and equipment storage areas, electrical equipment containing PCBs, and releases to the ground surface from spills and stacks. These SWMUs/AOCs may have released contaminants to Mortandad Canyon either by direct discharge or by contaminating surface runoff entering the canyon. Former TA-04 is located on a mesa within current TA-52 south of Ten Site Canyon and was used in the 1940s as a firing site. SWMUs/AOCs at TA-04 include the former firing site, which used HE and radioactive materials, and associated facilities, including a photo-processing facility, surface disposal area, and outfalls. TA-05 is an inactive firing site located on the south rim of Mortandad Canyon that was used from 1944 to 1959. Potential contaminant sources include the former firing sites, septic tanks, and drains. TA-35 is located on a mesa between Mortandad and Ten Site Canyons and was constructed in 1951 to house experimental reactor and hot cell facilities. The TA-35 WWTP [SWMU 35-003(a)-99] was used until 1963 to treat wastewater from radiochemistry laboratories in TA-35. Plant effluent discharged to Pratt Canyon and is the most significant TA-35 contaminant source in the Mortandad Canyon system. Over 2,700,000 gal. of wastewater, which contained 20.7 Ci of gross beta activity, were discharged into Pratt Canyon. In addition to SWMU 35-003(a)-99, SWMUs/AOCs in TA-35 include surface impoundments, oil storage and treatment facilities, transformers, septic systems, and disposal areas. These SWMUs/AOCs may have released contaminants to Mortandad Canyon either by direct discharge or by contaminating surface runoff entering the canyon. Former TA-42 is located within current TA-55 and was used from 1951 to 1952 to incinerate radioactive wastes and from 1957 to 1969 to decontaminate radioactive equipment. These facilities underwent D&D in 1977 and 1978. SWMUs/AOCs include the former incinerator and decontamination facility and associated equipment. TA-48 is located on the south rim of Mortandad Canyon and houses radiochemistry laboratories. Potential contaminant sources include outfalls that discharge to Mortandad and Effluent Canyons, a septic system, container storage areas, and stack releases. TA-50 is located at the head of Ten Site Canyon and is the location of the RLWTF, which became operational in 1963 and began discharging treated effluent into Effluent Canyon; sediment and groundwater monitoring began at that time. Plant effluent is the most significant TA-50 contaminant source in the Mortandad Canyon system. A total of 1,294,000,000 gal. of wastewater containing approximately 0.3 Ci plutonium was discharged from the plant outfall [SWMU 50-006(d)] from 1963 to 1995. Other potential sources at TA-50 include an outfall area at the head of Ten Site Canyon where spills of untreated radioactive wastewater occurred [SWMU 50-006(a)].

TA-52 is located on a mesa at the head of Cañada del Buey and is the location of the former UHTREX. SWMUs/AOCs at TA-52 include outfalls that may have discharged into Ten Site Canyon.

TA-55 is located on the south rim of Mortandad Canyon and is the location of plutonium processing facilities. SWMUs/AOCs at TA-55 include outfalls that discharge stormwater into Mortandad Canyon.

TA-60 is located on Sigma Mesa between Mortandad and Sandia Canyons and houses LANL support and maintenance operations and contractor service facilities. Potential contamination sources include spills from a fuel storage yard.

TA-63 is located on the south rim of Ten Site Canyon and houses engineering offices and shops. SWMUs are limited to two inactive septic systems.

The ER Project has developed a work plan for investigating the Mortandad Canyon system. For the investigation, the canyon was divided into seven reaches in Mortandad Canyon (M-1 through M-7), three reaches in Ten Site Canyon (TS-1 through TS-3), one reach in Effluent Canyon (E-1), and possibly two reaches in an unnamed tributary to Mortandad Canyon (MCW-1 and MCW-2).

Mortandad Canyon

Reach M-1 is located below outfalls from TA-03, TA-59, and TA-60 and west of the confluence with Effluent Canyon. This reach was selected to evaluate contamination from sources upstream of TA-48 and TA-50.

Reach M-2 is downstream of the confluence with Effluent Canyon and is expected to have the highest contaminant concentrations in Mortandad Canyon that are associated with RLWTF discharges.

Reach M-3 is located upstream of the confluence with Ten Site Canyon in a wider area of the canyon that has greater opportunity for sediment deposition. This reach was selected to evaluate the inventory of contaminants in this deposition area, as well as to evaluate a broader range of potential land uses in risk assessments.

Reach M-4 is located downstream of Ten Site Canyon and includes the sediment traps (SWMU 00-001). This reach was selected because it may contain the highest contaminant inventory.

Reach M-5 is located upstream and downstream of the boundary between LANL and San Ildefonso Pueblo and was selected to evaluate the types and concentrations of contaminants transported across the LANL boundary.

Reach M-6 is located on San Ildefonso land adjacent to State Highway 4 in an area of sediment deposition. This reach would not be investigated unless contamination was found in upstream Reach M-5.

Reach M-7 is on San Ildefonso land, downstream of the confluence with Cañada del Buey (AOC C-00-009) and immediately upstream of the Rio Grande. The decision to investigate this reach would depend on the results of sampling in upstream reaches in Mortandad Canyon and Cañada del Buey.

Ten Site Canyon

Reach TS-1 is located upstream of Pratt Canyon and is expected to have the highest TA-50 contaminant concentrations that discharge into the head of Ten Site Canyon. Reach

		TS-2 is located downstream of Pratt Canyon and is expected to have the highest concentration of contaminants associated with discharges from the TA-35 treatment plant [SWMU 35-003(a)-99]. Reach TS-3 is immediately upstream of the confluence with Mortandad Canyon in an area of sediment deposition and was selected to evaluate the inventory of contaminants in Ten Site Canyon. Effluent Canyon Reach E-1 is located between TA-48 and Mortandad Canyon and was selected to evaluate the contribution of contaminants from Effluent Canyon to Mortandad Canyon and the contaminant inventory in Effluent Canyon. Unnamed Tributary to Mortandad Canyon Reaches MCW-1 and MCW-2 are located in an unnamed tributary to Mortandad Canyon downstream of mesa-top SWMUs/AOCs in TA-05. The decision to investigate these reaches would depend on the results of sampling and analysis at the SWMUs/AOCs. Activities conducted at all reaches will include geomorphic surveys to identify sediment age and physical characterization. Field radiological surveys will be conducted and sediment samples will be collected and analyzed. Analyses will include full-suite analyses, limited-suite analyses, and key contaminant analyses. The full-suite analyses will include radionuclides, inorganic chemicals, and organic chemicals. Limited-suite analyses will focus on chemical and radionuclides detected above BV/FV in the full-suite analyses. Key contaminant analyses will include constituents shown to be the primary risk drivers. The investigations also will include characterization of SWMUs located in the canyons [SWMUs 00-001, 50-006(a), and 50-006(d)]; measurement of stream flow and ET; installation of alluvial, Bandelier Tuff, and regional aquifer wells; analysis of borehole core samples; sampling and analysis of alluvial, perched, and regional groundwater; collection and analysis of air particulate samples; and sampling and analysis of biota. The ER Project began sediment sampling in Mortandad Canyon as described in the work plan in 1998. At that time 19 samples were collected from 9 locations in Reach M-3, 18 samples from 11 locations in Reach M-4, 8 samples from 5 locations in Reach TS-1, and 12 samples from 9 locations in Reach TS-2, for a total of 57 samples from 34 locations. The results of this sampling have not been documented yet.
C-00-009	In Progress	AOC C-00-009 consists of the Cañada del Buey canyon system. Cañada del Buey originates on LANL property within TA-46 and TA-52 at an elevation of approximately 7230 ft and trends east-southeast across LANL. Cañada del Buey crosses the southeast LANL boundary and enters Los Alamos County property, crossing the town of White Rock before entering San Ildefonso Pueblo land and joining Mortandad Canyon (AOC C-00-008) at an elevation of approximately 5620 ft. Cañada del Buey has a watershed area of 4.3 sq mi, a channel length of 8.2 mi, and a mean elevation of 6620 ft. Cañada del Buey has one major tributary on LANL property. This tributary, know as the south fork of Cañada del Buey, heads near TA-51 and extends along the north side of Mesita del Buey adjacent to TA-54. Streamflow in the canyon is entirely ephemeral on LANL property and is the result of surface runoff. A short reach with continuous flow in the lower canyon below the town of White Rock is the result of discharges from the White Rock WWTP. The width of the canyon on LANL property ranges from approximately 1000 ft to 2500 ft and the canyon is up to 80 ft deep. Two municipal water supply wells (PM-4 and PM-5) are located within Cañada del Buey. Previous environmental investigations at AOC C-00-009 include regular environmental

		monitoring that has been conducted in Cañada del Buey since approximately 1970 as part of the LANL Environmental Surveillance Program. This program includes monitoring surface water and sediments in the canyon. In addition, the alluvial and regional aquifers in Cañada del Buey are monitored as part of LANL's Groundwater Protection Management Program. Past investigations have detected several radionuclides (americium-241, plutonium-238, plutonium-239,-240, and tritium) and inorganic chemicals (barium, cadmium, lead, and selenium) slightly above BVs/FVs in Cañada del Buey sediments at the eastern LANL boundary. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Cañada del Buey passes through or is adjacent to former TA-04, TA-46, TA-51, TA-52, and TA-54. Former TA-04 is located on a mesa within current TA-52 near the head of Cañada del Buey and was used in the 1940s as a firing site. SWMUs at former TA-04 include the former firing site, which used HE and radioactive materials, and associated facilities including a photo-processing facility, surface disposal area, and outfalls. TA-46 is located on a mesa between the head of Cañada del Buey and Pajarito Canyon. TA-46 contains laboratories, office buildings, warehouses, and storage facilities. Numerous potential sources are located within TA-46, including outfalls associated with surface impoundments, septic systems, and industrial drainlines; material and equipment storage areas; surface disposal areas; and releases to the ground surface from spills and stacks. These SWMUs/AOCs may have released contaminants to Cañada del Buey either by direct discharge or by contaminating surface runoff entering the canyon. TA-51 is located on the south rim of Cañada del Buey and is the location of engineering research facilities related to waste disposal technologies. No significant sources of potential contaminants for Cañada del Buey are believed to be located in TA-51. TA-52 is located on a mesa at the head of Cañada del Buey and is the location of the former UHTREX. SWMUs/AOCs at TA-52 include the UHTREX equipment and associated facilities. TA-54 is located on Mesita del Buey, between Cañada del Buey and Pajarito Canyon and is the location of many of LANL's waste management facilities, including MDA G, MDA J, and MDA L. MDA G is a 65-ac site that has been used since 1957 for disposal of low-level radioactive waste and storage of low-level, mixed, TRU, and TRU mixed wastes. MDA J is a 2.7-ac site used for disposal of administratively controlled wastes (e.g., classified shapes), surface storage of nonfriable asbestos, and land-farming of petroleum-contaminated soils. MDA L is a 2.5-ac site that includes inactive chemical waste disposal sites and active storage areas for chemical mixed, hazardous, and PCB wastes. Inactive facilities at the western end of TA-54 were used for biomedical research involving radiation from 1962 to the mid-1970s. This portion of TA-54 is also the location of two magazines formerly associated with TA-18 firing sites. These facilities at the west end of TA-54 are not considered significant potential sources of contaminants for Cañada del Buey. The ER Project has developed a work plan for investigating the Cañada del Buey system. For the investigation, the canyon was divided into five reaches in Cañada del Buey (CDB-1 through CDB-5) and one reach in the south fork of Cañada del Buey (CDBS-1). The reach locations were selected to collect data needed to assess current and future risk associated with potentially contaminated sediments and to improve understanding of transport processes. Reach CDB-1 is located downstream of TA-52 and was selected to help evaluate potential contamination from SWMUs/AOCs in TA-52 and former TA-04.

		Reach CDB-2 extends from TA-46 to the confluence with the south fork of Cañada del Buey. This reach was separated into three subreaches that were selected to evaluate the potential contaminant contribution from SWMUs/AOCs in TA-46 and to determine the contaminant inventory in middle Cañada del Buey. Reach CDB-3 is located downstream of the confluence with the south fork of Cañada del Buey. This reach contains two subreaches selected to evaluate the potential contaminant contribution from the south fork and from the primary drainage east of MDA G. Reach CDB-4 is located upstream of the intersection of Cañada del Buey and the LANL boundary and was selected to evaluate contaminant inventory at the eastern LANL boundary. Reach CDB-5 is located on San Ildefonso Pueblo land east of the town of White Rock, upstream of the confluence with Mortandad Canyon, and was selected to evaluate the potential contaminant contribution to Mortandad Canyon and the Rio Grande. Reach CDBS-1 is located upstream of the confluence with Cañada del Buey. This reach contains two subreaches selected to evaluate the TA-54 contaminant contribution. Activities conducted at all reaches will include geomorphic surveys to identify sediment age and physical characterization. Sediments will be collected and analyzed and field radiological surveys will be conducted. Analyses will include full-suite analyses, limited-suite analyses, and key-contaminant analyses. The full-suite analyses will include radionuclides, inorganic chemicals, and organic chemicals. Limited-suite analyses will focus on chemicals and radionuclides detected above BV/FV in the full-suite analyses. Key-contaminant analyses will include constituents shown to be the primary risk drivers. The investigations also will include installing a regional aquifer well; sampling and analyzing alluvial, perched, and regional groundwater; and, as necessary to support ecological risk assessments, sampling and analyzing biota. Investigations of reach CDB-4 in Cañada del Buey were conducted in 1999 and 200 in support of land transfer, and included collection of sediment samples from 30 locations. This work was reported in 2000. In addition, seven sedment samples were collected from reach CDB-2 in 200 as part of post-fire baseline characterization. These results have not been formally reported.
C-00-010	In Progress	AOC C-00-010 consists of the Twomile Canyon system. Twomile Canyon heads on the flanks of the Sierra de los Valles on USFS land at an elevation of approximately 9820 ft on Pajarito Mountain. The canyon trends east-southeast across USFS land and crosses the western LANL boundary at TA-58. Twomile Canyon extends east-southeast before joining Pajarito Canyon (AOC C-00-011) in TA-66 at an elevation of approximately 6940 ft. Twomile Canyon has a watershed area of 3.1 sq mi, a length of 5.2 mi, and a mean elevation of 7754 ft. The canyon consists of several tributaries known as the north fork of Twomile Canyon, the main fork of Twomile Canyon, the southwest fork of Twomile Canyon, and the southeast fork of Twomile Canyon. Streamflow in the canyon is generally ephemeral and/or intermittent with seasonal springs. Sampling in Twomile Canyon is not performed as part of the LANL Environmental Surveillance Program. The alluvial and regional aquifers in Twomile Canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Twomile Canyon passes through or is adjacent to TA-03, TA-06, former TA-07, TA-22, TA-40, TA-48, TA-50, TA-55, TA-58, TA-59, TA-62, TA-64, TA-66, TA-67, and TA-69. TA-03 is located on the mesa east of the north fork of Twomile Canyon. The numerous

		potential contaminant sources within SWMUs/AOCs at TA-03 include outfalls discharging into the north fork of Twomile Canyon, material and equipment storage areas, electrical equipment containing PCBs, and releases to the ground surface from spills and stacks. These SWMUs/AOCs may have released contaminants to the Twomile Canyon system either by direct discharge or by contaminating surface runoff entering the canyon. TA-06 is located on Twomile Mesa and consists of inactive firing site facilities that were used until 1952. Former TA-07 is located within TA-06 and was also a firing site. Potential sources of contamination for Twomile Canyon from TA-06 and former TA-07 include the inactive firing sites, which used HE and radioactive materials, and support facilities including structures, septic tanks, and disposal sites. TA-22 is located between the north rim of Pajarito Canyon and the head of the southeast fork of Twomile Canyon and originally was used to assemble explosives. The area later was remodeled into office and laboratory space and currently houses the detonation systems laboratory. Potential contaminant sources for Twomile Canyon include sumps, drywells, and septic systems. TA-40 is located on a mesa between Pajarito Canyon and the southeast fork of Twomile Canyon east of TA-22 and is used for explosives testing. Potential contaminant sources for Twomile Canyon include a sump, septic tanks, and storage areas. TA-59 is located on the mesa north of the north fork of Twomile Canyon and houses office and laboratory facilities. Potential contaminant sources for Twomile Canyon include an outfall. TA-64 is located on the north rim of Twomile Canyon and houses administrative and support facilities for LANL's security force. There are no significant potential sources of contamination to Twomile Canyon at TA-64. TA-69 is located on the western LANL boundary and historically was used to incinerate classified documents. The only SWMU at this site is located within the Twomile Canyon watershed and is the incinerator and associated ash pond (SWMU 69-001). There are no SWMUs/AOCs for TA-48, TA-50, or TA-55 within the Twomile Canyon drainage and no SWMUs/AOCs are associated with TA-58, TA-62, TA-66, and TA-67. The ER Project has developed a work plan for investigating the Twomile Canyon system. For the investigation, the canyon was divided into four reaches along the main fork (TW-1 through TW-4), one reach on the north fork (TWN-1), one reach on the southwest fork (TWSW-1), and one reach on the southeast fork (TWSE-1). The reach locations were selected to collect data needed to assess current and future risk associated with potentially contaminated sediments and to improve understanding of transport processes. Reach TW-1 is near Anchor Ranch Road and consists of two subreaches selected to evaluate the contribution of contaminants from SWMU 69-001. Reach TW-2 consists of two subreaches upstream and downstream of the confluence with the north fork of Twomile Canyon. This reach was selected to evaluate the dilution of contaminants from upstream and the addition of contaminants from the north fork of Twomile Canyon. Reach TW-3 consists of two subreaches upstream and downstream of the confluence with the southwest fork of Twomile Canyon. This reach was selected to evaluate the dilution of contaminants from upstream and the possible addition of contaminants from SWMUs/AOCs at TA-06 and former TA-07.

		Reach TW-4 is located near the confluence with Pajarito Canyon (AOC C-00-011) and consists of two subreaches upstream and downstream of the confluence with the southeast fork of Twomile Canyon. This reach was selected to evaluate dilution of contaminants from upstream and to evaluate the possible addition of contaminants from sources along Twomile Canyon and from TA-06, former TA-07, TA-22, and TA-44 in the southeast fork of Twomile Canyon. Reach TWN-1 is located in upper north fork of Twomile Canyon and consists of three subreaches selected to evaluate contaminant contribution from sources in TA-03. Reach TWSW-1 is located upstream of the confluence with Twomile Canyon and consists of three subreaches selected to evaluate the potential addition of contaminants from TA-06. Reach TWSE-1 is located upstream of the confluence with Twomile Canyon and consists of two subreaches selected to evaluate the potential addition of contaminants from TA-06, former TA-07, TA-22, and TA-40. Activities conducted at all reaches will include geomorphic surveys to identify sediment age and physical characterization. Sediment samples will be collected and analyzed. Analyses will include full-suite analyses, limited-suite analyses, and key-contaminant analyses. The full-suite analyses will include radionuclides, inorganic chemicals, and organic chemicals. Limited-suite analyses will focus on chemicals and radionuclides detected above BV/FVs in the full-suite analyses. Key-contaminant analyses will include constituents shown to be the primary risk drivers. The investigations also will include collecting and analyzing surface water samples from springs, installing a regional aquifer well, sampling and analyzing perched and regional groundwater, and as required to support ecological risk assessments, sampling and analyzing biota. Twenty-five sediment samples were collected from reaches TW-2, TW-4, TWSE-1, and TWSW-1 in 2000 as part of post-fire baseline characterization. These results have not been formally reported.
C-00-011	In Progress	AOC C-00-011 consists of the Pajarito Canyon system. Pajarito Canyon heads on the flanks of the Sierra de los Valles on USFS land at an elevation of 10,430 ft on Pajarito Mountain. The canyon trends east-southeast across USFS land and crosses the western LANL boundary at TA-69. Pajarito Canyon crosses LANL and is joined by Twomile Canyon (AOC C-00-010) and Threemile Canyon (AOC C-00-012). Other tributaries on LANL are the south fork of Pajarito Canyon, also known as Starmer Gulch, the north Anchor East Basin, also known as Arroyo de LaDelfe, and south Anchor East Basin. These tributaries are located in TA-08 and TA-09. After crossing LANL, the canyon enters Los Alamos County land and crosses the town of White Rock before reaching the Rio Grande in White Rock Canyon at an elevation of approximately 5420 ft. Pajarito Canyon has a watershed area of 8.0 sq mi, a length of 14.8 mi, and a mean elevation of 7469 ft. Streamflow in the canyon is discontinuously perennial in the uppermost and lowermost reaches and mostly ephemeral and/or intermittent throughout the canyon. Springs are located in upper Pajarito Canyon on USFS land and on LANL within the south fork of Pajarito Canyon and north Anchor East Basin. Springs also are present in Pajarito Canyon in TA-18 and in lower Pajarito Canyon within White Rock Canyon. Previous environmental investigations at AOC C-00-011 include regular environmental monitoring that has been conducted in Pajarito Canyon since approximately 1970 as part of the LANL Environmental Surveillance Program. This program includes monitoring surface water and sediments in the canyon. In addition, the alluvial and regional aquifers in Pajarito Canyon are monitored as part of LANL's Groundwater Protection Management Program. Past investigations have detected several inorganic chemicals (barium, beryllium, chromium, lead, nickel, silver, and zinc) above BV in sediments in wetlands downstream of TA-18. Routine sediment sampling in Pajarito

		Canyon at the eastern LANL boundary has shown several inorganic chemicals (cadmium, cobalt, and zinc) above BV, while radionuclides are generally at FVs. HE has been detected in surface water in upper Pajarito Canyon west of the LANL boundary, in middle Pajarito Canyon, in TA-18 spring water, and in alluvial groundwater upstream and downstream of TA-18. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Pajarito Canyon passes through or is adjacent to TA-08, TA-09, former TA-12, TA-14, TA-15, TA-18, TA-22, former TA-23, former TA-27, TA-36, TA-40, TA-46, TA-51, TA-54, TA-66, TA-67, and TA-69. TA-08 is located at the western LANL boundary and is the location of historical firing sites and facilities currently used for x-ray work and photographic processing. Potential contamination sources are associated with the firing sites and active drains and outfalls. TA-09 is located east of TA-08 and is used for HE production and testing. Potential contamination sources include decommissioned firing sites, active wastewater treatment facilities, and an inactive surface disposal area (MDA M). Former TA-12 is located on Pajarito Mesa between Pajarito and Threemile Canyons within current TA-15 and TA-67. Former TA-12 originally was used as a firing site and later as a biomedical test facility for radiation experiments. The site was abandoned in 1953. Potential contamination sources for Pajarito Canyon are the firing sites and associated facilities. TA-18 is located in Pajarito Canyon at its confluence with Threemile Canyon and originally was used as a firing site in the 1940s and is now the location of the critical experiments facility. Potential contaminant sources for Pajarito Canyon include septic tanks, drainlines, outfalls, a sewage lagoon, and other liquid-waste management systems and an inactive firing site. TA-22 is located between the north rim of Pajarito Canyon and the head of the southeast fork of Twomile Canyon and originally was used to assemble explosives. The area was later remodeled into office and laboratory space and currently houses the Detonation Systems Laboratory. Potential contaminant sources for Pajarito Canyon include outfalls and drains. Former TA-23 is located within current TA-09 and was used during the 1940s for firing tests involving HE, inorganic chemicals, and radionuclides. Potential contaminant sources are associated with these tests. Former TA-27 consists of inactive firing sites that are located within current TA-36. These firing sites, which used HE, radioactive materials, and inorganic chemicals, are potential sources of contaminants for Pajarito Canyon. TA-40 is located on a mesa between Pajarito Canyon and the southeast fork of Twomile Canyon east of TA-22 and is used for explosives testing. Potential contaminant sources for Pajarito Canyon include firing sites, septic tanks, and storage areas. TA-54 is located on Mesita del Buey, between Cañada del Buey and Pajarito Canyon and is the location of many of LANL's waste management facilities, including MDA G, MDA J, and MDA L. MDA G is a 65-ac site that has been used since 1957 for disposal of low-level radioactive waste and storage of low-level, mixed, TRU, and TRU-mixed wastes. MDA J is a 2.7-ac site used for disposal of administratively controlled wastes (e.g., classified shapes), surface storage of nonfriable asbestos, and land-farming of petroleum-contaminated soils. MDA L is a 2.5-ac site that includes inactive chemical-waste disposal sites and active storage areas for chemical-mixed, hazardous, and PCB

		wastes. Inactive facilities at the western end of TA-54 were used for biomedical research involving radiation from 1962 to the mid 1970s. This portion of TA-54 is also the location of two magazines formerly associated with TA-18 firing sites. These facilities at the west end of TA-54 are not considered significant potential contaminants sources for Pajarito Canyon. There are no SWMUs/AOCs for TA-14, TA-15, TA-36, TA-46, TA-51, or TA-69 within the Pajarito Canyon watershed and no SWMUs/AOCs are associated with TA-58, TA-62, TA-66, and TA-67. One municipal water supply well (PM-2) is located within Pajarito Canyon. The ER Project has developed a work plan for investigating the Pajarito Canyon system. For the investigation, the canyon was divided into five reaches along the main canyon (PA-1 through PA-5) and five reaches along tributary canyons. The latter consist of two reaches on the south fork of Pajarito Canyon (PAS-1 and PAS-2), one reach in Anchor West Basin (AW-1), one reach in north Anchor East Basin (AEN-1), and one reach in south Anchor East Basin (AES-1). The reach locations were selected to collect data needed to assess current and future risk associated with potentially contaminated sediments and to improve understanding of transport processes. Reach PA-1 is located in upper Pajarito Canyon and consists of three subreaches selected to evaluate potential sources of contamination from TA-08, TA-09, and TA-22 and to evaluate contaminant inventory in upper Pajarito Canyon. Subreaches are located upstream of the south fork of Pajarito Canyon, between the south fork of Pajarito Canyon and north Anchor East Basin, and downstream of south Anchor East Basin. Reach PA-2 consists of two subreaches located upstream and downstream of the confluence with Twomile Canyon (AOC C-00-010). This reach was selected to evaluate dilution of contamination below reach PA-1 and to evaluate the possible addition of contaminants from former TA-12, TA-40, and sources in Twomile Canyon. Reach PA-3 consists of two subreaches upstream and downstream of TA-18 and the confluence with Threemile Canyon (AOC C-00-012). This reach was selected to evaluate the dilution of contaminants from PA-2 and the possible addition of contaminants from TA-18 and Threemile Canyon. Reach PA-4 is located upstream of the eastern LANL boundary and was selected to evaluate dilution of contaminants from upstream and the possible addition of contaminants from former TA-27 and TA-54. Reach PA-5 is located in White Rock Canyon and consists of two subreaches selected to evaluate dilution from upstream and the potential contaminant contribution to the Rio Grande. Reach PAS-1 is located upstream of the confluence with Anchor West Basin and consists of two subreaches selected to evaluate the contribution of contaminants from TA-08 and TA-09. Reach PAS-2 is located downstream of the confluence with Anchor West Basin and was selected to evaluate contamination from TA-08 and TA-09 and the contaminant inventory in the south fork of Pajarito Canyon. Reach AW-1 is located in the lower part of Anchor West Basin and was selected to evaluate contaminant contribution from some SWMUs/AOCs in TA-08. Reach AEN-1 is located in the lower part of north Anchor East Basin and was selected to evaluate contaminant contribution from some SWMUs/AOCs in TA-08.

		Reach AES-1 is located in the lower part of south Anchor East Basin and was selected to evaluate the contaminant contribution from some SWMUs/AOCs in TA-09. Activities conducted at all reaches will include geomorphic surveys to identify sediment age and physical characterization. Sediment samples will be collected and analyzed. Analyses will include full-suite analyses, limited-suite analyses, and key-contaminant analyses. The full-suite analyses will include radionuclides, inorganic chemicals, and organic chemicals. Limited-suite analyses will focus on chemicals and radionuclides detected above BV/FVs in the full-suite analyses. Key-contaminant analyses will include constituents shown to be primary risk drivers. The investigation also will include measuring streamflow and ET; collecting and analyzing surface water samples from streamflow and springs, installing alluvial and regional aquifer wells; sampling and analyzing alluvial, perched, and regional groundwater; hydrologic and geochemical modeling; and as required to support ecological risk assessments, sampling and analyzing biota. Twenty sediment samples were collected from reaches PA-1, PA-2, and PA-4 in 2000 as part of post-fire baseline characterization. These results have not been formally reported.
C-00-012	In Progress	AOC C-00-012 consists of the Threemile Canyon system. Threemile Canyon heads on LANL within TA-14 at an elevation of approximately 7450 ft. The canyon trends east-southeast across LANL before joining Pajarito Canyon (AOC C-00-011) in TA-18 at an elevation of approximately 6740 ft. Threemile Canyon has a watershed area of 1.7 sq mi, a length of 2.4 mi, and a mean elevation of 7110 ft. Stream flow in the canyon generally is ephemeral and/or intermittent with perennial springs supporting short reaches of perennial flow. Sampling in Threemile Canyon is not conducted as part of the LANL Environmental Surveillance Program. Previous sampling in wetlands in Threemile Canyon has shown two inorganic chemicals (barium and zinc) and several radionuclides (plutonium-238, plutonium-239,-240, thorium-228, thorium-230, and total uranium) above BVs/FVs. HE has been detected in surface water in Threemile Canyon. In addition, the alluvial and regional aquifers in Threemile Canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Threemile Canyon passes through or is adjacent to former TA-12, TA-14, TA-15, TA-18, TA-36, and TA-67. Former TA-12 is located on Pajarito Mesa between Pajarito and Threemile Canyons within current TA-15 and TA-67. Former TA-12 originally was used as a firing site and later as a biomedical test facility for radiation experiments. The site was abandoned in 1953. Potential sources of contamination for Threemile Canyon are the firing sites and associated facilities and the radiation test facility. TA-15 is located on Pajarito and Threemile Mesas and is the location of active and inactive firing sites used for tests involving HE, inorganic chemicals, and radionuclides. Potential contaminant sources for Threemile Canyon include the firing sites and associated facilities. TA-18 is located in Pajarito Canyon at its confluence with Threemile Canyon and originally was used as a firing site in the 1940s and now is the location of the critical experiments facility. Potential sources of contaminants for Threemile Canyon include inactive firing sites and outfalls. TA-36 is located south of Pajarito and Threemile Canyons and is the location of active and inactive firing sites. SWMUs/AOCs for TA-36 located within the Threemile Canyon watershed include an active firing site, sump, septic system, and photographic outfall. There are no SWMUs/AOCs for TA-14 within the Threemile Canyon drainage and no SWMUs/AOCs are associated with TA-67.

		The ER Project has developed a work plan for investigating the Threemile Canyon system. For the investigation, the canyon was divided into three reaches along the main canyon (TH-1 through TH-3) and three reaches along tributary canyons. The latter consist of one reach on the west fork of Threemile Canyon (THW-1), one reach on the middle fork of Threemile Canyon (THM-1), and one reach on the south fork of Threemile Canyon (THS-1). Reach TH-1 is located near the head of Threemile Canyon and consists of three subreaches selected to evaluate the contribution of contaminants from some SWMUs/AOCs in former TA-12 and TA-15. Reach TH-2 consists of two subreaches upstream and downstream of the confluence with the middle fork of Threemile Canyon. This reach was selected to evaluate the dilution of contaminants from TH-1 and the contaminant contribution from additional SWMUs/AOCs in former TA-12 and TA-15. Reach TH-3 is located upstream from TA-18 and was selected to evaluate the dilution and storage of contaminants from former TA-12, TA-15, and TA-36. Reach THW-1 is located upstream of the confluence with Threemile Canyon and was selected to evaluate contaminant contribution from SWMUs/AOCs s at TA-15. Reach THM-1 is located upstream of the confluence with Threemile Canyon and was selected to evaluate the contribution of contaminants from SWMUs/AOCs at TA-15, including former Firing Site R-44 [SMWU 15-006(c)-99]. Reach THS-1 is located upstream of the confluence with Threemile Canyon and consists of two subreaches selected to evaluate the contaminant contribution from SWMUs/AOCs at TA-15, which includes Firing Site E-F [SWMU 15-004(f)-99], and TA-36, which includes Firing Site I-J [AOC 36-004(e)]. Activities conducted at all reaches will include geomorphic surveys to identify sediment age and physical characterization. Sediment samples will be analyzed. Analyses will include full-suite analyses, limited-suite analyses, and key-contaminant analyses. The full-suite analyses will include radionuclides, inorganic chemicals, and organic chemicals. Limited-suite analyses will focus on chemicals and radionuclides detected above BV/FVs in the full-suite analyses. Key-contaminant analyses will include constituents shown to be the primary risk drivers. The investigation also will include measuring streamflow, collecting and analyzing surface water samples from streamflow and springs, installing alluvial wells, sampling and analyzing alluvial groundwater, and as required to support ecological risk assessments, sampling and analyzing biota. Seven sediment samples were collected from reach TH-3 in 2000 as part of post-fire baseline characterization. THese results have not been formally reported.
C-00-013	In Progress	AOC C-00-013 consists of the Potrillo Canyon system. Potrillo Canyon heads on LANL in TA-15 at an elevation of approximately 7290 ft. The canyon extends southeast across LANL before joining Water Canyon (AOC C-00-016) in TA-71 at an elevation of approximately 5800 ft. Potrillo Canyon has a watershed area of 3.4 sq mi, a channel length of 6.9 mi, and a mean elevation of 6704 ft. Streamflow in Potrillo Canyon is ephemeral and results primarily from rainfall runoff. Potrillo Canyon has no perennial springs or perennial reaches. Previous environmental investigations at AOC C-00-013 include routine sediment and runoff sampling as part of the LANL Environmental Surveillance Program. Past sampling has detected plutonium-239,-240 slightly above FVs in sediments in Potrillo Canyon at State Highway 4. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Potrillo Canyon passes through or is adjacent to TA-15, TA-36, and TA-71.

		TA-15 is an active firing area and has facilities located on mesas north and south of Potrillo Canyon. These facilities include active and inactive firing sites used for tests involving HE, inorganic chemicals, and radionuclides. SWMUs/AOCs at these sites include the firing sites and related facilities, including surface disposal areas, septic tanks, and outfalls. TA-36 is also an active firing area. TA-36 facilities located within the Potrillo Canyon watershed include the active Lower Slobbovia firing site. SWMUs/AOCs associated with this site are MDA AA, the firing site, and an explosive-waste storage area. There are no SWMUs/AOCs in TA-71. The ER Project will develop a work plan for investigating canyon systems in the southern portion of LANL, including Potrillo Canyon. These investigations will be conducted to characterize potential contamination in the canyon systems to assess current and future risk. The work plan will address sediment investigations in Potrillo Canyon, including geomorphic surveys to identify sediment age and physical characterization, field radiological surveys, and collection and analysis of sediment samples. As appropriate, the work plan also may include investigations of alluvial, perched, and regional groundwater; surface water; airborne particulates; and biota.
C-00-014	In Progress	AOC C-00-014 consists of the Cañon de Valle canyon system. Cañon de Valle heads on the flanks of the Sierra de Los Valles on USFS land west of LANL at an elevation of approximately 10,390 ft. The canyon extends east-southeast and enters LANL at TA-16 before joining Water Canyon (AOC C-00-016) at the boundary between TA-15 and TA-37 at an elevation of approximately 6810 ft. Cañon de Valle has a watershed area of 4.2 sq mi, a channel length of 7.8 mi, and a mean elevation of 8268 ft. Streamflow in Cañon de Valle is interrupted upstream of the LANL boundary and is entirely ephemeral on LANL. Several perennial springs in upper Cañon de Valle on USFS land result in perennial reaches. Previous environmental investigations at AOC C-00-014 include routine sediment and runoff sampling performed as part of the LANL Environmental Surveillance Program. Past sampling has detected plutonium-239,-240 slightly above FVs in sediments in Cañon de Valle at State Highway 501. In addition, the alluvial and regional aquifers in Cañon de Valle canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Cañon de Valle passes through or is adjacent to TA-09, TA-11, former TA-13, TA-14, TA-15, TA-16, former TA-23, former TA-24, former TA-25, and TA-37. There are no SWMUs/AOCs in TA-09 within the Cañon de Valle watershed. TA-11 is located on a mesa between Cañon de Valle and Water Canyon and is an HE testing area. SWMUs/AOCs include an active drop tower, inactive firing sites, septic tanks, and outfalls. Former TA-13 is located within TA-16 and was used from 1944 to 1957 for a variety of HE manufacturing and testing activities. SWMUs include a former firing site, septic system, and landfill. TA-14 is an active firing area and includes SWMUs/AOCs located on Threemile Mesa at the north rim of Cañon de Valle. These SWMUs/AOCs include active and inactive firing sites and associated facilities. The latter include sumps and outfalls, septic tanks, an incinerator, and a burn area. TA-15 is an active firing area and includes laboratories, shops, and support facilities located adjacent to Cañon de Valle. TA-16 is an HE manufacturing area and is the most significant source of contamination

		for the Cañon de Valle system. SWMUs/AOCs include numerous outfalls from HE operations, along with facilities for HE treatment and disposal. Significant SWMUs/AOCs include the outfall from the 260 HE machining line [SWMU 16-021(c)-99], MDA P (SWMU 16-018), MDA R (SWMU 16-019), and a silver recovery unit outfall (SWMU 16-020). Former TA-23 is located within TA-09 and was used in the 1940s as a firing site for tests involving HE, radionuclides, and inorganic chemicals. SWMUs/AOCs from TA-23 have been incorporated into those for TA-09. Former TA-24 and TA-25 were HE manufacturing areas that have been incorporated into TA-16. No SWMUs/AOCs are associated with former TA-24 and only one AOC, a pit, is associated with former TA-25. TA-37 is a magazine area located adjacent to the confluence with Cañon de Valle and Water Canyon. The only AOC in TA-37 is a septic tank. There are no SWMUs/AOCs in TA-71. The ER Project will develop a work plan for investigating canyon systems in the southern portion of LANL, including Cañon de Valle. These investigations will be conducted to characterize potential contamination in the canyon systems in order to assess current and future risk. The work plan will address sediment investigations in Cañon de Valle, including geomorphic surveys to identify sediment age and physical characterization, and collect and analyze sediment samples. As appropriate, the work plan may also include investigations of alluvial, perched, and regional groundwater; surface water; airborne particulates; and biota. Extensive sampling of sediment, surface water, and alluvial grounwater has occurred in Cañon de Valle as part of investigations for the 260 Outfall [16-021(c)-99]. These results were reported in the September 2003, Phase III RFI Report for Solid Waste Management Unit 16-021(c)-99.
C-00-015	In Progress	AOC C-00-015 consists of the Fence Canyon system. Fence Canyon heads on LANL near the boundary between TA-36 and TA-68 at an elevation of approximately 7090 ft. The canyon extends southeast across LANL before joining Potrillo Canyon (AOC C-00-013) in TA-71 at an elevation of approximately 6430 ft. Fence Canyon has a watershed area of 1.1 sq mi, a channel length of 3.1 mi, and a mean elevation of 6711 ft. Streamflow in Fence Canyon is ephemeral and results primarily from rainfall runoff. Fence Canyon contains no perennial springs or perennial reaches. Previous environmental investigations at AOC C-00-015 include routine sediment sampling performed as part of the LANL Environmental Surveillance Program. Past sampling has detected plutonium-239,-240 slightly above FVs in sediments in Fence Canyon at State Highway 4. In addition, the alluvial and regional aquifers in Fence Canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Fence Canyon passes through or is adjacent to TA-36, TA-68, and TA-71. TA-36 is an active firing area. TA-36 facilities located on Mesita del Potrillo near the head of Fence Canyon include active firing sites, an HE waste storage area, and a bone yard. TA-68 and TA-71 contain no SWMUs/AOCs. The ER Project will develop a work plan for investigating canyon systems in the southern portion of LANL, including Fence Canyon. These investigations will be conducted to characterize potential contamination in the canyon systems in order to assess current and future risk. The work plan will address sediment investigations in

		Fence Canyon, including geomorphic surveys to identify sediment age and physical characterization, and collect and analyze sediment samples. As appropriate, the work plan also may include investigations of alluvial, perched, and regional groundwater; surface water; airborne particulates; and biota.
C-00-016	In Progress	AOC C-00-016 consists of the Water Canyon system. Water Canyon heads on the flanks of the Sierra de Los Valles on USFS land west of LANL at an elevation of approximately 9940 ft. The canyon extends east-southeast and enters LANL at TA-16. Water Canyon crosses LANL and is joined by Cañon de Valle (AOC C-00-014) and Potrillo Canyon (AOC C-00-013) before entering the Rio Grande in TA-70 at an elevation of approximately 5430 ft. Water Canyon has a watershed area of 9.8 sq mi, a channel length of 14.5 mi, and a mean elevation of 7557 ft. Streamflow in Water Canyon is interrupted upstream of the LANL boundary and is ephemeral over most of the canyon on LANL property. There are several perennial springs in upper Water Canyon on USFS land, including Armistead Spring and American Spring. These springs result in perennial reaches. A small perennial spring in lower Water Canyon, below the confluence with Potrillo Canyon, supports a very short perennial reach. Flow in Water Canyon from near the southwest LANL boundary to the confluence with Cañon de Valle sometimes results from discharges from the Water Canyon gallery, which is located in Water Canyon west of LANL. Previous environmental investigations at AOC C-00-016 include routine surface water, sediment, spring, and runoff sampling performed as part of the LANL Environmental Surveillance Program. The sediment sampling program includes sampling stations at MDA AB [SWMU 49-001(a)-00] near the rim of Water Canyon. A surface release of plutonium occurred at this site in the past and plutonium has been detected in sediments. Three observation wells are located in Water Canyon and are included in the Environmental Surveillance Program alluvial groundwater monitoring network. In addition, the alluvial and regional aquifers in Water Canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Water Canyon passes through or is adjacent to TA-11, TA-15, TA-16, TA-28, TA-36, TA-37, TA-39, TA-49, TA-68, TA-70, and TA-71. TA-11 is located on a mesa between Cañon de Valle and Water Canyon and is an HE testing area. SWMUs/AOCs include an active drop tower, inactive firing sites, septic tanks, and outfalls. TA-15 is an active firing area that includes facilities on a mesa between Water Canyon and Potrillo Canyon. These facilities include the active PHERMEX facility and inactive Firing Site G. Associated SWMUs/AOCs include firing sites and related facilities, including septic tanks, outfalls, and disposal sites. TA-16 is an active HE manufacturing area. Facilities located along the north side of Water Canyon include an administrative area, a tritium facility, and HE pressing, assembly, metal forming, and powder inspection areas. Associated SWMUs/AOCs include outfalls discharging to Water Canyon and HE storage areas. TA-28 is a magazine area along the north rim of Water Canyon within TA-16. There are no SWMUs/AOCs in TA-28. TA-36 is an active firing area. SWMUs/AOCs located near Water Canyon include an active firing site and HE storage area. TA-37 is a magazine area located adjacent to the confluence with Cañon de Valle and Water Canyon. The only AOC in TA-37 is a septic tank. TA-39 is an active firing area. There are no SWMUs/AOCs at TA-39 within the Water Canyon watershed.

		TA-49 is an inactive firing area located on Frijoles Mesa between Ancho and Water Canyons. TA-49 was used to conduct subsurface firing experiments involving special nuclear material. SWMUs/AOCs located along the edge of Water Canyon include portions of MDA AB, where most experiments involving special nuclear material were conducted, and an open burning/landfill area. There are no SWMUs/AOCs in TA-68, TA-70, or TA-71. The ER Project will develop a work plan for investigating canyon systems in the southern portion of LANL, including Water Canyon. These investigations will be conducted to characterize potential contamination in the canyon systems in order to assess current and future risk. The work plan will address sediment investigations in Water Canyon, including geomorphic surveys to identify sediment age and physical characterization, and collect and analyze sediment samples. As appropriate, the work plan also may include investigations of alluvial, perched, and regional groundwater; surface water; airborne particulates; and biota. Investigations were conducted in Martin Spring, a tributary to Water Canyon, as part of the 260 Outfall [16-021(c)-99] work and reported in the Phase III RFI Report for Solid Waste Management Unit 16-021(c)-99.
C-00-017	In Progress	AOC C-00-017 consists of the Indio Canyon system. Indio Canyon heads on LANL in TA-39 at an elevation of approximately 6860 ft. The canyon extends southeast and joins Water Canyon in TA-71 at an elevation of approximately 6380 ft. Indio Canyon has a watershed area of 0.5 sq mi, a channel length of 1.2 mi, and a mean elevation of 6636 ft. Streamflow in Indio Canyon is ephemeral, primarily due to rainfall runoff. Indio Canyon has no perennial springs or perennial reaches. Previous environmental investigations at AOC C-00-017 include routine sediment and runoff sampling performed as part of the LANL Environmental Surveillance Program. In addition, the alluvial and regional aquifers in Indio Canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Indio Canyon passes through or is adjacent to TA-39 and TA-71. TA-39 consists of an active firing area. There are no SWMUs/AOCs at TA-39 within the Indio Canyon watershed. However, it may be possible that shot debris from firing sites in the north fork of Ancho Canyon enters Indio Canyon. There are no SWMUs/AOCs in TA-71. The ER Project will develop a work plan for investigating canyon systems in the southern portion of LANL, including Indio Canyon. These investigations will be conducted to characterize potential contamination in the canyon systems in order to assess current and future risk. The work plan will address sediment investigations in Indio Canyon, including geomorphic surveys to identify sediment age and physical characterization. Sediment samples will be collected and analyzed. As appropriate, the work plan also may include investigations of alluvial, perched, and regional groundwater; surface water; airborne particulates; and biota.
C-00-018	In Progress	AOC C-00-018 consists of the Ancho Canyon system. Ancho Canyon heads on LANL in TA-49 at an elevation of approximately 7280 ft. The canyon extends southeast across LANL and enters the Rio Grande along the boundary between TA-33 and TA-70 at an elevation of approximately 5410 ft. Ancho Canyon has a watershed area of 6.7 sq mi, a channel length of 7.3 mi, and a mean elevation of 6609 ft. Streamflow in Ancho Canyon is ephemeral over most of the canyon length, until about 0.8 mi upstream of the confluence with the Rio Grande, where Ancho Spring is located. This perennial spring supports perennial flow over the remainder of the canyon to the Rio Grande. Previous environmental investigations at AOC C-00-018 include routine surface water, sediment, spring, and runoff sampling performed as part of the LANL Environmental Surveillance Program. Tritium has been detected in sediment samples collected in Ancho Canyon at State Highway 4. In addition, the alluvial and regional aquifers in Ancho Canyon are monitored as part of LANL's Groundwater Protection Management

		Program. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Ancho Canyon passes through or is adjacent to TA-33, TA-39, TA-49, and TA-70. TA-33 was used originally as a firing area and later for tritium operations. TA-33 is located on a mesa between Ancho and Chaquehui Canyons. The TA-33 East Site is within the Ancho Canyon watershed; SWMUs/AOCs at this site are MDA D, a septic tank, an outfall, and surface disposal sites. TA-39 is an active firing area. SWMUs/AOCs located within the Ancho Canyon watershed consist of firing sites, HE storage areas, and landfills. TA-49 is an inactive firing area located on Frijoles Mesa between Ancho and Water Canyons. TA-49 was used to conduct subsurface firing experiments that involved special nuclear material. SWMUs/AOCs located along the edge of Ancho Canyon include portions of MDA AB where containment experiments were conducted that involved limited amounts of radioactive materials. There are no SWMUs/AOCs in TA-70. The ER Project will develop a work plan for investigating canyon systems in the southern portion of LANL, including Ancho Canyon. These investigations will be conducted to characterize potential contamination in the canyon systems in order to assess current and future risk. The work plan will address sediment investigations in Ancho Canyon, including geomorphic surveys to identify sediment age and physical characterization. Field radiological surveys will be conducted and sediment samples will be collected and analyzed. As appropriate, the work plan also may include investigations of alluvial, perched, and regional groundwater; surface water; airborne particulates; and biota. Sediment sampling was conducted in Ancho Canyon as part of investigations of SWMUs/AOCs in Ta-39 and this work was reported in 1997.
C-00-019	In Progress	AOC C-00-019 consists of the Chaquehui Canyon system. Chaquehui Canyon heads on LANL in TA-33 at an elevation of approximately 6770 ft. The canyon extends southeast across TA-33 and enters the Rio Grande at an elevation of approximately 5400 ft. Chaquehui Canyon has a watershed area of 1.6 sq mi, a channel length of 3.0 mi, and a mean elevation of 6435 ft. Streamflow in Chaquehui Canyon is ephemeral over most of the canyon length, until about 0.5 mi upstream of the confluence with the Rio Grande, where Doe Spring is located. This perennial spring supports perennial flow over a short distance. Two other perennial springs, Spring 9 and Spring 9A, are located approximately 0.25 mi above the confluence with the Rio Grande. These springs support perennial flow in the remainder of the canyon to the Rio Grande. Previous environmental investigations at AOC C-00-019 include routine sediment, spring, and runoff sampling performed as part of the LANL Environmental Surveillance Program. Cesium-137 and tritium have been detected in sediment samples collected in Chaquehui Canyon at the Rio Grande. In addition, the alluvial and regional aquifers in Chaquehui Canyon are monitored as part of LANL's Groundwater Protection Management Program. Potential sources of contamination for the canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. Chaquehui Canyon is located entirely within TA-33. TA-33 was used originally as a firing area and later for tritium operations. TA-33 is located a mesa between Ancho and Chaquehui Canyons. Facilities within the Chaquehui Canyon watershed are the TA-33 Main Site, Area 6, South Site, and NRAO Site. SWMUs/AOCs at these sites include MDA E, MDA K, outfalls, septic systems, firing sites, and surface disposal sites.

		The ER Project will develop a work plan for investigating canyon systems in the southern portion of LANL, including Chaquehui Canyon. These investigations will be conducted to characterize potential contamination in the canyon systems in order to assess current and future risk. The work plan will address sediment investigations in Chaquehui Canyon, including geomorphic surveys to identify sediment age and physical characterization. Field radiological surveys will be conducted and sediment samples will be collected and analyzed. As appropriate, the work plan also may include investigations of alluvial, perched, and regional groundwater; surface water; airborne particulates; and biota.
C-00-020	In Progress	AOC C-00-020 is a 30-acre mortar impact area located along the north valley wall of Rendija Canyon. The site also includes a northern tributary of Rendija Canyon west of Guaje Pines Cemetery. During a preliminary site survey in 1991, no ordnance was found at this site. Because signage and its arrangement at this site were similar to signage for impact areas AOC 00-011(a) through (e), the validity of the 1991 survey was called into question and this site was listed as an AOC. The ER Project conducted an RFI at AOC C-00-020 in 1993 to search for and remove unexploded ordnance and ordnance explosive waste, map the geomorphology, and collect shallow surface-soil samples. No ordnance was found during the RFI. Because none was found, the RFI report stated that the site is not a former ordnance impact area, and recommended NFA for the site and approval for future residential use.
C-00-021	In Progress	AOC C-00-021 consists of the DP Canyon system. DP Canyon originates in the Los Alamos townsite at an elevation of approximately 7240 ft. The canyon extends east-southeast and after a short distance, enters LANL property in TA-73. The Canyon then enters TA-21 and continues until it joins Los Alamos Canyon (AOC C-00-006) along the boundary between TA-21 and TA-73 at an elevation of approximately 6620 ft. DP Canyon has a watershed area of approximately 0.6 sq mi and a channel length of approximately 1.5 mi. A small spring, DP Spring, is located near the bottom of DP Canyon and has a flow range from 0 L/min to 20 L/min. Streamflow in DP Canyon is intermittent, other than flow from the spring, and results from discharges of industrial effluent from outfalls and from storm water and snowmelt runoff. Previous environmental investigations at AOC C-00-021 include regular environmental monitoring that has been conducted in DP Canyon since the 1970s as part of the LANL Environmental Surveillance Program. Sediment samples containing elevated levels of cesium-137, plutonium-238, plutonium-239, strontium-90, thorium-230, thorium-232, and uranium-238 have been detected; some concentrations exceeded SALs. In addition, the ER Project has conducted numerous investigations in and around TA-21 in association with SWMUs/AOCs at TA-21. Potential contamination sources for canyon systems include SWMUs/AOCs associated with TAs in or adjacent to the canyons. DP Canyon passes through or is adjacent to TA-21, the most significant potential contamination source for DP Canyon, and TA-73. TA-21 is located on DP Mesa between DP and Los Alamos Canyons and is the site of former plutonium and uranium processing facilities and former and current research laboratories. One of the most significant contamination sources at TA-21 is SWMU 21-011(k), which is an outfall that discharged effluent from RLWTFs into DP Canyon from 1956 to 1985. Other potential contaminant sources at TA-21 include MDA A (SWMU 21-014), MDA T [SWMU 21-016(a)-99], MDA U [21-017(a)-99], septic tanks and outfalls, and a petroleum product tank farm (SWMU 21-029). TA-73 currently is a buffer zone, but from 1947 to 1951 it housed construction support activities along the north rim of DP Canyon. This area was known as Contractors' Row and contains SWMUs consisting of a surface disposal area, septic tanks, and septic pits. The ER Project conducted an evaluation of sediment contamination in Los Alamos Canyon from 1996 through 1998 in accordance with an RFI work plan. The results of this effort indicated that DP Canyon was a significant source of contamination in Los

		Alamos Canyon. As a result, the ER Project prepared a SAP for further characterization of DP Canyon. For the investigation, the canyon was divided into four reaches that have distinct physiographic and geomorphic settings. Reach DP-1 is located at the head of DP Canyon. This reach is narrow, with minimal storage of post-1942 sediments. Reach DP-2 consists of two subreaches located where discharges from the SWMU 21-011(k) outfall and MDA T [SWMU 21-016(a)-99] enter the canyon. This reach was selected to help characterize the DP Canyon contaminant inventory. Reach DP-3 is located downstream of Reach DP-2 in an area with much less potential for sediment accumulation. Reach DP-4 consists of two subreaches located from DP Spring to the confluence of Los Alamos Canyon. Sediment samples were collected in DP canyon to evaluate the potential contaminant migration from mesa-top SWMUs and AOCs. The canyon was divided into four reaches: DP-1, DP-2, DP-3, and DP-4. Geomorphic mapping and radiological screening were performed in reaches DP-2, DP-3, and DP-4. Sample sites were chosen based on geomorphic characteristics and radiological screening. The first group of samples was collected in August and October 1997 at all of the four reaches comprising DP Canyon. The second group of samples was collected in November 1998. New sample locations as well as sample locations from the previous sampling event were sampled in the second sampling round. Sample suites for these samples were based on radiological screening, geomorphic characteristics, and results from the first set of samples. Sediment samples collected in DP canyon included samples for full-suite, limited-suite, and key-contaminant analyses. Full-suite analyses included radionuclides, inorganic chemicals, and organic chemicals. Limited-suite analyses focused on potential contaminants identified in the full-suite analyses and during the investigations at Los Alamos Canyon. Results of these sampling events indicate organic chemicals were detected and inorganic chemicals and radionuclides were detected above BVs/FVs. The investigations also included collecting and analyzing stormwater samples and water samples from alluvial wells and DP Spring. The assessments of potential human-health and ecological risk indicate that contamination levels in the sediments and alluvial groundwater in DP Canyon do not pose an unacceptable risk to human health or the environment.
C-00-036(a)	Administratively Complete	AOC C-00-036(a) is borrow pit 1, located about 0.25 mi northwest of the entrance to Bandelier National Monument. The pit is 420 ft x 130 ft and covers about 1.25 acres. The northern portion of the pit is excavated into Bandelier Tuff and forms a near-vertical slope. The pit floor slopes gently southeast and is sparsely vegetated with pine trees and shrubs. The pit was used to dispose of construction debris from grade and drainage improvements and from road resurfacing during the 1950s. The pit is located within Bandelier on land that was acquired from the US Forest Service to support the Manhattan Project. The land was acquired in May 1943 and was transferred to Bandelier in January 1961. The ER Project conducted a site reconnaissance visit in 1993. No radiological activity was detected above BVs. Two asphalt and cement piles were noted at the site, as were scattered pieces of metal and cans. No evidence of LANL-related materials was observed during the 1993 inspections. The ER Project conducted a VCA at AOC C-00-036(a) in 1995 to excavate and remove asphalt, concrete, and metal debris from three locations in the pit. The debris was field-screened for radioactivity and for volatile organic vapors. Field-screening did not indicate the presence of volatile organic vapors or radioactivity above instrument background. The debris, which totaled 13.7 tons of concrete, 14.8 tons of asphalt, and 140 lb of metal debris, was disposed of at the Los Alamos County landfill. Confirmatory

		sampling verified site cleanup. Two surface-soil samples were collected and analyzed for radionuclides, organic chemicals, and inorganic chemicals. All analytical results were below the PRG levels applicable to cleanup verification and indicated no detectable residual contamination at the cleanup sites. Site restoration included covering the disturbed areas with a mulch of dead vegetation to control erosion and to allow the areas to reseed naturally. The VCA completion report requested DOE concurrence to approve NFA at AOC C-00-036(a).
C-00-036(b)	Administratively Complete	AOC C-00-036(b) is borrow pit 2 at Bandelier National Monument. The pit is located near the south side of State Road 4, about 1.9 mi northwest of the monument entrance. It measures about 300 ft x 100 ft and covers an area of about 0.7 acre with 15-ft- to 20-ft-high steep slopes on the north and south edges of the pit. The pit floor slopes gently southeast and is sparsely vegetated. Scattered piles of construction and facility debris and a LANL TA sign were present in the pit. This pit was excavated for fill material for road construction in the 1950s. During reconnaissance field trips in 1993 and 1994, a LANL ESH-1 surface radiological survey indicated no radioactivity above instrument background, except for a vehicle hubcap that exceeded instrument background. Based on the elevated levels, depleted uranium became a potential contaminant at AOC C-00-036(b). Posted signs advised that the area was under investigation by the LANL ER Project and visitors should keep out. The ER Project conducted a VCA at AOC C-00-036(b) in 1995 to excavate and remove asphalt, concrete, and metal debris from the pit. The debris was field-screened for radioactivity and for volatile organic vapors. Field-screening did not indicate the presence of volatile organic vapors or radioactivity above instrument background. The debris, which totaled 12.5 tons of concrete/asphalt and 540 lbs of metal, was disposed of at the Los Alamos County landfill. Confirmatory sampling verified site cleanup. Two surface-soil samples were collected and analyzed for radionuclides, organic chemicals, and inorganic chemicals. All analytical results were below PRG levels applicable to cleanup verification and indicated no detectable residual contamination at the cleanup sites. Site restoration included covering the disturbed areas with a mulch of dead vegetation to control erosion and allow the areas to reseed naturally. The VCA completion report requested DOE concurrence to approve NFA at AOC C-00-036(b).
C-00-036(c)	Administratively Complete	AOC C-00-036(c) is borrow pit 3, which covers an area of about 1.13 acres and is located about 0.1 mi southeast of the entrance to TA-49. Several debris piles were identified in the western part of the pit; the debris included steel cables, crushed pieces of corrugated metal pipe, and a section of small-gauge rail. Another area was identified with lead shot, and was identified as an impromptu shooting range. The northern edge of the pit is excavated into Bandelier Tuff and forms a steep slope that is 20 ft high. The pit floor generally is flat with the western one-third separated from the eastern two-thirds by a transverse low ridge. The floor is sparsely vegetated with pine trees and shrubs. The pit is located within Bandelier National Monument on land that was acquired from the US Forest Service to support the Manhattan Project. The land was acquired in May 1943, used as a borrow area for the improvement of State Road 4, and transferred to the monument in January 1961. During a 1993 reconnaissance field trip, LANL EHS-1 conducted a surface radiological survey; results indicated no radioactivity above instrument background. In 1995, the ER Project conducted a VCA at AOC C-00-036(c) to excavate and remove metal and wood debris from two primary locations in the pit. The upper 8 in. to 10 in. of a sand backstop used for the shooting range was excavated, containerized, and stored at TA-33 pending disposal at the Los Alamos County landfill. The debris was field-screened for radioactivity and for volatile organic vapors. Field-screening did not indicate the presence of volatile organic vapors or radioactivity above instrument background. The debris, which totaled 1020 lbs, was disposed of at the Los Alamos County landfill. The containerized sand was sent to TA-33 for storage pending analytical results. Confirmatory sampling verified site cleanup. One surface-soil sample was collected beneath the sand backstop and analyzed for radionuclides and inorganic chemicals. Analytical results were below the PRG levels applicable to cleanup verification and indicated no detectable residual contamination at the backstop site. Site

		restoration included covering the disturbed areas with a mulch of dead vegetation to control erosion and to allow the areas to reseed naturally. The VCA completion report requested DOE concurrence to approve NFA at AOC C-00-036(c).
C-00-036(d)	Administratively Complete	AOC C-00-036(d) is borrow pit 4, which covers an area of about 0.1 acre and is located about 1 mi northwest of the entrance to TA-49. The pit consisted of construction debris, including pieces of corrugated metal pipe and concrete. The northeast wall of the pit is excavated into Bandelier Tuff and forms a steep, 20-ft-high slope. The pit floor generally is flat and sparsely vegetated with pine trees and shrubs. The pit is located within Bandelier National Monument on land that was acquired from the US Forest Service to support the Manhattan Project. The land was acquired in May 1943, used as a borrow area for the improvement of State Road 4, and transferred to the monument in January 1961. During a reconnaissance field trip in 1993, LANL ESH-1 performed a surface radiological survey; results indicated no radioactivity above instrument background. In 1995, the ER Project conducted a VCA at AOC C-00-036(d) to excavate and remove debris from two primary locations in the pit. The debris was field-screened for radioactivity and for volatile organic vapors. Field-screening did not indicate the presence of volatile organic vapors or radioactivity above instrument background. The debris, which totaled 9.7 tons of concrete and 800 lbs of metal, was disposed of at the Los Alamos County landfill. One surface soil sample was collected from beneath the sand backstop and analyzed for radionuclides. Analytical results were below PRG levels applicable to cleanup verification and indicated no detectable residual contamination at the site. Site restoration included covering the disturbed areas with a mulch of dead vegetation to control erosion and to allow the areas to reseed naturally. The VCA completion report requested DOE concurrence to approve NFA at AOC C-00-036(d).
C-00-037	In Progress	AOC C-00-037 is an inactive 2.75-acre landfill located southwest of the road leading to Loop C of the Juniper Campground at Bandelier National Monument on the mesa top separating Frijoles and Ancho Canyons. The land was acquired in May 1943 to support the Manhattan Project and was transferred to the monument in 1959. The ER Project coordinated an RFI at AOC C-00-037 in 1994. The investigation consisted of an archeological investigation conducted by the National Park Service Division of Anthropology and a historical records search of LANL operations in the area. Based on preliminary investigations at this site, monument and ER Project personnel agreed that no further investigations were warranted at this site. The RFI report recommended NFA for AOC 00-037 because the site was identified erroneously as an AOC and is not associated with LANL activities.
C-00-038	In Progress	AOC C-00-038 is a suspected surface disposal area adjacent to an abandoned section of the Tyuonyi Overlook Loop Trail, about 1/8 mi southwest of the Juniper Campground at Bandelier National Monument. The site covers about 0.12 acre in an amphitheater cut into the Bandelier Tuff. Debris, if present, is beneath cobble- and boulder-size blocks of welded tuff that form two wide benches. The top of a vintage automobile is exposed on the uppermost bench. A 6-ft- to 8-ft-diameter pile of asphalt debris is located about 150 ft southeast of the disposal area. The land was acquired in May 1943 to support the Manhattan Project and was transferred to the monument in 1959. An RFI at AOC C-00-038 consisted of a detailed archeological investigation, radiological survey of the site, and records search. The records search of LANL operations near the monument indicated no LANL activities in that area would have necessitated waste disposal at the monument. No debris items in the surface disposal area suggested that LANL used the area for disposal. Based on preliminary investigations at this site, monument and ER Project personnel agreed that no further investigations were warranted at this site because the nature of the materials found there suggest that the debris is associated with 1930s to early 1940s National Park Service activities. The RFI report recommended NFA for AOC 00-038 because the site was identified erroneously as an AOC and is not associated with LANL activities.
C-00-041	In Progress	AOC C-00-041 was the site of a former asphalt batch plant in a 50-ft x 600-ft part of a

		side slope and drainage channel that flows into Rendija Canyon. The earliest evidence of asphalt plant operations was found on a 1951 aerial photograph. A similar photograph from 1958 shows the plant was still operational, but a 1965 photograph indicates that the asphalt plant no longer is present. The land was transferred in 1969 from the Atomic Energy Commission (predecessor to DOE), which had owned the land since 1943, to the US Forest Service. The Forest Service requested that DOE remediate the site because Forest Service regulations in effect at the time of the land transfer required restoring industrial sites when operations ended. Also, the NMED surface water division considered the asphalt and concrete "refuse in a watercourse," and recommended its removal. During field verification, this AOC was found to have two distinct parts: the southern part, where the asphalt plant was located, had four piles of asphalt, each about 3 ft in diameter and a few inches high, and parts of a building foundation; and the northern part, which had tar deposits that had flowed down a streambed. The ER Project conducted a VCA at AOC C-00-041 in 1995 to remove asphalt from the stream channel, the area to which the asphalt was confined, and to break up and remove the concrete blocks. Six samples, including two water samples, were collected from locations upstream beneath the asphalt at the upstream and downstream ends of the deposit, and from downstream of the deposit. The 300 cubic yds of excavated materials were disposed of at the Los Alamos County landfill. A Forest Service representative inspected the site and the VCA was declared complete to Forest Service satisfaction. The VCA report requested completion concurrence from DOE.
C-00-042	In Progress	AOC C-00-042 was a 2500-gal., steel, waste-oil UST associated with the former automotive maintenance hangar at the historic Zia motor pool. The site is located on Trinity Drive between Fifteenth Street and the Los Alamos credit union. The UST is located within AOC 00-032, but was undiscovered until construction activities at the site in 1995 for the Los Alamos National Bank complex. The automotive maintenance hangar was decommissioned and removed in 1962 and the land subsequently was transferred to Los Alamos County in 1967. There is no indication that ensuing landowners used the UST. The UST and all access ways were covered with asphalt and fill material following demolition of the automotive maintenance hangar. The ER Project collected liquid and sludge samples from the half-full UST in 1995. Analytical results indicated organic chemicals were detected in the liquid and organic and inorganic chemicals were detected in the tank sludge. A VCA was conducted to remove the tank. Upon excavation, the tank was found to be in good condition, but staining was observed in surrounding surface soil. Through field-screening (for volatile organic chemicals) and observation, it was determined that the contaminated soil was limited to the west side of the tank. Affected soils were excavated and soil samples were collected from the limits of the excavation to confirm that all contaminated soils were removed and that the nature and extent of contamination had been properly defined. Five confirmatory samples were collected from five locations at the bottom and sides of the excavation and submitted for laboratory analysis for inorganic chemicals, TPH, and organic chemicals. All sample analysis results were below SALs. Screening samples were collected from the confirmatory sample material and analyzed at the mobile analytical laboratory to verify that contaminated soils had been removed and that the limits of the contamination had been reached. After the tank was removed, the excavation was backfilled with clean fill material and compacted. The UST area was released to the construction contractor following receipt of soil sample-analysis results.
C-00-043	In Progress	AOC C-00-043 was a brick and mortar manhole, that was no longer used, located about 50 ft south of the Immaculate Heart of Mary Catholic Church, in a landscaped part of the church’s parking lot. It was bell-shaped, 2 ft in diameter at the surface x 5 ft to 6 ft in diameter at the base, and 5-5.5 ft deep. The manhole had an 8-ft-diameter x 6-in.- to 8-in.-thick concrete base. The AOC was identified in 1996 during field activities. The manhole was believed to have been connected to sanitary sewer lines for the former central wastewater treatment plant. The plant operated from the mid-1940s until it was decommissioned in the early 1960s.

		The ER Project conducted an RFI and VCA at AOC C-00-043 in 1996. The RFI was conducted to determine whether contamination was present. The VCA was conducted to remove the manhole because it presented a potential safety risk to people using the site. RFI activities included a site survey, geodetic survey, manhole investigation and sampling, and field-screening. RFI activities were conducted in accordance with the VCA plan. During the RFI, two waste-characterization samples were collected from the sediment at the bottom of the manhole. The samples were field-screened for organic vapors and gross radiological activity. No organic vapors were detected, and no radioactivity was detected above instrument background. The samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and radionuclides. Characterization data indicated that the sediment contained constituents above BVs but below SALs. Since the excavated soil was returned to the site following manhole excavation, the characterization data were compared to SALs and a screening assessment was performed. After the manhole was removed, two confirmatory samples were collected in each half of the manhole footprint. The samples were field-screened for organic vapors and gross radiological activity. No organic vapors were detected and no alpha or beta/gamma activity was detected above instrument background. The samples were submitted for laboratory analysis for inorganic and organic chemicals, and radionuclides. Inorganic chemicals were detected at concentrations that exceeded BVs but not SALs. Organic chemicals were also detected. Two of the detected organic chemicals, PAHs, were eliminated from further consideration because the manhole lies in a low point that receives runoff from the surrounding asphalt parking lot and the PAHs are most likely the result of runoff from the asphalt and not related to AOC C-00-043. None of the detected chemicals exceeded its respective SAL. One inorganic chemical, calcium, and one organic chemical, 2-hexanone, have no SAL. Calcium is an essential nutrient. At the standard soil-ingestion rate for a child, the amount ingested per day from AOC 00-043 would be less than the RDA for calcium; calcium was eliminated from further consideration. The SAL for hexane was used as a surrogate for 2-hexanone, based on similarities in the mode of toxicity. Its concentration was less than the surrogate SAL. Less than 10 cubic yds of brick/mortar and concrete were taken to the Los Alamos County landfill for disposal. The excavation was backfilled and compacted with excavated soil and clean fill material. The area was regraded and reseeded. The VCA report recommended NFA at AOC C-00-043 because contaminants are present only in concentrations that pose no unacceptable level of risk under current and projected future land use.
C-02-001	Administratively Complete	AOC C-02-001 was a pile of steel nuggets on the east side of the Omega West Reactor building (Building 02-1). The pile sat atop a mound of soil. This AOC was not included in the 1990 SWMU report or RFI work plan, but was identified in 1995. Field screening was conducted at AOC C-02-001 in 1996. Three samples were field-screened for organic chemicals and radionuclides. No radiation above instrument background was detected, and no organic chemicals were detected. Based on field-screening results, the ER Project stated in a letter to EPA that this unit does not warrant further investigation. AOC C-02-001 was excavated in 2000 as part of the post-Cerro Grande Fire recovery and transported to the Los Alamos County landfill. A total of 31,280 pounds of soil and metal nuggets were removed from the site for erosion control. Following removal, verification samples were collected at depth intervals of 0 to 0.5 ft and 2 to 2.5 ft at each of two locations. No chemicals were reported above SALs. The site was then seeded and stabilized with jute matting.
C-03-001	Administratively Complete	
C-03-002	Administratively Complete	
C-03-003	Administratively Complete	

C-03-004	Administratively Complete	
C-03-005	Administratively Complete	
C-03-006	In Progress	C-03-006 is the site of a non-intentional release from a manhole that is connected to the industrial waste line. The manhole is located near the corner of Diamond Drive and Pajarito Road. The manhole is part of the liquid industrial waste collection system that runs from TA-3 to the liquid waste treatment facility at TA-50. In 1974, the manhole overflowed to a storm sewer in TA-3 [see SWMU 03-054(e)] and discharged to upper Mortandad Canyon. The overflow resulted from a plug in the industrial waste line and was estimated to be between 500 to 1,000 gallons of radioactive liquid waste. The overflow spilled to the surrounding paved area, traveled north along Diamond Drive, flowed into the storm sewer via a storm drain gate, and ultimately discharged into upper Mortandad Canyon through an outfall [SWMU 03-054(e)]. A cleanup of the overflow-impacted area began the day following the release. A collection and pumping system was used to flush the contaminated storm drain. Approximately 176 cubic meters of pavement were cut to the depth of the base course, excavated, and buried at TA-54. Newly exposed surfaces were monitored and one section of curbing with radioactivity levels exceeding background levels was removed. Additional surveys and subsequent confirmation sampling indicated that no radioactivity exceeding the decontamination criteria was present in the base course material. The area was restored by repaving and replacing the curb along Diamond Drive and around the manhole, removing the dam built in the stream bed at the base of the canyon, and installing engineering controls. Potential contaminants at this site include inorganic chemicals, SVOCs, PCBs, and radionuclides. In April 1995, an RFI was conducted at C-03-006 and SWMU 03-054(e). This investigation was accelerated due to planned erosion control measures conducted to stabilize the erosion below the base of the outfall pipe. Six soil/sediment samples were collected from five locations in the outfall area [SWMU 03-054(e)]. Two of the six sample locations had samples collected from two depth intervals. Because remediation had previously been completed around C-03-006, sampling was limited to the outfall and canyon area associated with SWMU 03-054(e). Based on the data collected during this sampling event, this AOC was recommended for NFA in the RFI Report.
C-03-007	Administratively Complete	
C-03-008	Administratively Complete	
C-03-009	Administratively Complete	
C-03-010	Administratively Complete	
C-03-011	Administratively Complete	
C-03-012	Administratively Complete	
C-03-015	Administratively Complete	
C-03-016	In Progress	AOC C-03-016 is an oil distributor cleanout bin with a hinged lid. The bin is about 4 ft wide x 16 ft long x 3 ft deep and is buried so that the top is flush with the ground surface. The bin was installed in the mid-1970s and contained used asphalt emulsion oil (85-100), which was applied to roads before laying asphalt. Photos from the 1970s and 1980s show extensive stains in the immediate vicinity of the bin. In the late 1980s, the area surrounding the oil distributor cleanout bin was excavated and new fill consisting of sand and gravel was put around the bin. Staining still occurs because the asphalt distributor machine rollers, when sprayed off, drip residue onto the gravel surrounding the tank. This bin was removed by the user group in the late 1990s. The OU 1114 work plan, addendum 1, recommended this AOC for deferred action

		because it is an active site used in day-to-day roads and grounds maintenance operations. The addendum stated that further action [RFI sampling and remedial action (if warrented)] will be taken when the roads and grounds operations are decommissioned or moved to another area.
C-03-017	Administratively Complete	
C-03-018	Administratively Complete	
C-03-019	Administratively Complete	
C-03-020	Administratively Complete	AOC C-03-020 consists of three former inactive USTs (structures 03-107, 03-108, and 03-109) associated with the former Sherwood Complex (Building 03-105), located within TA-03. All three tanks were constructed of steel. Structure 03-107 had a capacity of 2000 gal., while structures 03-108 and 03-109 were smaller, each with a capacity of 560 gal. The three tanks were installed in 1956 for the storage of electric insulating oil used in various high-voltage arrangements for magnetic fusion energy experiments conducted at TA-03, including power supplies, spark-gap switches, experimental transformers, capacitors, and cable junction containers. The tanks were originally installed underground at a location directly adjacent to the west side of former Building 03-105, which was situated in the north-central portion of TA-03. The tanks were located west of Room 161B, an equipment room. In the mid-1970s, an addition to Building 03-105 was constructed directly over the tanks. During construction of this addition, 6 ft of fill was placed over the tops of the tanks followed by placement of the new addition's floor slab, which was poured directly on top of the fill. A memorandum from TA-03 facility management regarding the tanks states that in the mid-1970s, a 400-sq-ft addition was constructed on the southwest corner of Building 03-105 to house a large air compressor and that the concrete foundation of the new addition covered the AOC C-03-020 tanks. Although the memorandum indicates that the tanks were no longer in service by the early 1970s, they may have ceased to be used at an even earlier date. Addendum 1 to the OU 1114 RFI Work Plan recommended NFA for these tanks because the tanks had no history of leaks and were abandoned in place in 1978 to prepare for a building addition located over the tanks. However, the addendum was never approved by NMED. From July 5 to November 9, 2001, the Sherwood Complex (Building 03-105 and associated structures) underwent D&D. In a collaborative venture between the ER Project and the D&D group, the three petroleum USTs designated as AOC C-03-020 were excavated and removed in accordance with State of New Mexico Petroleum Storage Tank (NMPST) regulations (20 NMAC 5.8). Analytical samples were collected by the D&D group as part of their completion activities at the site. Analytical results of the tanks' contents showed the presence of TPH confirming that the tanks contained a petroleum-based electrical insulating oil. In addition, the results showed low concentrations (less than 50 mg/kg) of a PCB (Aroclor-1254), indicating that the tanks contained "non-PCB" electrical insulating oil as defined in the USEPA TSCA regulations, 40 CFR Part 761.2. Analytical results from crushed tuff samples collected from the bottom of the tank excavation immediately after the tanks were removed also showed low concentrations of TPHs and Aroclor-1254. Other D&D activities included backfilling the tank excavation, adding fill to the area formerly occupied by the Sherwood Complex, and conducting extensive finish grading of the entire area. From April 1 to April 5, 2002, a final field investigation was conducted at the former location of the tanks. The purpose of this investigation was to determine the vertical and lateral extent of the petroleum contamination identified during removal of the tanks as required by NMPST regulations (20 NMAC 5.8 and 5.12). The April 2002 field investigation involved drilling and sampling five boreholes on either side of and below the area of contamination. The analytical results of the borehole samples showed low TPH and Aroclor-1254 concentrations in one of sixteen samples. All other sample

		results yielded nondetects and demonstrate that extent is established. Based on the applicable requirements of TSCA (40 CFR Part 761) and NMPST regulations (20 NMAC 5.8 and 5.12), AOC C-03-020 does not pose an unacceptable risk to human health or to the environment under current or projected future land use. The results of this collaborative removal project are documented in the VCA completion report submitted to DOE in September 2002, however analytical results were not available for summary in the 2003 SWMU Report. AOC c-03-020 was proposed for NFA in the VCA completion report.
C-03-021	Administratively Complete	
C-03-022	Administratively Complete	
C-04-001	Administratively Complete	
C-05-001	Administratively Complete	
C-06-001	In Progress	AOC C-06-001 is the site of an explosives storage magazine (former structure 06-4). The storage magazine was constructed sometime in the 1940s and was removed in 1972. Possible contaminants at this site are HE. In the RFI work plan, sampling at the site at two depths was proposed for investigation and further decision regarding this site.
C-08-001	Administratively Complete	
C-08-002	Administratively Complete	
C-08-003	Administratively Complete	
C-08-004	Administratively Complete	
C-08-005	Administratively Complete	
C-08-006	Administratively Complete	
C-08-007	Administratively Complete	
C-08-008	Administratively Complete	
C-08-009	Administratively Complete	
C-08-010	Pending	AOC C-08-010 is the location of a former drum storage structure (structure 08-34). The structure was situated at the foot of a stairway that once connected former Building 08-8 to Building 08-1 and other buildings at the abandoned bunker site. It was put into use in 1943 and removed in 1947. Suspect contaminants were organic chemicals. The ER Project conducted an RFI at AOC C-08-010 in 1994 to determine if contamination from organic chemicals was present. Four soil samples were collected from two locations at the AOC. Samples were field-screened for radioactivity, organic chemicals, and HE. Radiation readings were slightly elevated above LANL FVs at 257 to 307 cpm (LANL FV is 150 cpm to 250 cpm). Organic chemicals were less than 1 ppm, and HE spot tests were negative. Samples were submitted for laboratory analysis of organic chemicals. None was detected at levels that exceeded EQLs. The RFI report recommended NFA at AOC C-08-010 because the site was characterized in accordance with current applicable state and federal regulations, and available data indicate that contaminants are not present in concentrations that pose a risk under current and projected land use.
C-08-011	Administratively Complete	
C-08-012	Administratively	

	Complete	
C-08-013	Administratively Complete	
C-08-014	In Progress	AOC C-08-014 is in a laboratory and administrative building (Building 08-21) that was associated with TA-08 radiography facilities. The facilities were used to study HE, plutonium, uranium, arsenic, lithium hydride, and titanium oxide. The OU 1157 work plan proposed deferring action on AOC C-08-014 until D&D of Building 08-21.
C-08-015	Administratively Complete	
C-08-016	Administratively Complete	
C-08-017	Administratively Complete	
C-08-018	Administratively Complete	
C-08-019	Administratively Complete	
C-08-020	Administratively Complete	
C-09-001	In Progress	SWMU C-09-001 is a 2-ft x 3-ft area of stained soil beneath a drainpipe at the southeast corner of a solvent-storage building (Building 09-31). The stain is associated with the outfall from a chemical-storage area outside the building. The drainpipe, now plugged, was a discharge from spill containment trays in the building. Although the exact dates of operation of the chemical storage area are not known, structures in the area were built in the early 1940s and were used until the 1950s. The ER Project completed RFI fieldwork at SWMU C-09-001 in 1994. Soil samples were collected and analyzed; four PAHs were detected above their respective SALs in the top 6 in. of soil: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene. Only benzo(a)pyrene was present in concentrations greater than PRGs. A VCA was conducted due to the limited amount of contamination, and a VCA completion report was submitted in lieu of an RFI report. The VCA cleanup was conducted in 1995. During cleanup, the area was field-screened for alpha/beta/gamma radioactivity, volatile organic vapors, and HE. No radioactivity was detected above instrument background or volatile organic vapors were detected above BVs, and HE was not detected. The stained area was excavated and waste soils were disposed of as hazardous waste at MDA L. Two confirmatory samples verified cleanup. The site was restored by filling the excavated area with clean material, recontouring, and reseeding with native grasses. The VCA report requested regulator concurrence to remove SWMU C-09-001 from Module VIII of LANL's Hazardous Waste Facility Permit.
C-09-002	Administratively Complete	
C-09-003	Administratively Complete	
C-09-004	Administratively Complete	
C-09-006	Administratively Complete	
C-09-007	Administratively Complete	
C-09-008	Administratively Complete	
C-09-009	Administratively Complete	

C-09-010	Administratively Complete	
C-09-011	Administratively Complete	
C-10-001	In Progress	AOC C-10-001 consists of two sites of radioactively contaminated soil located in Bayo Canyon. The sites are within an area associated with SWMU 10-001(a)-99, the Firing Sites and are located within the same fenced area as AOC 10-009. The soil-contamination areas apparently were bulldozed and remained following decontamination and decommissioning activities that were conducted at TA-10 in 1963. The sites were discovered during routine shrapnel-removal operations in 1994. Contamination was from strontium-90. The ER Project conducted a VCA at this AOC in August 1995. The VCA included site surveys to delineate the contaminated areas, hand-augering within and around the areas of surface contamination to determine the extent of subsurface contamination, excavating the radioactive soil and restoring the site. Confirmatory samples were collected from the excavation and an additional confirmatory sample was collected at the site where radioactive shrapnel had been found and removed. Excavated soil was containerized, removed, and disposed of at TA-54, Area G. Site restoration included filling the excavation site with clean fill material and replacing pine needles.
C-11-002	In Progress	AOC C-11-002 is potential surface soil contamination at the location of a former 7-ft x 9-ft, wood-frame structure (former Building 11-12). Building 11-12 may have housed the laboratory that was used to prepare samples for P Division photofission experiments on uranium and plutonium isotopes and it may have been used as a darkroom. Building 11-12 was monitored in 1956 and was free of radioactive contamination; it was removed to salvage in 1959. According to an engineering drawing, Building 11-12 was located about 65 ft east-northeast of the air-gun facility's earthen berm. Suspect contaminants are HE, photo processing chemicals, and uranium and plutonium isotopes. The OU 1082 work plan proposed sampling to determine the presence or absence of contamination at the site.
C-11-003	Administratively Complete	
C-12-001	In Progress	AOC C-12-001 was the trim building (Building 12-1) for the TA-12 firing sites. It was built in 1944 and was used to prepare HE for detonation. The building was 16 ft x 16 ft x 9 ft high; it was of wood-frame construction with soil fill on three sides and on top. HE was molded at S-Site and then transported to TA-12 (L-Site) for final preparation. Use of L-Site was discontinued in 1953 and intentional burning in 1960 destroyed Building 12-1. A 1959 inspection report noted that Building 12-1 was contaminated with HE. Some noncombustible debris (concrete blocks and metal radiators) remained in place when the OU 1085 work plan was written. The site is considered a buffer zone and is currently not used for any LANL operations. The ER Project conducted an RFI at AOC C-12-001 in 1995 to determine the presence or absence of contamination. Two samples were collected from the footprint of former Building 12-1. The samples were field-screened for radiation and HE. Field screening was negative. One sample was submitted for laboratory analysis for inorganic chemicals, radionuclides, and HE. Lead and uranium-238 were detected at concentrations above BVs/FVs but below SALs. The RFI report recommended NFA for AOC C-12-001.
C-12-002	In Progress	AOC C-12-002 was the control building (Building 12-2) for the TA-12 (L-Site) firing sites. It was built in 1945 of wood frame construction and was 8 ft x 8 ft x 8 ft, with soil fill on three sides and on top. The structure was located south of Redondo Road, about 3000 ft east of the former TA-12 entrance. Use of L-Site was discontinued in 1953; intentional burning in 1960 destroyed Building 12-2. A 1959 survey indicated that the building was contaminated with HE. The site is considered a buffer zone and is currently not used for any LANL operations.

		The ER Project conducted an RFI at this site in 1995 to determine the presence or absence of contamination. Two samples were collected from the footprint of the control building and field-screened for radiation and HE; field-screening was negative. One of the samples was submitted for laboratory analysis for inorganic chemicals, radionuclides, and HE. No chemicals were detected at concentrations above BVs/FVs. The RFI report recommended NFA for AOC C-12-002.
C-12-003	In Progress	AOC C-12-003 was the HE storage magazine (Building 12-3) for the TA-12 (L-Site) firing sites. It was built in 1944 and was of wood-frame construction and measured 6 ft x 6 ft x 7 ft, with soil fill on three sides and on top. The structure was located north of Redondo Road, about 3000 ft east of the former TA-12 entrance. Use of L-Site was discontinued in 1953 and intentional burning in 1960 destroyed Building 12-3. A 1959 survey indicated that the building was contaminated with HE. The site is considered a buffer zone and is currently not used for any LANL operations. The ER Project conducted an RFI at this site in 1995 to determine the presence or absence of contamination. Two samples were collected: one within the magazine footprint and one 5 ft downgradient. The samples were field-screened for radiation and HE; field-screening was negative. One of the samples was submitted for laboratory analysis for inorganic chemicals and HE. No chemicals were detected at concentrations above BVs. The RFI report recommended NFA for AOC C-12-003.
C-12-004	In Progress	AOC C-12-004 was the generator building (Building 12-5) for the TA-12 (L-Site) firing sites. A fuel-oil barrel holder remains at the site. Building 12-5 was a wood-frame building that originally was located adjacent to a former junction box (structure 12-6) but was relocated 10 ft north of the former control building (Building 12-2) in 1952. Use of Building 12-5 was discontinued in 1953. A 1959 survey indicated the building was free of radioactive and HE contamination. The building was destroyed in 1960 by intentional burning. The site is considered a buffer zone and is currently not used for any LANL operations. The ER Project conducted an RFI at this site in 1995 to determine the presence or absence of contamination. Two samples were collected from the footprint of Building 12-5 and field-screened for radiation and HE; field-screening was negative. One of the samples was submitted for laboratory analysis for organic chemicals. No chemicals were detected at concentrations above BVs. The RFI report recommended NFA for AOC C-12-004.
C-12-006	Administratively Complete	
C-14-001	In Progress	AOC C-14-001 is the former site of a decommissioned magazine (structure 14-1) that was built in 1944 to serve the TA-14 firing sites. Structure 14-1 was located in a wooded area 300 ft west of the western complex at TA-14. Made of wood, it was 9 ft wide x 11 ft long x 8 ft high, with a soil berm on three sides and the top. In 1959 the magazine was reported contaminated with HE. It was burned and destroyed in 1963. The ER Project conducted an RFI at this site in 1995 to determine the presence or absence of contamination. Three samples were collected and field-screened for HE and radioactivity. No HE was detected, and radiation levels were below background screening values. The samples were submitted for laboratory analysis for inorganic chemicals and HE. Three inorganic chemicals were detected at concentrations above BVs but below SALs. One HE chemical was detected. An MCE was conducted for the four detected chemicals, which were eliminated from further consideration based on MCE results. The RFI report recommended NFA for the site.
C-14-002	Administratively Complete	
C-14-003	In Progress	AOC C-14-003 is the former site of a decommissioned HE-preparation building (structure 14-4). Made of wood, it was 12 ft wide x 25 ft long x 8 ft high. It was built in 1944 and removed in 1952. AOC C-14-003 is north of the current magazine (structure 14-22) in the central part of TA-14, within the loop made by the paved road that circles the magazine.

		The ER Project conducted an RFI at this site to determine the presence or absence of contamination. Two samples were collected and field-screened for HE and radiation. No HE was detected, and radiation levels were within background screening values. The samples were submitted for laboratory analysis for inorganic chemicals, radionuclides, and HE. One radionuclide was detected at concentrations above FV, and one HE chemical was detected above BV. Both detected analytes were below SALs. The RFI report recommended NFA for this site.
C-14-004	In Progress	AOC C-14-004 is the former site of an electronics shop (Building 14-7) that was built in 1945 and removed in 1952. It was located 75 ft west of a control building (Building 14-23), in the central part of TA-14. Made of wood, it was 15 ft wide x 24 ft long x 9 ft high. The ER Project conducted an RFI at this site to determine the presence or absence of contamination. Two samples were collected and field-screened for HE and radiation. No HE was detected, and radiation levels were within background screening values. The samples were submitted for laboratory analysis for organic chemicals. One organic chemical, 4-chloro-3-methyl phenol, was detected, and it has no SAL. It was not retained as a potential contaminant due to its low concentration and the lack of significant related compounds. The RFI report recommended NFA for this site.
C-14-005	In Progress	AOC C-14-005 is the former site of a decommissioned storage building (Building 14-8) in the central part of TA-14. It was located on the east side of the TA-14 access road, about 80 ft north of Building 14-6. Made of wood, it was 16 ft long x 6 ft wide x 9 ft high. Building 14-8 was built in 1944 and removed in 1952. The ER Project conducted an RFI at this site to determine the presence or absence of contamination. Two samples were collected and field-screened for HE and radiation. No HE was detected, and radiation levels were within background screening values. The samples were submitted for laboratory analysis for inorganic chemicals, total uranium, and HE. Three inorganic chemicals were detected at concentrations above BVs but below SALs, and were subjected to an MCE. Based on results of the MCE, no chemicals were retained as potential contaminants. No radionuclides or HE were detected. The RFI report recommended NFA for this site.
C-14-006	In Progress	AOC C-14-006 is the former site of a decommissioned HE magazine (structure 14-9) located 60 ft northwest of the current magazine (structure 14-22). Made of wood, it was 6 ft x 6 ft x 6 ft with a soil berm on three sides and on top. The structure was built in 1945 and removed in 1952. The ER Project conducted an RFI at AOC C-14-006 to determine the presence or absence of contamination. Two samples were collected and field-screened for HE and radiation. No HE was detected, and radiation levels were within background screening values. The samples were submitted for laboratory analysis for inorganic chemicals and HE. No inorganic chemicals or HE were detected. The RFI report recommended NFA for this site.
C-14-007	In Progress	AOC C-14-007 is the former site of a decommissioned storage building (structure 14-10) in the central part of TA-14, 160 ft west of a control building (Building 14-23). Made of wood, structure 14-10 was 10 ft long x 10 ft wide x 8 ft high. It was built in 1945 and removed in 1952. A small pile of bricks and mortar remains at the former site of structure 14-10. The ER Project conducted an RFI at this site to determine the presence or absence of contamination. Two samples were collected and field-screened for HE and radiation; no HE was detected, and radiation levels were within background screening values. The samples were submitted for laboratory analysis for inorganic chemicals, total uranium, HE, and organic chemicals. Three inorganic chemicals were detected at concentrations above BVs but below SALs. Total uranium was detected at concentrations above BVs. One HE chemical, 4-amino-2,6-dinitrotoluene, was detected; no other organic chemicals were detected. The HE chemical had no SAL. Because the detected level was near the detection limit and the compound is a degradation product of TNT, which was not detected at the site, the HE chemical was not retained as a potential

		contaminant. The RFI report recommended NFA for this site.
C-14-009	In Progress	AOC C-14-009 is the site of a former magazine (structure 14-13), which was built in 1945 to temporarily store explosives for use at the two firing pads at Building 14-5. It is located at the eastern end of TA-14, about 50 ft northeast of Building 14-5. Made of wood, it was 3 ft wide x 4 ft long x 3 ft high with a soil berm on three sides and the top. Structure 14-13 was used until the firing pads were inactivated in the mid-1950s. A 1959 survey noted that structure 14-13 was contaminated with HE, and it was destroyed by burning in 1960. The ER Project conducted an RFI at this site in 1995 to determine the presence or absence of contamination. Two samples were collected and field-screened for HE and radiation; no HE was detected, and radiation levels were below background screening values. The samples were submitted for laboratory analysis for inorganic chemicals and HE. One inorganic chemical was detected at concentrations above its BV but below SAL. The RFI report recommended NFA for this site.
C-15-001	In Progress	AOC C-15-001 is a pile of soil near inactive Firing Site G [SWMU 15-004(g)-00], which is located on the south side of TA-15. This pile of soil first was noted during a 1988 environmental restoration reconnaissance visit to Firing Site G, and was described as contaminated with radionuclides. This AOC is located south of the firing site, northwest of a carpenter shop (Building 15-233). The source of the soil comprising this AOC is unknown, as is the date that the soil pile was created. Previous investigations have not addressed AOC C-15-001 specifically, although they have addressed the general area that could have been impacted by SWMU 15-004(g), including the area occupied by AOC C-15-001. An aerial radiological survey in 1982 did not identify radionuclides above BVs at the firing site or adjacent areas. Several areas of radiological surface contamination at the firing site were identified, however, during surface surveys conducted during 1991 and 1996. The ER project conducted a Phase I RFI at this site in 1995 to determine whether contamination was present that could be associated with site activities. A surface sample was collected at each of two locations at this AOC. These samples were field-screened for radioactivity, inorganic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals and total uranium. Inorganic chemicals detected above BVs were chromium, copper, and silver; none was above its SAL. Uranium was detected above BVs, but was less than SAL based on systemic effects. Uranium also may have exceeded its SAL based on radiological effects, depending on whether the uranium was natural or depleted. Based on the results of this sampling, the RFI report recommended collecting additional samples at this AOC and analyzing them for isotopic uranium to determine whether the elevated uranium concentrations were due to natural or depleted uranium. These additional samples were collected in 1997; a surface and a shallow subsurface sample were collected from both 1995 sampling locations. These four samples were field-screened for radioactivity and HE and submitted for laboratory analysis for isotopic uranium. The results indicated that the uranium was natural uranium. Based on this determination, total uranium results from 1995 exceeded the SAL for natural uranium due to radiological effects. Results from the 1995 and 1997 sampling were used in a human health screening assessment. Based on the results of this assessment, the RFI report recommended NFA for AOC C-15-001. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report indicated that this site would be included as a potential contaminant source in the ecological risk assessment that would be performed once an ecological risk assessment methodology had been approved.
C-15-002	Administratively Complete	
C-15-003	Administratively Complete	
C-15-004	In Progress	AOC C-15-004 is a transformer station (structure 15-56) that was located 20 ft to 30 ft southwest of the control room for inactive Firing Site E-F (Building 15-27). This

		transformer station had two transformers (one 18-gal. transformer and one 30-gal. transformer), which were located on a 5-ft-long wood platform approximately 10 ft above the ground. The dates of installation are unknown, but they were removed from the site in 1989. The oil in these transformers reportedly was contaminated with PCBs, but the PCB concentration was not identified. The RFI work plan indicated that there was no evidence of leakage on the wood platform or on the soil beneath the platform. No previous investigations were conducted at this AOC. The ER Project conducted a Phase I RFI in 1994 to determine the extent, concentration, and depth profile of potential contaminants at this firing site. A surface sample was collected from each of two locations beneath the transformer station. These samples were field-screened for radioactivity and submitted for laboratory analysis for PCBs; none was detected. Based on these results, the RFI report recommended NFA for this AOC. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use.
C-15-005	In Progress	AOC C-15-005 is the site of a former laboratory and shop associated with inactive Firing Sites C and D (former Building 15-1), located in the northwest corner of TA-15. This former building is believed to have been constructed in the late 1940s to support experiments performed at Firing Sites C and D. Building 15-1 reportedly was demolished in 1962. The disposition of the demolition debris is unknown, but it may have been disposed of at nearby MDA N [SWMU 15-007(a)]. Information about the use of hazardous materials in this building is limited, but thorium contamination reportedly was discovered in the building and cleaned up. There was no reported use of HE or uranium in this building, though these materials were used at Firing Sites C and D. The septic tank associated with Building 15-1 may have been used to dispose of darkroom wastes from nearby Building 15-7 (AOC C-15-006). The only historical environmental survey at this site described in the RFI work plan was an aerial radiological survey conducted in 1982. This survey did not identify radiation above BVs at this site. The ER Project conducted a Phase I RFI at this AOC from June 1995 through March 1996 to determine whether contamination was present that could be associated with site activities. A surface and shallow (less than 2 ft deep) subsurface sample were collected from each of two sample locations at the former site of Building 15-1. All samples were field-screened for radioactivity, inorganic chemicals, and HE. One surface sample and both subsurface samples were submitted for laboratory analysis for inorganic chemicals, organic chemicals, isotopic thorium, and total uranium. Inorganic chemicals above BVs were lead, manganese, mercury, and zinc; none was present above SALs. Uranium was the only radionuclide present above its BV, but it was below its SAL. No organic chemicals were detected. The results of the sampling were used in a human health screening assessment. Based on the results of this assessment, the RFI report recommended NFA for AOC C-15-005. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report indicated that this site would be included as a potential contaminant source in the ecological risk assessment that would be performed after an ecological risk assessment methodology had been approved.
C-15-006	In Progress	AOC C-15-006 is the site of a former control room and dark room (Building 15-7) associated with inactive Firing Sites C and D, located in the northwest corner of TA-15. This former building is believed to have been constructed in the late 1940s to support experiments performed at Firing Sites C and D. Building 15-7 reportedly was demolished in 1962. The disposition of the demolition debris is unknown, but it may have been disposed of at nearby MDA N [SWMU 15-007(a)]. Information about the use of hazardous materials in this building is limited, but mercury and darkroom chemicals reportedly were used. A mercury spill reportedly occurred before 1953, but was cleaned up. Darkroom chemicals may have been disposed of in the septic tank at Building 15-1 (AOC C-15-005). There was no reported use of HE or uranium in this building, though

		these materials were used at Firing Sites C and D. The only historical environmental survey at this site described in the RFI work plan was an aerial radiological survey conducted in 1982. This survey did not identify radiation greater than BVs at this site. The ER Project conducted a Phase I RFI at this AOC from June 1995 through March 1996 to determine whether contamination was present that could be associated with site activities. A surface and a shallow (less than 2 ft deep) subsurface sample were collected from one sampling location at the former site of Building 15-7. All samples were field-screened for radioactivity, inorganic chemicals, and HE. The surface sample was submitted for laboratory analysis for inorganic chemicals, organic chemicals, isotopic thorium, and total uranium. No inorganic chemicals or radionuclides were present above BVs and no organic chemicals were detected. Based on these results, the RFI report recommended NFA for AOC C-15-006. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use.
C-15-007	In Progress	AOC C-15-007 consists of stained soil outside the west corner of a pulsed-power laboratory in one of the buildings (Building 15-194) on the west side of TA-15 called “the hollow.” This soil staining was noted during an environmental restoration site reconnaissance visit in 1988. When the RFI work plan was prepared, this soil had been covered with a metal transportainer (structure 15-372). The stained soil is adjacent to an asphalt-paved parking area. The material spilled at this location reportedly was oil; the site is located adjacent to an aboveground mineral oil storage tank (structure 15-261), which is surrounded by an asphalt berm. The timing of the release was not noted. There have been no prior investigations of this AOC. The RFI work plan noted that because the stained soil was covered by the transportainer, it did not pose an immediate hazard to occupational workers. The RFI work plan included this AOC within the sampling plan for former SWMUs 15-011(b), 15-011(c), 15-014(i), and 15-014(j), which are part of consolidated unit 15-009(a)-00. Samples were not to be collected directly at the site of AOC C-15-007, but would be collected at locations potentially impacted by runoff from AOC C-15-007. This sampling was included in the Phase I RFI conducted by the ER Project from June 1995 through March 1996. Based on the results of this sampling, NFA was recommended for former SWMUs 15-011(b), 15-011(c), 15-014(i), and 15-014(j). The RFI report, however, recommended deferring action at AOC C-15-007 until after structure 15-372 had been removed from the site. The ER Project prepared a plan for this sampling effort in 1997 that called for collecting surface and subsurface samples at and downgradient of the spill site after the transportainer was moved from the site. This sampling plan was implemented in August 1997. Four surface samples and twelve shallow (less than 36 in. deep) subsurface samples were collected from seven locations at and downgradient of the stained soil. Samples were field-screened for radioactivity, organic chemicals, and HE and submitted for laboratory analysis for inorganic chemicals, total uranium, and organic chemicals. Inorganic chemicals above BVs were copper and zinc; neither exceeded its SAL. Uranium was not detected above BVs. Sixteen organic chemicals were detected: acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, dibenzofuran, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, pyrene, and tetrachloroethene. Four of these organic chemicals were present above SALs: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and indeno[1,2,3-cd]pyrene. All organic chemicals present above SALs are PAHs, and their presence is not believed to be associated with site activities. The results of the Phase I RFI sampling were used in a human health risk-based screening assessment. Based on the results of this assessment, the RFI report recommended NFA for this AOC. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no unacceptable risk under projected land use. The RFI report indicated that this site would be included as a potential contaminant source in the ecological risk assessment that would be performed after an

		ecological risk assessment methodology had been approved.
C-15-008	Administratively Complete	
C-15-009	Administratively Complete	
C-15-010	In Progress	AOC C-15-010 is the former site of an underground fuel tank (structure 15-52) that was removed in 1989. This tank was located 15 ft south of the southeast corner of Building 15-20. Building 15-20 houses a shop and laboratory and is one of the buildings in an area on the west side of TA-15 called “the hollow.” Structure 15-52 was used to store diesel fuel; it was approximately 15 ft to 20 ft long x 7 ft in diameter and held 4000 gal. to 6000 gal. The top of the former tank was believed to have been 3 ft bgs. The RFI work plan did not indicate whether soil contamination or evidence of leakage was noted when the tank was removed, and it did not identify prior investigations of this AOC. The ER Project conducted a Phase I RFI from June 1995 to March 1996 to determine whether contamination was present that could be associated with site activities. A shallow subsurface sample (18 in. to 24 in. deep) was collected at each of two sample locations. When the Phase I RFI was conducted, a transportainer that covered part of the area of the former tank limited the area that could be sampled. The samples were field-screened for radioactivity, HE, and inorganic chemicals and submitted for laboratory analysis for uranium, inorganic chemicals, and organic chemicals. Inorganic chemicals above BVs were copper, lead, and zinc; none exceeded its SAL. Uranium was not present above FVs. Fourteen organic chemicals were detected: acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, chrysene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, 2-methyl-naphthalene, naphthalene, phenanthrene, and pyrene. Four of these organic chemicals were present above SALs: benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, and indeno[1,2,3-cd]pyrene. The results of the Phase I RFI sampling were used in a human health risk-based screening assessment, which indicated that potential contaminants were not present above PRGs. The RFI report noted, however, that contamination could be associated with the former fuel tank and that the Phase I sampling was not sufficient to characterize the nature and extent of this contamination. The RFI report recommended Phase II sampling at this AOC to further clarify nature and extent of the contamination at the site. Additional sampling at this site was conducted in 1997. Nineteen samples were collected from three boreholes (0-6.5 ft, 0-55 ft, and 0-33 ft) and submitted to an analytical laboratory for analysis of organic and inorganic chemicals. Sampling results indicated that TPH contamination was present beginning at approximately 10 ft. Maximum concentrations of TPH were observed in the 30 ft to 40 ft intervals and decreasing trending in TPH concentrations were noted from 40 ft down to a maximum borehole depth of 55 ft. Based on the results of the sampling, additional work will be conducted at this site.
C-15-011	In Progress	AOC C-15-011 is the former site of an underground steel fuel tank (structure 15-274) that was installed in 1973 and removed in 1987. This tank was located immediately south of Building 15-185, the power control building at the PHERMEX site in the southeast corner of TA-15. The former site of the tank now is an asphalt parking lot. The tank had a capacity of 218 gal. The RFI work plan indicated that staff responsible for removing the tank had reported that the bottom of the tank was 6 ft bgs. The RFI work plan did not indicate whether soil contamination or evidence of leakage was noted when the tank was removed, and it did not identify prior investigations of this AOC. The ER Project conducted a Phase I RFI from June 1995 to March 1996 to determine whether site activity-related contamination was present. Two subsurface samples were collected from one borehole at the former location of the tank. These samples were collected at depths of 6 ft bgs and 10 ft bgs. The samples were field-screened for

		radioactivity and submitted for laboratory analysis for organic chemicals. Acetone was the only organic chemical detected, but was not considered a potential contaminant because it is a common laboratory contaminant. Based on these results, the RFI report recommended NFA for AOC C-15-011. The basis for the NFA recommendation was that the site has been characterized and available data indicate that contaminants are not present or are present in concentrations that pose no acceptable risk under projected land use.
C-15-012	Administratively Complete	
C-15-013	Administratively Complete	AOC C-15-013 is an inactive underground fuel tank located near Building 15-184 at the PHERMEX site in the southeast corner of TA-15. This tank has a capacity of 200 gal. and is constructed of fiberglass. It was installed in 1977 during an upgrade to the PHERMEX facility and was used to store ethylene glycol. The RFI work plan indicated that the tank was no longer in use, but did not indicate when it was removed from service. The work plan did not indicate whether spills or releases had occurred when the tank was in service or whether the tank was emptied when it was removed from service, nor did it identify prior investigations of this AOC. Because this tank was not in use and ethylene glycol is not regulated under RCRA, the RFI work plan recommended NFA for this AOC. The basis for this NFA recommendation was that the AOC is regulated or closed under a different authority, which addresses corrective action.
C-16-001	Administratively Complete	
C-16-002	In Progress	AOC C-16-002 is potentially contaminated soil in the footprint of a decommissioned cooling tower (structure 16-262) that served an HE machining building (Building 16-260). The former cooling tower, built in 1946 at Building 16-42 and relocated to Building 16-260 in 1951, was located about 50 ft north of a walkway (structure 16-269) and 12 ft west of Building 16-260. It was made of wood and sat on a 3-ft-high concrete base. It was removed in 1957. The cooling tower's purpose is not known. Remains of the tower include a pile of rubble and two 2-in. cast-iron pipes that discharge into a drainage ditch. Suspect contaminants are chromates, given the age and nature of the unit (e.g., cooling tower), although no documentation exists stating that chromates were used. Addendum 2 of the OU 1082 work plan proposed sampling to detect chromate contamination at the outfall drainage [see SWMU 16-031(b)]; samples from the drainage will be representative of contamination, if any, at AOC C-16-002.
C-16-003	Administratively Complete	
C-16-004	Administratively Complete	
C-16-007	Administratively Complete	
C-16-008	Administratively Complete	
C-16-009	Administratively Complete	
C-16-010	Administratively Complete	
C-16-011	In Progress	AOC C-16-011 is potentially contaminated soil associated with the footprint of a former paint shop (Building 16-132). Building 16-132 was part of a Zia Company satellite maintenance area used for upkeep on S-Site buildings. The structural composition of Building 16-132 is not known. The maintenance area was built in 1944 and 1945 and was removed by 1955. It was located west of West Road, which was the only entry to S-Site before 1951 and formed the boundary of the HE exclusion zone. The maintenance area included the fire station. Suspect contaminants are HE. Addendum 2 of the OU 1082 work plan proposed sampling at AOC C-16-011 to detect residual organic chemicals on the disturbed surface of the site.

C-16-012	Administratively Complete	
C-16-013	Administratively Complete	
C-16-014	Administratively Complete	
C-16-015	Administratively Complete	
C-16-016	Administratively Complete	
C-16-017	Administratively Complete	
C-16-018	Administratively Complete	
C-16-019	Administratively Complete	
C-16-020	Administratively Complete	
C-16-021	Administratively Complete	
C-16-022	Administratively Complete	
C-16-023	Administratively Complete	
C-16-024	Administratively Complete	
C-16-027	Administratively Complete	
C-16-028	In Progress	AOC C-16-028 is the historic location of an instrument shop, Building 16-5. The shop was built in 1945 and removed in 1956. It was made of wooden-frame construction and was used to repair instruments such as gauges. Building 16-5 also has an inactive outfall, SWMU 16-026(s). Building 16-5 was located in the old TA-16 administration area. The administration area of S-Site was used primarily for activities that did not involve HE processing. Suspect contaminants are inorganic and organic chemicals. Addendum 1 of the OU 1082 work plan proposed sampling at the inactive outfall [SWMU 16-026(s)] to detect residual oil and solvents. Outfall sampling results would be used to determine the types of contaminants, if any, that may be associated with AOC C-16-028.
C-16-029	Administratively Complete	
C-16-030	In Progress	AOC C-16-030 is potentially contaminated surface soil associated with decommissioned tank housing (structure 16-181). The concrete tank housing was buried 1.5 ft in the soil. The building was constructed in 1948 and removed in 1956. It was located about 20 ft from a former diesel unit building [Building 16-182 (AOC C-16-031)] and about 40 ft northeast of a historic steam plant and machine shop (Building 16-7) in the old TA-16 administration area. The administration area of S-Site was used primarily for activities that did not involve HE processing. Addendum 1 of the RFI work plan stated that it is likely that the former tank housing was used to store fuel for the Building 16-182 diesel unit. Addendum 1 of the OU 1082 work plan proposed sampling at AOC C-16-030 to detect residual gasoline, oil, or diesel that may have spilled in the vicinity of the tank housing.
C-16-031	In Progress	AOC C-16-031 is potentially contaminated surface soil associated with a decommissioned diesel unit building (Building 16-182). The former diesel unit building was of wooden construction. The building was constructed in 1944 and removed in 1956. It was located about 20 ft from former structure 16-181 (AOC C-16-030) and about 40 ft northeast of historic Building 16-7, a steam plant and machine shop in the

		old TA-16 administration area. The administration area of S-Site was used primarily for activities that did not involve HE processing. Addendum 1 of the OU 1082 work plan proposed sampling at AOC C-16-031 to detect residual gasoline, oil, or diesel that may have spilled in the vicinity of the diesel unit building.
C-16-032	Administratively Complete	
C-16-033	Administratively Complete	
C-16-034	Administratively Complete	
C-16-035	Administratively Complete	
C-16-036	Administratively Complete	
C-16-037	Administratively Complete	
C-16-038	Administratively Complete	
C-16-039	Administratively Complete	
C-16-040	Administratively Complete	
C-16-041	Administratively Complete	
C-16-042	Administratively Complete	
C-16-043	Administratively Complete	
C-16-044	Administratively Complete	
C-16-045	Administratively Complete	
C-16-046	Administratively Complete	
C-16-047	Administratively Complete	
C-16-048	Administratively Complete	
C-16-049	Administratively Complete	
C-16-050	Administratively Complete	
C-16-051	Administratively Complete	
C-16-052	Administratively Complete	
C-16-053	Administratively Complete	
C-16-054	Administratively Complete	
C-16-055	Administratively Complete	
C-16-056	Administratively Complete	
C-16-057	Administratively Complete	

C-16-058	Administratively Complete	
C-16-059	Administratively Complete	
C-16-060	In Progress	AOC C-16-060 is potentially contaminated soil associated with a former storage structure (structure 16-479) that was 16 ft square x 8 ft high with a wooden floor. The structure was used at P-Site from 1944 to 1949. P-Site was constructed in 1944 to conduct flash x-ray studies of the implosion of HE test devices. It consisted of an office and shop building, laboratory and test buildings, an experimental chamber, a magazine, and a storage building. By the 1950s most of the buildings had been removed. Remaining buildings were incorporated into the S-Site complex. Structure 16-479 was located about 50 ft south of structure 16-480 [AOC 16-025(d2)] and may have been used to store materials used in the structure 16-480 mockup chamber. Structure 16-479 was moved to TA-33 for further use in August 1949. Addendum 2 of the OU 1082 work plan proposed sampling in the footprint of Building 16-479 to detect residual radionuclides on the disturbed surface.
C-16-061	Administratively Complete	
C-16-062	Administratively Complete	
C-16-063	Administratively Complete	
C-16-066	Administratively Complete	
C-16-069	In Progress	AOC C-16-069 is potentially contaminated media associated with a standard 8-ft x 13-ft x 7-ft Signal Corps trailer (structure 16-87) that was used as a machine shop for metallic parts in the historic GMX-2 area. The structures in GMX-2 were built primarily in the 1940s for experimental HE research and development activities. No production-scale HE volumes were processed in this area. The GMX-2 area ceased to be used as an active site in the early 1950s. Most of the structures in the GMX-2 area were intentionally destroyed by burning in 1960. Residual debris from burning and the remaining subsurface structures were cleaned up in 1966. Structure 16-87 was surveyed for hazardous materials, including HE, in the late 1950s; none was found. The trailer was returned to the AEC in 1957. Addendum 1 of the OU work plan proposed sampling in the footprint of structure 16-87 to detect residual petroleum hydrocarbons. One sample was collected form this site in 1997 and submitted to an offsite laboratory. The sample was analyzed for HE and organic chemicals. No HE constituents were detected and pyrene was the only organic chemical detected.
C-16-070	Administratively Complete	
C-16-071	Administratively Complete	
C-16-072	Administratively Complete	
C-16-073	In Progress	AOC C-16-073 is an underground gasoline storage tank believed to be located 6 ft from the southwest wall of an administrative building (Building 16-200) located outside the TA-16 HE exclusion zone. The tank has no structure number. The tank served an emergency generator located inside the basement equipment room of Building 16-200; it is assumed that the tank was installed in 1952 when Building 16-200 was built. The emergency generator power source was subsequently changed to natural gas, and it is likely that the tank was decommissioned when the conversion occurred. The tank was monitored for radioactivity in 1967 and none was detected. Preliminary survey results have not succeeded in locating this tank. Addendum 2 of the OU 1082 work plan proposed performing geophysical surveys to determine if the tank remains at the site. If it was removed, the work plan stated that it

		would be recommended for NFA. If it remains in place, the tank and associated lines will be removed under LANL's UST program.
C-16-075	In Progress	AOC C-16-075 is a newly identified spill location near an HE synthesis building (Building 16-340). This AOC was identified on January 30, 1997, during the excavation of a 15-ft x 15-ft x 2-ft concrete pad adjacent to the covered walkway of Building 16-340. Organic vapors (fuel-oil odor) were detected during the excavation. The soil was sampled for VOCs. Hydrocarbons were detected in the samples collected, consistent with a kerosene or light diesel oil. The only AOCs in the immediate area are AOCs 13-003(a) and 13-003(b), an inactive septic system that once served P-Site; however, no drainlines were discovered during the excavation and there was no obvious connection to AOCs 13-003(a) or 13-003(b). This area is considered to be the site of a one-time spill. The excavation was backfilled with the original soil.
C-18-001	Administratively Complete	
C-18-002	Administratively Complete	
C-18-003	Administratively Complete	AOC C-18-003 was originally identified in the 1990 SWMU report as a possible radioactive-waste storage area behind a staging area (structure 18-1). This site was inspected during RFI work plan preparation in 1992, and no waste storage area was present. Discussions with site personnel at that time indicated that no radioactive materials had been stored at this location for a number of years. No evidence of past releases at this site was identified in the 1990 SWMU report, and no previous environmental investigations have been conducted. The RFI work plan indicated that Phase I sampling could not be conducted at AOC C-18-003 because the exact location of the site is unknown. The RFI work plan also indicated that sampling at TA-18 storm sewer outfalls [AOCs 18-010(b), 18-010(c), 18-010(d), 18-010(e), and 18-010(f)] is designed to determine whether contamination is present from past storage of radioactive materials at TA-18, including storage that may have occurred at AOC C-18-003. Thus, the RFI work plan recommended NFA for AOC C-18-003. AOC C-18-003 was subsequently recommended for NFA in the March 1995 permit modification request. The basis for this recommendation was that the site has been closed under another authority that includes corrective action requirements.
C-20-001	Administratively Complete	
C-20-002	Administratively Complete	AOC C-20-002 is described in the 1990 SWMU report as the former location of a storage building (structure 20-12) and associated soil reported to be HE-contaminated soil. An engineering drawing shows structure 20-12 as a portable magazine, a skid-mounted wooden structure with interior dimensions of 6 ft by 6 ft by 7 ft, with an earth berm around it. According to engineering records this structure was built in 1945. A later LANL memo, written in 1959, identifies the structure as abandoned and details the various screenings (radiological, HE, and toxicity) conducted to characterize this and other LANL structures. This memo describes structure 20-12 as having no radiological contamination but does describe contamination from HE. A LANL memo of January 29, 1960, states that structure 20-12 was scheduled for demolition by burning and a memo of May 27, 1960, records the demolition. AOC C-20-002 was recommended for NFA in the RFI work plan. There was no documented release from this storage facility and the structure was completely burned in 1960; the potential for soil contamination appears remote.
C-20-003	Administratively Complete	AOC C-20-003 is described in the 1990 SWMU report as the former location of a magazine (structure 20-14) and associated soil reported to be HE-contaminated in the former TA-20. An engineering drawing shows structure 20-14 as a portable magazine, a skid-mounted wooden structure with interior dimensions of 9 ft by 11 ft by 7 ft, with an earth berm around the structure. According to engineering records this structure was built in 1945. A later LANL memo identifies the structure as abandoned and details the various screenings (radiological, HE, and toxicity) conducted to characterize this and other LANL structures. This memo describes structure 20-14 as having no radiological

		contamination but does describe contamination from HE. A LANL memo of January 29, 1960, states that structure 20-14 was scheduled for demolition by burning and a memo of May 27, 1960, records the demolition. AOC C-20-003 was recommended for NFA in the RFI work plan. There was no documented release from this storage facility and the structure was completely burned in 1960; the potential for soil contamination appears remote.
C-21-001	In Progress	AOC C-21-001 is the location of a hydrogen fluoride spill in a passageway identified as Structure 21-17. There is no documentation of the cleanup of the spill and additional information about the spill was unavailable at the time that the OU 1106 work plan was written. Structure 21-17 was removed in 1969.
C-21-002	Administratively Complete	
C-21-003	Administratively Complete	AOC C-21-003 is the location of unknown releases to the paved area between Building 21-2 and former Building 21-3. Cleanup reports exist for these releases supporting pursuit of an NFA determination. This AOC was proposed for NFA in the OU 1106 work plan. A permit modification request was submitted in 1995.
C-21-004	Administratively Complete	AOC C-21-004 is the location of a possible radionuclide and hazardous waste release to asphalt driveways at Building 21-2. The soil was removed and the area was repaved. This AOC was proposed for NFA in the OU 1106 work plan. A permit modification request was submitted in 1995.
C-21-005	In Progress	AOC C-21-005 is the location of a release of americium-241 and plutonium on the west side of a former waste treatment plant (Building 21-257) [former SWMU 21-011(a)]. The spill resulted from a 1959 fire in a filter in a former laboratory building (Building 21-5). The resulting contamination was cleaned up at that time. The OU 1106 work plan stated that this AOC would be addressed in conjunction with the investigation of former SWMU 21-011(a), which subsequently has been consolidated to SWMU 21-016(a)-99.
C-21-006	In Progress	AOC C-21-006 is the location of a 1977 release of americium-241 from a leaking transport trailer near a laboratory building (Building 21-2). The contaminated area was covered with asphalt. There is no documentation of the cleanup of the spill and additional information about the spill was unavailable at the time that the OU 1106 work plan was written. Investigation of AOC C-21-006 will be conducted at the time Building 21-02 undergoes D&D.
C-21-007	In Progress	AOC C-21-007 is the location of a 1982 spill from a tank vent at a former waste treatment plant (Building 21-257) [former SWMU 21-011(a)]. The spill contaminated the building's roof, wall, and surrounding area with low levels of plutonium, americium, and uranium. The spill was reportedly cleaned up. The OU 1106 work plan stated that this AOC would be addressed in conjunction with the investigation of former SWMU 21-011(a), which subsequently has been consolidated to SWMU 21-016(a)-99, MDA T.
C-21-008	Administratively Complete	AOC C-21-008 is the location of a release of radioactive material from a process exhaust line at former Building 21-4. The affected soil was excavated. A cleanup report about this incident was written. This AOC was proposed for NFA in the OU 1106 work plan. A permit modification request was submitted in 1995.
C-21-010	Administratively Complete	
C-21-011	Administratively Complete	
C-21-013	Administratively	

	Complete	
C-21-014	Administratively Complete	
C-21-015	Administratively Complete	AOC C-21-015 is former Building 21-45 and its associated appurtenances, originally located at 15th Street and Trinity Drive. In 1947, the building was moved to the north side of DP Road north of the former DP laundry building (Building 21-20). Initially the building (Buiding 21-45) was used for safety training. In 1949, Building 21-45 was renovated for the Industrial Waste Studies Group, a LANL group that studied various waste streams in an attempt to recover more plutonium and uranium as well as other valuable and scarce materials. The northwest restroom of the building was converted into a waste treatment room so that waste could be transferred to the DP laundry building via steel piping. The conversion included building an 8-ft by 6-ft by 4-ft pit that drained to a 3-ft by 3.5-ft by 2.5-ft concrete sump. The liquid waste-handling equipment was positioned over the pit and the sump. A steel pipe exited the sump and was routed underground and ran to the west where it was routed aboveground and attached to an existing aboveground steam line. The steam line and the pipe passed over DP Road and continued aboveground into the former laundry building and the main laundry sump. The laundry sump discharged to the MDA V absorption beds. It is unknown whether a release from this system occurred. Building 21-45 was declared free of contamination and sold for salvage intact in 1954. The concrete sump and underground pipes were reportedly abandoned in place in 1954.The aboveground section of the steel pipe is no longer in place. AOC C-21-015 was proposed for NFA in the OU 1106 work plan. Subsequent historical research and field reconnaissance surveys indicated that a concrete sump and underground piping were left in place after the building was removed in 1954. Also, the operational history was different than was known at the time the work plan was prepared and the NFA was proposed. There were no previous field investigation activities at AOC C-21-015 prior to 1999. A VCA Plan for SWMU 21-024(f) and AOC C-21-015 was prepared in 1999. Initial VCA activities were conducted in 1999. These activities included locating the septic tank [SWMU 21-024(f)] and sump (AOC C-21-015) and collecting waste characterization samples from these structures. VCA activities were continued in 2001. Remediation activities began by exposing the sides of the concrete sump and locating the sump outlet line with a backhoe. The entire length of the exposed sump outlet line was field screened for radioactivity. Field screening measured no elevated radiation levels. Inspection of the line showed it to be in good condition and the treaded fittings appeared to be intact. No soil staining was observed beneath the line during and following removal. Fourteen confirmation samples were collected from seven locations along the outline following its removal to bias sample locations to areas where releases would have most likely occurred. The samples were submitted for fixed laboratory analysis for organic chemicals, inorganic chemicals, and radionuclides. The concrete sump, including its contents, was excavated and removed. The concrete sump was disposed of at TA-54, Area G. The outside walls and bottom of the sump were inspected and no cracks or staining was observed. Confirmation samples were collected from borehole locations beneath and down gradient of the former sump. The samples were submitted for fixed laboratory analysis for organic chemicals, inorganic chemicals, and radionuclides. The excavation was backfilled and the surface was regarded. Six samples were collected from the footprint of former Building 21-45, three from the shallow soil and three from tuff. The three surface soil confirmation samples were collected from 0-6 in. within the footprint of the building. The sample locations were distributed throughout the building footprint. The confirmation samples from the second depth interval were collected at locations immediately adjacent to the surface sample

		locations within the building footprint. All samples were submitted for fixed laboratory analysis for organic chemicals, inorganic chemicals, and radionuclides. In 2002, ten additional samples were collected from five of the confirmation sample locations from two depth intervals and analyzed for radionuclides to confirm that the nature and extent of radionuclides detected in the sump contents had been adequately defined. Organic chemicals were detected in the VCA confirmation samples. All organic chemicals detected in the confirmation samples were identified as potential contaminants. A human health screening assessment was conducted and no organic chemicals were retained as potential contaminants. An ecological screening evaluation was conducted and no organic chemicals were retained as potential ecological contaminants. Inorganic chemicals were detected above BVs. Based on the results of the data review several inorganic chemicals were identified as potential contaminants. A human health screening assessment was conducted and no inorganic chemicals were retained as potential contaminants. An ecological screening evaluation was conducted and no inorganic chemicals were retained as potential ecological contaminants. Radionuclides were detected above BVs/FVs. Based on the results of the data review several radionuclides were identified as potential contaminants. A human health screening assessment was conducted and no radionuclides were retained as potential contaminants. An ecological screening evaluation was conducted and no radionuclides were retained as potential ecological contaminants.
C-21-016	Administratively Complete	
C-21-017	Administratively Complete	
C-21-018	Administratively Complete	
C-21-019	Administratively Complete	
C-21-020	Administratively Complete	
C-21-021	Administratively Complete	
C-21-022	Administratively Complete	AOC C-21-022 is the location of a former laboratory (Building 21-34) that was demolished and disposed of at TA-54, Area G. In the OU 1106 work plan, this site was discussed as one of a group of AOCs where no documented releases had occurred or where releases had occurred but cleanup had been conducted and documented. A permit modification request for this AOC was submitted in 1995.
C-21-023	Administratively Complete	AOC C-21-023 is the location of a former laboratory (Building 21-54) and the associated soil. The laboratory was demolished and disposed of at TA-54, Area G. In the OU 1106 work plan, this site was discussed as one of a group of AOCs where no documented releases had occurred or where releases had occurred but cleanup had been conducted and documented. A permit modification request for this AOC was submitted in 1995.
C-21-024	Administratively Complete	AOC C-21-024 is the location of a former warehouse (Building 21-22) and the associated soil. The warehouse was demolished and disposed of at TA-54, Area G. In the OU 1106 work plan, this site was discussed as one of a group of AOCs where no documented releases had occurred or where releases had occurred but cleanup had been conducted and documented. A permit modification request for this AOC was submitted in 1995.

C-21-025	Administratively Complete	AOC C-21-025 is the former location of a corridor at former Building 21-19 that was contaminated with radionuclides. The building was demolished in 1965. In the OU 1106 work plan, this site was discussed as one of a group of AOCs where no documented releases had occurred or where releases had occurred but cleanup had been conducted and documented. A permit modification request for this AOC was submitted in 1995.
C-21-026	Administratively Complete	
C-21-027	In Progress	AOC C-21-027 is the location of a former cooling tower (structure 21-143) that received water from Building 21-3, then circulated it and returned it to the building in a closed loop. The cooling tower occupied an area of 10 ft x 20 ft. The aboveground portion of the structure was removed, along with the south part of Building 21-3, in 1994 during D&D. The below ground portion was removed in 1995. No information was available from previous investigations to determine if contamination remained at the site. AOC C-21-027 was selected for a VCA that began in 1994 when D&D workers removed the aboveground structures; and continued in April 1995 when the below ground structure was removed. Three confirmatory samples from one location in the center of the footprint of the cooling tower were collected. Samples were analyzed for metals, radionuclides, and organic chemicals. Analytical results indicated that no concentrations were reported above SALs. The VCA report concluded that the D&D activities had accomplished all necessary remediation at AOC C-21-027 and recommended NFA at the site.
C-21-029	Administratively Complete	AOC C-21-029 is the location of a former aboveground 1,000-gal. steel oil tank (structure 21-60) that was removed. This AOC was proposed for NFA in the OU 1106 work plan. A permit modification request for this AOC was submitted in 1995.
C-21-030	Administratively Complete	
C-21-031	Administratively Complete	AOC C-21-031 is a half-buried 5,200-gal. stainless steel tank (structure 21-325). In the OU 1106 work plan, this site was discussed as one of a group of AOCs where no documented releases had occurred or where releases had occurred but cleanup had been conducted and documented. The work plan proposed NFA for this site.
C-21-032	Administratively Complete	AOC C-21-032 is a standby diesel generator in the basement of a laboratory building (Building 21-152). The generator is served by a 300-gal. day tank and a 1,000-gal. underground tank. . In the OU 1106 work plan, this site was discussed as one of a group of AOCs where no documented releases had occurred or where releases had occurred but cleanup had been conducted and documented. The work plan proposed NFA for this site.
C-21-033	In Progress	AOC C-21-033 is the location of a 1976 TRU cement paste spill that occurred when radioactively-contaminated cement was being pumped from a waste disposal plant (Building 21-257) into shafts between absorption beds 1 and 3 at MDA T. The exact location of the spill is unknown. The OU 1106 work plan stated that this AOC would be addressed in conjunction with the investigation of former SWMU 21-011(a), which subsequently has been consolidated with SWMU 21-016(a)-99, MDA T.
C-21-034	In Progress	AOC C-21-034 is the location of a former 1,000-gal. raffinate holding tank (structure 21-91). In 1957, the tank was installed at the southwest corner of a waste disposal laboratory (Building 21-35). Subsequently, the tank was removed and disposed of at TA-54, Area G. The OU 1106 work plan stated that the location of this former tank, adjacent to Building 21-35, would be investigated in conjunction with the investigation of former SWMUs 21-010(a-h), which subsequently have been consolidated to SWMU 21-016(a)-99, MDA T.
C-21-035	In Progress	AOC C-21-035 is the location of a former aboveground acid holding tank (structure 21-110) that was located on the south side of a waste disposal laboratory (Building 21-35).

		In 1967, it was relocated from the area near Building 21-35 to Building 21-257, a waste disposal plant. The OU 1106 work plan stated that this AOC would be addressed in conjunction with the investigation of former SWMUs 21-010(a-h), which subsequently have been consolidated with SWMU 21-016(a)-99, MDA T.
C-21-036	In Progress	AOC C-21-036 is the location of a former aboveground acid holding tank (structure 21-111) that was located on the south side of a waste disposal laboratory (Building 21-35). In 1967, the tank was relocated to Building 21-257, a waste disposal plant. The OU 1106 work plan stated that this AOC would be addressed in conjunction with the investigation of former SWMUs 21-010(a-h), which subsequently have been consolidated to SWMU 21-016(a)-99, MDA T.
C-21-037	In Progress	AOC C-21-037 is the location of a former 2,000-gal. aboveground acid tank (structure 21-256). The tank was originally located at the southwest corner of a waste disposal laboratory (Building 21-35). In 1967, the tank was relocated to Building 21-257, a waste disposal plant. The OU 1106 work plan stated that this AOC would be addressed in conjunction with the investigation of former SWMUs 21-010(a-h), which subsequently have been consolidated to SWMU 21-016(a)-99, MDA T.
C-25-001	Administratively Complete	
C-31-001	Administratively Complete	PRS C-31-001 consists of the soil beneath former structure locations and the paved parking area. The structures included several warehouses, a loading dock, and an oil drum storage site. No chemicals were routinely stored at the site during its operation. The only liquid storage documented was oil products. The storage yard was paved, which protected soils from liquid spills. Any possible contamination would have been removed during decommissioning (exact date unknown).
C-32-001	Administratively Complete	
C-33-001	In Progress	AOC C-33-001 consists of a former pad-mounted power transformer (structure 33-124) that was located adjacent to the east wall of Building 33-114 in the Main Site area of TA-33. This transformer was placed into service in the 1950s and the oil in the transformer may have contained PCBs. The transformer and pad were surrounded by Building 33-114 and by a paved parking area. The pad was enclosed by a fence and was accessible only through a locked gate. The pad reportedly had oil stains, but active leaks from the transformer were not observed during inspections conducted in September 1985 and March 1992. The transformer was replaced in 1992 as part of activities conducted under TSCA; sampling conducted at that time was limited to areas where the transformer was placed temporarily during removal. No previous environmental investigations have been conducted at this site. The 1992 RFI work plan indicated that the transformer pad would be cleaned and sampled during transformer replacement; therefore, the RFI work plan proposed no additional sampling. The ER project conducted Phase I RFI activities at TA-33 during 1993. At that time, the ER Project determined that sampling conducted during transformer replacement did not meet the RFI objectives. The RFI report, therefore, recommended additional sampling to determine whether historic releases of PCBs had occurred. The proposed sampling included field-screening stained areas on the concrete pad and soil around the perimeter of the pad. If field-screening detected PCBs in soil at the perimeter of the pad, additional screening samples were to be collected at greater distances from the pad until the extent of PCB contamination had been bounded. In 1996 the sampling was conducted at AOC C-33-001 but no report was written. Five samples were collected and submitted to an offsite laboratory for analysis for organic chemicals. Fifteen organic chemicals were detected, but only seven were detected above SALs.

		A Best Management Plan was written and implemented in 1999 consisting of a PCB clean up conducted using a vacuum system on an asphalt area within the Main Site area of TA-33 between Buildings 33-113 and 33-114. The field team began by vacuuming the area closest to the transformer pads next to Building 33-114 then continued to pickup any sediment that was present in low laying depressions on the asphalt. Special emphasis was placed within cracks and potholes that had developed over the years. Also a low-grade slope from Building 33-114 east between Buildings 33-113 and 33-39 was followed that could potentially carry off surface sediment during storm events. A total volume of 55-gallons of material was collected.
C-33-002	In Progress	AOC C-33-002 is a former power transformer (structure 33-95) that was located adjacent to structure 33-87, which is a firing site bunker in the East Site area of TA-33. Structure 33-95 was located within a concrete-walled vault. The vault is covered by a soil berm that was constructed to provide protection from nearby gun-firing sites [former SWMUs 33-006(b) and 33-007(a)]. This transformer was placed into service in the 1950s and the oil in the transformer may have contained PCBs. Structure 33-95 was placed on the concrete floor of the vault and the floor reportedly had oil stains. Active leaks from the transformer were not observed, however, during inspections conducted in September 1985 and March 1992. The transformer was replaced in 1992 as part of activities conducted under the TSCA. Sampling performed during transformer replacement was limited to sampling where the transformer had been placed temporarily during removal. No previous environmental investigations have been conducted at this site. The 1992 RFI work plan indicated that the transformer pad would be cleaned and sampled during replacement; therefore, the RFI work plan proposed no additional sampling. The ER project conducted Phase I RFI activities at TA-33 during 1993. At that time, the ER Project determined that the sampling conducted during transformer replacement did not meet the RFI objectives. The RFI report, therefore, recommended additional sampling to determine whether historic releases of PCBs had occurred. Sampling was conducted in 1996 at AOC C-33-002 but was not documented. Four samples were collected and submitted to an offsite analytical laboratory for analysis of PCBs. Seven PCBs were detected above BVs and six of these detected PCBs were detected above SALs.
C-33-003	In Progress	AOC C-33-003 consists of two former fill areas located at the Main Site area of TA-33. Fill was placed in these areas to provide level sites for portable trailers. One of these trailers (structure 33-169) was installed next to the water tower at Main Site; the fill for this site was approximately 100 ft x 100 ft x 4 ft deep. The other trailer (structure 33-170) was installed north of Building 33-114; the fill for this site was approximately 70 ft x 90 ft x 7 ft deep. Both trailers were installed in January 1984 and removed in June 1988. After the trailers were removed, no further improvements were made to these sites. Three projectiles, one of which contained uranium, were discovered at the fill area near the water tower during brush-clearing activities conducted during the spring of 1996. The source of these projectiles appears to have been the fill material, which was obtained from the cinder cone located in Area 6, just west of Main Site. Projectiles historically were fired into catcher boxes at the base of the cinder cone during experiments conducted at the Area 6 firing area [former SWMU 33-007(c)]. Previous environmental investigations at AOC C-33-003 consist of geophysical investigations conducted at both fill areas in 1997. The results of these surveys included anomalies that may be indicative of other projectiles. No other environmental investigations have been conducted at this site. AOC C-33-003 was not included in the RFI work plan for TA-33 because it was discovered after the work plan was prepared. The ER Project prepared and implemented a VCA plan for former SWMUs 33-007(b) and 33-010(c) and AOC C-33-003 in 1999. As part of the VCA, the RESRAD model was used to establish VCA cleanup standards for uranium. At AOC C-33-003, fill material was excavated until native soil or tuff was encountered. A total of 408.5 cu yd

		of fill material was excavated. Radiation surveys of the excavated areas showed no readings greater than 2 times background. Confirmation samples were collected to verify that cleanup levels had been achieved. Confirmation samples consisted of a surface and subsurface sample collected at each of four locations at each site. These samples were submitted for laboratory analysis for inorganic chemicals, isotopic uranium, and organic chemicals. Two additional samples were collected from the drainage at the site near the water tower (there is no drainage at the other site). These samples were submitted for laboratory analysis for inorganic chemicals and isotopic uranium. The excavated material was transported to an SGS treatment plant, where radioactive materials were separated from the fill. A total of 1.45 cu yd of contaminated fill was separated and disposed of as low-level radioactive waste. Three samples of the treated fill were collected to verify decontamination. Two of these samples were submitted for laboratory analysis for inorganic chemicals, total uranium, tritium, and organic chemicals. The other sample was submitted for laboratory analysis for isotopic uranium and organic chemicals. The decontaminated fill then was returned to the site and the site was restored and revegetated. Inorganic chemicals detected above BV in the confirmation samples from the excavated areas were antimony, barium, calcium, cobalt, copper, lead, magnesium, nickel, and selenium. Radionuclides detected above BV/FV in the confirmation samples from the excavated areas were tritium, uranium-234, and uranium-238. Total uranium concentrations were below the VCA cleanup levels. Nineteen organic chemicals were detected in confirmation samples from the excavated areas: anthracene, Aroclor-1254, Aroclor-1260, benzene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, bis[2-ethylhexyl] phthalate, chrysene, di-n-butyl phthalate, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene, pyrene, toluene, and trichloroethene. The VCA report did not compare sampling results to SALs or use the data to perform human health risk-based screening assessments. The VCA report stated that further work at this AOC would be addressed as part of the Chaquehui Canyon aggregate.
C-35-001	Administratively Complete	
C-35-002	Administratively Complete	
C-35-003	Administratively Complete	
C-35-004	Administratively Complete	
C-35-005	Administratively Complete	
C-35-006	Administratively Complete	
C-35-007	In Progress	AOC C-35-007 consists of non-indigenous sand and gravel piles located along an unpaved access road north of the sand filter beds, former SWMU 35-010(d) now included in consolidated SWMU 35-010(a)-99, in Ten Site Canyon. The Ten Site Canyon WWTP, SWMU 35-010(a)-99, consisted of three lagoons, a sand filter treatment unit, and an effluent outfall that collectively operated from 1975 to 1992. The sand and gravel material may consist of clean material for use in the sand filters and/or used materials that have been removed from the filters. Several 3-ft-high sand and gravel piles are stored on the flat floor of a borrow quarry. Tuff was removed from the quarry, leaving behind a 30-ft-high tuff wall embankment. The piles are composed of varying material sizes, from sand and pea gravel to gravel that is 1 and 2 in. in diameter. Evidence that large gravel piles were previously stored at the quarry site is present near the center of the quarry. A large area of gravel veneer, 1.5 in. in diameter, is present on the ground and thin veneers of gravel are present on the quarry embankment wall approximately 20 ft above the present ground level. This gravel may represent material that was stored for use in the filter beds. Crushed pea gravel similar to the material in two of the filter beds is found on a roadway at the east end of the filter beds, on the slope above the filter beds, and south of the access road. Two gravel piles in the eastern part of the quarry contain pieces of old weathered red clay tile sewage

		pipe similar to pieces that are scattered on the road south of the filter beds. Phase I RFI samples were collected in 1995. These 13 samples were submitted for inorganic and organic chemical and radiological analysis. Inorganic chemicals were detected above BVs. Radiological results were within FVs. No organic chemicals were detected. No chemicals were detected above SALs. The SAP for Middle Mortandad/Ten Site Aggregate prepared in March of 2002 tabulates an additional 20 samples collected at AOC C-35-007 in 1998. These samples were analyzed for organic and inorganic chemicals and radionuclides. Calcium was the only inorganic chemical detected above BVs. Several SVOCs, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, and benzoic acid, were detected and all at less than 0.06 ppm. Aroclor-1254 was detected in 1 sample. Alpha spectroscopy analysis detected plutonium-238 and plutonium-239 above FVs in 1 sample. Gamma spectroscopy, strontium-90, and tritium were not detected.
C-35-008	Administratively Complete	
C-36-001	Administratively Complete	PRS C-36-001 was a safety vessel that provided secondary containment for explosives tests. The vessel was manufactured in 1970 and placed at the PHERMEX test facility at TA-15. Later the vessel was moved to the I-J Firing site near TA-36-55 until 1983. The unused vessel was removed from the site in 1994 [PRS 36-004(e)]. PRS C-36-001 was decontaminated prior to disposal at MDA G.
C-36-002	Administratively Complete	
C-36-003	In Progress	SWMU C-36-003 consists of an outfall located on the south rim of Threemile Canyon north of an office and laboratory building (Building 36-1). SWMU C-36-003 is believed to have become operational during the 1950s, but the outfall is no longer in use. The outfall was formerly used to discharge wastewater from a photo-processing unit located in Building 36-1. When the photo-processing unit was operational, the outfall reportedly discharged a steady stream of liquid that ran downstream for approximately 35 ft. These discharges supported growth of heavy vegetation in the area of the outfall. SWMU C-36-003 operated as NPDES-permited Outfall 06A106 and was removed from the permit January 11, 1999. Contaminants typically associated with photo-processing wastes include silver, thiosulfate, and organic chemicals. Previous environmental investigations at SWMU C-36-003 include sampling of the outfall performed in support of the NPDES permit. Samples collected in 1990 showed low levels of cyanide. Samples collected after 1989 showed silver to be present above the SAL for water. The ER Project conducted a Phase I RFI at SWMU C-36-003 in 1994 to determine the presence, concentration, and migration of potential contaminants at the site. Two surface soil samples and two water samples were collected at one location just below the outfall. Water from a source in Building 36-1 was flushed through the drainline and outfall in order to provide water for sampling. In addition, a surface soil sample was collected at each of five locations in the drainage channel along the canyon wall below the outfall. Sample locations were selected at areas where sediments had accumulated. All samples were screened in the field for radioactivity and organic chemicals and submitted for laboratory analysis for inorganic chemicals and organic chemicals. Seven inorganic chemicals were detected above BVs in soil samples; but only two of these inorganic chemicals (chromium and silver) were detected above SALs. One inorganic chemical was also detected in the water samples but was below its SAL. Seventeen organic chemicals were detected in soil samples. Seven of these organic chemicals were detected above SALs. The results of the organic analyses also tentatively identified mixed aroclors (PCBs) above SALs in soil. No organic chemicals were detected in the water samples. The results of the Phase I RFI were used to conduct a human health risk-based screening assessment. The results of this assessment indicated that maximum chromium concentrations in soil exceeded the PRG for hexavalent chromium and that additional characterization of chromium contamination was needed. In addition, because PCBs tentatively were identified above SALs, additional characterization of potential PCB contamination was needed. The RFI

		report, therefore, recommended Phase II sampling and analysis for SWMU C-36-003.
C-36-006(e)	In Progress	AOC C-36-006(e) consists of an inactive projectile test area located at the active I-J Firing Site [AOC 36-004(e)]. This site was used to conduct tests where depleted uranium projectiles were fired from a 120-mm gun into an embankment. Some of the projectiles were reportedly recovered, but much of the projectile material remains on the site. AOC C-36-006(e) was originally located in TA-15 and was identified in the 1990 SWMU report as SWMU 15-006(e). In 1981, the boundary of TA-36 was expanded to include I-J Site. AOC C-36-006(e) is located at the west end of TA-36 on Mesita del Potrillo, along the north rim of Potrillo Canyon. The dates of operation of this projectile test area are not known, but the I-J Firing Site has been active since 1948. Previous investigations conducted at I-J Site consist of a surface radiological survey conducted in 1991 that identified hot spots up to 255,000 counts per minute. Numerous pieces of depleted uranium and oxidized depleted uranium were reportedly present around the site. Because AOC C-36-006(e) is located within an active firing site, the RFI work plan indicated that investigation and, if necessary, remediation of this site would be deferred until the firing site is decommissioned. However, the need for an interim action was identified on the basis of the presence of visible pieces of depleted uranium around the site. The ER Project prepared an interim action plan in 1997 that called for removal of visible pieces of uranium from the firing site and surrounding area. This interim action plan addressed AOC C-36-006(e), as well as two other AOCs at I-J Site [AOC 15-008(f) and AOC 36-004(e)].
C-40-001	Administratively Complete	
C-41-001	Administratively Complete	Sump - Duplicate of 41-003
C-41-002	Administratively Complete	
C-41-003	Administratively Complete	Former industrial waste underground tank - never located
C-41-004	In Progress	AOC C-41-004 is the storm drain system surrounding a laboratory (Building 41-4). The system has seven storm drainage catch basins/manholes (structures 41-22 through 41-28). Although there are no indications of contaminant releases to the system, operational tritium releases from the emission stacks located between Building 41-4 and Building 41-30 (office building) may have resulted in surface contamination of the storm drain system. Suspect contaminants are radionuclides and inorganic chemicals. The OU 1098 work plan proposed a Phase I investigation at AOC C-41-004 to sample catch basins and outfalls of the storm drains to assess the presence or absence of contamination.
C-41-005	Administratively Complete	Underground tank Mystery tank - duplicate of C-41-003
C-43-001	In Progress	AOC C-43-001 is a storm drain outfall that flows into Los Alamos Canyon. It collects runoff from the HRL (Building 43-1) loading dock and also functions as the overflow from the lift station (structure 43-10). The overflow line is 8-in. VCP that extends from structure 43-10 130-ft south to a manhole. A 12-in. corrugated metal pipe, containing discharge from two storm drains and any effluent from the overflow, flows southwest for 160 ft and drains into the canyon south of the HRL. The sanitary waste lines for the HRL [SWMUs 43-001(a1) and 43-001(a2)] may have become clogged at some time, causing an overflow. Any sanitary waste carried through the sewer lines could have discharged into the storm drains. Although no documentation was found about any routine releases into the storm drains, the outfall may have received radioactive, non-sanitary cooling water. The HRL was completed in 1952. TA-43 was established in 1953 when LANL's former H Division, which conducted biomedical and industrial hygiene research, first occupied the HRL. The original emphasis was a mixture of basic and applied research to assess health effects of radiation and materials associated with LANL operations. Industrial

		hygiene activities were relocated to TA-59 in 1966 and since then the focus at the HRL has been on biomedical research conducted by the LS Division. No quantitative historical data exist about the concentration or potential contaminants at SWMU 43-001(a1). In 1973, the HRL was listed as having low contamination of transuranics, fission products, and tritium. For some years, wastes in the sewer lines were composite-sampled and analyzed for radioactivity three times a week. Radioactivity was found to be less than 1/10 of the Table II AEC Manual 0524 guidelines. In 1975, containers for radioactive wastes were placed in laboratories that generated such wastes. The wastes were sent to TA-50 for treatment. The OU 1136 work plan proposed sampling at the outfall and in its drainage to determine the presence or absence of contaminants.
C-46-001	In Progress	AOC C-46-001 is described as a spill of 0.55 lb to 1.1 lb of mercury near a warehouse (Building 46-75) on July 22, 1975. All visible mercury was cleaned up at that time, although no precise spill location was given in the documentation. Aerial photos and the term “scraped up,” used in the documentation of this spill, indicated the area was paved. Existing information indicates runoff from the site would be directed toward the west end of SWSC Canyon to one of two possible stormwater outfalls. The sampling approach defined in the OU 1140 work plan is to sample both outfalls that are near the documented spill. Fifteen samples from the two outfalls were to be collected and submitted to an off-site laboratory for analysis for organic and inorganic chemicals, radionuclides, and mercury. No additional RFI activities have been completed at this site.
C-50-001	In Progress	AOC C-50-001 is the former location of a PCB transformer that was installed when the radioactive liquid waste treatment facility (Building 50-1) was built in 1963. The site is a 20 ft x 10 ft concrete pad surrounded by asphalt and is located east of Building 50-1. According to the historical research conducted at this AOC, the concrete pad was expanded in recent years, and a containment system was installed along the inside edge of the pad. One documented release occurred from the transformer at AOC C-50-001. A minor seep from a valve was discovered in August 1989 during a routine daily inspection. The valve was cleaned, and metal epoxy was used to seal the valve. Oil staining was noted on the concrete pad after the PCB transformer was removed in 1994. A sample collected by ESH-19 confirmed the presence of PCBs. The staining remained within the perimeter boundary of the transformer pad. The pad subsequently was scraped clean and double washed/rinsed five times using an alkaline detergent, in accordance with EPA’s PCB Spill Cleanup Policy (40 CFR 761). The cleaned area was encapsulated with polymeric paint/sealer before the replacement non-PCB transformer was positioned on the pad. The June 2000 RFI report for AOC C-50-001 recommended NFA at this AOC because the site has been managed in accordance with 40 CFR 761 requirements and LANL’s PCB management policy. Releases from AOC C-50-001 were cleaned up in accordance with regulatory requirements, and the PCB-containing transformer was replaced with a non-PCB transformer.
C-51-001	Administratively Complete	
C-51-002	Administratively Complete	
C-52-001	Administratively Complete	
C-52-002	Administratively Complete	
C-53-001	Administratively Complete	
C-53-002	Administratively Complete	
C-53-003	Administratively Complete	

C-53-004	Administratively Complete	
C-53-005	Administratively Complete	
C-53-006	Administratively Complete	
C-53-007	Administratively Complete	
C-53-008	Administratively Complete	
C-53-009	Administratively Complete	
C-53-010	Administratively Complete	
C-53-011	Administratively Complete	
C-53-012	Administratively Complete	
C-53-013	Administratively Complete	
C-53-014	Administratively Complete	
C-53-015	Administratively Complete	
C-53-016	Administratively Complete	
C-53-017	Administratively Complete	
C-53-018	Administratively Complete	
C-53-019	Administratively Complete	
C-59-001	Administratively Complete	
C-60-001	Administratively Complete	
C-60-002	Administratively Complete	
C-60-003	Administratively Complete	
C-60-004	Administratively Complete	
C-61-001	Administratively Complete	
C-61-002	In Progress	AOC C-61-002 is subsurface contamination that was discovered during a test of a drill rig. The test hole was located approximately 15 ft north of a former storage building [Building 61-16 (former structure 03-326)]. During the drilling test, an odor was noted and suspected petroleum contamination (e.g., diesel) was found at 7 ft to 8 ft below the ground surface. Personnel interviews conducted after the drilling test indicate that the source of the diesel may have been the previous road maintenance support work performed in the area, which included the filling of flare pots. Additional interviews will be conducted to obtain all available information on past operations at the site. A sample of the tuff was collected and the analysis indicated the presence of diesel. There has been no further investigation at this site.
C-73-001	Administratively Complete	AOC C-73-001 was a 2,000 gallon aviation fuel UST that served the Los Alamos County Airport. The tank was installed in 1965 and removed and replaced by a double walled tank in 1992. The tank was owned by a private aviation club on DOE land. The tank and associated piping were found to be in excellent condition upon removal.

		There were no reported spills or leaks associated with the tank, and no contamination detected upon removal. NMED letter states no further action is required.
C-73-002	Administratively Complete	AOC C-73-002 was a 6,000 gallon aviation fuel UST that served the Los Alamos County Airport. The tank was installed in 1965 and removed and replaced by a double walled tank in 1992. The tank was owned by a private aviation club on DOE land. The tank and associated piping were found to be in excellent condition upon removal. There were no reported spills or leaks associated with the tank, and no contamination detected upon removal. NMED letter states no further action is required.
C-73-003	Administratively Complete	AOC C-73-003 was a 4,000 gallon aviation fuel UST that served the Los Alamos County Airport. The tank was installed in 1973 and removed and replaced by a double walled tank in 1992. The tank was owned by a private aviation club on DOE land. The tank and associated piping were found to be in excellent condition upon removal. There were no reported spills or leaks associated with the tank, and no contamination detected upon removal. NMED letter states no further action is required.
C-73-004	Administratively Complete	AOC C-73-004 was a 6,000 gallon aviation fuel UST that served the Los Alamos County Airport. The tank was installed in 1973 and removed and replaced by a double walled tank in 1992. The tank was owned by a private aviation club on DOE land. The tank and associated piping were found to be in excellent condition upon removal. There were no reported spills or leaks associated with the tank, and no contamination detected upon removal. NMED letter states no further action is required.