

Los Alamos National Laboratory 2002 Pollution Prevention Awards

1. Recycling Surplus Chemicals

Richard Staroski	NMT-7
Deirdre Espinoza	NMT-7
Wayne Taylor	NMT-11
Michael Cournoyer	NMT-13
Russell Jung	HSR-1

Description of Nomination:

The termination of the Moly 99 project left several cartons of unopened chemicals in the basement of the CMR Building. These chemicals include ammonium hydroxide, sulfuric acid, and hydrochloric acid. Instead of disposing of these perfectly good chemicals at a cost of -\$5000, new users for 470 liters the chemicals were found. This represents the first R in Recycling, Reuse, and Reduce.

2. Switching Lead Crimps to Plastic

Ed Boylan	JCNNM-FS-13
Dan Broughton	JCNNM-FS13

Description of Nomination:

Previously, JCNNM used lead crimps as safety devices for its backflow prevention maintenance operations. Ed Boylan (Pipefitter Foreman working at TA-50) identified a plastic crimp that could be substituted for the lead crimp. Ed contacted his Zone Manager, who helped ensure that the change to plastic crimps was made and that the rest of JCNNM was informed of the change. JCNNM stopped using lead crimps company-wide in February 2002, thereby eliminating them from the Laboratory's hazardous and mixed waste streams.

3. Spill Prevention

Dianne Wilburn	RRES-SA
L. Vince Rodriguez	JCNNM-HENV
John Keene	JCNNM-MDHE
Manny L'Esperance	S-8
Harvey Decker	DX-DO (con)
Debbie Finfrock	JCNNM-HENV
Jim Stanton	JCNNM-HENV

Description of Nomination:

In FY 2000, JCNNM formed a Green Zia team to investigate its petroleum-contaminated soil waste stream. During the course of this investigation, the team determined that the majority of JCNNM's spills were due to the end fittings failing on hydraulic lines. Further, the team determined that most of the spills were from backhoes and packmasters. In FY 2001, JCNNM implemented the team's recommendations, including replacing aluminum end fittings on backhoe and packmaster hydraulic lines with steel ferrules. In doing so, JCNNM has reduced its spill rate by approximately 60 percent and its waste volume by approximately 70 percent over FY 1999.

4. Spent Lacquer Thinner Reduction

James Merheg	JCNNM-MDCR
George Lujan	JCNNM-MDCR

L. Vince Rodriquez JCNNM-HENV
Jocelyn Buckley HSR-13 (con)
Jim Stanton JCNNM-HENV

Description of Nomination:

In FY 2001, JCNNM formed a Green Zia team to investigate its spent lacquer thinner waste stream. During the course of this investigation, the team determined that as much as 85 percent of the spent lacquer thinner generated at SM-38 came from steel cleaning operations. Further, the team evaluated potential substitutes for lacquer thinner in steel cleaning and began using Pro-Clean, a water-based solvent, for this type of work. Following some pre-treatment, the spent Pro-Clean is treatable at SWS. By implementing the use of Pro-Clean, JCNNM reduced the spent solvent waste stream by 368 kg in the first quarter of FY 2002.

5. Bioremediation

Mark Haagenstad JCNNM-HENV
John Keene JCNNM-MDHE
Johnny Herrera JCNNM-MDHE
Jim Stanton JCNNM-HENV

Description of Nomination:

In August 2001, JCNNM started bioremediating petroleum-contaminated absorbent from its heavy equipment shop. The key to JCNNM's program is a 100 percent recycled material content absorbent (Oil Sponge) that is inoculated with petroleum metabolizing microbes. JCNNM uses Oil Sponge to cleanup small spills in the shop and then places the material into specialized bins for bioremediation. By the time the contaminated Oil Sponge works its way to the bottom of the bin, enough bioremediation has taken place that the absorbent can be reused. By implementing this project, JCNNM has reduced its New Mexico Special waste generation by 422 kg in the first quarter of FY 2002 compared to the same period in FY 2001.

6. Aerosol Can Puncturing

L. Vince Rodriguez JCNNM-HENV

Description of Nomination:

In FY 2000, JCNNM formed a Green Zia teams to investigate ways to reduce waste stream. One of the activities recommended in the Green Zia action plan was puncturing and recycling spent aerosol cans. Because spent aerosol cans may still contain small quantities of propellant, they cannot be recycled unless they are punctured. In September 2001, JCNNM began puncturing waste aerosol cans and recycling them. To date, JCNNM has punctured and prepared for recycling more than 800 aerosol cans. By recycling its aerosol cans, JCNNM has reduced its first quarter FY 2002 hazardous waste generation by 88 kg compared to the first quarter of FY 2001.

7. Fire Loop Best Management Practice (BMP) Storm Water Pollution Prevention

Tim Zimmerly JCNNM-HENV

Description of Nomination:

During construction projects, when the ground is disturbed and the potential for excessive soil erosion exists, JCNNM places dikes across the stormwater channels in accordance with stormwater pollution prevention best management practices. Tim Zinimerly developed a new BMP for use at the TA-55 Fire Loop project to keep sediment and debris from discharging into Mortandad Canyon. This procedure replaces the standard dike with a filter assembly that allows

water, but not soil, to flow through the discharge channel. The filter consists of Type R material and cinder block, and appears to work well for low flows (i.e., light rain and snow melt).

8. Soil Guard™ Erosion Inhibitor

Tim Zimmerly JCNNM-HENV

Description of Nomination:

JCNNM identified and implemented the use of Soil Guard™, a new soil erosion inhibitor that is more effective than the previously used hydromulching materials. Soil Guard is a bonded fiber matrix that lasts three times longer than mulch. Workers can seed more ground with the new product and Hydro-seeder, with a corresponding 60% reduction in labor costs. Soil Guard™ has been used effectively on several construction projects, including the Norton Power Line Replacement Project at S-Site.

9. Title of Nomination: Pallet Recycling at SM 30

Patricia Aguilar	BUS-4
Dona Crump	BUS-4
Freddy Garcia	BUS-4
Larry Herrera	BUS-4
Salomon Manzanares	BUS-4
Michael Padilla	BUS-4
Paul Rivera	BUS-4
Danny Sandoval-Tidwell	BUS-4
Carlo Trujillo	BUS-4
Eddie Trujillo	BUS-4
Martin Trujillo	BUS-4
Ray Trujillo	BUS-4
Robby Lovato	BUS-4
Anthony Valerio	BUS-4
Anthony Garcia	BUS-4
Rudy Lovato	BUS-4
Danny Pacheco	BUS-4
Jeannette Trujillo	BUS-4
Jeremias Archuleta	BUS-4
David Griego	BUS-4
Juan Montoya	BUS-4
Mike Roybal	BUS-4
Gilbert Lopez	BUS-4
Miguel Salazar	BUS-4

Description of Nomination:

BUS-4 receives approximately 150 metric tons of pallets each year, or roughly 3/4 of all pallets used on-site. BUS 4 and JCNNM have developed a system to safely manage, store and recycle pallets. The pallets, if not recycled, would be buried at the landfill. It is anticipated that this program will divert 150 metric tons of wood pallets from the landfill each year with an annual cost savings of \$89,100. This diversion activity is an important contribution to meeting the Laboratory's Appendix F measures for both recycling and reduction of sanitary waste.

10. Timber Waste Pollution Prevention Program at the Cerro Grande Rehabilitation Project

Matthew M. Nuckols	FWO-CGRP
Michael Dennis	FWO-CGRP
Robert Paul	FWO-CGRP
Laura Paul	FWO-CGRP
Michael Pannell	HSR-5
Shannon Smith	FWO-CGRP
Lindsey Quam	FWO-CGRP
Stephen Mee	FWO-CGRP
Terry Kiehne	FWO-CGRP(con
Scotty Miller	RRES-MAQ
Jackie Hurtle	RRES-MAQ
James Stapleton	ESA-FM-ESH
Robert Farris	FWO-FIRE
Harold Martinez	RRES-MAQ

Description of Nomination:

After the Cerro Grande Fire in May 2000, the DOE mandated that LANL mitigate losses from future potential forest fire events. As a result, an ambitious project to thin approximately 1,000 acres of unmanaged forest in and around LANL has been initiated by the FWO-SGRP Group. This project includes cutting defensible space around LANL structures and thinning forested lands. Currently, portions of the forest have densities in excess of 1500 trees per acre. A healthy, sustainable forest density for northern New Mexico is determined to be 50-150 trees per acre. Using conservative estimation, the LANL-wide defensible space and thinning activities will produce approximately 250,000 ton (1.19 million cubic yards) of gross harvested materials. Historically, harvested materials were inefficiently disposed of in open burns, yielding large volumes of residual ash and unburned remnants, and emitting clouds of smoke and entrained ash.

The CGRP used a number of measures designed to specifically reduce the volume of ash, debris, and smoke; and at the same time enhance regional economic partnerships and provide timber and firewood to northern New Mexico. The first measure is to segregate the timber waste into three categories: salvageable timber, slash (limbs and branches) and firewood. The salvageable timber is made available to local mills for construction lumber. The firewood is cut into fireplace sized segments and given away to the public. The slash is either mulched or burned by Air Curtain Destructors (ACD), a newly acquired technology. ACD units use a high-volume curtain of forced air to super heat the materials and contain the smoke and ash until burned down to approximately 2 percent of the original volume of material. It is estimated that these fully implemented measures reduce the gross volume of timber waste by greater than 75 percent and reduce emissions from burning timber waste by 65 to 75 percent.

11. Voluntary Replacement of Hazardous Light Bulbs

George Guitierrez JCNNM
JCNNM

Description of Nomination:

A major source of hazardous waste for ESA Division is mercury-containing fluorescent light bulbs. ESA has elected to replace all these with non-hazardous bulbs. TA- 16-900 and - 901 were converted to these bulbs in 2001 to test that there were no changes in lighting quality or increase in maintenance problems. This pilot test was successful and ESA Division is now extending this

program to all other buildings. George Gutierrez, the JCNMM relalmper for ESA will be responsible for this project. The initial replacement of bulbs will still create hazardous waste, which will be recycled, but subsequent replacements should avoid 5000 bulbs/year. Even though the new bulbs are non-hazardous, the Laboratory will continue recycling bulbs so as to avoid sending even low levels of mercury to a landfill.

12. Innovative Design for Waste Minimization at TA-11 Drop Tower

Mike Saladen	RREA-WQH
Terrell Lemke	Merrick
John Hartin	ESA-WR
Ann Sherrard	ESA-FM-ESH

Description of Nomination:

A team of ESH- 18, ESA, and Merrick Engineering designed a method of separating industrial water from storm water at the TA- 11 Drop pad, thus eliminating an outfall. The team proposed for this P2 award went through several design iterations before settling on a novel approach that created almost no waste. This consists of using quick connect piping to bypass sumps during industrial operations so that stormwater occurring during multi-day tests would not fill the sumps. The sumps would be emptied before a test, bypassed during a test, and filled with industrial wash water after a test. The industrial water would be pumped and trucked to the High Explosives Waste Water Treatment Facility (HEWTF). After a test was finished, the quick disconnects will be removed and the sumps returned to use for stormwater. This is important because the sumps act as a best management practice to remove small pieces of HE from legacy testing on the pad. Also, a high-pressure washer was purchased, reducing the amount of industrial water generated.

13. Recycling Plastic Drilling Completion Materials Buckets

Joe Skalski	RRES-R
Lorenzo Martinez	RRES-WQH
Dwain Farley	RRES-R
Mike Henke	RRES-R
Mike Clevenger	RRES-R

Description of Nomination:

The Environmental Restoration Project's Field Support Facility (FSF), working with JCNMM, identified a recycling pathway for plastic buckets that contained drilling completion materials. The completion materials are not available in larger containers and large quantities of used buckets were being generated on a routine basis. The FSF inquired about recycling options for the buckets rather than disposing of them at the landfill. The plastic buckets are now sent to Tewa Industries in Albuquerque and are used to make plasphalt, a type of asphalt that incorporates plastic into asphalt for road materials. It is estimated that 400 to 800 buckets are recycled per well. The Environmental Restoration (ER) Program recycles approximately 2,000 to 4,000 buckets per year.

14. Thermal Stabilization of Cellulose Materials Process

Daniel J. Kathios	NMT-2
Joey L. Moya	NMT-2
Jeremy J. Trujillo	NMT-5
Mathew W. Bailey	NMT-2
Thomas W. McNaughton	NMT-5

Description of Nomination:

This team successfully designed and implemented an advanced process to stabilize cellulose materials (e.g., cheese cloth rags, wood, paper, etc.) contaminated with radionuclides. This process, called the Thermal Stabilization of Cellulose Materials Process, uses pyrolysis to decompose these materials in a high temperature argon environment, and catalytic conversion to oxidize the resulting decomposition products to environmentally benign constituents. The radionuclides can then be recovered using established separation processes, significantly reducing the amount of waste sent to the Waste Isolation Pilot Plant. The process is presently in operation at the Los Alamos National Laboratory Plutonium Facility. This process also has applicability to waste streams at the Hanford site.

15. Water Conservation – Infrastructure Leak Repair

Gilbert A. Montoya FWO-UI
Herman E. Madrid JCNNM-UPD
Mark Trujillo JCNNM/uWGW

Description of Nomination:

FWO-UI has implemented a leak survey system for the Laboratory’s water distribution system. A recently conducted leak survey and found 32 leaks that ranged from very minor (< .1 gpm) to significant (15gpm). System leaks were repaired. A total of 20 gpm of water losses have been repaired, thus saving 10,500,000 gallons of potable water per year (32 acre-feet/year) or about 2% of total Laboratory water usage.

16. Moving Box Reuse

Anthony Garcia BUS-4
Tim Albright BUS-4
Jim Campbell BUS-4
Albert Chacon BUS-4
Arlene Martinez BUS-4
Damian Martinez BUS-4
Martin Pacheco BUS-4
Randy Priddy BUS-4
Edward Quintana BUS-4
Sam Serrano BUS-4
Roland Valdez BUS-4
Rueben Silva BUS-4
Nicole Maestas BUS-4
Valerie Cordova Weirich
Sammy Lucero Comforce
Rosendo Lujan Weirich
Mark McClelland Plus Group
Judy Romero Comforce
Jose Salazar Weirich
Chris Ross Weirich

Description of Nomination:

BUS 4 instituted a moving box reuse program as part of its support for the Laboratory MS A1000 recycling program. Used moving boxes are segregated from the MS A1000 materials and are

made available to Laboratory staff for reuse. Approximately 300 boxes are reused each week resulting in an annual waste avoidance of 7 metric tons and a cost savings of \$29,000.

17. MS A1000 Recycling

Anthony Garcia	BUS-4
Tim Albright	BUS-4
Jim Campbell	BUS-4
Albert Chacon	BUS-4
Arlene Martinez	BUS-4
Damian Martinez	BUS-4
Martin Pacheco	BUS-4
Randy Priddy	BUS-4
Edward Quintana	BUS-4
Sam Serrano	BUS-4
Roland Valdez	BUS-4
Rueben Silva	BUS-4
Nicole Maestas	BUS-4
Valerie Cordova	Weirich
Sammy Lucero	Comforce
Rosendo Lujan	Weirich
Mark McClelland	Plus Group
Judy Romero	Comforce
Jose Salazar	Weirich
Chris Ross	Weirich
Mike Roybal	JCNM-MGPM
Gilbert Lopez	JCNM-MGPM
Miguel Salazar	JCNM-MGPM

Description of Nomination:

BUS-4 and JCNM, working in partnership, have continued to administer and improve the MA A1000 program. The MS A1000 program was started in 1998. In the first year, 37 metric tons of mixed office materials were recycled; it is estimated that 120 metric tons will be recycled in 2002. This recycling program is essential for meeting recycling and waste reduction goals. The program has continuously increased the types of materials that it recycles. Current MS A1000 recycle streams include colored paper, newsprint, magazines, catalogs, computer software, toner cartridges, transparencies, binders and more. The team continues to improve the program. Laboratory employees are encouraged to use old cardboard copier boxes to recycle bulk amounts MS A1000 materials; this results in recycling of the MS A1000 materials as well as the box itself. Customer services have been expanded to include special pick-up for large quantities of MS A1000 materials identified during clean-outs or when moving offices. Annual cost saving realized through this program are greater than \$120,000.

18. Surface Water Assessment Team (SWAT)

Steve Vennis	RRES-WQH
Barbara Hoditshek	DOE/OB
Ralph Ford	DOE/OB
Brett Lucas	NMED/SWOB
Gene Turner	DOE/LAAO

Karen Agogino DOE/ABQ

Description of Nomination:

The Surface Water Assessment Team (SWAT) includes LANL/ESH-18, DOE/013, DOE/OLASO and NMED/SWQB staff. The SWAT was originally tasked with recommending appropriate Best Management Practices (BMPs) based on the findings of Standard Operating Procedure (SOP) 2.01 - Surface Water Site Assessments. To-date, BMPs (i.e., erosion controls) have been installed at over 200 sites throughout the Laboratory in an effort to reduce the migration potential of contaminated sediments through erosional processes.

In addition to the these recommendations, the SWAT provided valuable technical review and input for:

- Identifying Solid Waste Management Units (SWMUs) with existing PCB concentrations of greater than 1 part per million (ppm) and assuring that erosion controls have been implemented at these sensitive locations;
- providing evaluation and reporting on the BMPs installed at Solid Waste Management Units impacted by the Cerro Grande Fire;
- coordinating and helping implement a BMP Effectiveness Study at TA-46 to assess different types of erosion controls in burned and non-burned areas; and,
- coordinating the completion of a Data Quality Objective (DQO) process for the Laboratory's NPDES Storm Water Monitoring Program. This process will provide the necessary communication and interaction needed to get regulator approval of the storm water monitoring approach.

Thanks to support from the DOE and New Mexico Environment Department, the SWAT has been recognized as an effective resource for identifying areas that may impact water quality at the Laboratory and assuring that appropriate corrective actions are recommended and implemented.

19. Teaming up to Make a Difference

Deba Daymon	FWO-SWO
Chris Duy	FWO-SWO
Nick Gallegos	Duratek - SWO
Darla Jo Huff	FWO-SWO(con)
Matt Kaiser	Duratek - SWO
John Kelly	Duratek - SWO
Dave Lalonde	Duratek - SWO
Ed Lopez	FWO-WMF
Jim Matzke	FWO-SWO
Paul Newberry	FWO-SWO
Pat O'Grady	Duratek - SWO
Mike Pierotti	BUS-5
Carmen Rodriguez	RRES-R
Adrian Romero	Duratek - SWO
Sheri Scott	Duratek - SWO
Matt Shanahan	Duratek - SWO
Larry Sherman	Duratek - SWO

Monica Talachy

E-ER

Therese Trujillo

Duratek - SWO

Description of Nomination:

Reaching out to our communities is an effort that takes money, time and planning and, most importantly, volunteers. Duratek Federal Services, Inc. (DFS), Los Alamos New Mexico office, and the Los Alamos National Laboratory (LANL), Los Alamos, NM, demonstrated their dedication to community support on Saturday April 21, 2001 at the La Loma Transfer station in Espanola New Mexico. With the assistance of the City of Espanola, DFS employees, LANL volunteers and Espanola Transfer station employees all were able to conduct a successful Household Hazardous Waste (HHW) Event. Many in the community came out on this windy day to drop off their Household Hazardous Waste approximately 2,200 gallons of oil, 200 gallons antifreeze, 50 gallons of bulk flammable liquids, 200 gallons of containerized hazardous (corrosive, flammable and toxic) chemicals, 350 gallons of paint, 200 aerosol cans, and 160 batteries were collected. This was the first HHW event for by the city of Espanola, and was enthusiastically welcomed by Leonard Padilla, City Manager of Espanola. The event brought over 100 cards and thankful gestures from the community.

Duratek contracts with an EPA registered transporter (for shipping the waste) and EPA permitted treatment facilities for final disposition of the waste. Organic solvents and oils are blended and used for fuel recycling. Organic pesticides are shipped to a permitted waste incinerator. Batteries are sent for metal recovery.

20. Material Recycling Facility – Solid Waste Reduction of 40%

Orlando Archuleta	FWO-SWO
Andrew Vigil	Duratek
Jonathan Romero	Duratek
Adrian Romero	Duratek
Larry Atencio	Duratek
Mark Waterman	Confoci
Victor Garde	Duratek
Connie Brown	BUS-2 (con)

Description of Nomination:

The FWO-SWO (Facility Waste Operations-Solid Waste Operations) Materials Recycling Facility personnel receive, inspect, sort and segregate LANL-generated refuse at TA-60, Dome 85, into recyclable material, prohibited materials, and universal and solid waste, which are then compacted and baled. The MRF personnel have been able to reduce the LANL solid waste stream sent to the Los Alamos County landfill by 45% -50%by volume.

The MRF has been in operation for just over one year and is an important part of the Laboratory's integrated approach to waste management and recycling. It is estimated that each year the MRF recovers approximately 170 metric tons of cardboard, 10 tons of metal, 12 tons of wood and other materials such as circuit boards, equipment and toner cartridges.

These efforts have assisted LANL in meeting the DOE Appendix F sanitary waste reduction and recycling measures.

21.Sustainable Design of the Strategic Computer Complex

Mark Harris	UC/PMD PMDS
Phil Sena	UC/PMD PMDS
Bill Bryant	UC/BUS BUS 5
Kable Oldham	Hensel Phelps CC
Charlie Cartwright	Hensel Phelps CC
Rachel Taylor	UC/PMD PMDS

Description of Nomination:

At the DOE, laboratory structures use more energy and water than typical office buildings and provide an opportunity to achieve tremendous pollution prevention (P2) results. Los Alamos National Laboratory's project team, with the contractor Hensel Phelps, created a model facility with high quality sustainable design elements that meet stringent environmental standards. The Strategic Computing Complex demonstrates outstanding waste-prevention, recycling, affirmative procurement, energy-saving, and cost saving results that offer inspiring examples to builders and designers throughout DOE. Results include: 40% annual water use reduction; \$574,000 savings in water cost; and \$1 million saved in structural steel and labor costs.

22. Substituting Mercury Containing Devices with Mercury-Free Alternatives

Michael Cournoyer	NMT-13
Jeffrey Dare	NMT-DO
Timothy Martinez	C-AAC

Description of Nomination:

Within the Nuclear Materials Technology (NMT) Division of Los Alamos National Laboratory, mercury containing devices are used for a variety of operations, including actinide chemistry, weapons production, radiochemistry, and analytical chemistry. Mercury present in these instruments does not in itself constitute a risk of contamination since the metal is contained within a closed system. However, breakage, inadequate maintenance and disposal of such instruments can expose workers and the public to this toxic substance. As part of an ongoing hazardous material elimination program, approximately 5 kilograms of mercury in Nuclear Material Technology (NMT) Division were removed from radiological control areas. . The operating group purchased mercury-free alternative devices at costs similar to the original mercury containing devices. Substitution for the original mercury containing devices eliminated the potential liability for the generation of 100 m³ of Mixed Low-Level Waste in the future..

23. Avoided MLLW; Reanalyzed and Characterized to be LLW

Manny Gonzales	Retired UC
Chris Duy	UC-FWO-SWO
Louis Jalbert	Duratek FWO-SWO
Randy Axtell	Comforce FWO-SWO
John Kelly	Duratek FWO-SWO
Mario Medina	HSR-1
Mark Waterman	CONFOCI FWO-SWO
	UC FWO-SWO Team
Deba Daymon	Lead
Beverly Martin	UC E- WMOSR
Barbara McInroy	FWO-SWO

Description of Nomination:

FWO-SWO was able to recharacterize 61 Drums (130 Cubic meters) of legacy MLLW as LLW through chemical analysis. The MLLW would have been treated at a cost of \$610,000.00 at Permafix and the treated MLLW shipped to Envirocare for MLLW burial at an additional cost of \$457,500.00.

Total cost for treatment and disposal as MLLW would have been \$1,067,500.00. The actual verification analyses cost of \$71,000.00 resulted in a net savings of \$996,500.00.

24. Lead-free Aprons

Jane Lloyd	NMT-15
Roger Wishau	HSR-1
Yvonne Rivera	NMT-15
Trish Wright	NMT-15

Description of Nomination:

NMT- 15 searched out and found a replacement for lead aprons.

Traditional x-ray and gamma photon shield aprons are constructed of lead vinyl. Lead aprons present a waste disposal concern at the end-of-life. Further when lead aprons are used in radiation work they have the potential to become radiologically contaminated. This would present an additional waste disposal concern, as the aprons would then become a mixed low-level waste.

For about the same price as a traditional apron NMT- 15 purchased EarthSafe™ lead-free aprons. These aprons were x-ray tested prior to placing them in service. They were found to provide the same shield effectiveness as traditional lead aprons (0.5mm lead equivalent at 100 keV) yet were lighter and are environmentally friendly.

25. Waste Minimization

Dave Gallimore	C-AAC
Alex Martinez	C-AAC
Joe Rodriguez	C-AAC

Description of Nomination:

Spent Lithium batteries, generated by the use of electronic pipettes in gloveboxes, have been the main source of Mixed Hazardous Waste for Group C-AAC for some years. Those batteries that could be decontaminated were free-released from the controlled areas and disposed of as Hazardous Waste.

This year an improvement team located a source for electronic pipettes, without Li batteries, suitable for glovebox projects. These pipettes are capable of using AC adaptors, thus eliminating the group's largest routine source of Mixed Hazardous Waste.

The estimated reduction in Mixed Hazardous Waste generation is significant, it has reduced the labor-hours and monies spent in the management of this waste stream by groups C-AAC, NMT-7, ESH-1 and ESH-19.

26. Minimizing CZT Detector Polishing Waste

Frank Ameduri	NIS-1
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Description of Nomination:

Cadmium Zinc Telluride (CZT) is a wide band gap semiconductor that is fabricated into detectors that are used to detect x-rays. An important part of CZT detector production is CZT crystal polishing. This is done on a commercial polishing machine using a replaceable polishing cloth on an 8" platen. Slurries of aluminum oxide of various grit sizes are used to produce a smooth flat surface on the CZT samples. The platens have to be cleaned several times during the process to remove embedded particles of CZT. The original method of cleaning was to place the platen in a containment tray and using a hose connected to a tap, rinse the platen until the water ran clear. This could take one to 2 gallons per rinse for each of 6 platens. The wastewater containing cadmium and tellurium powder mixed with slurry was collected in containers for disposal. A typical polishing would produce 10-12 gallons of hazardous waste, which was mostly water.

The new cleaning method was developed which involves placing the platens face down in a plastic tub containing about one half gallon of water. The platens are sitting on a brush with the bristles pointed up. A vibrating palm sander is attached to the back of the platen via an adapter plate and plugged into a Variac. As the Variac is adjusted, the vibration speed increases. The particles are shaken loose and settle into the tub. After about 10 minutes the cleaned platen is lifted out of the water and rinsed with a few ounces of clean water. The wastewater is transferred into a gallon holding container where in a day or so the particles settle out. The clear water is siphoned off and returned to the shaker tub where it is re-used. The total waste is less than a half pint of liquid.

27. Atlas Oil Waste Reduction

James Cochrane	UC-P22
Katherine Forman	Weirech-P22
Bill Hinckley	UC-P22
Keith Hosaf	P22
John Martinez	UC-P22 (con)
Diann Mills	UC-P22
Robert Newton	UC-P22
Joseph Stone	UC-P22
John Telford	UC-P22
Clark Thompson	UC-P22
Billy Vigil	UC-P22

Description of Nomination:

The P-22 Atlas Team has worked to reduce oil waste and prevent environmental damage. Through the use of reusable sorbent materials, recovery wringers, portable recovery and filtration systems, and secondary containment systems, the team has vastly reduced the amount of oil based waste generated. Epoxy sealing of floors and drains combined with new spill control berms, booms, and dikes prevent any possible oil spills from reaching the environment where surface water pollution would be the result.

28. Realistic Site-specific TRUPACT II Seal Periods

Stan Kosiewicz	RRES-AT
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Description of Nomination:

Stan's effort resulted in a request to reduce the seal-period requirement for TRU waste containers from 60 days to 20 days. This change will increase the allowable wattage limit for each container. The NRC is reviewing this request for incorporation into the TRUPACT-II SAR. In fact, the Department of Energy (DOE) is using this concept to accelerate shipments of about 2,000 of LANL's most radioactive TRU waste drums.

LANL waste generators will benefit from the increase in shippable wattages. For LANL TRU waste with no confinement layers, the gain will be a 61% increase in wattage (and hence volume). For waste with one layer of confinement, like the TA-55 gypsum or cemented waste, the increase will be approximately 48%. The shorter seal period could in effect as early as September. The DOE included RFETS and NTS in the application for the shorter seal period.

29. New Life for Lead

Gunther Muhrer	UC-LANSCE-12
Ross Sanchez	UC-LANSCE-12
Melvin Borrego	UC-LANSCE-12
Jonathan Ferris	UC-LANSCE-12
Michael Geelan	Butler - LANSCE-12
Tim Medina	Butler - LANSCE-12

Description of Nomination:

Experiments at the Lujan Center aim to understand structure-property relationships of materials by probing these materials with intense beams of neutrons. In order to minimize the possibility of stray neutrons reaching sensitive neutron detectors, and to offer radiation protection to personnel, the experimental area (also called beam line) is enclosed within 10" thick walls of neutron shielding materials. These materials typically include polyethylene and steel.

The Lujan Center is developing a new capability to study materials in very large magnetic fields. The new capability involves conversion of an antiquated nuclear physics beam line to better suit the materials science emphasis at the Lujan Center. Because of the strong magnetic fields, the conversion requires replacement of the ferromagnetic heavy metals (e.g., steel) used in the neutron shielding with non-magnetic heavy metals. Approximately nine tons of heavy metals were required.

Using Monte Carlo simulation codes, Lujan Center scientific personnel (Muhrer) determined that lead (Pb) would be a suitable non-magnetic heavy metal substitute for steel. Stockpiled lead bricks (i.e., lead bricks that were used for experiments a long time ago and awaiting a reuse opportunity) were obtained at TA-53. Lujan technicians (Sanchez, Medina, Ferris, Geelan, and Borrego) placed the bricks between sheets of polyethylene reclaimed from the nuclear physics beam line.

By maintaining a lead stockpile and using stockpiled lead bricks, the Lujan Center avoided procuring new lead, or additional purchases of stainless (non-magnetic) steel and brass; thus, saving the facility roughly \$40k. The reuse of existing lead reduces the inventory of lead at LANL and the volume of lead that will eventually have to be treated and/or disposed in the future.

30. Ferric Chloride Recycling reduces LANL's Hazardous Waste by more than 20%

Joe Bonner	UC- DX-1
Connie Gerth	UC- DX-2

Kathy Smith	UC- DX-1
Dennis Jaramillo	UC- DX-1(con)
Manny Lujan	UC- DX-1

Description of Nomination:

DX-1 sent 220 gallons of spent ferric chloride etchant solution to a California recycler who will remove and recycle the copper and purify the ferric chloride for reuse. As spent ferric chloride constitutes over 20% of the Lab's routine hazardous waste generation, recycling will help LANL meet DOE's 2005 hazardous waste minimization goal. Ferric chloride is used as a process etchant in DX-1 facilities at TA22. Concentrated ferric chloride is purchased from Philbrotech and then diluted for use in the equipment. The equipment uses a counterflow chamber system to minimize the amount of fresh ferric chloride that must be used. Periodically, the entire system is drained, cleaned, and refilled. Each drum of fresh ferric chloride eventually produces two to three drums of spent ferric chloride solution that must be managed and disposed as hazardous waste. The facility produces an average of 20 drums of spent ferric chloride solution annually, or about 9,000 pounds. This represents the largest single routine hazardous waste stream at LANL. Recycling this waste stream will avoid 4000 kg of RCRA hazardous waste annually.

31. Concrete/Asphalt Waste

Henry Nunes	UC FWO-SWO
Mark Shepard	UC E-ER(con)
Dana Williams	UC E-ER(con)
Tad West	Southwest Abatement
Timothy Hogan	Coronado Salvage

Description of Nomination:

One of the Laboratory's largest sanitary waste streams is concrete and asphalt (1863.6 tons disposed of at the landfill last year). Over the next ten years, several demolition projects will take place. This team purchased a concrete crusher to crush and reuse concrete and asphalt from the demolition projects. Although most of the waste is reused internally at the Laboratory, the team worked with a contractor to also reuse clean asphalt in Albuquerque. It is estimated that this project will divert 60,000 tons of concrete/asphalt from the landfill over the next five years. This diversion will result in a total savings of over \$4 million.

32. A Film-less, No Waste Solution for Flash X-Radiography at DX-3

Aaron Honey	UC-DX-3
Gregory Cunningham	UC-DX-3
Joesph Gonzales	DX-DO
Gary Childers	
Karen Warthen	UC-DX-1(con)
Todd Kauppila	UC-DX-3
Monica Anderson	UC-DX-3

Description of Nomination:

The Dynamic Experimentation Division Hydrodynamics Applications Group (DX-3) at Los Alamos National Laboratory has redesigned their flash radiographic imaging system to eliminate waste and improve mission performance. For DX-3, photochemicals and x-ray film are large waste streams. For standard photography, going digital is the best solution, but for flash x-radiography, digital systems do not always work. For explosive testing of nuclear weapons mock-ups, DX-3 has implemented phosphor-imaging

technology in place of x-ray film. As a result, DX-3 saved \$105,000 dollars per year; eliminated 450 gallons of chemicals waste, decommissioned a large costly darkroom, and avoided large amounts of unused film disposal.

33. Recycling Used Lab Equipment to Regional University

Donivan Porterfield	C-AAC
Timothy Martinez	C-AAC
Michael Cournoyer	NMT-13

Description of Nomination:

While upgrading the instrumental capabilities of the C-AAC analytical lab located at TA-55, 33 boxes of lab equipment (valued at \$20,000) were scheduled for disposal. Instead of sending the equipment to salvage, it was donated to Department of Chemistry at the University of Texas at El Paso (UTEP). Not only is this efficient reuse of expensive lab equipment, it contributes to LANL's Special Regional Involvement Contract Provisions of Appendix F.

34. BUS-5 Just-In-Time (JIT) Environmentally Preferable Purchasing

Bob Holder	UC BUS-5
John Archuleta	UC BUS-5
Dave Barsness	UC BUS-5
Vanessa Dixon	UC BUS-5
Yvonne Ebelacker	UC BUS-5
Elena Fuentes-Ortiz	UC BUS-5
Cindy Gallegos	UC BUS-5
Jennie Herrera	UC BUS-5
Louella Lopez	UC BUS-5
Michelle Phillips	UC BUS-5(con)
Venetia Salazar	UC BUS-5
Joann Sandoval	UC BUS-5
Florence Serna	UC BUS-5

Description of Nomination:

The BUS-5 JIT team has made an extraordinary effort to incorporate Environmentally Preferable Purchasing language into LANL JIT contracts. They have actively worked with contract vendors to procure Environmentally Preferable Products and to help Los Alamos National Laboratory meet Appendix F and DOE performance goals concerning Affirmative Procurement and Biobased Products. The JIT procurement team has provided Laboratory customers with quality products that meet or exceed the EPA's Comprehensive Procurement Guidelines. By encouraging the use of Environmentally Preferable Purchasing, the Laboratory contributes to the sustainability of the recycle and recycle content manufacturing industry.

35. Aluminum and Plastic Pilot Program

Bani Chatterjee	UC BUS-2
Joesphine Caffery	UC BUS-2
Jim Dalton	UC FWO-SWO
Carlos Padilla	HSR-13
Don Gerheart	HSR-13

Dann Zelic	JCNNM MGPM
Mike Roybal	JCNNM MGPM
Leroy Archuleta	JCNNM MGPM
Miguel Salazar	JCNNM MGPM
James Armstrong	JCNNM MGPM
Demetro Martinez	JCNNM MGPM
Edward Romero	JCNNM MGPM
Gilbert Lopez	JCNNM MGPM
Camille Bustamante	JCNNM MGPM

Description of Nomination:

In October 2001, the Laboratory officially began Lab wide collection of plastic and aluminum beverage containers for recycle. To date, this initiative has diverted approximately 5 tons of solid sanitary waste from the landfill.

The pilot phase of the program involved personnel from several different organizations and locations throughout the Laboratory who, through great patience, set up the first gray bin locations, monitored usage, and ensured collection. Without the support of these team members, Laboratory-wide aluminum and plastics recycling would not have been possible. The information garnered from the pilot program helped to assess future collection needs in order to implement the current Laboratory-wide system.

36. Reduction of Air Pollution from Diesel Powered Equipment

Kirk Meekin	HSR-5
Orlando Archuleta	FWO-SWO
Andrew Vigil	Duratek
Jonathan Romero	Duratek

Description of Nomination:

Orlando Archuleta and Andrew Vigil (FWO-SWO) purchased and installed an aftermarket muffler/converter on a diesel powered skid-steer loader used at TA-60, Building 85 (the Material Recycling Facility (MRF)). The muffler/converter was purchased and installed on the advice of Kirk Meekin, CIH, (an ESH-5 Industrial Hygienist). The muffler/converter is a CleanDIESEL™ Converter manufactured by CleanAIR Systems of Santa Fe. The manufacturer states that the converter reduces carbon monoxide by over 90%, hydrocarbons by 80%, and visible smoke by over 30%. After installation workers commented that, the black exhaust smoke was much less evident during startup, and virtually none could be seen during operation. They also commented that they no longer noticed the odor of the exhaust. The purchase price was \$800. As of March 27th, 2002 the skid-steer loader has been operated for 300 hours with the CleanDIESEL™ Converter. The manufacturer of the skid-steer loader said that the engine emits 201 ppm of CO when the engine is idling, 117 ppm of CO when the engine is at full throttle with a 50% load, and 10 ppm of CO when the engine is at full throttle with a 70% load. Based on CleanAIR Systems information, the emissions of CO would be reduced to 20, 12, and 11 ppm respectively with their CleanDIESEL™ Converter installed. No information was provided by the manufacturer regarding typical levels of hydrocarbons and particulates emitted by the engine, so values for these pollutants cannot be estimated.

Notwithstanding the lack of complete data for emissions levels, we believe this type of equipment is worthwhile addition to existing equipment when employees are exposed to diesel exhaust.

37. Cooling Towers at LANSCE (TA-53)

Troy Belyeu	LANSCE-FM
Roger Cardon	FWO-FE
Duane Nizio	FWO-FE
Alberto Martinez	LANSCE-FM
Bryan Koehler	PM/DS

Description of Nomination:

Staff at TA 53, working in collaboration with FWO and PM divisions, has completed construction of two new cooling towers at LANSCE. These new cooling towers, which supply cooling water to various accelerator equipment systems, have had a significant positive impact on the environment while improving overall operational capability. Improvements include the elimination of a NPDES outfall, eliminating arsenic containing waste streams, and improving water resource management. Water resource management was improved by including modernizing equipment and water treatment methods in the new towers thereby improving system efficiencies and reducing the total amount of water used.

38. Plastics Recycling at TA-53

Ben Poff	LANSCE-FM
Bernie Weber	LANSCE- HRS-1
Natalie Smith	LANSCE- HRS-1
Ross Sanchez	LANSCE-12
Melvin Borrego	LANSCE-12
Tim Medina	LANSCE-12(con
Johathan Ferris	LANSCE-12
Camille Bustamante	JCNM/HENV

Description of Nomination:

Staff at TA 53, working in collaboration with JCNM and the Nambe Recycling Facility, identified a recycling pathway for plastics from the LANSCE facility. Twenty tons of plastics were sent to Tewa Industries in Albuquerque and were used to make plasphalt, a type of asphalt that incorporates plastic into asphalt for road materials. This project resulted in a cost savings of \$13,000.

39. Water Base Paints

Peter Bussolini	UC FMU75
John Jennings	UC FMU75
Scott Alexander	UC FMU75

Description of Nomination:

This year FMU-75 switched all interior and exterior paint material to water base products. The use of water based paint products allowed the decommissioning of the last

satellite accumulation area (SAA) because hazardous chemicals are no longer used for paint thinning and clean up. Chemical storage areas have been closed as well. The water base paints hold up well and look good. FMU-75 continues to acquire and test new water base products.

40. Reusing Gravel

Peter Bussolini	UC FMU75
John Jennings	UC FMU75
Scott Alexander	UC FMU75
Cody Trujillo	UC FMU75
Tanner Trujillo	UC FMU75

Description of Nomination:

FW-75 replaced a gravel and tar roof at the TA-35 with a cold process roof.

The old roof gravel was then collected and reused on a parking area that became unusable when it rained.

Additional gravel was spread on an access road a few hundred feet from the building.

The roads and parking areas were improved, and the FMU did not have to pay to have the gravel disposed away from the site.

41. Deck Built from Recycled Material at TA-35

Peter Bussolini	UC FMU75
John Jennings	UC FMU75
Scott Alexander	UC FMU75
Cody Trujillo	UC FMU75
Tanner Trujillo	UC FMU75
James Stewart	Butler

Description of Nomination:

Several old trailers were salvaged from TA35 leaving foundation materials that would have been disposed at the landfill. Graduate engineering students at FMU-75 took on a project to find a way to re-use the left over material. The students used the materials to build an outdoor deck.

Blocking used to support the trailers was re-used as supports for a raised deck. Skirting material, along with recycled wood was used to make the deck.. The students reduced the amount of waste removed from the site and built an attractive deck for a minimal cost.

42. Fire Sale of Excess Equipment

Jay Samuels C-AAC

Description of Nomination:

Rather than discard unused scientific equipment, Jay Samuels held an "Email Fire Sale" within NMT and C Divisions. Of course all the items were free to users that needed them. As a result of his innovative thinking, 2 Matheson Gas Regulators, 2 MDA Scientific Toxic Gas Monitors, an 01 Analytical Total Organic Carbon Analyzer, and boxes of beaker covers, pipette tips and filter capsules were claimed for reuse rather than discarded.

43.South Fork of Acid Canyon Interim Action Team

Matt Johansen	DOE
Tom Whitacre	DOE
Al Pratt	RE
Steve Reneau	EES-9
Roy Bohn	RRES-R
Ray Hahn	FWO
Julie Minton-Hughes	FWO
Manuel Griego	FWO
Tim Martinez	FWO(con)
Gerry George	HSR-1
Larry Pacheco	DOE
Johnny Jameson	DOE
Chris Lovato	RE
Tom Crespin	EES-9
Eloy Trujillo	RRES-R
John Kelly	FWO
Mike Dake	FWO
Larry Sherman	FWO FWO(con)
Terese Trujillo	Washington
Tom Benson	Washington
Keith Tucker	Washington
Casey von Bargaen	Washington
Rick Haaker	Washington
Antoinette Toya	Washington
Aletha Banar	Washington
Shannon Purdue	Keers Environment
Deborah Steven	Keers Environment
Ray Jaramillo	Keers Environment
Akil McCloud	Keers Environment
Brian Standefer	Keers Environment
Servando Holguin	Keers Environment
Joe Casados	Keers Environment
Chris Lara	Keers Environment
Jorge Lopez	Keers Environment
Gerry Bell	Keers Environment
Edward Martinez	Keers Environment
Raymond Roybal	Keers Environment
Description of Nomination:	

This Pollution Prevention Award nomination is for the South Fork of Acid Canyon Interim Action team soil removal and disposal activities. Waste minimization was achieved by pre-screening soil for removal, using a vacuum remediation technology to remove only the pre-screened soil from the South Fork of Acid Canyon channel, depositing it in vacuum-tight rolloff bins and transporting the bins to TA-54 where they were end dumped in Area G. Additional waste minimization was achieved by using dedicated worker coveralls and leather work boots instead of using disposable coveralls and booties. The dedicated coveralls and work boots were left onsite during remediation activities and disposed of at the end of the project.

The vacuum remediation equipment and the time of year chosen for field activities minimized air and water pollution. Using the vacuum remediation technology instead of conventional excavation using heavy equipment minimized air pollution from dust producing activities. The vacuum remediation technology removed soil and reduced dust emissions during remediation activities thereby reducing air pollution in the work area and the surrounding residential areas. Also access roads and high traffic areas were wetted down as needed to provide dust suppression. Conducting field activities during the dry season so that no natural water flow was present in the channel during work activities minimized water pollution. Disturbed soil areas were covered with plastic sheeting until remediated to prevent runoff in the event of rain.

Site restoration activities included mulching with straw and preventing surface erosion using straw wattles. Straw bales and straw wattles are recycled vegetative materials.

44. Recycling/Rebuilding Expensive RF Power Tubes

John Lyles	LANSCE-5
Steve Archuleta	LANSCE-5
Luis Lopez	LANSCE-5
Danny Vigil	LANSCE-5
David Keffeler	

Description of Nomination:

LANSCE amplifiers use high power electron tubes. These amplifiers provide the pulsed RF (radio frequency) voltage that accelerates protons in the drift tube linac; the amplifiers are critical to the operation of the accelerator. Some of the tubes cost from \$25,000 to \$140,000 new. Instead of buying new tubes, LANSCE now has its old tubes rebuilt. Three companies compete for this work. Rebuilding saves valuable resources such as the ceramics, oxygen free copper, silver, mica, and various metals, while minimizing hazardous waste generation (silver plated copper, thoriated tungsten, and barium compounds). Rebuilding has cut the cost of tube acquisitions by 33 to 50% per year. An additional benefit is that LANSCE gets an analysis of why the tubes failed since they must be opened up during the rebuild process.

45. Process Changes for Improved Metal Recycling at TA-16

Bart Olinger	ESA-WMM
Robert Garcia	ESA-WMM

Description of Nomination:

In the past, ESA flashed HE-contaminated building fixtures (desks, chairs, kettles, light fixtures, etc.) and disposed of the flashed objects as New Mexico Special Waste. ESA Bum Ground staff changed their processes so the metal is segregated from other wastes. It can, therefore, be classified as "processed scrap" under RCRA, which is exempt from solid waste requirements. As

a result, ESA can either steam clean or flash and recycle the materials. In 2001, more than 60 cubic yards were recycled rather than disposed. Much of the metal was from operating equipment in buildings to be vacated.

46. Mixed Waste Avoidance and Metal Recycling at LANSCE

Ben Poff	LANSCE-FM
Avril Millensted	FWO-SWO
Johnny Herrera	LANSCE/7
Jeff Hannaford	LANSCE/7
Joe Raybun	LANSCE/7
Ronnie Garcia	LANSCE/ESH-1
Willie Haynes	LANSCE/ESH-1
Claude Gallegos	LANSCE/ESH-1
Feliz Valdez	LANSCE/ESH-1
Sandra West	LANSCE/ESH-1
John Kelly	GTS Duratek

Description of Nomination:

Old shutters and other equipment removed from the LANSCE beam line were potentially contaminated with mercury and other heavy metals. If a recycling pathway could not be developed, this material would have to be disposed of MLLW. The LANSCE waste management organization partnered with GTS Duratek and SWO personnel to develop a pathway for this material. The radioactivity levels and potential heavy metal contamination levels made the development of a pathway to recycle this material especially difficult. A recycling pathway was developed and a total of 10 cubic meters of MLLW generation was avoided. Cost savings associated with this project was approximately \$50,000, with additional projected cost savings for scheduled material removal over the next two years of approximately \$110,000.

47. Waste Minimization – CMR Facility

Richard Staroski	NMT-7
Bryan Vigil	NMT-7
Leslie Champ	NMT-7
Georgiana Vigil	Eberline
Velma Dominguez	UC
Roby Ruby	ESH-1
Andrew Maestas	ESH-1
Robbie Burd	ESH-1(con)
Frances Martin	ESH-1
Jerry Montoya	ESH-1
Dave Hobart	C-AAC
Terry Hahn	C-AAC
Robert Gonzales	NMT-11
Michael Cournoyer	NMT-13
Pat Martinez	C-AAC
Kenny Espinosa	NMT-13
Don Dale	C-ACS
Stephanie Ortiz	C-ACS

Description of Nomination:

Waste minimization and management of excess materials are important aspects of CMR activities. This team identified 3,287 pound of "suspect contaminated" lead that could be reused at the SNS accelerator at DOE's Oak Ridge facility, 1500 pounds "suspect contaminated" lead to be reused at CMR and 70,090 grams of contaminated mercury with no path forward to be treated at Oak Ridge. Once a use or path forward for these materials was determined, the team visited waste generators, storage areas and searched the entire CMR facility to locate and inventory all the excess materials. This effort substantially reduced the amount, of hazardous materials stored within CMR.

48. Low Mercury Fluorescent Lamps

Eric Jones	SUMMIT
John Archuleta	BUS-5
Jim Stanton	JCNNM-HENV

Description of Nomination:

BUS-5, JCNNM, and Summit Electric identified low-mercury, non-hazardous fluorescent lamps with the same performance as the high mercury lamps typically used in the lab today. High mercury lamps must be handled and processed as universal waste. Should a high mercury lamp break, the break must be treated as a hazardous waste spill and the clean-up debris is RCRA waste. Once low mercury lamp identification was complete, high mercury lamps were blocked in the JIT system so no one could accidentally purchase high mercury lamps. This makes purchasing environmentally safer lamps easy.

49. Septic Tank Waste Clean Up

Becky Coel-Roback	ER
Paula Bertino	Adalante
John Crocker	ER-contractor
John Kelly	Duratek
John Hopkins	EES-9

Description of Nomination:

Structure TA 21-181 was a concrete septic tank that was part of potential release site (PRS) 21-024. Sludge containing tritium and PCBs was cleaned out of the tank in February 2001.

Following sludge removal, the interior of the septic tank was cleaned using a pressure washer. Despite the pressure washing, however, the concrete tank failed to meet the definition of a clean surface, and therefore did not achieve the RCRA alternative treatment standards for hazardous debris (40 CFR 268.45). As a result of residual staining and the presence of tritium contamination, the tank was considered mixed waste.

An alternative disposal pathway, for hazardous waste containing residual radioactive material, was identified. Additional analyses were conducted on concrete samples from the septic tank and a proposal was prepared to dispose of the tank under the DOE authorized limits for tritium at the Waste Control Specialists (WCS) facility in Andrews, Texas. The DOE, WCS, and the State of Texas accepted the proposal, and the tank was successfully removed and transported for disposal in August 2001. By disposing of the contaminated septic tank under the authorized limits for tritium, instead of disposing of it as mixed waste, the ER Project avoided the designation of 27

cubic yards (approximately 27,000 kg) of mixed waste and realized a savings of approximately \$250,000.00 in waste disposal costs.