



U.S. DEPARTMENT OF  
**ENERGY**

**FY 2010 Congressional  
Budget Request**

**Environmental Management**

**Defense Nuclear Waste  
Disposal  
Nuclear Waste Disposal**





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Budget Request**

**Environmental Management**

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Nuclear Waste Disposal**



**Environmental Management**



**Defense Nuclear Waste Disposal**

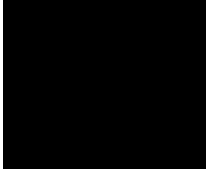


**Nuclear Waste Disposal**

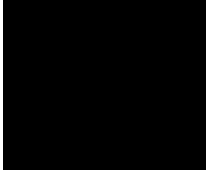




**Environmental Management**



**Defense Nuclear Waste Disposal**



**Nuclear Waste Disposal**

**Volume 5**

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The Department of Energy’s Congressional Budget justification is available on the Office of Chief Financial Officer, Office of Budget homepage at <http://www.cfo.doe.gov/crorg/cf30.htm>.

For the latest details on the Department of Energy’s implementation of the Recovery Act, please visit: <http://www.energy.gov/recovery>

**Department of Energy  
Environmental Management/  
Defense Nuclear Waste/Nuclear Waste Disposal**

**FY 2010 Congressional Budget**





U.S. DEPARTMENT OF ENERGY  
 FY 2010 Internal Statistical Table by Appropriation  
 (dollars in thousands - OMB Scoring)

FY 2008 Current Approp.	FY 2009 Current Approp.	FY 2009 Current Recovery	FY 2010 Congressional Request	FY 2010 vs. FY 2009	
				\$	%

**Discretionary Summary By Appropriation**

Energy And Water Development, And Related Agencies

Appropriation Summary:

Energy Programs

Energy efficiency and renewable energy.....	1,704,112	2,178,540	16,800,000	2,318,602	+140,062	6.4%
Electricity delivery and energy reliability.....	136,170	137,000	4,500,000	208,008	+71,008	51.8%
Nuclear energy.....	960,903	792,000	----	761,274	-30,726	-3.9%
Legacy management.....	33,872	----	----	----	-----	0.0%

Fossil energy programs

Clean coal technology.....	-58,000	----	----	----	-----	0.0%
Fossil energy research and development.....	727,181	876,320	3,400,000	617,565	-258,755	-29.5%
Naval petroleum and oil shale reserves.....	20,272	19,099	----	23,627	+4,528	23.7%
Strategic petroleum reserve.....	186,757	205,000	----	229,073	+24,073	11.7%
Northeast home heating oil reserve.....	12,335	9,800	----	11,300	+1,500	15.3%
<b>Total, Fossil energy programs.....</b>	<b>888,545</b>	<b>1,110,219</b>	<b>3,400,000</b>	<b>881,565</b>	<b>-228,654</b>	<b>-20.6%</b>

Uranium enrichment D&D fund.....	622,162	535,503	390,000	559,377	+23,874	4.5%
Energy information administration.....	95,460	110,595	----	133,058	+22,463	20.3%
Non-Defense environmental cleanup.....	182,263	261,819	483,000	237,517	-24,302	-9.3%
Science.....	4,082,883	4,772,636	1,600,000	4,941,682	+169,046	3.5%
Energy transformation acceleration fund.....	----	----	400,000	10,000	+10,000	N/A
Nuclear waste disposal.....	187,269	145,390	----	98,400	-46,990	-32.3%
Departmental administration.....	148,415	155,326	----	182,331	+27,005	17.4%
Inspector general.....	46,057	51,927	15,000	51,445	-482	-0.9%
Advanced technology vehicles manufacturing loan.....	----	7,510,000	10,000	20,000	-7,490,000	-99.7%
Innovative technology loan guarantee program.....	4,459	----	----	----	-----	0.0%
Section 1705 temporary loan guarantee program.....	----	----	5,990,000	----	-----	0.0%
<b>Total, Energy Programs.....</b>	<b>9,092,570</b>	<b>17,760,955</b>	<b>33,588,000</b>	<b>10,403,259</b>	<b>-7,357,696</b>	<b>-41.4%</b>

Atomic Energy Defense Activities

National nuclear security administration:

Weapons activities.....	6,302,366	6,380,000	----	6,384,431	+4,431	0.1%
Defense nuclear nonproliferation.....	1,334,922	1,482,350	----	2,136,709	+654,359	44.1%
Naval reactors.....	774,686	828,054	----	1,003,133	+175,079	21.1%
Office of the administrator.....	402,137	439,190	----	420,754	-18,436	-4.2%
<b>Total, National nuclear security administration.....</b>	<b>8,814,111</b>	<b>9,129,594</b>	<b>----</b>	<b>9,945,027</b>	<b>+815,433</b>	<b>8.9%</b>

Environmental and other defense activities:

Defense environmental cleanup.....	5,411,231	5,657,250	5,127,000	5,495,831	-161,419	-2.9%
Other defense activities						
Health, safety and security.....	425,461	446,471	----	449,882	+3,411	0.8%
Legacy Management.....	154,961	185,981	----	189,802	+3,821	2.1%
Nuclear energy.....	75,261	565,819	----	83,358	-482,461	-85.3%
Defense related administrative support.....	98,104	108,190	----	122,982	+14,792	13.7%
Office of hearings and appeals.....	4,565	6,603	----	6,444	-159	-2.4%
Congressionally directed projects.....	----	999	----	----	-999	-100.0%
<b>Subtotal, Other defense activities.....</b>	<b>758,352</b>	<b>1,314,063</b>	<b>----</b>	<b>852,468</b>	<b>-461,595</b>	<b>-35.1%</b>
Adjustments.....	-8,893	----	----	----	-----	0.0%
<b>Total, Other defense activities.....</b>	<b>749,459</b>	<b>1,314,063</b>	<b>----</b>	<b>852,468</b>	<b>-461,595</b>	<b>-35.1%</b>
Defense nuclear waste disposal.....	199,171	143,000	----	98,400	-44,600	-31.2%
<b>Total, Environmental &amp; other defense activities.....</b>	<b>6,359,861</b>	<b>7,114,313</b>	<b>5,127,000</b>	<b>6,446,699</b>	<b>-667,614</b>	<b>-9.4%</b>
<b>Total, Atomic Energy Defense Activities.....</b>	<b>15,173,972</b>	<b>16,243,907</b>	<b>5,127,000</b>	<b>16,391,726</b>	<b>+147,819</b>	<b>0.9%</b>

Power marketing administrations:

Southeastern power administration.....	6,404	7,420	----	7,638	+218	2.9%
Southwestern power administration.....	30,165	28,414	----	44,944	+16,530	58.2%
Western area power administration.....	228,907	218,346	10,000	256,711	+38,365	17.6%
Falcon & Amistad operating & maintenance fund.....	2,477	2,959	----	2,568	-391	-13.2%
Colorado River Basins.....	-23,000	-23,000	----	-23,000	-----	0.0%
<b>Total, Power marketing administrations.....</b>	<b>244,953</b>	<b>234,139</b>	<b>10,000</b>	<b>288,861</b>	<b>+54,722</b>	<b>23.4%</b>

Federal energy regulatory commission.....	----	----	----	----	-----	0.0%
---	------	------	------	------	-------	------

Subtotal, Energy And Water Development and Related

Agencies.....	24,511,495	34,239,001	38,725,000	27,083,846	-7,155,155	-20.9%
Uranium enrichment D&D fund discretionary payments.....	-458,787	-463,000	----	-663,000	-200,000	-43.2%
Excess fees and recoveries, FERC.....	-20,370	-27,682	----	-26,864	+818	3.0%
<b>Total, Discretionary Funding.....</b>	<b>24,032,338</b>	<b>33,748,319</b>	<b>38,725,000</b>	<b>26,393,982</b>	<b>-7,354,337</b>	<b>-21.8%</b>



# **Environmental Management**

# **Environmental Management**

## Volume 5

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## **Environmental Management**

### **Proposed Appropriation Language**

#### **DEFENSE ENVIRONMENTAL CLEANUP**

(INCLUDING TRANSFER OF FUNDS)

For Department of Energy expenses, including the purchase, construction, and acquisition of plant and capital equipment and other expenses necessary for atomic energy defense environmental cleanup activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion, and the purchase of not to exceed four ambulances and three passenger motor vehicles for replacement only, [\$5,657,250,000] \$5,495,831,000, to remain available until expended, of which not more than \$463,000,000 shall be transferred to the "Uranium Enrichment Decontamination and Decommissioning Fund" [: Provided, That, of the amount appropriated in this paragraph, \$17,908,391 shall be used for projects specified in the table that appears under the heading "Congressionally Directed Defense Environmental Cleanup Projects" in the text and table under this heading in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act)]. (Energy and Water Development and Related Agencies Appropriations Act, 2009.)

#### **NON-DEFENSE ENVIRONMENTAL CLEANUP**

For Department of Energy expenses, including the purchase, construction, and acquisition of plant and capital equipment and other expenses necessary for non-defense environmental cleanup activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion, [\$261,819,000] \$237,517,000, to remain available until expended [: Provided, That the appropriation includes funds for environmental remediation activities associated with the Energy Technology and Engineering Center (ETEC) at the Santa Susana Field Laboratory (SSFL), subject to the following: (1) the Department shall use a portion of this funding to enter into an interagency agreement with the Environmental Protection Agency (EPA) regarding a comprehensive radioactive site characterization of Area IV of the SSFL and (2) the Department shall provide the amount required by EPA for the radioactive site characterization in fiscal year 2009 from within the available funds: Provided further, That of the amounts provided, \$5,000,000 is available for necessary expenses for the purpose of carrying out remedial actions under this title at real property in the vicinity of the Tuba City processing site designated in section 102(a)(1), of the Uranium Mill Tailings Radiation Control Act of 1978 (Public Law 95-604, as amended; 42 U.S.C. 7901, et seq.), notwithstanding section 112 of that Act, at a dump site immediately adjacent to the north-northwest section of the Tuba City processing site, and on the north side of Highway 160: Provided further, That, of the amount appropriated in this paragraph, \$4,757,500 shall be used for projects specified in the table that appears under the heading "Congressionally Directed Non-Defense Environmental Cleanup Projects" in the text and table under this heading in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act)]. (Energy and Water Development and Related Agencies Appropriations Act, 2009.)

## **URANIUM ENRICHMENT DECONTAMINATION AND DECOMMISSIONING FUND**

For necessary expenses in carrying out uranium enrichment facility decontamination and decommissioning, remedial actions, and other activities of title II of the Atomic Energy Act of 1954, and title X, subtitle A, of the Energy Policy Act of 1992, [\$535,503,000] \$559,377,000, to be derived from the Uranium Enrichment Decontamination and Decommissioning Fund, to remain available until expended [, of which \$10,000,000 shall be available in accordance with title X, subtitle A, of the Energy Policy Act of 1992] : Provided, That the Secretary shall collect up to \$200,000,000 in assessments pursuant to section 1802 of the Atomic Energy Act of 1954 (42 U.S.C. 2297g-1), as amended by this Act. (Energy and Water Development and Related Agencies Appropriations Act, 2009.)



**Environmental Management  
Overview  
Appropriation Summary**

	FY 2008 Current Appropriation	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010 Request
Defense Environmental Cleanup	5,424,072	5,658,359	5,127,000	5,495,831
Non-Defense Environmental Cleanup	196,798	282,472	483,000	237,517
Uranium Enrichment Decontamination and Decommissioning Fund	622,162	535,503	390,000	559,377
Subtotal, Environmental Management	6,243,032	6,476,334	6,000,000	6,292,725
Use of Prior Year (Defense Environmental Cleanup)	-12,841	-1,109	0	0
Use of Prior year (Non-Defense Environmental Cleanup)	-14,535	-653	0	0
Transfer from Office of Science	0	-10,000	0	0
Transfer from NNSA	0	-10,000	0	0
D&D Fund Offset	-458,787	-463,000	0	-463,000
Subtotal, EM	5,756,869	5,991,572	6,000,000	5,829,725
Offsetting Receipts, Domestic Utility Fee	0	0	0	-200,000
Total, Environmental Management	5,756,869	5,991,572	6,000,000	5,629,725

**Appropriation Summary by Program**

	FY 2008 Current Appropriation	FY 2009 Current Appropriation	FY 2010 Request
Defense Environmental Cleanup			
Closure Sites			
Ashtabula	292	0	0
Closure Sites Administration	11,726	13,209	8,225
Fernald	0	2,100	0
Miamisburg	30,032	30,574	33,243
Total, Closure Sites	42,050	45,883	41,468
Hanford Site			
2012 Accelerated Completions	437,689	476,491	501,367
2035 Accelerated Completions	467,309	490,485	401,713
Total, Hanford Site	904,998	966,976	903,080
Idaho National Laboratory	517,487	475,761	406,168
NNSA Sites			
California Site Support	367	0	238
Lawrence Livermore National Laboratory	8,601	0	910
Los Alamos National Laboratory	173,270	222,734	189,000
Nevada	85,368	75,674	65,674
NNSA Service Center/Separations Processing Research Unit (SPRU)	28,831	19,443	17,938
Pantex	25,027	0	0

	FY 2008 Current Appropriation	FY 2009 Current Appropriation	FY 2010 Request
Sandia National Laboratories	0	3,000	2,864
Total, NNSA Sites	321,464	320,851	276,624
Oak Ridge	194,235	262,835	153,768
Office of River Protection			
Tank Farm Activities	292,818	319,943	408,000
Waste Treatment and Immobilization Plant	683,722	690,000	690,000
Total, Office of River Protection	976,540	1,009,943	1,098,000
Savannah River Site			
2035 Accelerations	543,506	185,526	57,068
Nuclear Material Stabilization and Disposition	0	339,843	391,625
Tank Farm Activities	595,208	701,774	761,256
Total, Savannah River Site	1,138,714	1,227,143	1,209,949
Waste Isolation Pilot Plant	234,585	231,661	220,337
Program Support	32,844	33,930	34,000
Program Direction	306,941	309,807	355,000
Safeguards and Security	257,632	260,341	279,437
Technology Development and Deployment	20,600	32,320	55,000
Federal Contribution to the Uranium Enrichment D&D Fund	458,787	463,000	463,000
Congressionally Directed Projects	17,195	17,908	0
Total, Defense Environmental Cleanup	5,424,072	5,658,359	5,495,831
Non-Defense Environmental Cleanup			
Fast Flux Test Reactor Facility D&D	10,248	10,755	7,652
Congressionally Directed Projects	0	4,757	0
Gaseous Diffusion Plants			
Oak Ridge	0	0	0
Paducah Gaseous Diffusion Plant	32,597	45,305	49,166
Portsmouth Gaseous Diffusion Plant	19,711	35,991	55,278
Total, Gaseous Diffusion Plants	52,308	81,296	104,444
Small Sites			
Argonne National Laboratory	433	29,479	0
Brookhaven National Laboratory	15,438	8,433	12,614
California Site Support	158	187	262
Completed Sites/Program Support	1,189	1,100	1,200
Energy Technology Engineering Center	12,882	15,000	13,000
Idaho National Laboratory	5,351	13,478	5,000
Inhalation Toxicology Laboratory	423	0	0
Los Alamos National Laboratory	1,888	1,905	0
Moab	23,734	40,699	30,671
Tuba City	0	5,000	0
SLAC National Accelerator Laboratory	7,846	4,883	4,600
Total, Small Sites	69,342	120,164	67,347
West Valley Demonstration Project	64,900	65,500	58,074
Total, Non-Defense Environmental Cleanup	196,798	282,472	237,517
Uranium Enrichment Decontamination and Decommissioning Fund			
D&D Activities			
Oak Ridge	282,181	208,833	225,000
Paducah Gaseous Diffusion Plant	115,614	116,446	87,501
Portsmouth Gaseous Diffusion Plant	204,549	200,224	246,876
Total, D&D Activities	602,344	525,503	559,377
U/Th Reimbursements	19,818	10,000	0

	FY 2008 Current Appropriation	FY 2009 Current Appropriation	FY 2010 Request
Total, Uranium Enrichment Decontamination and Decommissioning Fund	622,162	535,503	559,377
Total, Environmental Management	6,243,032	6,476,334	6,292,725
Use of Prior Year (Defense Environmental Cleanup)	-12,841	-1,109	0
Use of Prior year (Non-Defense Environmental Cleanup)	-14,535	-653	0
Transfer from Office of Science	0	-10,000	0
Transfer from NNSA	0	-10,000	0
D&D Fund Offset	-458,787	-463,000	-463,000
Subtotal, Environmental Management	5,756,869	5,991,572	5,829,725
Offsetting Receipts, Domestic Utility Fee	0	0	-200,000
Total, Environmental Management	5,756,869	5,991,572	5,629,725

### Funding by Budget Chapters

	FY 2008	FY 2009 Original Appropriation	FY 2010 Request
Carlsbad	234,585	231,661	220,337
Idaho	522,838	489,239	411,168
Oak Ridge			
Oak Ridge	476,416	471,668	378,768
Paducah	148,211	161,751	136,667
Portsmouth	224,260	236,215	302,154
Richland	915,246	977,731	910,732
River Protection	976,540	1,009,943	1,098,000
Savannah River	1,138,714	1,227,143	1,209,949
NNSA Sites			
California Site Support	367	0	238
Nevada	85,368	75,674	65,674
NNSA Service Center/Separations Processing Research Unit (SPRU)	28,831	19,443	17,938
Lawrence Livermore National Laboratory	8,601	0	910
Los Alamos National Laboratory	175,158	224,639	189,000
Pantex	25,027	0	0
Sandia National Laboratories	0	3,000	2,864
Subtotal, NNSA Sites	323,352	322,756	276,624
Closure Sites			
Ashtabula	292	0	0
Closure Sites Administration	11,726	13,209	8,225
Fernald	0	2,100	0
Miamisburg	30,032	30,574	33,243
Subtotal, Closure Sites	42,050	45,883	41,468
All Other Sites			
Completed Sites/Program Support	1,189	1,100	1,200
Brookhaven National Laboratory	15,438	8,433	12,614

	FY 2008	FY 2009 Original Appropriation	FY 2010 Request
California Site Support	158	187	262
Argonne National Laboratory	433	29,479	0
Energy Technology Engineering Center	12,882	15,000	13,000
Inhalation Toxicology Laboratory	423	0	0
Moab	23,734	40,699	30,671
Tuba City	0	5,000	0
SLAC National Accelerator Laboratory	7,846	4,883	4,600
Subtotal, All Other Sites	62,103	104,781	62,347
Safeguards and Security	257,632	260,341	279,437
Headquarters Operations	69,857	66,595	34,000
West Valley Demonstration Project	64,900	65,500	58,074
Technology Development & Deployment	20,600	32,320	55,000
Program Direction	306,941	309,807	355,000
D&D Fund Deposit	458,787	463,000	463,000
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Transfer from Office of Science	0	-10,000	0
Transfer from NNSA	0	-10,000	0
D&D Fund Offset	-458,787	-463,000	-463,000
Subtotal, Environmental Management	5,756,869	5,991,572	5,829,725
Offsetting Receipts, Domestic Utility Fee	0	0	-200,000
Total, Environmental Management	5,756,869	5,991,572	5,629,725

## Mission

Fifty years of nuclear weapons production and energy research generated millions of gallons of liquid radioactive waste, millions of cubic meters of solid radioactive wastes, thousands of tons of spent nuclear fuel and special nuclear material, along with huge quantities of contaminated soil and water. The Environmental Management (EM) program was established in 1989 to achieve the successful cleanup of this Cold War legacy. In order to execute the mission, EM has ranked, in priority order, those activities with the greatest risk reduction. Safety remains the utmost priority. EM is committed to its safety principles and will continue to maintain and demand the highest safety performance to protect the workers and the communities where EM operates.

## Summary

The EM program has made significant progress over the past seven years in meeting the enormous challenge of cleaning up the nuclear weapons complex. Since 2001, EM has completed 15 of 18 sites for cleanup and closure, including three former weapons production sites as part of its risk-reduction driven cleanup strategy: Rocky Flats and Fernald, which have already transferred to the DOE Office of Legacy Management for long-term stewardship; and Mound, which is scheduled to transfer in FY 2011.<sup>a</sup>

EM continues to pursue its cleanup objectives within the overall framework of achieving the greatest risk reduction benefit per radioactive content and overlaying regulatory compliance commitments and best business practices to maximize cleanup progress. To support this approach EM has prioritized its cleanup activities:

<sup>a</sup> A small area associated with the OU-1 for the Miamisburg site will be remediated with FY 2009 Congressionally directed funding and completed with American Recovery and Reinvestment Act funding in FY 2010.

- Essential activities to maintain a safe and secure posture in the EM complex
- Radioactive tank waste stabilization, treatment, and disposal
- Spent nuclear fuel storage, receipt and disposition
- Special nuclear material consolidation, processing, and disposition
- High priority groundwater remediation
- Transuranic and mixed/low level waste disposition
- Soil and groundwater remediation
- Excess facilities deactivation & decommissioning

In addition to these priorities, other equally important strategies are integrated into cleanup activities important not only to the achievement of EM cleanup progress, but also important to our stakeholders and states where cleanup sites are located. Most importantly, EM will continue to discharge its responsibilities by conducting cleanup within a “Safety First” culture that integrates environment, safety and health requirements and controls into all work activities to ensure protection to the worker, public, and the environment and adheres to the project and contract management principles as defined in DOE Order 413.3A. As part of this, project risks are defined and risk integration strategies are developed.

Project cost, schedule and performance, including earned value data, continue to be reviewed on a regular basis. Over 90 percent of EM contractors are utilizing earned value management systems certified to ANSI Standard 478. In addition, EM defined what enhancements would be required to make the EM organization Best-in-Class for project and contract management. As part of this effort, EM partnered with the Corps of Engineers to conduct an assessment of EM’s project and contract management process, systems and workforce capabilities within each site as well as the Consolidated Business Center and Headquarters. Where gaps have been identified, EM has aggressively pursued improvements. Specifically, EM has made 360 critical mission hires since the beginning of FY 2006. At locations where gaps exist, federal staff has been augmented with Corps of Engineers personnel until federal hires are made.

In 2008, as part of an effort to implement project management reforms at a Departmental level, a detailed analysis of the root causes contributing to less than satisfactory project performance was conducted. From this effort, DOE developed a Corrective Action Plan. EM was an active participant in the CAP and is now developing and implementing corrective actions. These corrective actions include project reviews modeled after the Office of Science “Lehman Reviews,” centered on the rigorous development and implementation of a long-standing project peer review and evaluation process that has consistently been the basis for delivering large Office of Science projects on schedule and within cost.

Another project management enhancement EM is pursuing is “bundling” cleanup work scope into more discrete scope elements and developing standardized cost information at this level. This should lead to increased ownership of project work scope which can be a key determinant of project success. In addition, the collection of standardized cost information will provide the analytical tools to compare and evaluate project performance across the legacy cleanup complex. As a result EM will be able to better manage, evaluate, and communicate project progress and understand the performance impacts on cleanup work scope, schedule and cost.

The performance of the EM program is measured against baselines of the scope, schedule and cost of each of the projects in the program. Sixteen corporate performance metrics are also used to assess and

communicate the annual and life-cycle progress of the EM cleanup. Each metric is tracked against the projected life-cycle quantities necessary to complete cleanup at each site. Together, the baselines and the performance metrics clearly establish agreed-upon performance expectations. Both baselines and performance metrics are under configuration control.

EM has made substantial progress in stabilizing and consolidating special nuclear material, resulting in significant reduction of risk posed by these materials. As a result, EM has eliminated all but two Material Access Areas, which has dramatically reduced not only risk, but costly compliance with security requirements. Progress also includes the near completion of transferring Spent Nuclear Fuel from wet to dry storage and disposition of large quantities of transuranic waste, low-level waste, and mixed-low level waste.

EM has demonstrated success in transuranic and solid waste disposition, soil and groundwater remediation and facility decontamination and decommissioning using proven technologies within a well-defined regulatory framework. Under this rubric, EM has been able to demonstrate that this work can be successfully executed and that efficiencies can be realized through economies of scale, allowing completion of additional work at the same or lower cost. These types of activities are most often associated with footprint reduction at larger sites and near-term completions at all sites.

Footprint reduction cleanup activities are, generally speaking, lower in risk than the management of radioactive tank waste, surplus special nuclear material, and spent nuclear fuel and other essential activities to maintain a safe and secure posture in the EM complex, which account for over half the EM life-cycle cost and pose the highest environmental, health and safety risks. These higher-risk activities are associated with the larger sites and are laden with technical, regulatory, and political uncertainties. EM is pursuing alternative approaches to reduce the enormous life-cycle cost associated with management of tank waste and surplus nuclear materials and proactively evaluating the benefits associated with footprint reduction and near-term completions.

As a result of an intensive year-long strategic planning initiative, EM is able to demonstrate that additional investments in footprint reduction and near-term completion cleanup activities can yield significant environmental cleanup progress and reduce life-cycle cost.

### ***American Recovery and Reinvestment Act***

To that end, EM's plan is to allocate the \$6 billion in American Recovery and Reinvestment Act (Recovery Act) funding provided by Congress to complete lower-risk footprint reduction and near-term completion cleanup activities. In addition, much of this cleanup work is associated with compliance milestones. As a result, EM will be better positioned to meet its compliance commitments going forward.

This work will be accomplished primarily through the use of existing contract vehicles and will allow thousands of blue collar workers to be hired with limited training required. EM is well poised to effectively spend the \$6 billion in Recovery Act funding because this type of cleanup is associated with:

- Proven technologies—on-the-shelf plans and projects ready to be implemented;
- Regulatory infrastructure in place—established regulatory framework with regulator and community support;

- Acquisition structure in place—flexible contract vehicles allow quick expansion of environmental cleanup workforces—over 80 percent of funds would be direct labor costs;
- Project Management structure in place—ability to track and measure performance;
- Proven track record of significant expenditures in the year of appropriation.

### ***FY 2010 Budget***

The FY 2010 budget request of \$5.8 billion will be utilized to fund essential activities to maintain a safe and secure posture in the EM complex, activities needed to support the management and timely disposition of radioactive tank waste, special nuclear material, spent nuclear fuel, and high priority groundwater remediation. It will also fund the solid waste disposal infrastructure needed to support disposal of transuranic and low-level wastes generated by high-risk activities and the footprint reduction activities. These activities represent over 80% of EM's FY 2010 base budget request of \$5.8 billion.

The requested funding will be used in part to reimburse the costs of DOE contractor contributions to defined-benefit (DB) pension plans as required by the Employee Retirement Income Security Act (ERISA), as amended by the Pension Protection Act of 2006 (PPA), and consistent with Departmental direction. The PPA amended ERISA to require accelerated funding of DB pension plans so that the plans become 100% funded in 2011. Most contractors that manage and operate DOE's laboratories, weapons plants, and execute environmental clean-up projects at various government owned sites and facilities are contractually required to assume sponsorship of any existing contractor DB pension plans for incumbent employees who work and retire from these sites and facilities. Increased contributions began to be required for some of these DB pension plans as a result of the downturn in investment values in FY 2009. Whether additional funding will be needed in future years will depend on the funded status of the plans based on plan investment portfolios managed by the contractors as sponsors of the DB pension plans.

Many of the high-risk activities funded in the base program represent the biggest challenges facing the EM program. EM continues to move forward and clear hurdles in finalizing design, constructing, and operating three unique and complex tank waste processing plants to treat approximately 88 million gallons of radioactive tank waste for ultimate disposal. With a total cost estimate of \$14.3 billion, investments are still needed to complete building and operating these necessary facilities and process the tank waste, which is one of the primary risk and cost drivers in the program. EM also faces the challenge of selecting and implementing disposition options needed to prepare certain types of SNM and SNF for ultimate disposal.

Based on the technical challenges associated with these activities, funding for the Technology Development and Demonstration program has been increased from \$32 million in FY 2009 to \$105 million in FY 2010. Within the request, \$50 million in Technology Development and Deployment funds will be invested specifically at the Office of River Protection to support investments in tank waste technologies. In FY 2010, investments will be highly focused and concentrated on higher-risk activities such as radioactive tank waste and high priority groundwater remediation. Technology Development and Deployment tools are integral to reducing the technical uncertainty associated with building and operating the unique facilities and processes needed for EM cleanup. This will result in improved cost and schedule performance.

EM will continue to seek ways to maximize reduction of environment, safety, and health risks in a safe, secure, compliant, and cost-effective manner. The current EM life-cycle cost estimate range, which covers the period of 1997 through completion, is \$274 to \$330 billion. This includes \$69 billion in actual costs from 1997 through 2007, and an additional estimate of \$205 to \$260 billion to complete EM's remaining mission.

### ***Integration of the FY 2010 Budget and Recovery Act***

EM will segregate cleanup scope funded within the normal appropriation process from work funded from the Recovery Act for both budget execution and project performance tracking and reporting. This will allow EM to clearly articulate existing programmatic performance (base program) and the additional cleanup progress that is achieved as a result of the additional resources invested in the cleanup program. In addition, this will position the program to optimize planning scenarios that can support future funding allocation decisions.

Savannah River is using Recovery Act funds to pull in lower priority cleanup activities that are tied to existing compliance agreements that have been deferred to fund higher risk activities such as the management and disposition of radioactive tank waste and surplus special nuclear materials. As a result, Savannah River will enhance its compliance posture and accelerate five Area completions including the entombment of two plutonium production reactors.

Hanford's use of Recovery Act funds will fully utilize the River Corridor cleanup contract and will go along way to restoring the River Corridor and protecting the Columbia River by eliminating additional contamination of this key water resource.

In Idaho, Recovery Act funds will be used to leverage the efficiencies realized through existing D&D contracts. The value of the D&D work conducted at Idaho translates into \$1.60 of work being completed for every dollar spent. The acceleration of D&D projects at Idaho will reduce project cost; avoid out-year save the surveillance and maintenance and escalation costs for D&D activities.

At Oak Ridge, Recovery Act funding will allow EM to begin to address the environmental liability associated with the Integrated Facility Disposition Project (IFDP) which includes removal of at risk materials and stabilization and deactivation of facilities.

Small site cleanup is another area funded through the Recovery Act. EM intends to accelerate completion of a number of small sites with this funding. This will result in the elimination of EM's presence at these sites, ultimately reducing the footprint of the EM legacy cleanup complex and reducing the life-cycle cost of the cleanup program.

For up-to-date information regarding recovery act progress, please reference the Energy Recovery website at <http://www.energy.gov/recovery/index.htm>.

### **Highlights of the Request**

For FY 2010, EM's funding priorities are as follows:

- Requisite safety, security, and essential services across EM cleanup sites;
- Post-closure contract liabilities
- Radioactive tank waste storage, treatment, and disposal;



- Spent nuclear fuel storage, receipt, and remediation;
- Special nuclear materials storage, processing, and disposition;
- High risk soil and groundwater remediation
- Solid waste (transuranic, low-level, and mixed low-level wastes) treatment, storage, and disposal;
- Soil and groundwater remediation; and
- Decontamination and decommissioning of contaminated facilities.

Based on these priorities, EM's FY 2010 request of \$5.8 billion will fund the following activities:

- Safe and secure operations;
- Pension and medical benefits for current and former workers;
- Hanford Waste Treatment and Immobilization Plant (\$690M) and completion of two C-Farm Single-Shell Tank retrievals (\$30M);
- Tank farm operations at the Hanford, Idaho, and Savannah River sites (\$527M);
- Idaho Sodium Bearing Waste Treatment activities (\$83.7M);
- Savannah River Salt Waste Processing Facility construction and pre-operations (\$259M);
- Special nuclear material consolidation/disposition and storage (\$548M), this includes H canyon operations (\$250M), Plutonium disposition planning (\$15M) and U-233/Building 3019 processing (\$38.9M);
- DUF6 Operations at Portsmouth and Paducah (\$95.2M);
- Solid Waste (TRU and Mixed/Low level waste) storage, treatment, and disposal (\$429M), includes operations of WIPP to support an average rate of 21 contact-handled and 5 remote-handled shipments weekly of TRU waste disposal at WIPP; and operations of the Nevada Test Site to dispose of low-level and mixed low-level wastes;
- High-priority soil and ground water remediation at Portsmouth, Paducah, Los Alamos, Savannah River, Hanford (\$748.3M);
- Decontamination and decommissioning work to maintain site progress (\$190M);
- Technology Development and Deployment in support of tank waste, soil and groundwater, and facility D&D (\$105M), this includes directed investments in tank waste technologies at the Office of River Protection (\$50M); and
- Community and Regulatory activities (\$67.9M).

### ***FY 2009 Accomplishments and FY 2010 Highlights***

EM continues to make significant cleanup progress demonstrated by:

- Beginning consolidation of all nuclear materials at the Savannah River Site
- Processed for disposition over one million gallons of radioactive liquid waste at the Savannah River Site
- Producing over 2,800 cans of vitrified high-level waste from highly radioactive liquid wastes. (Savannah River Site and the West Valley Demonstration Project)
- Characterizing, and certifying, over 50,000 cubic meters of transuranic waste from many sites to the Waste Isolation Pilot Plant and shipping that waste from many sites over 8,000,000 miles for permanent disposal, without any major incident and with no release.
- First Remote-Handled Transuranic Waste shipments from Oak Ridge arrived safely at WIPP
- Disposing of over one million cubic meters of legacy low-level waste and mixed low-level waste.
- Safely closing seven of the eleven radioactive liquid waste tanks at the Idaho National Laboratory.

## **Strategic Themes, Goals and the Secretary's Initiatives**

A new strategic plan has not yet been established and approved by the Secretary of Energy. The Secretary has established major priorities and initiatives.

The Secretary's top ten initiatives are:

1. **Energy Efficient Homes and Businesses:** Funding provided through the states for homeowners and businesses to take immediate steps toward energy efficiency – reducing heating and air conditioning bills and creating jobs.
2. **Greening Federal Buildings:** Provide funding for the federal government to improve the efficiency of offices and buildings, reducing energy bills and creating jobs.
3. **Renewable Energy Projects:** Accelerate the construction of solar, wind, geothermal and other renewable energy generation facilities through a combination of loans and grants, creating jobs immediately and provide the United States with clean energy supply for the long term.
4. **SmartGrid Technology and Transmission Infrastructure:** Build the wires and infrastructure needed to transport electricity across the country – from renewable energy plants to population centers, reducing congestion and allowing for more clean energy – and improve the efficiency and reliability of the existing grid.
5. **Clean Coal Technology:** Develop and pilot innovative technologies for the emission-free coal plants of the future, allowing our nation to safely utilize our abundant coal resources.
6. **Next Generation Biofuels:** Provide loans and grants to accelerate the research and deployment of cellulosic biofuels technologies to provide a clean alternative to imported fossil fuel sources.
7. **Science and Basic Research in the Energy Technologies of the Future:** Investments in building and renovating laboratories and scientific research facilities that will create jobs immediately and enable the research on for technologies and innovations that will sustain American industry and provide new energy and climate solutions over the longer term.
8. **Battery Research and Advanced Vehicle Technologies:** Loans and grants to support the development of advanced vehicle batteries and battery systems to reinvigorate the U.S. auto industry, reduce the U.S. dependence on foreign oil and transforming the way automobiles are powered.
9. **Advanced Research Project Agency-Energy (ARPA-E):** Jump start advanced energy technologies by funding high-risk, high-payoff research in collaboration with industry.
10. **Cleanup of Nuclear Legacy:** Redouble the ongoing projects to clean up the radioactive waste from cold war nuclear project sites, creating jobs and reclaiming lands for communities across the country.

The following chart aligns the current Strategic Plan with the Secretary's priorities:

Strategic Theme	Strategic Goal Title	Secretary's Priorities	GPRA Unit Program Number	GPRA Unit Program Title	Office
4. Environmental Responsibility	1. Environmental Cleanup	Cleanup of Nuclear Legacy	53	Environmental Management	EM

### Annual Performance Results and Targets

EM has developed 16 corporate performance measures to enable the program to monitor annual and life-cycle progress towards meeting the Department's Strategic Goal 4 and EM's Program Goal. These corporate performance measures are:

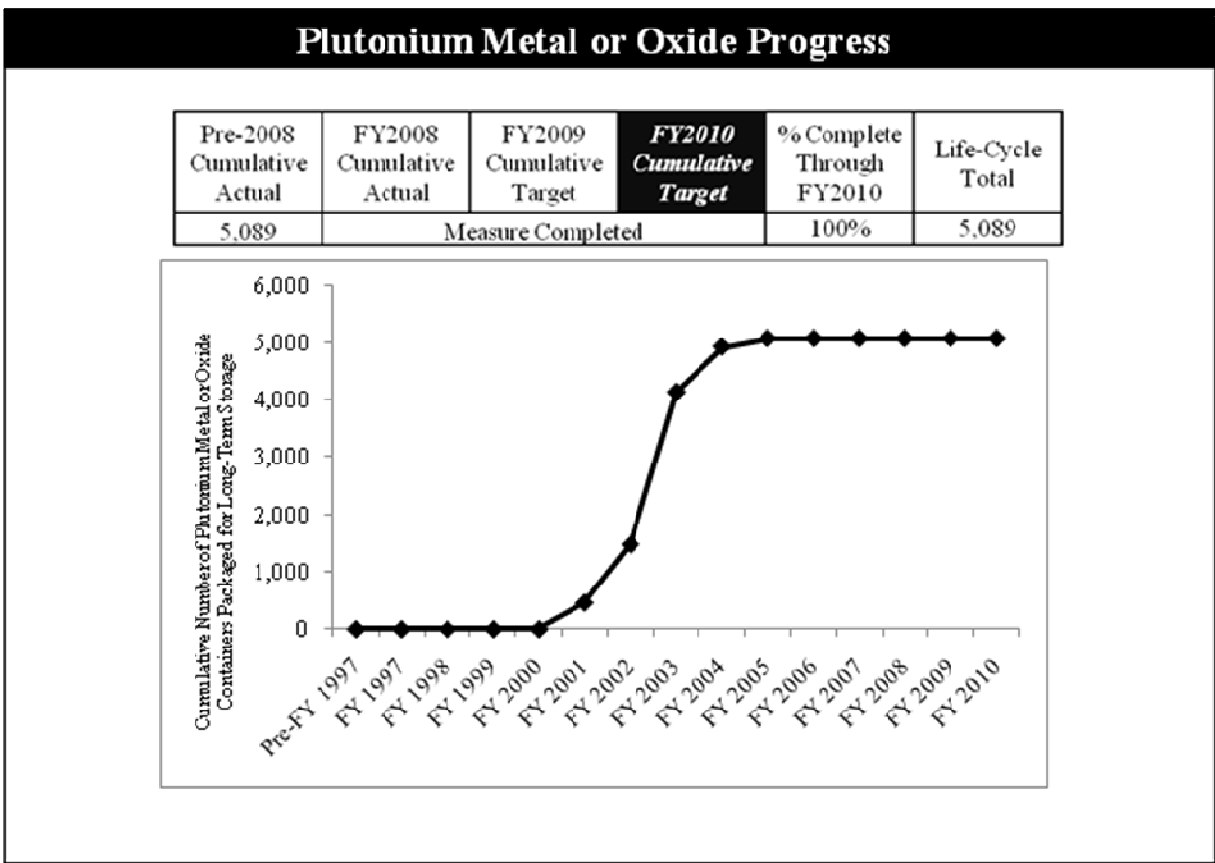
- Certified DOE storage/treatment/disposal 3013 containers (or equivalent) of plutonium metal or oxide packaged ready for long-term storage;
- Certified containers of enriched uranium packaged ready for long-term storage;
- Plutonium or uranium residues packaged for disposition (kg of bulk material);
- Depleted and other uranium packaged for disposition (metric tons).
- Liquid waste eliminated (millions of gallons);
- Number of liquid tanks closed;
- Canisters of high-level waste packaged for final disposition;
- Spent nuclear fuel packaged for final disposition (metric tons of heavy metal);
- Transuranic waste shipped for disposal (cubic meters);
- Low-level waste/mixed low-level waste disposed (cubic meters);
- Number of material access areas eliminated;
- Number of nuclear facilities completed;
- Number of radioactive facilities completed;
- Number of industrial facilities completed;
- Number of release sites remediated; and
- Number of geographic sites closed.

Each of these 16 corporate performance measures is quantitative and focuses on the accomplishment of risk-reducing actions and life-cycle reduction. Each measure is tracked in the context of the total measure (life-cycle) necessary to complete each site as well as the EM program as a whole. The corporate measures are under configuration control, thereby establishing performance expectations and accountability for those expectations within a given funding level. Through configuration control, EM is able to make corporate decisions that will keep the program on track, monitor and control costs and schedules, and manage site closure expectations. In addition to the corporate measures, performance is also tracked through the establishment of baselines, which are used to demonstrate whether a project and site are on track to achieve agreed upon performance expectations.

## Nuclear Materials

Reducing the inventory of high-risk nuclear materials by preparing it for long-term storage or disposition quantitatively measures EM's progress towards environmental, safety, and security risk reduction. The stabilization and packaging of nuclear materials indicates a reduction in an activity that is a major cost driver for the EM program. The following four corporate performance measures (and the identification of the sites that mainly contribute to each of the measures for which work scope remains) are depicted below.

- Plutonium metal or oxide containers packaged for long-term storage (all work for this corporate performance measure has been completed)<sup>a</sup>
- Enriched uranium containers packaged for long-term storage (Hanford Site, Savannah River Site, and Idaho National Laboratory)<sup>b</sup>
- Plutonium or uranium residues packaged for disposition (all work for this corporate performance measure has been completed) and
- Depleted and other uranium packaged for disposition (Hanford, Savannah River Site, Paducah, and Portsmouth)<sup>c</sup>



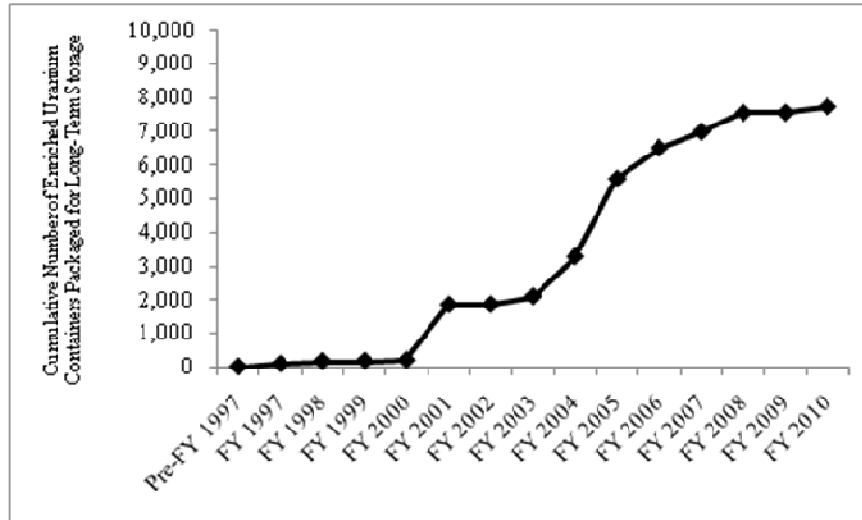
<sup>a</sup> The final life-cycle quantity of plutonium oxide containers from Richland has been revised.

<sup>b</sup> New disposition plans for enriched uranium containers resulted in revised life-cycle quantities and targets from the Savannah River Site and Idaho.

<sup>c</sup> A delayed start date for the depleted uranium conversion facilities and changes to the project performance baselines have resulted in revised targets.

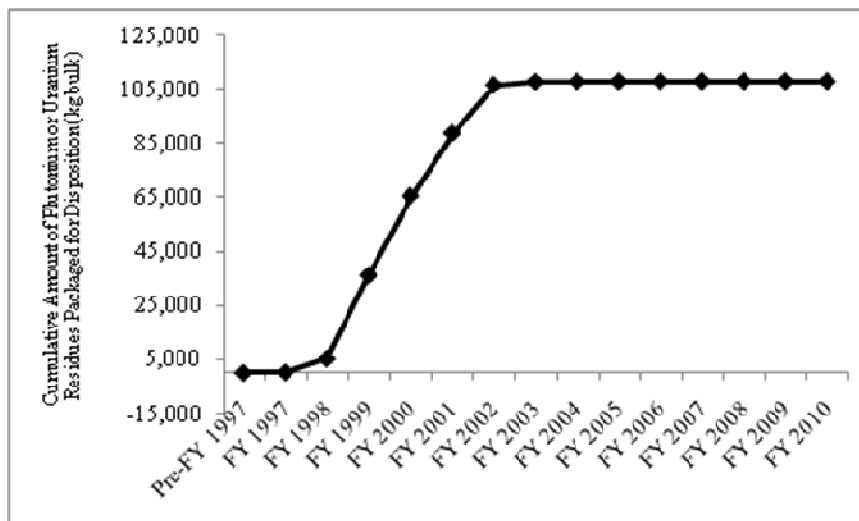
## Enriched Uranium Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<b>FY2010 Cumulative Target</b>	% Complete Through FY2010	Life-Cycle Total
6,986	7,548	7,549	7,729	98%	7,911



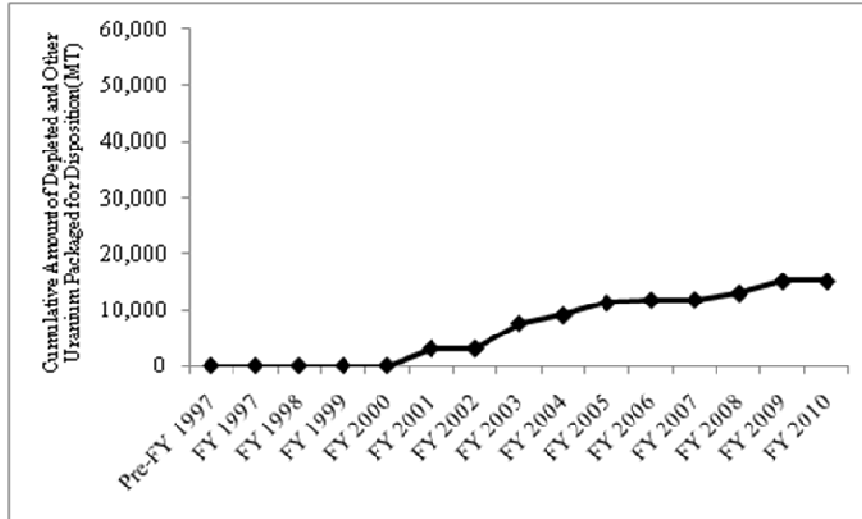
## Plutonium or Uranium Residues Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<b>FY2010 Cumulative Target</b>	% Complete Through FY2010	Life-Cycle Total
107,828	Measure Completed			100%	107,828



## Depleted and Other Uranium Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<i>FY2010 Cumulative Target</i>	% Complete Through FY2010	Life-Cycle Total
11,860	13,074	15,210	15,210	2%	692,982



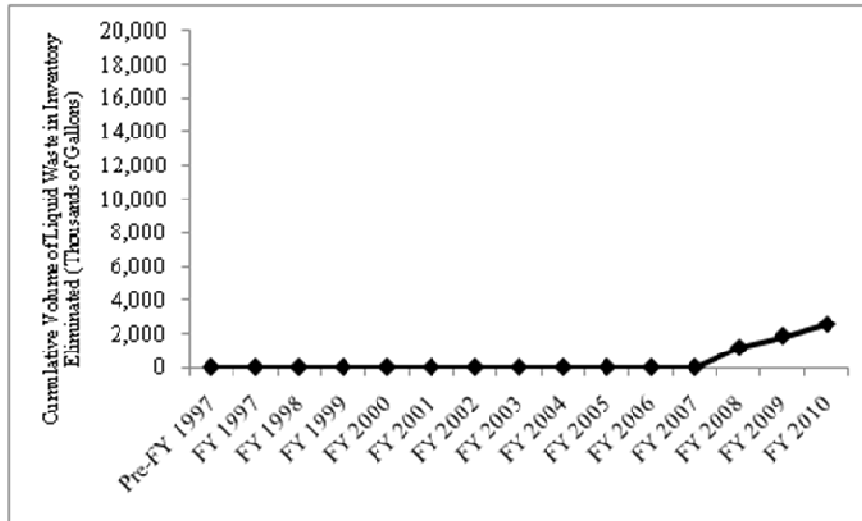
### Liquid Waste

By reducing the amount of high risk radioactive liquid waste in the inventory and subsequent closing of the liquid waste tanks, EM is demonstrating tangible evidence of the program's goal to reduce the highest risks in the complex first. In addition to eliminating high-risk material, corresponding life-cycle cost reductions are achieved for an activity that is a major cost driver to the EM program. The following two corporate measures (and the identification of the sites that mainly contribute to each of the measures) are depicted below:

- Liquid waste in inventory eliminated (Hanford Site and Savannah River Site) and
- Liquid waste tanks closed (Hanford Site, Savannah River Site, and Idaho National Laboratory)

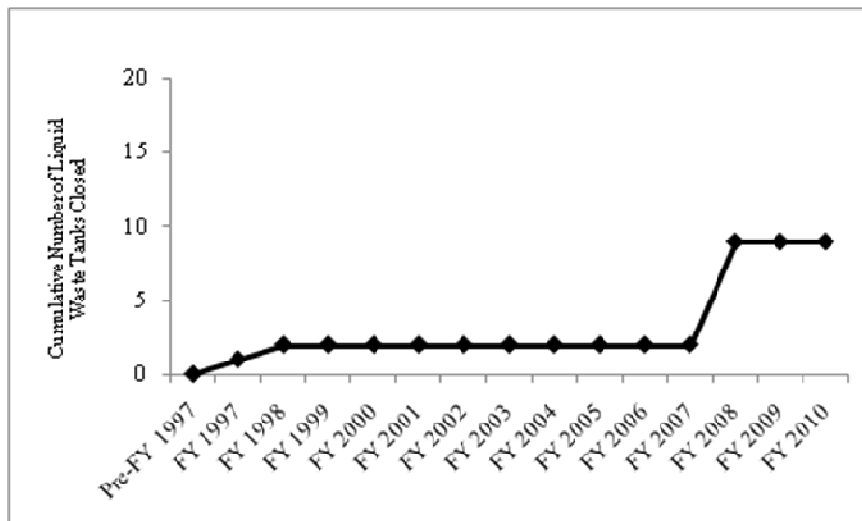
## Liquid Waste in Inventory Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<b>FY2010 Cumulative Target</b>	% Complete Through FY2010	Life-Cycle Total
0	1,174	1,874	2,574	3%	88,000



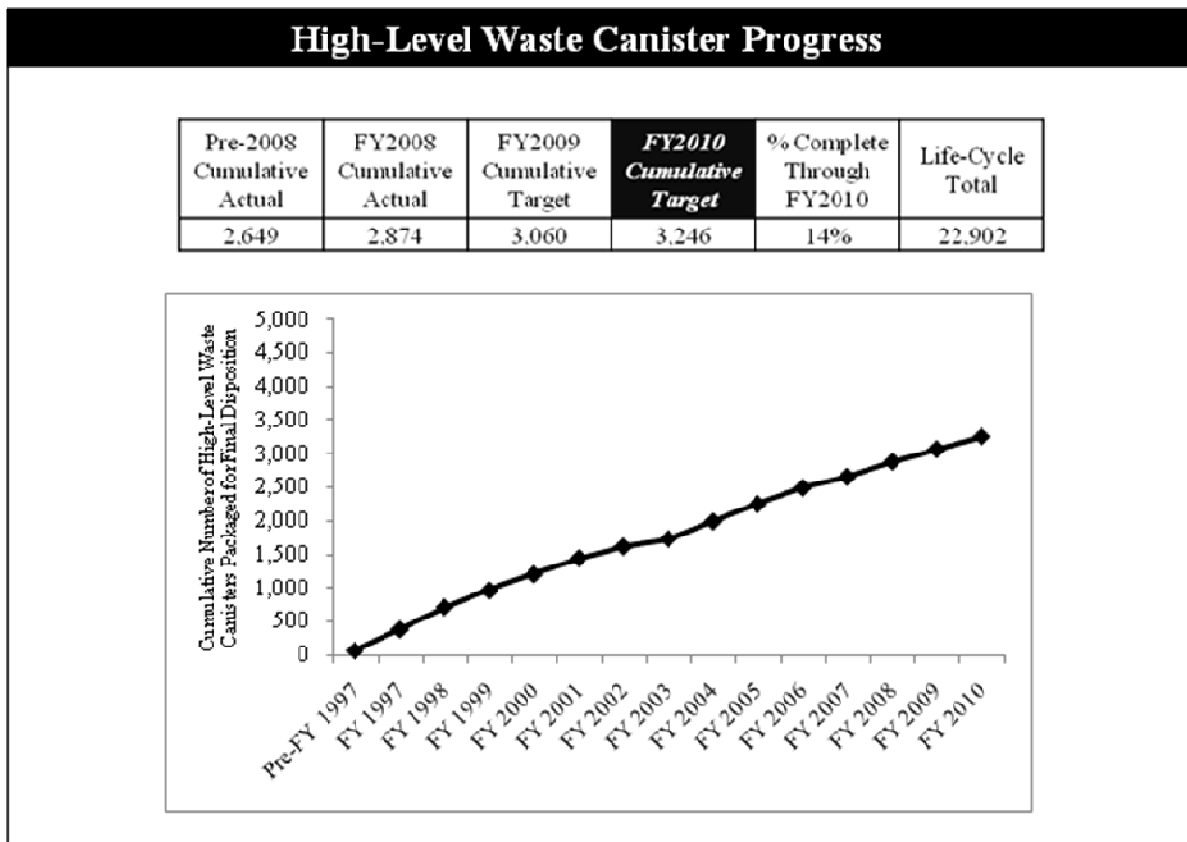
## Liquid Waste Tank Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<b>FY2010 Cumulative Target</b>	% Complete Through FY2010	Life-Cycle Total
2	9	9	9	4%	239



## High-Level Waste and Spent Nuclear Fuel

The EM program is preparing high-level waste and spent nuclear fuel for final disposition in order to ensure the material is ready for offsite disposal. Completion of high-level waste and spent nuclear fuel activities indicates the reduction of both high risk and cost incurring activities. The Hanford Site, Savannah River Site, and Idaho National Laboratory primarily contribute to both the high-level waste measure<sup>a</sup> and the spent nuclear fuel measure. Both corporate performance measures are depicted below.

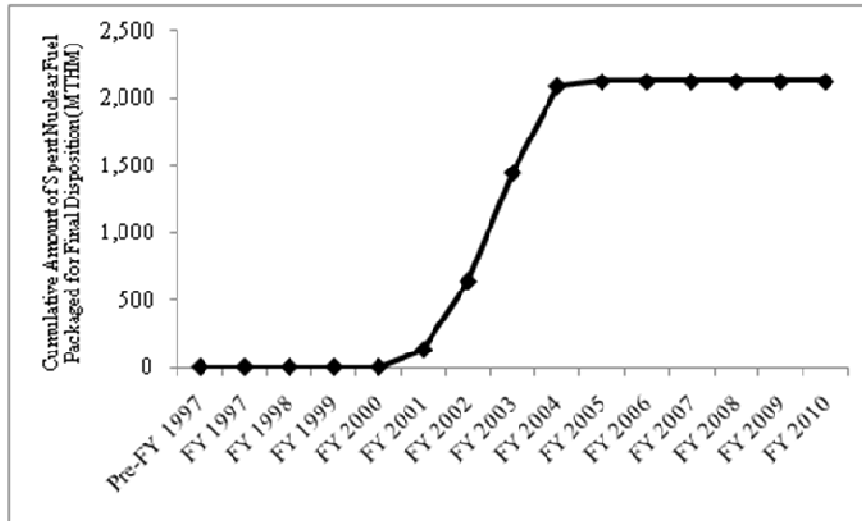


<sup>a</sup> Changes in the total number of high-level waste canisters reflect a revised life-cycle estimate from the Savannah River Site  
**Environmental Management/  
 Overview**



## Spent Nuclear Fuel Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<b>FY2010 Cumulative Target</b>	% Complete Through FY2010	Life-Cycle Total
2,128	2,128	2,128	2,128	88%	2,418



### Transuranic Waste and Legacy and Newly Generated Low-Level/Mixed Low-Level Waste

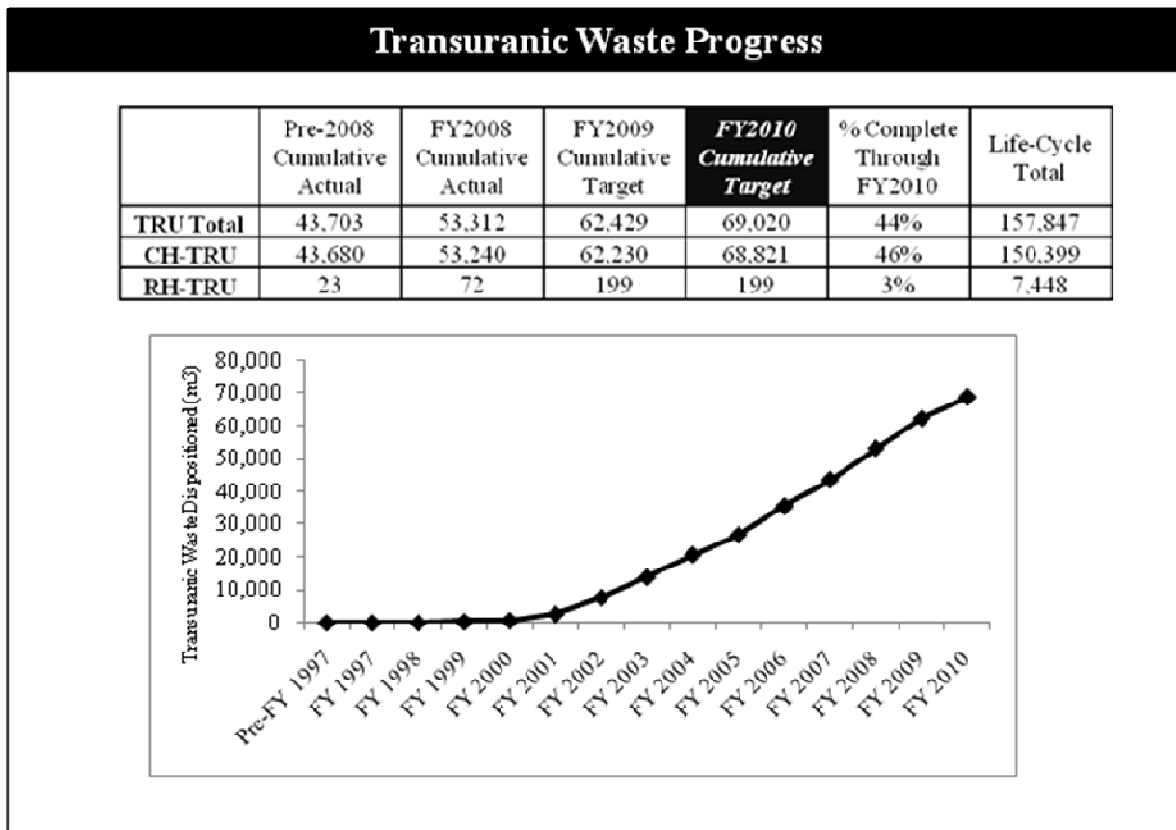
The disposition of transuranic waste metric measures a site's progress toward accelerating cleanup and reducing risk. This measure reflects the progress the generator site has made to manage and prepare its inventory of transuranic (and suspect-transuranic) waste for disposal; it also reflects support from the Department's disposal facilities, in many cases. In FY 2010, the Idaho National Laboratory, Los Alamos National Laboratory, and Oak Ridge are the primary contributors to the transuranic waste corporate measure using funds within this budget request.<sup>a</sup> The volume included within the FY 2010 target reflects that the transuranic disposition activities at several sites (e.g., Argonne National Lab, Savannah River Site) are supported in part or in total by funds provided by the American Recovery and Reinvestment Act. This metric also provides information on the disposition of both remote-handled transuranic and contact-handled transuranic waste. It is important to note that the budget request supports the operation of the Waste Isolation Pilot Plan and supporting programs to provide disposal services to these generator sites.

The disposal of legacy and newly generated low-level waste and mixed low-level waste reflects the intensity of cleanup activities at a site. A number of sites contribute to the low-level and mixed low-level waste measure.<sup>b</sup>

<sup>a</sup> Changes in the targets and life-cycle estimate for transuranic waste reflect new shipping priorities for Oak Ridge, Savannah River, Idaho, Nevada Test Site, and Los Alamos National Laboratory.

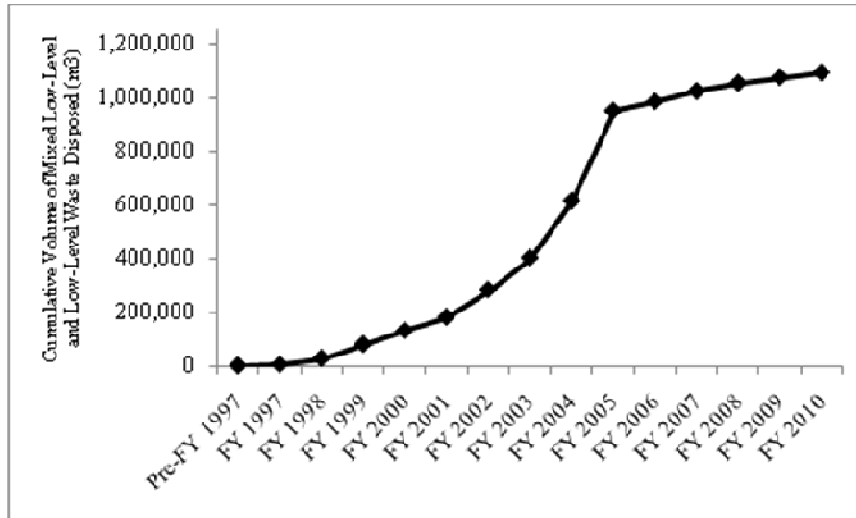
<sup>b</sup> Changes in the targets and life-cycle estimate for legacy and newly generated low-level/mixed low-level waste reflect new shipping priorities for Oak Ridge, Richland, Portsmouth, Idaho, the Inhalation Toxicology Laboratory, and Los Alamos National Laboratory.

The two corporate measures portrayed below demonstrate progress towards EM’s ultimate goal of site completion. The lifecycle totals for these measures currently include scope that will be funded by the American Recovery and Reinvestment Act. They do not, however, yet include the volumes of waste associated with the additional environmental liabilities that EM has agreed to accept from other Departmental mission programs.



## Legacy and Newly Generated Low-Level and Mixed Low-Level Waste Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<i>FY2010 Cumulative Target</i>	% Complete Through FY2010	Life-Cycle Total
1,023,339	1,053,500	1,075,135	1,092,450	79%	1,386,619



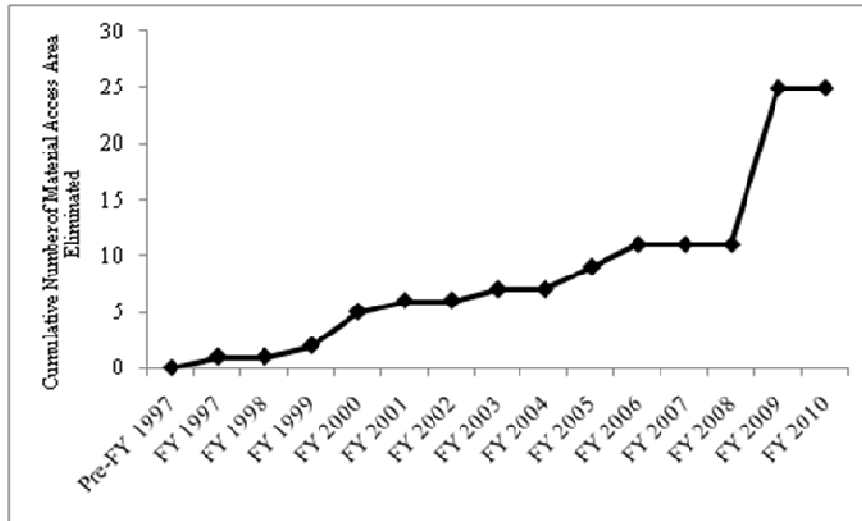
### Material Access Areas

The elimination of a material access area indicates the completion of a segment of work that removes the need for safeguards and security in the area. This is an obvious indicator of a site's progress towards reducing risk to workers, the public, and the environment. The Rocky Flats Site and the Idaho National Laboratory completed all work for this measure, while Savannah River Site and Hanford Site<sup>a</sup> continue to contribute to this corporate measure, which is depicted below.

<sup>a</sup> Changes in the targets and life-cycle estimate for material access areas reflect nuclear material consolidation efforts at Richland.

## Material Access Area Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<b>FY2010 Cumulative Target</b>	% Complete Through FY2010	Life-Cycle Total
11	11	25	25	83%	30



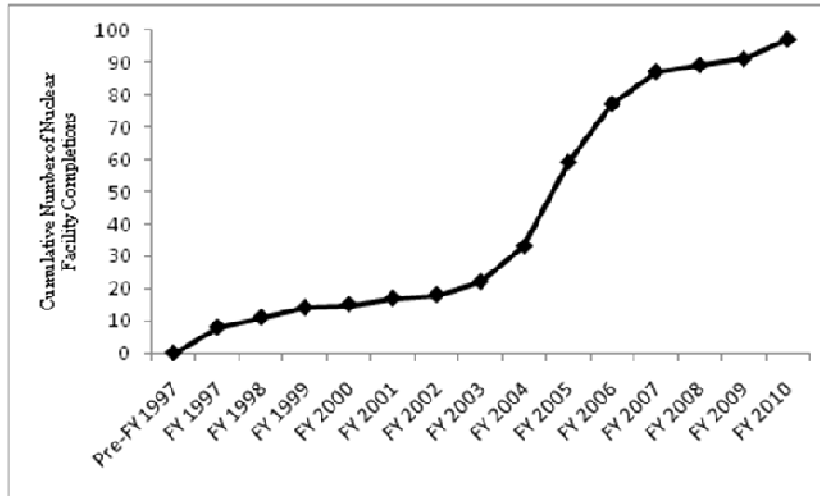
### Facility Completions

Three corporate performance measures (i.e., nuclear, radioactive, and industrial facilities) encompass facility completions; measured are the number of facilities that have reached their end state within the EM program. The endpoint corresponds to one of the following: decommissioning, deactivation, dismantlement, demolition, or responsibility for the facility is transferred to another program or owner. Facility completions are an excellent indicator of EM's progress towards site cleanup. Many sites contribute to facility completions, which are portrayed below.<sup>a</sup>

<sup>a</sup> Changes in the targets and life-cycle estimate for the completion of radioactive, nuclear and industrial facilities reflect revisions to the baselines at Oak Ridge, Richland, Idaho, Energy Technology Engineering Center, and Los Alamos National Laboratory.

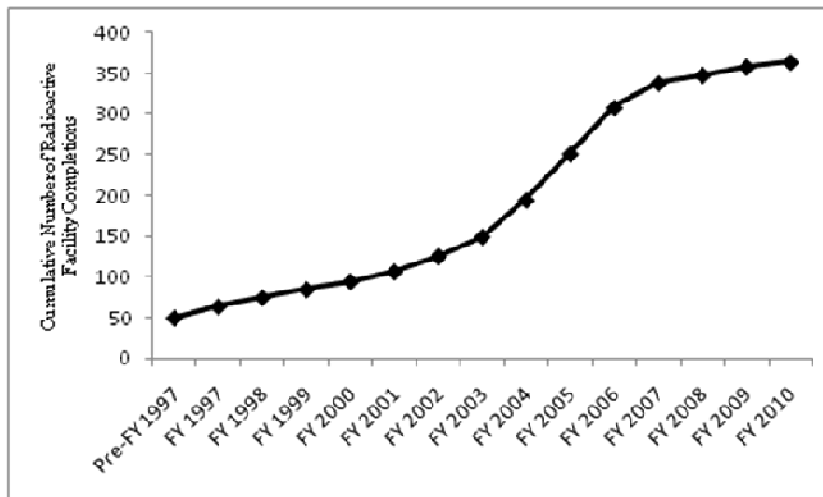
## Nuclear Facility Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<b>FY2010 Cumulative Target</b>	% Complete Through FY2010	Life-Cycle Total
87	89	91	97	21%	458



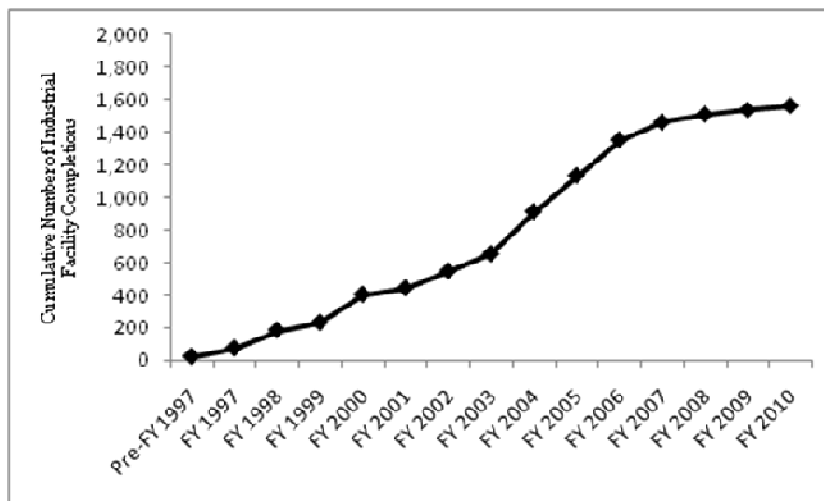
## Radioactive Facility Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<b>FY2010 Cumulative Target</b>	% Complete Through FY2010	Life-Cycle Total
338	348	358	364	37%	992



## Industrial Facility Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<i>FY2010 Cumulative Target</i>	% Complete Through FY2010	Life-Cycle Total
1,462	1,509	1,536	1,562	43%	3,625



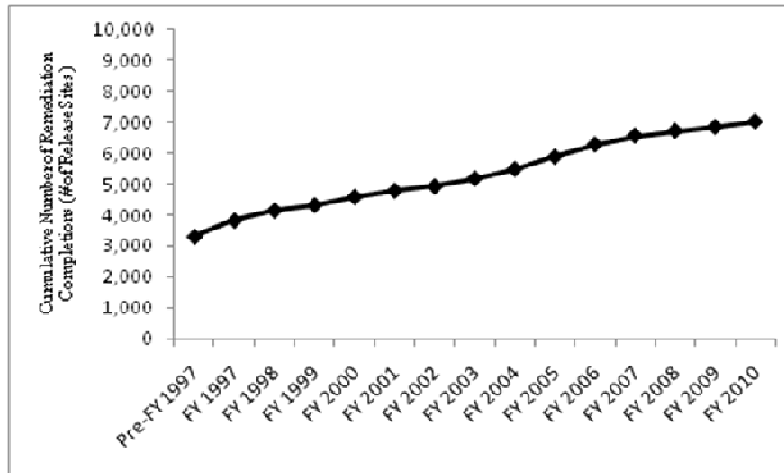
### Remediation Completions

The completion of release sites, discrete areas of contamination at a site, is a good indicator of a site's progress towards completions. The measure indicates completion of the activities necessary to evaluate and alleviated the release or possible release of a hazardous substance that may pose a risk to human health or the environment. Many sites contribute to remediation completions, which are portrayed below.<sup>a</sup>

<sup>a</sup> Changes in the targets and life-cycle estimate for remediation completions reflect revisions to the baselines at, Richland, Idaho, Paducah, and the Stanford Linear Accelerator Center.

## Remediation Completion Progress

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<i>FY2010 Cumulative Target</i>	% Complete Through FY2010	Life-Cycle Total
6,553	6,706	6,831	7,005	66%	10,644



### Geographic Site Completions

Completion of a geographic site best reflects EM's goal of accelerating cleanup and reducing risk. A geographic site is considered complete in its entirety when active remediation has been completed in accordance with the terms and conditions of cleanup agreements. Stewardship or non-EM activities may be on going after a site is completed. EM tracks cleanup responsibilities for 107 contaminated sites.<sup>a</sup>

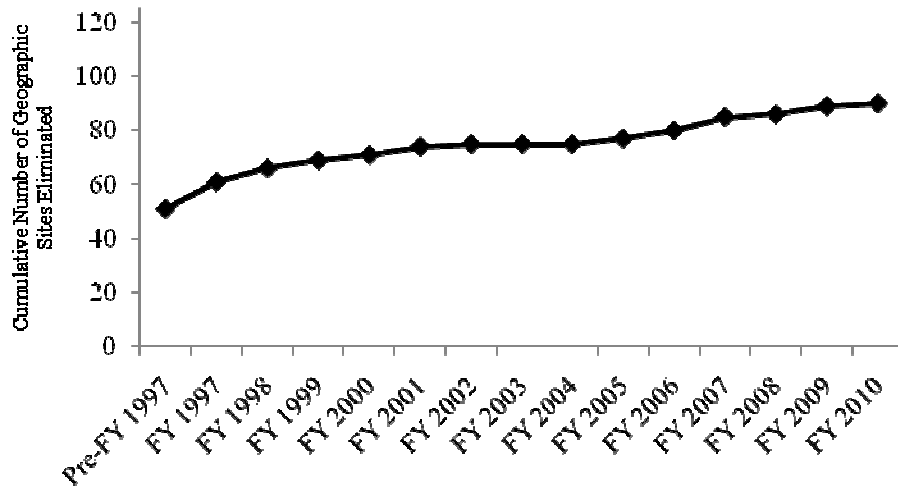
- In FY 2009 EM plans to cleanup an additional three sites – Pantex Plant, Inhalation Toxicology Laboratory, and Argonne National Laboratory
- In FY 2010 EM plans to cleanup one site – Stanford Linear Accelerator Center

In order to complete a geographic site (e.g., Fernald), EM must complete remediation of all release sites present at the site. This corporate performance measure that indicates the level of completion for the EM program is shown below.

<sup>a</sup> This total does not include the Southwest Experimental Fast Oxide Reactor Decommissioning (SEFOR) project, an FY 2009 Congressionally Directed Project.

## Geographic Sites Eliminated

Pre-2008 Cumulative Actual	FY2008 Cumulative Actual	FY2009 Cumulative Target	<i>FY2010 Cumulative Target</i>	% Complete Through FY2010	Life-Cycle Total
85	86	89	90	84%	107



### Efficiency

In addition to the 16 corporate performance measures described above EM also has an efficiency measure, used to represent the operational efficiency of the EM program, defined as follows:

- Remain within the limits of no greater than 10% negative cost and schedule variances for the overall cost - weighted mean cost and schedule performance indices for 55 operating projects and eight line item projects that are baselined and under configuration control.

If the cumulative CPI and SPI are greater than 0.9 and less than 1.1 then EM has met its efficiency goal. EM has met its annual efficiency goal since its inception in FY 2006

### Means and Strategies

The EM program will pursue the following means and strategies to achieve its program goals:

- Eliminate significant environmental, health and safety risks as soon as possible.
  - o High-level waste/tank waste storage, treatment, disposal
  - o Spent nuclear fuel storage, receipt, disposition



- o Solid waste (transuranic waste and low-level waste/mixed low-level waste) storage, treatment, disposal
- o Special nuclear material storage, processing and disposition
- o Higher risk groundwater remediation
- o Soil and groundwater remediation
- o Decontamination and decommissioning of contaminated facilities
- Hold cleanup contractors accountable to high safety standards; and empower them to pursue the most direct path to success.
- Acquisition strategies will promote contractor efficiencies through competition, performance incentives and through use of appropriate contracting vehicles (such as Indefinite Delivery/ Indefinite Quantity).
- Perform risk reduction and site closure in concert with regulators and stakeholders to determine the most appropriate remediation schedules and approaches.
- Project contingency funding will not be requested with the exception of capital projects. Unexpected project expenditures will reduce planned annual project performance.
- Streamline EM program activities to focus on risk reduction and cleanup.
- Continue to revitalize human capital as it is only with well-trained and qualified people that EM will be able to accomplish its cleanup mission.

The following external factors could affect EM's ability to achieve its strategic goal:

- **Cleanup Standards:** The end state for cleanup at certain sites is not fully determined. The extent of cleanup greatly affects cost, schedule and scope of work.
- **Uncertain Work Scope:** Uncertainties are inherent in the environmental cleanup program due to the complexity and nature of the work. There are uncertainties in EM's knowledge of the types of contaminants, their extent, and concentrations.
- **Commercially Available Options for Waste Disposition:** Accomplishment of risk reduction and site closure is dependent upon the continued availability of commercial options for mixed low level waste and low-level waste treatment and disposal.
- **Constrained Flexibility:** New regulations, statutes, orders, or litigation may constrain the program's flexibility in accomplishing the goal of cleanup completion and risk reduction in a fiscally responsible manner. EM will be given sufficient flexibility by Congress to execute its budget efficiently within established appropriation control points.
- **Waste Incidental to Reprocessing:** EM can proceed with key aspects of its planned tank waste programs consistent with the FY 2005 authorization legislation and current status of the litigation related to waste incidental to reprocessing.
- **New Mission or Responsibilities:** EM will not initiate additional work scope, associated with cleanup of excess facilities from other DOE programs, until there is room within EM's budget based on risk reduction and business case priorities to accomplish this new work scope or the other DOE programs transfer budget target to EM.
- **Pension Plans:** Fluctuating budgetary requirements relative to market-based contractor pension plan contributions may affect planned accomplishments (milestones and metrics).

In carrying out the program's risk reduction and cleanup mission, EM performs a variety of collaborative activities:

- **Regulatory Compliance:** DOE negotiates and executes environmental compliance and cleanup agreements with the U.S. Environmental Protection Agency and state regulatory agencies, as appropriate. Key parameters such as required cleanup levels and milestones must be negotiated with

the appropriate regulators and stakeholders for each site. Compliance with environmental laws and agreements continues to be a major cost driver for the EM program.

- Defense Nuclear Facilities Safety Board: EM works with the Board to implement recommendations relating to activities at the Department’s nuclear facilities affecting nuclear health and safety.
- Environmental Management Advisory Board: EM solicits advice and guidance from the EM Advisory Board on a wide variety of topics, with special emphasis on difficult corporate issues relative to cleanup.
- EM Site Specific Advisory Boards: EM solicits advice and guidance on site operations from nine Site Specific Advisory Boards across the EM complex.
- National Academy of Public Administration (NAPA): EM works with NAPA on its recommendations regarding organization, managerial and human capital issues.
- National Academy of Science (NAS): EM works with the NAS on its recommendations regarding various technical and scientific issues confronting the EM program.

EM also solicits advice and guidance from other external liaison groups, including the National Governors’ Association, National Association of Attorney’s General, State and Tribal Governments Working Group, Energy Communities Alliance, and the Environmental Council of the States.

**Validation and Verification**

To validate and verify program performance, EM will conduct various internal and external reviews and audits. EM’s programmatic activities are subject to continuing reviews by the Congress, the Government Accountability Office, the Department’s Inspector General, the Nuclear Regulatory Commission, the U.S. Environmental Protection Agency, state environmental and health agencies, the Defense Nuclear Facilities Safety Board, and the Department’s Office of Engineering and Construction Management. Each year, the Office of Engineering and Construction Management conducts external independent reviews of selected projects. In addition, various Operations/Field Offices commission external independent reviews of site baselines or portions of both operating and construction project baselines. Additionally, EM Headquarters senior management and Field managers conduct quarterly, in-depth reviews of cost, schedule, and scope to ensure projects are on-track and within budget. Headquarters offices conduct routine assessments of baseline performance.

**<sup>a</sup>Corporate Performance Measures – EM Totals**

	Complete Through FY 2008	Cumulative FY 2009 Target	Cumulative FY 2010 Target
Geographic Sites Eliminated (number of sites)	86	89	90
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	5,089	5,089	5,089
Enriched Uranium packaged for disposition (Number of Containers)	7,548	7,549	7,729
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	107,828	107,828	107,828
Depleted and Other Uranium packaged for disposition (Metric Tons)	13,074	15,210	15,210

<sup>a</sup> Performance measures are currently being updated.

	Complete Through FY 2008	Cumulative FY 2009 Target	Cumulative FY 2010 Target
Liquid Waste in Inventory eliminated (Thousands of Gallons)	1,174	1,874	2,574
Liquid Waste Tanks closed (Number of Tanks)	9	9	9
High-Level Waste packaged for final disposition (Number of Containers)	2,874	3,060	3,246
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	2,128	2,128	2,128
Transuranic Waste shipped for disposal (Cubic meters) - CH	53,240	62,230	68,821
Transuranic Waste shipped for disposal (Cubic meters) - RH	72	199	199
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	1,053,500	1,075,135	1,092,450
Material Access Areas eliminated (Number of Material Access Areas)	11	25	25
Nuclear Facility Completions (Number of Facilities)	89	91	97
Radioactive Facility Completions (Number of Facilities)	348	358	364
Industrial Facility Completions (Number of Facilities)	1,509	1,536	1,562
Remediation Complete (Number of Release Sites)	6,706	6,831	7,005

## Life-cycle Costs

As part of its application of DOE Order 413.3A to operating expense-funded cleanup projects, EM identifies contingency that increases the probable project cost with a resulting higher confidence level (from a nominal 50% confidence level to 80% confidence level) that the project can be completed on time at the estimated cost. This contingency is a critical component of the EM program; however, EM's budget request does not include any contingency funding to support this higher confidence.

The EM program has developed life-cycle estimates with cost and schedule ranges to account for the uncertainty associated with long-term project execution. These ranges have been reviewed independently for reasonableness by the DOE Office of Engineering and Construction Management. These ranges represent EM's best estimate for life-cycle cost. In instances where a project has not been reviewed or is complete, a single point estimate or actual cost is provided. The life-cycle costs represent active projects at EM sites and those sites completed in FY 2007 that are transitioning to the Office of Legacy Management or other program landlords for long-term stewardship. In addition, the life-cycle cost ranges include prior year costs beginning in FY 1997 through FY 2008.

**ENVIRONMENTAL MANAGEMENT PROGRAM LIFE-CYCLE COST RANGE**

(Millions of Dollars)

Site	LCC Total Range
Argonne National Laboratory - East	78 - 79
Ashtabula Environmental Management Project	136 -
Brookhaven National Laboratory	429 - 470
Columbus Environmental Management Project - West Jefferson	171 -
Energy Technology Engineering Center	280 - 326
Fernald Environmental Management Project	3,599 -
General Atomics	15 -
Hanford Site	58,527 - 61,303
Headquarters/Program Direction	14,418 -
Idaho National Laboratory	26,117 - 33,049
Inhalation Toxicology Laboratory	10 -
Kansas City Plant	30 -
Lawrence Berkeley National Laboratory	35 -
Lawrence Livermore National Laboratory - Main Site	206 -
Lawrence Livermore National Laboratory - Site 300	122 -
Los Alamos National Laboratory	2,647 - 3,593
Miamisburg Environmental Management Project	1,892 -
Moab	999 - 1,042
Nevada Test Site Projects	2,457 - 2,790
Oak Ridge Reservation	10,061 - 10,636
Office of River Protection	56,937 - 74,873
Other	1,164
Paducah Gaseous Diffusion Plant	10,757 - 17,656
Pantex Plant	193 -
Portsmouth Gaseous Diffusion Plant	9,079 - 16,074
Rocky Flats	9,143 -
Sandia National Laboratory	235 - 236
Savannah River Site	52,880 - 63,716
Separations Process Research Unit	222 -
Stanford Linear Accelerator Center	46 - 62
Technology Development & Deployment	2,807 -
Waste Isolation Pilot Plant	6,830 - 7,425
West Valley Demonstration Project	1,849 - 2,009
<b>TOTAL EM PROGRAM</b>	<b>274,371 - 329,501</b>

## Site Closure Dates

EM's lifecycle cost estimates reflect a range of site completion dates. This range is shown on the following table. In instances where a project has not been reviewed or is complete, a single point estimate or actual date is provided. Note that the dates in the table are based on fiscal years to conform with the budget cycle. Changes from the FY 2009 Congressional Request are discussed in each site's budget narrative.

ENVIRONMENTAL MANAGEMENT PROJECT SCHEDULE RANGE	
Site	Completion Date
Miamisburg Environmental Management Project	2008
Pantex Plant	2009
Argonne National Laboratory - East	2009
Inhalation Toxicology Laboratory	2009
Stanford Linear Accelerator Center	2010
General Electric Vallecitos Nuclear Center	2012
West Valley Demonstration Project	2012
Separations Process Research Unit	2013 - 2014
Sandia National Laboratories - NM	2014
Los Alamos National Laboratory	2015
Lawrence Livermore National Laboratory - Site 300	2014 - 2016
Energy Technology Engineering Center	2018 - 2020
Brookhaven National Laboratory	2018 - 2020
Oak Ridge Reservation	2021 - 2022
Nevada Test Site Projects	2027 - 2038
Moab	2027 - 2028
Savannah River Site	2038 - 2040
Idaho National Laboratory	2035 - 2044
Waste Isolation Pilot Plant	2035 - 2039
Paducah Gaseous Diffusion Plant	2040 - 2052
Portsmouth Gaseous Diffusion Plant	2044 - 2052
Hanford Site	2050 - 2062

## Basic and Applied Research and Development Coordination

The Technology Development and Deployment program supports EM cleanup initiatives. The program focuses on the highest risk and cost centers for the EM complex and technology development activities are conducted in three primary areas: waste processing, groundwater and soil cleanup, and decommissioning and deactivation of facilities. The Technology Development and Deployment program will benefit from the basic and applied research conducted by the Office of Science in the areas of characterization of radioactive waste, predicting high level waste system performance over extreme time horizons, and advanced mathematics for optimization of complex systems, control theory and risk

assessment (reference table below). The Technology Development and Deployment program will leverage the investments in basic and applied research as it improves our understanding and leads to the development of new approaches or technologies to address environmental management issues. The combined efforts of the Office of Science and the Technology Development and Deployment program will enable more effective and potentially transformational research and development leading to demonstration and deployment of more efficient approaches and technologies to help reduce risk and uncertainty in the cleanup of the DOE complex.

	(Dollars in Thousands)		
	FY 2008	FY 2009	FY 2010
Characterization of Radioactive Waste	2,100	9,500	30,000
Predicting High Level Waste System Performance over Extreme Time Horizons	500	1,500	10,000
Advanced Mathematics for Optimization of Complex Systems, Control Theory and Risk Assessment	0	0	5,000
	<u>2,600</u>	<u>11,000</u>	<u>45,000</u>

### Facilities Maintenance and Repair

The Department's Facilities Maintenance and Repair activities are tied to its programmatic missions, goals, and objectives. Facilities Maintenance and Repair activities funded by this budget are displayed below.

### Direct-Funded Maintenance and Repair<sup>a</sup>

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Carlsbad	11,095	16,321	14,483
Oak Ridge	15,690	17,660	13,573
Idaho National Laboratory	12,584	10,737	9,103
Paducah	2,425	3,336	3,697
Portsmouth	13,285	8,764	5,356
Richland Operations Office	82,693	81,626	76,203
Office of River Protection	27,939	27,794	27,335
Savannah River	127,736	89,184	92,119
	<u>293,447</u>	<u>255,422</u>	<u>241,869</u>

<sup>a</sup> Data is as of fourth quarter FY 2008.

## Indirect-Funded Maintenance and Repair<sup>a</sup>

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Carlsbad	0	0	0
Oak Ridge	0	0	0
Idaho National Laboratory	0	0	0
Paducah	0	0	0
Portsmouth	26	0	0
Richland Operations Office	4,094	3,270	0
Office of River Protection	0	0	0
Savannah River	22,542	15,738	16,256
	26,662	19,008	16,256

<sup>a</sup> Data is as of fourth quarter FY 2008.





# ANCILLARY TABLES



## Detailed Funding Table

(dollars in thousands)

	FY 2008 Current Appropriation	FY 2009 Original Appropriation	FY 2010 Request
Defense Environmental Cleanup			
Closure Sites			
Operating	42,050	45,883	41,468
Hanford Site			
2012 Accelerated Completions			
Operating	437,689	476,491	501,367
2035 Accelerated Completions			
Operating	467,309	490,485	401,713
Total, Hanford Site	904,998	966,976	903,080
Idaho National Laboratory			
Operating	405,713	389,061	322,468
Construction:			
06-D-401 / Sodium Bearing Waste Treatment Project, Idaho National Laboratory (INL), Idaho	111,774	86,700	83,700
Total, Idaho National Laboratory	517,487	475,761	406,168
NNSA Sites			
Operating	321,464	320,851	276,624
Oak Ridge			
Operating	194,235	262,835	153,768
Office of River Protection			
Waste Treatment and Immobilization Plant			
Construction:			
01-D-16A / Low Activity Waste Facility, RL	141,699	160,000	100,000
01-D-16B / Analytical Laboratory, RL	44,591	65,000	55,000
01-D-16C / Balance of Facilities, RL	71,345	75,000	50,000
01-D-16D / High Level Waste Facility, RL	175,389	125,000	160,000
01-D-16E / Pretreatment Facility, RL	250,698	265,000	325,000
Total, Construction	683,722	690,000	690,000
Tank Farm Activities			
Operating	292,818	319,943	408,000
Total, Office of River Protection	976,540	1,009,943	1,098,000
Savannah River Site			
Nuclear Material Stabilization and Disposition			
Operating	0	339,843	385,310
2035 Accelerations			
Operating	542,515	185,526	57,068
Construction:			
08-D-401 / Plutonium Vitrification Facility, Savannah River Site (SRS), Aiken, South Carolina (SR-0011C)	991	0	0
08-D-414 / 08-D-414: Plutonium Preparation Project, Savannah River Site (SRS), Aiken, South Carolina (SR-0011C)	0	0	6,315
Total, Construction	991	0	6,315
Total, 2035 Accelerations	543,506	185,526	63,383
Tank Farm Activities			
Operating	498,099	546,250	527,138
Construction:			

(dollars in thousands)

	FY 2008 Current Appropriation	FY 2009 Original Appropriation	FY 2010 Request
03-D-414 / 03-01 PED: Salt Waste Processing Facility Alternative, SR	24,910	0	0
05-D-405 / Salt Waste Processing Facility, SR	72,199	155,524	234,118
Total, Construction	97,109	155,524	234,118
Total, Tank Farm Activities	595,208	701,774	761,256
Total, Savannah River Site Waste Isolation Pilot Plant	1,138,714	1,227,143	1,209,949
Operating	234,585	231,661	220,337
Program Support			
Operating	32,844	33,930	34,000
Program Direction			
Operating	306,941	309,807	355,000
Safeguards and Security			
Operating	257,632	260,341	279,437
Technology Development and Deployment			
Operating	20,600	32,320	55,000
Federal Contribution to the Uranium Enrichment D&D Fund			
Operating	458,787	463,000	463,000
Congressionally Directed Projects			
Operating	17,195	17,908	0
Total, Defense Environmental Cleanup	5,424,072	5,658,359	5,495,831
Non-Defense Environmental Cleanup			
Fast Flux Test Reactor Facility D&D			
Operating	10,248	10,755	7,652
Congressionally Directed Projects			
Operating	0	4,757	0
Gaseous Diffusion Plants			
Operating	23,922	48,296	104,444
Construction:			
02-U-101 / Depleted Uranium Hexafluoride Conversion Project, Paducah, KY & Portsmouth, OH	28,386	33,000	0
Total, Gaseous Diffusion Plants	52,308	81,296	104,444
Small Sites			
Operating	69,342	120,164	67,347
West Valley Demonstration Project			
Operating	64,900	65,500	58,074
Total, Non-Defense Environmental Cleanup	196,798	282,472	237,517
Uranium Enrichment Decontamination and Decommissioning Fund			
D&D Activities			
Operating	602,344	525,503	559,377
U/Th Reimbursements			
Operating	19,818	10,000	0
Total, Uranium Enrichment Decontamination and Decommissioning Fund	622,162	535,503	559,377
Total, Environmental Management	6,243,032	6,476,334	6,292,725
Use of Prior Year (Defense Environmental Cleanup)	-12,841	-1,109	0
Use of Prior year (Non-Defense Environmental)	-14,535	-653	0

**Environmental Management/  
Overview**

**FY 2010 Congressional Budget**

(dollars in thousands)

	FY 2008 Current Appropriation	FY 2009 Original Appropriation	FY 2010 Request
Cleanup)			
Transfer from Office of Science	0	-10,000	0
Transfer from NNSA	0	-10,000	0
D&D Fund Offset	-458,787	-463,000	-463,000
Subtotal, Environmental Management	5,756,869	5,991,572	5,829,725
Offsetting Receipts, Domestic Utility Fee	0	0	-200,000
Total, Environmental Management	5,756,869	5,991,572	5,629,725

## Funding Summary by Office

(dollars in thousands)

Site	FY 2008 Current Appropriation	FY 2009 Original Appropriation	FY 2010 Request
Carlsbad	234,585	231,661	220,337
Idaho	522,838	489,239	411,168
Oak Ridge	476,416	471,668	378,768
Paducah	148,211	161,751	136,667
Portsmouth	224,260	236,215	302,154
Richland	915,246	977,731	910,732
River Protection	976,540	1,009,943	1,098,000
Savannah River	1,138,714	1,227,143	1,209,949
NNSA Sites	323,352	322,756	276,624
Closure Sites	42,050	45,883	41,468
All Other Sites	62,103	104,781	62,347
Safeguards and Security	257,632	260,341	279,437
Headquarters Operations	69,857	66,595	34,000
West Valley Demonstration Project	64,900	65,500	58,074
Technology Development & Deployment	20,600	32,320	55,000
Program Direction	306,941	309,807	355,000
D&D Fund Deposit	458,787	463,000	463,000
Subtotal, Environmental Management	6,243,032	6,476,334	6,292,725
Offsets	-486,163	-484,762	-463,000
Subtotal, Environmental Management	5,756,869	5,991,572	5,829,725
Offsetting Receipts, Domestic Utility Fee	0	0	-200,000
Total, Environmental Management	5,756,869	5,991,572	5,629,725

## Environmental Management Federal Staffing

(Full-Time Equivalents)

	FY 2008 Current Appropriation	FY 2009 Original Appropriation	FY 2010 Request
Carlsbad	41	52	50
Idaho	60	70	70
Oak Ridge	81	84	82
Portsmouth/Paducah Project Office	41	50	48
Richland	238	247	275
River Protection	115	115	145
Savannah River	307	339	345
Small Sites	28	26	25
Nevada Site Office	23	23	25
NNSA Sites	31	30	28
EM Career Development Corp	0	0	40
Subtotal, Field, Full-Time Equivalents	965	1,036	1,133
Headquarters Operations	290	299	351
Consolidated Business Center	164	170	190
Total, Field, Full-Time Equivalents	1,419	1,505 <sup>a</sup>	1,674

<sup>a</sup> As of Spring 2009, the EM program has over 1,630 federal employees on board.

## Funding by Office/Site/Location

(dollars in thousands)

	FY 2008 Current Appropriation	FY 2009 Original Appropriation	FY 2010 Request
Carlsbad			
Carlsbad Field Office	25,704	27,860	27,854
Waste Isolation Pilot Plant	208,881	203,801	192,483
Total, Carlsbad	234,585	231,661	220,337
Idaho			
Idaho National Laboratory	522,838	489,239	411,168
Oak Ridge			
East Tennessee Technology Park	282,204	208,938	225,100
Oak Ridge National Laboratory	87,705	122,825	77,800
Oak Ridge Reservation	86,833	91,513	41,868
Y-12 Plant	19,674	48,392	34,000
Total, Oak Ridge	476,416	471,668	378,768
Paducah			
Paducah Gaseous Diffusion Plant	148,211	161,751	136,667
Portsmouth			
Portsmouth Gaseous Diffusion Plant	224,260	236,215	302,154
Richland			
Hanford Site	895,805	958,111	888,792
Richland Operations Office	19,441	19,620	21,940
Total, Richland	915,246	977,731	910,732
River Protection			
River Protection	976,540	1,009,943	1,098,000
Savannah River			
Savannah River National Laboratory	58,600	58,500	61,480
Savannah River Operations Office	12,386	14,800	18,300
Savannah River Site	1,067,728	1,153,843	1,130,169
Total, Savannah River	1,138,714	1,227,143	1,209,949
NNSA Sites			
California Site Support	367	0	238
Lawrence Livermore National Laboratory	8,601	0	910
Los Alamos National Laboratory	175,158	224,639	189,000
Nevada Test Site	85,368	75,674	65,674
NNSA Service Center	1,497	1,443	2,938
Pantex Plant	25,027	0	0
Sandia National Laboratory	0	3,000	2,864
Separations Process Research Unit	27,334	18,000	15,000
Total, NNSA Sites	323,352	322,756	276,624



(dollars in thousands)

	FY 2008 Current Appropriation	FY 2009 Original Appropriation	FY 2010 Request
Closure Sites			
Ashtabula	292	0	0
Consolidated Business Center	11,726	13,209	8,225
Fernald	0	2,100	0
Miamisburg	30,032	30,574	33,243
Total, Closure Sites	42,050	45,883	41,468
All Other Sites			
Argonne National Laboratory-East	433	29,479	0
Brookhaven National Laboratory	15,438	8,433	12,614
California Site Support	158	187	262
Consolidated Business Center	1,189	1,100	1,200
Energy Technology Engineering Center	12,882	15,000	13,000
Inhalation Toxicology Laboratory	423	0	0
Moab	23,734	40,699	30,671
SLAC National Accelerator Laboratory	7,846	4,883	4,600
Tuba City	0	5,000	0
Total, All Other Sites	62,103	104,781	62,347
Safeguards and Security			
Carlsbad Field Office	4,882	5,124	4,644
East Tennessee Technology Park	16,622	27,020	32,400
Hanford Site	86,503	79,765	82,771
Paducah Gaseous Diffusion Plant	0	8,196	8,190
Portsmouth Gaseous Diffusion Plant	0	4,500	17,509
Savannah River Site	148,040	134,336	132,064
West Valley Demonstration Project	1,585	1,400	1,859
Total, Safeguards and Security	257,632	260,341	279,437
Headquarters Operations			
Congressionally Directed Projects	17,195	22,665	0
Headquarters	52,662	43,930	34,000
Total, Headquarters Operations	69,857	66,595	34,000
West Valley Demonstration Project			
West Valley Demonstration Project	64,900	65,500	58,074
Technology Development & Deployment			
Technology Development and Deployment	20,600	32,320	55,000
Program Direction			
Program Direction	306,941	309,807	355,000
D&D Fund Deposit			
D&D Fund Deposit	458,787	463,000	463,000
Total, Environmental Management	6,243,032	6,476,334	6,292,725
Use of Prior Year (Defense Environmental Cleanup)	-12,841	-1,109	0
Use of Prior year (Non-Defense Environmental Cleanup)	-14,535	-653	0
Transfer from Office of Science	0	-10,000	0
Transfer from NNSA	0	-10,000	0
D&D Fund Offset	-458,787	-463,000	-463,000
Subtotal, Environmental Management	5,756,869	5,991,572	5,829,725

**Environmental Management/  
Overview**

**FY 2010 Congressional Budget**

(dollars in thousands)

Offsetting Receipts, Domestic Utility Fee  
Total, Environmental Management

FY 2008 Current Appropriation	FY 2009 Original Appropriation	FY 2010 Request
0	0	-200,000
5,756,869	5,991,572	5,629,725

## Corporate Measures Totals by Site <sup>a</sup>

	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Life-cycle Estimates
<u>All Other Sites</u>					
Ames Laboratory					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Argonne National Laboratory-East					
Geographic Sites Eliminated (number of sites)	0	0	1	1	1
Radioactive Facility Completions (Number of Facilities)	69	69	78	78	78
Remediation Complete (Number of Release Sites)	443	443	443	443	443
Brookhaven National Laboratory					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Nuclear Facility Completions (Number of Facilities)	0	0	0	1	1
Radioactive Facility Completions (Number of Facilities)	10	10	10	11	11
Remediation Complete (Number of Release Sites)	76	77	77	77	77
California Site Support					
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	272	272	272	272	272
Remediation Complete (Number of Release Sites)	3	3	3	3	3
Chicago Operations Office					
Geographic Sites Eliminated (number of sites)	3	3	3	3	3
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	537	537	537	537	537
Remediation Complete (Number of Release Sites)	30	30	30	30	30
Energy Technology Engineering Center					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Industrial Facility Completions (Number of Facilities)	24	24	24	24	25
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	1,055	1,055	1,055	1,055	1,055
Radioactive Facility Completions (Number of Facilities)	4	4	4	4	6
Remediation Complete (Number of Release Sites)	4	4	4	4	14
Fermi National Accelerator Laboratory					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1

<sup>a</sup> Life-cycle estimates for release sites, facilities, and high-level waste containers include pre-1997 actuals. Quantities for all other measures except low-level and mixed low-level waste disposal begin in 1997. Low-level and mixed low-level waste disposal begins in 1998. The lifecycle totals for these measures currently include scope that will be funded by the American Recovery and Reinvestment Act. They do not, however, yet include the volumes of waste associated with the additional environmental liabilities that EM has agreed to accept from other Departmental mission programs.

	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Life-cycle Estimates
<b>General Atomics</b>					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	1,716	1,716	1,716	1,716	1,716
Remediation Complete (Number of Release Sites)	2	2	2	2	2
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	1	1	1	1	1
<b>General Electric</b>					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
<b>Geothermal Test Facility</b>					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
<b>Grand Junction</b>					
Geographic Sites Eliminated (number of sites)	2	2	2	2	2
<b>Headquarters</b>					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
<b>Inhalation Toxicology Laboratory</b>					
Geographic Sites Eliminated (number of sites)	0	0	1	1	1
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	207	359	360	360	360
Remediation Complete (Number of Release Sites)	9	9	9	9	9
<b>Laboratory for Energy-Related Health Research</b>					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Industrial Facility Completions (Number of Facilities)	1	1	1	1	1
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	944	944	944	944	944
Remediation Complete (Number of Release Sites)	16	16	16	16	16
<b>Lawrence Berkeley National Laboratory</b>					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Remediation Complete (Number of Release Sites)	181	181	181	181	181
<b>Moab</b>					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
<b>New Mexico Site Support</b>					
Geographic Sites Eliminated (number of sites)	5	5	5	5	5
<b>Princeton Plasma Physics Laboratory</b>					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
<b>South Valley</b>					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
<b>Stanford Linear Accelerator Center</b>					
Geographic Sites Eliminated (number of sites)	0	0	0	1	1
Remediation Complete (Number of Release Sites)	17	17	37	52	71

	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Life-cycle Estimates
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Geographic Sites Eliminated (number of sites)	24	24	24	24	24
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Oak Ridge

East Tennessee Technology Park

Industrial Facility Completions (Number of Facilities)	284	288	297	310	595
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	38,250	38,250	38,298	38,748	39,229
Nuclear Facility Completions (Number of Facilities)	6	6	6	6	8
Radioactive Facility Completions (Number of Facilities)	7	8	8	10	30
Remediation Complete (Number of Release Sites)	87	91	92	112	167
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	131

FUSRAP

Geographic Sites Eliminated (number of sites)	25	25	25	25	25
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Oak Ridge National Laboratory

Industrial Facility Completions (Number of Facilities)	7	7	7	7	25
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	7,157	7,523	7,889	9,508	22,099
Nuclear Facility Completions (Number of Facilities)	0	0	0	0	15
Radioactive Facility Completions (Number of Facilities)	3	3	3	3	26
Remediation Complete (Number of Release Sites)	80	80	80	80	178
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	80
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	22

Oak Ridge Operations Office

Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Industrial Facility Completions (Number of Facilities)	3	3	3	3	3
Remediation Complete (Number of Release Sites)	97	97	97	97	97

Oak Ridge Reservation

Geographic Sites Eliminated (number of sites)	1	1	1	1	2
Industrial Facility Completions (Number of Facilities)	2	2	2	2	2
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	59,786	60,177	61,821	61,821	82,882
Nuclear Facility Completions (Number of Facilities)	2	2	2	2	2
Radioactive Facility Completions (Number of Facilities)	15	15	15	15	15
Remediation Complete (Number of Release Sites)	112	112	113	114	114
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	16	296	296	1,414
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	96	96	600

	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Life-cycle Estimates
meters) - RH					
<b>Weldon Spring Site</b>					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
<b>Y-12 Plant</b>					
Industrial Facility Completions (Number of Facilities)	1	1	1	1	2
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	16,252	16,252	16,252	16,252	16,252
Remediation Complete (Number of Release Sites)	28	28	28	28	138
<b><u>NNSA Sites</u></b>					
<b>Kansas City Plant</b>					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Remediation Complete (Number of Release Sites)	43	43	43	43	43
<b>Lawrence Livermore National Laboratory</b>					
Geographic Sites Eliminated (number of sites)	1	1	1	1	2
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	5,312	5,312	5,312	5,312	5,312
Remediation Complete (Number of Release Sites)	193	194	194	194	194
Transuranic Waste shipped for disposal (Cubic meters) - CH	125	125	125	125	125
<b>Los Alamos National Laboratory</b>					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	5,982	5,993	7,022	8,701	10,029
Radioactive Facility Completions (Number of Facilities)	0	0	0	0	85
Remediation Complete (Number of Release Sites)	1,417	1,417	1,467	1,497	2,129
Transuranic Waste shipped for disposal (Cubic meters) - CH	1,682	2,095	3,037	3,823	10,568
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	17	17	95
<b>Nevada Test Site</b>					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Remediation Complete (Number of Release Sites)	936	1,017	1,042	1,052	2,036
Transuranic Waste shipped for disposal (Cubic meters) - CH	392	449	1,207	1,207	1,207
<b>New Mexico Site Support</b>					
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	1,319	1,319	1,319	1,319	1,319
Remediation Complete (Number of Release Sites)	155	155	155	155	155
<b>NNSA Service Center</b>					
Nuclear Facility Completions (Number of Facilities)	0	0	0	0	4
Remediation Complete (Number of Release Sites)	0	0	4	4	6
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	50

	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Life-cycle Estimates
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Offsites

Geographic Sites Eliminated (number of sites)	3	3	3	3	3
Remediation Complete (Number of Release Sites)	53	53	53	53	53

Pantex Plant

Geographic Sites Eliminated (number of sites)	0	0	1	1	1
Industrial Facility Completions (Number of Facilities)	4	4	4	4	4
Remediation Complete (Number of Release Sites)	237	237	237	237	237

Sandia National Laboratory

Geographic Sites Eliminated (number of sites)	1	1	1	1	2
Radioactive Facility Completions (Number of Facilities)	1	1	1	1	1
Remediation Complete (Number of Release Sites)	263	263	264	264	265

Separations Process Research Unit

Geographic Sites Eliminated (number of sites)	0	0	0	0	1
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Idaho

Argonne National Laboratory - West

Remediation Complete (Number of Release Sites)	37	37	37	37	37
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Argonne National Laboratory-West

Geographic Sites Eliminated (number of sites)	1	1	1	1	1
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Idaho National Laboratory

Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Enriched Uranium packaged for disposition (Number of Containers)	1,311	1,586	1,587	1,587	1,587
High-Level Waste packaged for final disposition (Number of Containers)	0	0	0	0	6,660
Industrial Facility Completions (Number of Facilities)	122	138	139	139	267
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	0	0	900
Liquid Waste Tanks closed (Number of Tanks)	0	7	7	7	11
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	58,752	66,599	70,404	74,113	110,560
Material Access Areas eliminated (Number of Material Access Areas)	1	1	1	1	1
Nuclear Facility Completions (Number of Facilities)	22	24	26	26	77
Radioactive Facility Completions (Number of Facilities)	27	32	32	32	54
Remediation Complete (Number of Release Sites)	218	240	248	327	356
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	0	0	0	0	253
Transuranic Waste shipped for disposal (Cubic meters) - CH	18,933	26,798	33,298	38,998	79,052
Transuranic Waste shipped for disposal (Cubic meters) - RH	23	72	86	86	709

	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Life-cycle Estimates
Idaho Operations Office					
Remediation Complete (Number of Release Sites)	233	233	233	233	233
Maxey Flats					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Monticello Remedial Action Project					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Pinellas Plant					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
<u>Closure Sites</u>					
Ashtabula					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Industrial Facility Completions (Number of Facilities)	7	7	7	7	7
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	3,707	3,707	3,707	3,707	3,707
Radioactive Facility Completions (Number of Facilities)	28	28	28	28	28
Remediation Complete (Number of Release Sites)	3	3	3	3	3
Columbus					
Geographic Sites Eliminated (number of sites)	2	2	2	2	2
Nuclear Facility Completions (Number of Facilities)	1	1	1	1	1
Radioactive Facility Completions (Number of Facilities)	14	14	14	14	14
Remediation Complete (Number of Release Sites)	2	2	2	2	2
Fernald					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Industrial Facility Completions (Number of Facilities)	1	1	1	1	1
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	7,085	7,085	7,085	7,085	7,085
Radioactive Facility Completions (Number of Facilities)	29	29	29	29	29
Remediation Complete (Number of Release Sites)	6	6	6	6	6
Miamisburg					
Geographic Sites Eliminated (number of sites)	0	1	1	1	1
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	0
Industrial Facility Completions (Number of Facilities)	116	116	116	116	116
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	3,947	3,947	3,947	3,947	3,947
Nuclear Facility Completions (Number of Facilities)	8	8	8	8	8
Radioactive Facility Completions (Number of Facilities)	11	11	11	11	11
Remediation Complete (Number of Release Sites)	178	178	178	178	178



	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Life-cycle Estimates
<b>Rocky Flats Environmental Technology Site</b>					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Industrial Facility Completions (Number of Facilities)	317	317	317	317	317
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	602,188	602,188	602,188	602,188	602,188
Material Access Areas eliminated (Number of Material Access Areas)	7	7	7	7	7
Nuclear Facility Completions (Number of Facilities)	6	6	6	6	6
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	1,895	1,895	1,895	1,895	1,895
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	103,901	103,901	103,901	103,901	103,901
Radioactive Facility Completions (Number of Facilities)	54	54	54	54	54
Remediation Complete (Number of Release Sites)	360	360	360	360	360
Transuranic Waste shipped for disposal (Cubic meters) - CH	15,036	15,036	15,036	15,036	15,036
<b>West Valley Demonstration Project</b>					
<u>West Valley Demonstration Project</u>					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
High-Level Waste packaged for final disposition (Number of Containers)	275	275	275	275	275
Industrial Facility Completions (Number of Facilities)	10	13	22	23	29
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	26,025	26,931	26,931	27,563	27,786
Nuclear Facility Completions (Number of Facilities)	3	3	3	4	14
Radioactive Facility Completions (Number of Facilities)	3	4	4	4	13
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	1,142
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	555
<b>Portsmouth</b>					
<u>Portsmouth Gaseous Diffusion Plant</u>					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	247,740
Industrial Facility Completions (Number of Facilities)	7	7	8	8	121
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	24,078	31,907	35,016	35,016	35,016
Nuclear Facility Completions (Number of Facilities)	0	0	0	0	13
Radioactive Facility Completions (Number of Facilities)	7	7	7	7	27
Remediation Complete (Number of Release Sites)	150	150	150	150	151
<b>Paducah</b>					
<u>Paducah Gaseous Diffusion Plant</u>					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1

	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Life-cycle Estimates
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	418,960
Enriched Uranium packaged for disposition (Number of Containers)	0	0	0	0	182
Industrial Facility Completions (Number of Facilities)	12	12	17	17	172
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	12,680	15,642	20,006	20,752	27,464
Nuclear Facility Completions (Number of Facilities)	0	0	0	0	18
Radioactive Facility Completions (Number of Facilities)	2	2	3	3	22
Remediation Complete (Number of Release Sites)	92	94	94	94	206
<u>Savannah River</u>					
Savannah River Site					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Depleted and Other Uranium packaged for disposition (Metric Tons)	8,760	9,974	12,110	12,110	23,182
Enriched Uranium packaged for disposition (Number of Containers)	2,717	3,004	3,004	3,184	3,184
High-Level Waste packaged for final disposition (Number of Containers)	2,374	2,599	2,785	2,971	6,300
Industrial Facility Completions (Number of Facilities)	232	232	232	232	759
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	1,174	1,874	2,574	33,100
Liquid Waste Tanks closed (Number of Tanks)	2	2	2	2	51
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	94,179	100,620	105,064	111,674	137,579
Material Access Areas eliminated (Number of Material Access Areas)	2	2	2	2	3
Nuclear Facility Completions (Number of Facilities)	11	11	11	11	191
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	919	919	919	919	919
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	490	490	490	490	490
Radioactive Facility Completions (Number of Facilities)	8	8	8	8	40
Remediation Complete (Number of Release Sites)	339	361	372	372	515
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	3	3	3	3	40
Transuranic Waste shipped for disposal (Cubic meters) - CH	5,031	5,691	5,851	5,956	15,590
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	68
<u>Carlsbad</u>					
Waste Isolation Pilot Plant					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
<u>Richland</u>					
Hanford Site					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1

	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Life-cycle Estimates
Depleted and Other Uranium packaged for disposition (Metric Tons)	3,100	3,100	3,100	3,100	3,100
Enriched Uranium packaged for disposition (Number of Containers)	2,958	2,958	2,958	2,958	2,958
Industrial Facility Completions (Number of Facilities)	312	336	338	350	1,051
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	45,698	47,213	47,385	47,385	51,450
Material Access Areas eliminated (Number of Material Access Areas)	1	1	15	15	19
Nuclear Facility Completions (Number of Facilities)	28	28	28	32	82
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	2,275	2,275	2,275	2,275	2,275
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	3,437	3,437	3,437	3,437	3,437
Radioactive Facility Completions (Number of Facilities)	46	49	49	52	334
Remediation Complete (Number of Release Sites)	448	468	472	491	1,661
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	2,124	2,124	2,124	2,124	2,124
Transuranic Waste shipped for disposal (Cubic meters) - CH	2,481	3,030	3,380	3,380	24,580
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	858
<b><u>River Protection</u></b>					
<b>River Protection</b>					
High-Level Waste packaged for final disposition (Number of Containers)	0	0	0	0	9,667
Industrial Facility Completions (Number of Facilities)	0	0	0	0	128
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	0	0	54,000
Liquid Waste Tanks closed (Number of Tanks)	0	0	0	0	177
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	6,211	7,952	10,606	12,476	197,832
Nuclear Facility Completions (Number of Facilities)	0	0	0	0	18
Radioactive Facility Completions (Number of Facilities)	0	0	0	0	114
Remediation Complete (Number of Release Sites)	5	5	5	5	278
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	1,555
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	4,410

**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
Argonne National Laboratory - East	CH-ANLE-0030	Soil and Water Remediation-Argonne National Laboratory-East	\$29	\$1	\$1	\$30	\$30
Argonne National Laboratory - East	CH-ANLE-0040	Nuclear Facility D&D-Argonne National Laboratory-East	\$35	\$13	\$13	\$48	\$48
<b>Argonne National Laboratory - East Total<sup>a</sup></b>			\$65	\$14	\$14	\$78	\$79
Ashtabula Environmental Management Project	OH-AB-0030	Soil and Water Remediation-Ashtabula	\$136	\$0	\$0	\$136	\$136
<b>Ashtabula Environmental Management Project Total</b>			\$136	\$0	\$0	\$136	\$136
Brookhaven National Laboratory	BRNL-0030	Soil and Water Remediation-Brookhaven National Laboratory	\$216	\$50	\$50	\$266	\$266
Brookhaven National Laboratory	BRNL-0040	Nuclear Facility D&D-Brookhaven Graphite Research Reactor	\$64	\$46	\$59	\$110	\$123
Brookhaven National Laboratory	BRNL-0041	Nuclear Facility D&D-High Flux Beam Reactor	\$19	\$31	\$59	\$50	\$78
Brookhaven National Laboratory	BRNL-0100	Brookhaven Community and Regulatory Support	\$3	\$0	\$0	\$3	\$3
<b>Brookhaven National Laboratory Total</b>			\$302	\$128	\$169	\$429	\$470
Columbus Environmental Management Project - West Jefferson	OH-CL-0040	Nuclear Facility D&D-West Jefferson	\$171	\$0	\$0	\$171	\$171
<b>Columbus Environmental Management Project - West Jefferson Total</b>			\$171	\$0	\$0	\$171	\$171
Energy Technology Engineering Center	CBC-ETEC-0040	Nuclear Facility D&D-Energy Technology Engineering Center	\$174	\$106	\$152	\$280	\$326
<b>Energy Technology Engineering Center Total</b>			\$174	\$106	\$152	\$280	\$326
Fernald Environmental Management Project	OH-FN-0013	Solid Waste Stabilization and Disposition-Fernald	\$1,627	\$0	\$0	\$1,627	\$1,627
Fernald Environmental Management Project	OH-FN-0020	Safeguards and Security-Fernald	\$16	\$0	\$0	\$16	\$16
Fernald Environmental	OH-FN-0030	Soil and Water Remediation-Fernald	\$1,321	\$70	\$70	\$1,391	\$1,391

<sup>a</sup> Note: Site totals were calculated by adding PBS values in thousands of dollars and then rounding the total to millions of dollars. The site totals therefore do not necessarily equal the sum of the displayed PBS values, since the displayed PBS values have been rounded to millions of dollars at the PBS level.

**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
Management Project							
Fernald Environmental Management Project	OH-FN-0050	Non-Nuclear Facility D&D-Fernald	\$226	\$0	\$0	\$226	\$226
Fernald Environmental Management Project	OH-FN-0100	Fernald Post-Closure Administration	\$0	\$288	\$288	\$288	\$288
Fernald Environmental Management Project	OH-FN-0101	Fernald Community and Regulatory Support	\$14	\$0	\$0	\$14	\$14
Fernald Environmental Management Project	CBC-0100-FN	CBC Post Closure Administration - Fernald	\$31	\$8	\$8	\$38	\$38
<b>Fernald Environmental Management Project Total</b>			<b>\$3,233</b>	<b>\$366</b>	<b>\$366</b>	<b>\$3,599</b>	<b>\$3,599</b>
General Atomics							
General Atomics	VL-GA-0012	SNF Stabilization and Disposition-General Atomics	\$15	\$0	\$0	\$15	\$15
<b>General Atomics Total</b>			<b>\$15</b>	<b>\$0</b>	<b>\$0</b>	<b>\$15</b>	<b>\$15</b>
Hanford Site							
Hanford Site	HQ-SNF-0012X-RL	SNF Stabilization and Disposition-Storage Operations Awaiting Geologic Repository	\$3	\$0	\$0	\$3	\$3
Hanford Site	RL-0011	NM Stabilization and Disposition-PFP	\$1,281	\$2,173	\$2,204	\$3,454	\$3,484
Hanford Site	RL-0012	SNF Stabilization and Disposition	\$2,018	\$955	\$983	\$2,974	\$3,002
Hanford Site	RL-0013B	Solid Waste Stabilization and Disposition-200 Area-2012	\$0	\$0	\$0	\$0	\$0
Hanford Site	RL-0013C	Solid Waste Stabilization and Disposition-200 Area- 2035	\$1,472	\$12,368	\$13,676	\$13,840	\$15,148
Hanford Site	RL-0020	Safeguards and Security	\$353	\$3,232	\$3,232	\$3,585	\$3,585
Hanford Site	RL-0030	Soil and Water Remediation-Groundwater/Vadose Zone	\$532	\$7,524	\$7,711	\$8,056	\$8,243
Hanford Site	RL-0040	Nuclear Facility D&D-Remainder of Hanford	\$973	\$18,078	\$19,073	\$19,051	\$20,046
Hanford Site	RL-0041	Nuclear Facility D&D-River Corridor Closure Project	\$1,563	\$3,337	\$3,496	\$4,900	\$5,059
Hanford Site	RL-0042	Nuclear Facility D&D-Fast Flux Test Facility Project	\$261	\$987	\$1,055	\$1,247	\$1,317
Hanford Site	RL-0043	HAMMER Facility	\$7	\$0	\$0	\$7	\$7

**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
Hanford Site	RL-0044	B-Reactor Museum	\$1	\$0	\$0	\$1	\$1
Hanford Site	RL-0080	Operate Waste Disposal Facility	\$67	\$3	\$3	\$70	\$70
Hanford Site	RL-0100	Richland Community and Regulatory Support	\$144	\$1,064	\$1,064	\$1,208	\$1,208
Hanford Site	RL-0900	Pre-2004 Completions	\$130	\$0	\$0	\$130	\$130
<b>Hanford Site Total</b>			<b>\$8,805</b>	<b>\$49,722</b>	<b>\$52,496</b>	<b>\$58,527</b>	<b>\$61,303</b>
Headquarters/Program Direction	HQ-MS-0100	Policy, Management, and Technical Support	\$628	\$960	\$960	\$1,588	\$1,588
Headquarters/Program Direction	HQ-OPS-0900	Pre-2004 Completions	\$0	\$0	\$0	\$0	\$0
Headquarters/Program Direction	HQ-UR-0100	Reimbursements to Uranium/Thorium Licensees	\$432	\$331	\$331	\$763	\$763
Headquarters/Program Direction	HQ-PD-0100	Program Direction	\$3,266	\$8,802	\$8,802	\$12,068	\$12,068
<b>Headquarters/Program Direction Total</b>			<b>\$4,325</b>	<b>\$10,093</b>	<b>\$10,093</b>	<b>\$14,418</b>	<b>\$14,418</b>
Idaho National Laboratory	CH-ANLW-0030	Soil and Water Remediation-Argonne National Laboratory-West	\$8	\$0	\$0	\$8	\$8
Idaho National Laboratory	HQ-SNF-0012X	SNF Stabilization and Disposition-Storage Operations Awaiting Geologic Repository	\$60	\$0	\$0	\$60	\$60
Idaho National Laboratory	HQ-SNF-0012X-ID	SNF Stabilization and Disposition-Storage Operations Awaiting Geologic Repository	\$19	\$0	\$0	\$19	\$19
Idaho National Laboratory	HQ-SNF-0012Y	SNF Stabilization and Disposition-New/Upgraded Facilities Awaiting Geologic Repository	\$67	\$0	\$0	\$67	\$67
Idaho National Laboratory	ID-0011	NM Stabilization and Disposition	\$14	\$5	\$30	\$19	\$43
Idaho National Laboratory	ID-0012B-D	SNF Stabilization and Disposition-2012 (Defense)	\$386	\$136	\$295	\$522	\$681
Idaho National Laboratory	ID-0012B-N	SNF Stabilization and Disposition-2012 (Non-Defense)	\$9	\$0	\$0	\$9	\$9
Idaho National Laboratory	ID-0012C	SNF Stabilization and Disposition-2035	\$46	\$4,355	\$5,312	\$4,401	\$5,358
Idaho National Laboratory	ID-0013	Solid Waste Stabilization and Disposition	\$1,766	\$1,451	\$2,157	\$3,217	\$3,923

**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
Idaho National Laboratory	ID-0014B	Radioactive Liquid Tank Waste Stabilization and Disposition-2012	\$1,245	\$488	\$855	\$1,733	\$2,102
Idaho National Laboratory	ID-0014B-T	Radioactive Liquid Tank Waste Stabilization and Disposition-2012 (T)	\$65	\$0	\$0	\$65	\$65
Idaho National Laboratory	ID-0014C	Radioactive Liquid Tank Waste Stabilization and Disposition-2035	\$35	\$6,680	\$9,451	\$6,715	\$9,486
Idaho National Laboratory	ID-0030B	Soil and Water Remediation-2012	\$1,005	\$541	\$614	\$1,547	\$1,635
Idaho National Laboratory	ID-0030C	Soil and Water Remediation-2035	\$7	\$4,447	\$6,111	\$4,454	\$6,118
Idaho National Laboratory	ID-0040B	Nuclear Facility D&D-2012	\$295	\$536	\$542	\$831	\$837
Idaho National Laboratory	ID-0040C	Nuclear Facility D&D-2035	\$0	\$1,783	\$1,968	\$1,783	\$1,968
Idaho National Laboratory	ID-0050B	Non-Nuclear Facility D&D-2012	\$109	\$38	\$38	\$147	\$147
Idaho National Laboratory	ID-0050C	Non-Nuclear Facility D&D-2035	\$0	\$0	\$0	\$0	\$0
Idaho National Laboratory	ID-0100	Idaho Community and Regulatory Support	\$55	\$158	\$158	\$212	\$212
Idaho National Laboratory	ID-0900	Pre-2004 Completions	\$310	\$0	\$0	\$310	\$310
<b>Idaho National Laboratory Total</b>			<b>\$5,501</b>	<b>\$20,617</b>	<b>\$27,530</b>	<b>\$26,117</b>	<b>\$33,049</b>
Inhalation Toxicology Laboratory	CBC-ITL-0030	Soil and Water Remediation-Inhalation Toxicology Laboratory	\$10	\$0	\$0	\$10	\$10
Inhalation Toxicology Laboratory	VL-ITL-0030	Soil and Water Remediation-Inhalation Toxicology Laboratory	\$0	\$0	\$0	\$0	\$0
<b>Inhalation Toxicology Laboratory Total</b>			<b>\$10</b>	<b>\$0</b>	<b>\$0</b>	<b>\$10</b>	<b>\$10</b>
Kansas City Plant	VL-KCP-0030	Soil and Water Remediation-Kansas City Plant	\$30	\$0	\$0	\$30	\$30
<b>Kansas City Plant Total</b>			<b>\$30</b>	<b>\$0</b>	<b>\$0</b>	<b>\$30</b>	<b>\$30</b>
Lawrence Berkeley National Laboratory	CBC-LBNL-0030	Soil and Water Remediation-Lawrence Berkeley National Laboratory	\$34	\$0	\$0	\$34	\$34
Lawrence Berkeley National Laboratory	VL-LBNL-0030	Soil and Water Remediation-Lawrence Berkeley National Laboratory	\$2	\$0	\$0	\$2	\$2
<b>Lawrence Berkeley National Laboratory Total</b>			<b>\$35</b>	<b>\$0</b>	<b>\$0</b>	<b>\$35</b>	<b>\$35</b>
Lawrence Livermore National Laboratory - Main Site	VL-LLNL-0030	Soil and Water Remediation-Lawrence Livermore National Laboratory - Main Site	\$134	\$0	\$0	\$134	\$134

**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
Lawrence Livermore National Laboratory - Main Site	VL-LLNL-0013	Solid Waste Stabilization and Disposition-Lawrence Livermore National Laboratory	\$72	\$0	\$0	\$72	\$72
<b>Lawrence Livermore National Laboratory - Main Site Total</b>			\$206	\$0	\$0	\$206	\$206
Lawrence Livermore National Laboratory - Site 300	VL-LLNL-0031	Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300	\$114	\$9	\$9	\$122	\$122
<b>Lawrence Livermore National Laboratory - Site 300 Total</b>			\$114	\$9	\$9	\$122	\$122
Los Alamos National Laboratory	VL-LANL-0013	Solid Waste Stabilization and Disposition-LANL Legacy	\$330	\$471	\$520	\$801	\$850
Los Alamos National Laboratory	VL-LANL-0030	Soil and Water Remediation-LANL	\$679	\$952	\$1,810	\$1,630	\$2,489
Los Alamos National Laboratory	VL-LANL-0040-D	Nuclear Facility D&D-LANL (Defense)	\$0	\$198	\$237	\$198	\$237
Los Alamos National Laboratory	VL-LANL-0040-N	Nuclear Facility D&D-LANL (Non-Defense)	\$3	\$14	\$14	\$17	\$17
<b>Los Alamos National Laboratory Total</b>			\$1,011	\$1,635	\$2,582	\$2,647	\$3,593
Miamisburg Environmental Management Project	OH-MB-0013	Solid Waste Stabilization and Disposition-Miamisburg	\$265	\$0	\$0	\$265	\$265
Miamisburg Environmental Management Project	OH-MB-0020	Safeguards and Security-Miamisburg	\$28	\$0	\$0	\$28	\$28
Miamisburg Environmental Management Project	OH-MB-0030	Soil and Water Remediation-Miamisburg	\$208	\$14	\$14	\$222	\$222
Miamisburg Environmental Management Project	OH-MB-0031	Soil and Water Remediation - OU-1	\$0	\$0	\$0	\$0	\$0
Miamisburg Environmental Management Project	OH-MB-0040	Nuclear Facility D&D-Miamisburg	\$505	\$0	\$0	\$505	\$505
Miamisburg Environmental Management Project	OH-MB-0100	Miamisburg Post-Closure Administration	\$23	\$831	\$831	\$854	\$854
Miamisburg Environmental Management Project	OH-MB-0101	Miamisburg Community and Regulatory Support	\$10	\$0	\$0	\$10	\$10
Miamisburg Environmental Management Project	CBC-0100-MD	CBC Post Closure Administration - Mound	\$0	\$8	\$8	\$8	\$8
<b>Miamisburg Environmental Management Project Total</b>			\$1,039	\$852	\$852	\$1,892	\$1,892

**Environmental Management/  
Overview**



**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
Moab	CBC-MOAB-0031	Soil and Water Remediation-Moab	\$60	\$939	\$982	\$999	\$1,042
<b>Moab Total</b>			\$60	\$939	\$982	\$999	\$1,042
Nevada Test Site Projects	VL-NV-0013	Solid Waste Stabilization and Disposition-Nevada Test Site	\$79	\$19	\$30	\$98	\$109
Nevada Test Site Projects	VL-NV-0030	Soil and Water Remediation-Nevada Test Site	\$654	\$1,030	\$1,321	\$1,684	\$1,979
Nevada Test Site Projects	VL-NV-0080	Operate Waste Disposal Facility-Nevada	\$62	\$508	\$535	\$570	\$597
Nevada Test Site Projects	VL-NV-0100	Nevada Community and Regulatory Support	\$40	\$60	\$60	\$100	\$100
Nevada Test Site Projects	VL-SV-0100	South Valley Superfund	\$5	\$0	\$0	\$5	\$5
<b>Nevada Test Site Projects Total</b>			\$841	\$1,616	\$1,946	\$2,457	\$2,790
Oak Ridge Reservation	OR-0011Y	NM Stabilization and Disposition-ETTP Uranium Facilities Management	\$52	\$0	\$0	\$52	\$52
Oak Ridge Reservation	OR-0020	Safeguards and Security	\$92	\$191	\$198	\$283	\$290
Oak Ridge Reservation	OR-0040	Nuclear Facility D&D-East Tennessee Technology Park (D&D Fund)	\$1,546	\$1,524	\$1,704	\$3,070	\$3,250
Oak Ridge Reservation	OR-0043	Nuclear Facility D&D-East Tennessee Technology Park (Defense)	\$85	\$44	\$46	\$129	\$131
Oak Ridge Reservation	OR-0102	East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration	\$128	\$177	\$184	\$305	\$312
Oak Ridge Reservation	HQ-SW-0013X-OR	Solid Waste Stabilization and Disposition-Science Current Generation	\$143	\$0	\$0	\$143	\$143
Oak Ridge Reservation	OR-0011Z	Downblend of U-233 in Building 3019	\$46	\$315	\$339	\$361	\$385
Oak Ridge Reservation	OR-0042	Nuclear Facility D&D-Oak Ridge National Laboratory	\$266	\$933	\$1,056	\$1,199	\$1,323
Oak Ridge Reservation	OR-0900-D	Pre-2004 Completions (Defense)	\$17	\$0	\$0	\$17	\$17
Oak Ridge Reservation	OR-0900-N	Pre-2004 Completions (Non-Defense)	\$617	\$0	\$0	\$617	\$617
Oak Ridge Reservation	OR-0013A	Solid Waste Stabilization and Disposition-2006	\$465	\$0	\$0	\$465	\$465

**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
Oak Ridge Reservation	OR-0013B	Solid Waste Stabilization and Disposition-2012	\$851	\$813	\$905	\$1,664	\$1,757
Oak Ridge Reservation	OR-0030	Soil and Water Remediation-Melton Valley	\$350	\$0	\$0	\$350	\$350
Oak Ridge Reservation	OR-0031	Soil and Water Remediation-Offsites	\$49	\$13	\$13	\$62	\$63
Oak Ridge Reservation	OR-0100	Oak Ridge Reservation Community & Regulatory Support (Defense)	\$87	\$59	\$62	\$146	\$148
Oak Ridge Reservation	OR-0101	Oak Ridge Contract/Post-Closure Liabilities/Administration	\$105	\$0	\$0	\$105	\$105
Oak Ridge Reservation	OR-0103	Oak Ridge Reservation Community & Regulatory Support (D&D Fund)	\$44	\$0	\$0	\$44	\$44
Oak Ridge Reservation	OR-0041	Nuclear Facility D&D-Y-12	\$282	\$767	\$903	\$1,049	\$1,184
<b>Oak Ridge Reservation Total</b>			\$5,226	\$4,835	\$5,410	\$10,061	\$10,636
Office of River Protection	HQ-HLW-0014X-RV	Radioactive Liquid Tank Waste Stabilization and Disposition-Storage Operations Awaiting Geologic Rep	\$0	\$122	\$122	\$122	\$122
Office of River Protection	ORP-0014	Radioactive Liquid Tank Waste Stabilization and Disposition	\$3,780	\$40,337	\$58,267	\$44,117	\$62,053
Office of River Protection	ORP-0014-T	Radioactive Liquid Tank Waste Stabilization and Disposition (T)	\$0	\$0	\$0	\$0	\$0
Office of River Protection	ORP-0060	Major Construction-Waste Treatment Plant	\$3,940	\$8,323	\$8,323	\$12,263	\$12,263
Office of River Protection	ORP-0061	Pre-Waste Treatment Plan, Transition Activity	\$433	\$0	\$0	\$433	\$433
Office of River Protection	ORP-0100	Office of River Protection Community and Regulatory Support	\$1	\$0	\$0	\$1	\$1
<b>Office of River Protection Total</b>			\$8,155	\$48,782	\$66,713	\$56,937	\$74,873
Other	LEHR-0040	Nuclear Facility D&D-Laboratory for Energy-Related Health Research	\$40	\$0	\$0	\$40	\$40

**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
Other	VL-LEHR-0040	Nuclear Facility D&D-Laboratory for Energy-Related Health Research	\$0	\$0	\$0	\$0	\$0
Other	NV-0030	Soil and Water Remediation - Offsites	\$71	\$0	\$0	\$71	\$71
Other	CH-OPS-0900	Pre-2004 Completions	\$99	\$0	\$0	\$99	\$99
Other	OH-OPS-0900-N	Pre-2004 Completions (Non-Defense)	\$397	\$0	\$0	\$397	\$397
Other	OH-OPS-0900-D	Pre-2004 Completions	\$58	\$0	\$0	\$58	\$58
Other	CBC-CA-0013B-N	Solid Waste Stabilization and Disposition-California Sites-2012 (Non-Defense)	\$6	\$0	\$0	\$7	\$7
Other	CBC-CA-0100-N	Community and Regulatory Support (Non-Defense)	\$2	\$0	\$0	\$2	\$2
Other	VL-FOO-0013B-N	Solid Waste Stabilization and Disposition-Oakland Sites-2012 (Non-Defense)	\$0	\$0	\$0	\$0	\$0
Other	VL-FOO-0100-N	Oakland Community and Regulatory Support (Non-Defense)	\$0	\$0	\$0	\$0	\$0
Other	VL-FOO-0900-N	Pre-2004 Completions (Non-Defense)	\$21	\$0	\$0	\$21	\$21
Other	VL-FOO-0013B-D	Solid Waste Stabilization and Disposition Support-Lawrence Livermore National Laboratory	\$14	\$2	\$2	\$15	\$15
Other	VL-FOO-0100-D	LLNL Community and Regulatory Support	\$5	\$0	\$0	\$5	\$5
Other	CBC-ND-0100	CBC - Non-Defense Post Closure Administration	\$0	\$0	\$0	\$0	\$0
Other	CBC-UM-0100	CBC - Non-Defense Post Closure Administration - UMTRA Sites	\$0	\$0	\$0	\$0	\$0
Other	VL-FAO-0100-D	Nuclear Material Stewardship (Defense)	\$109	\$0	\$0	\$109	\$109
Other	VL-FAO-0100-N	Nuclear Material Stewardship (Non-Defense)	\$15	\$0	\$0	\$15	\$15
Other	VL-FAO-0900	Pre-2004 Completions	\$233	\$0	\$0	\$233	\$233
Other	VL-FAO-0101	Miscellaneous Programs and Agreements in Principle	\$83	\$10	\$10	\$93	\$93

**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
Other	CH-PPPL-0030	Soil and Water Remediation-Princeton Site A/B	\$0	\$0	\$0	\$0	\$0
<b>Other Total</b>			\$1,152	\$12	\$12	\$1,164	\$1,164
Paducah Gaseous Diffusion Plant	PA-0011	NM Stabilization and Disposition-Paducah Uranium Facilities Management	\$29	\$31	\$31	\$60	\$60
Paducah Gaseous Diffusion Plant	PA-0011X	NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	\$281	\$1,144	\$1,144	\$1,425	\$1,425
Paducah Gaseous Diffusion Plant	PA-0013	Solid Waste Stabilization and Disposition	\$203	\$126	\$208	\$329	\$411
Paducah Gaseous Diffusion Plant	PA-0020	Safeguards and Security	\$32	\$866	\$866	\$898	\$898
Paducah Gaseous Diffusion Plant	PA-0040	Nuclear Facility D&D-Paducah	\$623	\$1,442	\$1,559	\$2,065	\$2,182
Paducah Gaseous Diffusion Plant	GDP D&D	Nuclear Facility D&D-Paducah	\$0	\$5,800	\$12,500	\$5,800	\$12,500
Paducah Gaseous Diffusion Plant	PA-0100	Paducah Community and Regulatory Support (Non-Defense)	\$11	\$0	\$0	\$11	\$11
Paducah Gaseous Diffusion Plant	PA-0101	Paducah Contract/Post-Closure Liabilities/Administration (Non-Defense)	-\$2	\$0	\$0	-\$2	(\$2)
Paducah Gaseous Diffusion Plant	PA-0102	Paducah Contract/Post-Closure Liabilities/Administration (D&D Fund)	\$31	\$14	\$14	\$45	\$45
Paducah Gaseous Diffusion Plant	PA-0103	Paducah Community and Regulatory Support (D&D Fund)	\$15	\$111	\$111	\$126	\$126
<b>Paducah Gaseous Diffusion Plant Total</b>			\$1,223	\$9,533	\$16,432	\$10,757	\$17,656
Pantex Plant	VL-PX-0030	Soil and Water Remediation-Pantex	\$155	\$26	\$26	\$181	\$181
Pantex Plant	VL-PX-0040	Nuclear Facility D&D-Pantex	\$12	\$0	\$0	\$12	\$12
<b>Pantex Plant Total</b>			\$166	\$26	\$26	\$193	\$193
Portsmouth Gaseous Diffusion Plant	PO-0011	NM Stabilization and Disposition-Portsmouth Uranium Facilities Management	\$82	\$49	\$49	\$131	\$131
Portsmouth Gaseous Diffusion Plant	PO-0011X	NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	\$188	\$1,272	\$1,272	\$1,460	\$1,460

**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
Portsmouth Gaseous Diffusion Plant	PO-0013	Solid Waste Stabilization and Disposition	\$345	\$151	\$152	\$496	\$497
Portsmouth Gaseous Diffusion Plant	PO-0020	Safeguards and Security	\$82	\$657	\$657	\$739	\$739
Portsmouth Gaseous Diffusion Plant	PO-0040	Nuclear Facility D&D-Portsmouth	\$498	\$5,250	\$12,242	\$5,747	\$12,741
Portsmouth Gaseous Diffusion Plant	PO-0041	Nuclear Facility D&D-Portsmouth GCEP	\$66	\$0	\$0	\$66	\$66
Portsmouth Gaseous Diffusion Plant	PO-0101	Portsmouth Cold Standby	\$379	\$0	\$0	\$379	\$379
Portsmouth Gaseous Diffusion Plant	PO-0103	Portsmouth Contract/Post-Closure Liabilities/Administration (D&D Fund)	\$4	\$37	\$37	\$41	\$41
Portsmouth Gaseous Diffusion Plant	PO-0104	Portsmouth Community and Regulatory Support (D&D Fund)	\$2	\$18	\$18	\$19	\$19
<b>Portsmouth Gaseous Diffusion Plant Total</b>			<b>\$1,645</b>	<b>\$7,434</b>	<b>\$14,428</b>	<b>\$9,079</b>	<b>\$16,074</b>
Rocky Flats	RF-0011	NM Stabilization and Disposition	\$471	\$0	\$0	\$471	\$471
Rocky Flats	RF-0013	Solid Waste Stabilization and Disposition	\$871	\$0	\$0	\$871	\$871
Rocky Flats	RF-0020	Safeguards and Security	\$298	\$0	\$0	\$298	\$298
Rocky Flats	RF-0030	Soil and Water Remediation	\$2,055	\$0	\$0	\$2,055	\$2,055
Rocky Flats	RF-0040	Nuclear Facility D&D-North Side Facility Closures	\$1,908	\$0	\$0	\$1,908	\$1,908
Rocky Flats	RF-0041	Nuclear Facility D&D-South Side Facility Closures	\$748	\$0	\$0	\$748	\$748
Rocky Flats	CBC-RF-0102	Rocky Flats Future Use	\$3	\$0	\$0	\$3	\$3
Rocky Flats	RF-0100	Rocky Flats Environmental Technology Site Contract Liabilities	\$92	\$2,632	\$2,632	\$2,724	\$2,724
Rocky Flats	RF-0101	Rocky Flats Community and Regulatory Support	\$37	\$0	\$0	\$37	\$37
Rocky Flats	CBC-0100-RF	CBC Post Closure Administration - Rocky Flats	\$0	\$27	\$27	\$27	\$27
<b>Rocky Flats Total</b>			<b>\$6,484</b>	<b>\$2,660</b>	<b>\$2,660</b>	<b>\$9,143</b>	<b>\$9,143</b>
Sandia National Laboratory	VL-SN-0030	Soil and Water Remediation-Sandia	\$226	\$9	\$9	\$235	\$236
<b>Sandia National Laboratory</b>			<b>\$226</b>	<b>\$9</b>	<b>\$9</b>	<b>\$235</b>	<b>\$236</b>

**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
<b>Total</b>							
Savannah River Site	SR-0100	Non-Closure Mission Support	\$196	\$155	\$155	\$351	\$351
Savannah River Site	SR-0101	Savannah River Community and Regulatory Support	\$89	\$233	\$233	\$321	\$321
Savannah River Site	SR-0900	Pre-2004 Completions	\$198	\$0	\$0	\$198	\$198
Savannah River Site	HQ-HLW-0014X-SR	Radioactive Liquid Tank Waste Stabilization and Disposition-Storage Operations Awaiting Geologic Rep	\$0	\$0	\$0	\$0	\$0
Savannah River Site	HQ-SNF-0012X-SR	SNF Stabilization and Disposition-Storage Operations Awaiting Geologic Repository	\$68	\$0	\$0	\$68	\$68
Savannah River Site	SR-0011A	NM Stabilization and Disposition-2006	\$134	\$0	\$0	\$134	\$134
Savannah River Site	SR-0011B	NM Stabilization and Disposition-2012	\$3,663	\$127	\$127	\$3,790	\$3,790
Savannah River Site	SR-0011C	NM Stabilization and Disposition-2035	\$694	\$6,681	\$7,311	\$7,376	\$8,006
Savannah River Site	SR-0012	SNF Stabilization and Disposition	\$259	\$790	\$812	\$1,049	\$1,071
Savannah River Site	SR-0013	Solid Waste Stabilization and Disposition	\$970	\$3,312	\$3,756	\$4,281	\$4,725
Savannah River Site	SR-0014B	Radioactive Liquid Tank Waste Stabilization and Disposition-2012	\$0	\$0	\$0	\$0	\$0
Savannah River Site	SR-0014C	Radioactive Liquid Tank Waste Stabilization and Disposition-2035	\$5,002	\$16,893	\$25,385	\$21,896	\$30,388
Savannah River Site	SR-0014C-T	Radioactive Liquid Tank Waste Stabilization and Disposition-2035 (T)	\$138	\$0	\$0	\$138	\$138
Savannah River Site	SR-0020	Safeguards and Security	\$1,025	\$2,576	\$2,576	\$3,601	\$3,601
Savannah River Site	SR-0030	Soil and Water Remediation	\$1,109	\$2,928	\$3,415	\$4,037	\$4,524
Savannah River Site	SR-0040	Nuclear Facility D&D	\$482	\$5,157	\$5,918	\$5,639	\$6,400
Savannah River Site	SR-0040B	Nuclear Facility D&D-2012	\$1	\$0	\$0	\$1	\$1
<b>Savannah River Site Total</b>			<b>\$14,028</b>	<b>\$38,852</b>	<b>\$49,688</b>	<b>\$52,880</b>	<b>\$63,716</b>
Separations Process Research Unit	VL-SPRU-0040	Nuclear Facility D&D-Separations Process Research Unit	\$25	\$197	\$197	\$222	\$222
<b>Separations Process Research Unit Total</b>			<b>\$25</b>	<b>\$197</b>	<b>\$197</b>	<b>\$222</b>	<b>\$222</b>

**Lifecycle Costs by Project Baseline Summary (PBS)**  
**Millions of Dollars**

Site	PBS	PBS Name	Prior Costs	FY08 and Remaining Cost (Low Range)	FY08 and Remaining Cost (High Range)	Lifecycle Cost (Low Range)	Lifecycle Cost (High Range)
Stanford Linear Accelerator Center	CBC-SLAC-0030	Soil and Water Remediation-Stanford Linear Accelerator Center	\$22	\$23	\$39	\$46	\$62
<b>Stanford Linear Accelerator Center Total</b>			\$22	\$23	\$39	\$46	\$62
Technology Development & Deployment	HQ-TD-0100	Technology Development	\$1,613	\$1,194	\$1,194	\$2,807	\$2,807
<b>Technology Development &amp; Deployment Total</b>			\$1,613	\$1,194	\$1,194	\$2,807	\$2,807
Waste Isolation Pilot Plant	CB-0020	Safeguards and Security	\$18	\$174	\$174	\$192	\$192
Waste Isolation Pilot Plant	CB-0100	US/Mexico/Border/Material Partnership Initiative	\$11	\$0	\$0	\$11	\$11
Waste Isolation Pilot Plant	CB-0900	Pre-2004 Completions	\$7	\$0	\$0	\$7	\$7
Waste Isolation Pilot Plant	CB-0080	Operate Waste Disposal Facility-WIPP	\$1,693	\$3,225	\$3,671	\$4,918	\$5,363
Waste Isolation Pilot Plant	CB-0081	Central Characterization Project	\$90	\$411	\$480	\$500	\$570
Waste Isolation Pilot Plant	CB-0090	Transportation-WIPP	\$274	\$670	\$750	\$944	\$1,024
Waste Isolation Pilot Plant	CB-0101	Economic Assistance to the State of New Mexico	\$149	\$110	\$110	\$259	\$259
<b>Waste Isolation Pilot Plant Total</b>			\$2,240	\$4,590	\$5,184	\$6,830	\$7,425
West Valley Demonstration Project	OH-WV-0012	SNF Stabilization and Disposition-West Valley	\$32	\$0	\$0	\$32	\$32
West Valley Demonstration Project	OH-WV-0013	Solid Waste Stabilization and Disposition-West Valley	\$191	\$158	\$187	\$349	\$377
West Valley Demonstration Project	OH-WV-0014	Radioactive Liquid Tank Waste Stabilization and Disposition-West Valley High-Level Waste Storage	\$0	\$366	\$407	\$366	\$407
West Valley Demonstration Project	OH-WV-0020	Safeguards and Security-West Valley	\$14	\$32	\$32	\$46	\$46
West Valley Demonstration Project	OH-WV-0040	Nuclear Facility D&D-West Valley	\$425	\$630	\$721	\$1,056	\$1,147
<b>West Valley Demonstration Project Total</b>			\$662	\$1,187	\$1,347	\$1,849	\$2,009
<b>Grand Total</b>			\$68,939	\$205,432	\$260,532	\$274,371	\$329,501

**Corporate Performance Measure Quantities by Project Baseline Summary<sup>abc</sup>**

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
<b><u>Closure Sites</u></b>								
Ashtabula	OH-AB-0030	Soil and Water Remediation-Ashtabula Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	3,707	3,707	3,707	3,707	0	3,707
		Radioactive Facility Completions (Number of Facilities)	28	28	28	28	0	28
		Industrial Facility Completions (Number of Facilities)	7	7	7	7	0	7
		Remediation Complete (Number of Release Sites)	3	3	3	3	0	3
Columbus	OH-CL-0040	Nuclear Facility D&D-West Jefferson Nuclear Facility Completions (Number of Facilities)	1	1	1	1	0	1
		Radioactive Facility Completions (Number of Facilities)	14	14	14	14	0	14
		Remediation Complete (Number of Release Sites)	2	2	2	2	0	2
Fernald	OH-FN-0013	Solid Waste Stabilization and Disposition-Fernald Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	7,085	7,085	7,085	7,085	0	7,085
		Remediation Complete (Number of	4	4	4	4	0	4

<sup>a</sup>Life-cycle estimates for release sites, facilities, and high-level waste canisters include pre-1997 actuals. Quantities for all other measures except low-level and mixed low-level waste disposal begin in 1997. Low-level and mixed low-level waste disposal begins in 1998. The lifecycle totals for these measures currently include scope that will be funded by the American Recovery and Reinvestment Act. They do not, however, yet include the volumes of waste associated with the additional environmental liabilities that EM has agreed to accept from other Departmental mission programs.

<sup>b</sup>This chart provides a consistent set of performance measures for the EM program by PBS. The project-level justification provides a description of significant activities for each project including performance measures and project-specific budget milestones, as applicable.

<sup>c</sup> FY 2003 – FY 2005 annual results and targets, as well as life-cycle numbers, are under configuration control. In enforcing the Assistant Secretary’s added emphasis on project management principles, EM’s Configuration Control Board maintains strict configuration control of these numbers to ensure performance and accountability is firmly established and reported.



Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
Fernald	OH-FN-0030	Release Sites) Soil and Water Remediation-Fernald Remediation Complete (Number of Release Sites)	2	2	2	2	0	2
Fernald	OH-FN-0050	Non-Nuclear Facility D&D-Fernald Radioactive Facility Completions (Number of Facilities)	29	29	29	29	0	29
		Industrial Facility Completions (Number of Facilities)	1	1	1	1	0	1
Miamisburg	OH-MB-0013	Solid Waste Stabilization and Disposition- Miamisburg Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	0	0
Miamisburg	OH-MB-0030	Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	3,947	3,947	3,947	3,947	0	3,947
		Soil and Water Remediation-Miamisburg Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	0	0
Miamisburg	OH-MB-0040	Remediation Complete (Number of Release Sites)	178	178	178	178	0	178
		Nuclear Facility D&D-Miamisburg Nuclear Facility Completions (Number of Facilities)	8	8	8	8	0	8
		Radioactive Facility Completions (Number of Facilities)	11	11	11	11	0	11
		Industrial Facility Completions (Number of Facilities)	116	116	116	116	0	116
Rocky Flats Environmental Technology Site	RF-0011	NM Stabilization and Disposition Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	1,895	1,895	1,895	1,895	0	1,895
		Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	103,901	103,901	103,901	103,901	0	103,901
Rocky Flats Environmental	RF-0013	Solid Waste Stabilization and Disposition						

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
Technology Site								
		Transuranic Waste shipped for disposal (Cubic meters) - CH	15,036	15,036	15,036	15,036	0	15,036
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	602,188	602,188	602,188	602,188	0	602,188
Rocky Flats Environmental Technology Site	RF-0030	Soil and Water Remediation Remediation Complete (Number of Release Sites)	360	360	360	360	0	360
Rocky Flats Environmental Technology Site	RF-0040	Nuclear Facility D&D-North Side Facility Closures						
		Material Access Areas eliminated (Number of Material Access Areas)	6	6	6	6	0	6
		Nuclear Facility Completions (Number of Facilities)	6	6	6	6	0	6
		Radioactive Facility Completions (Number of Facilities)	22	22	22	22	0	22
		Industrial Facility Completions (Number of Facilities)	141	141	141	141	0	141
Rocky Flats Environmental Technology Site	RF-0041	Nuclear Facility D&D-South Side Facility Closures						
		Material Access Areas eliminated (Number of Material Access Areas)	1	1	1	1	0	1
		Radioactive Facility Completions (Number of Facilities)	32	32	32	32	0	32
		Industrial Facility Completions (Number of Facilities)	176	176	176	176	0	176
<b><u>All Other Sites</u></b>								
Brookhaven National Laboratory	BRNL-0030	Soil and Water Remediation-Brookhaven National Laboratory						
		Radioactive Facility Completions (Number of Facilities)	3	3	3	3	0	3
		Remediation Complete (Number of	75	75	75	75	0	75

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
Brookhaven National Laboratory	BRNL-0040	Release Sites) Nuclear Facility D&D-Brookhaven Graphite Research Reactor Nuclear Facility Completions (Number of Facilities)	0	0	0	1	0	1
		Radioactive Facility Completions (Number of Facilities)	7	7	7	8	0	8
		Remediation Complete (Number of Release Sites)	1	1	1	1	0	1
Brookhaven National Laboratory	BRNL-0041	Nuclear Facility D&D-High Flux Beam Reactor Remediation Complete (Number of Release Sites)	0	1	1	1	0	1
California Site Support	CBC-CA-0013B-N	Solid Waste Stabilization and Disposition-Oakland Sites-2012 (Non-Defense) Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	83	83	83	83	0	83
Energy Technology Engineering Center	CBC-ETEC-0040	Nuclear Facility D&D-Energy Technology Engineering Center Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	1,055	1,055	1,055	1,055	0	1,055
		Radioactive Facility Completions (Number of Facilities)	4	4	4	4	2	6
		Industrial Facility Completions (Number of Facilities)	24	24	24	24	1	25
		Remediation Complete (Number of Release Sites)	4	4	4	4	10	14
Inhalation Toxicology Laboratory	CBC-ITL-0030	Soil and Water Remediation-Inhalation Toxicology Laboratory Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	207	359	360	360	0	360
		Remediation Complete (Number of Release Sites)	9	9	9	9	0	9
Lawrence Berkeley National Laboratory	CBC-LBNL-0030	Soil and Water Remediation-Lawrence Berkeley National Laboratory Remediation Complete (Number of	181	181	181	181	0	181

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
Stanford Linear Accelerator Center	CBC-SLAC-0030	Release Sites) Soil and Water Remediation-Stanford Linear Accelerator Center Remediation Complete (Number of Release Sites)	17	17	37	52	19	71
Argonne National Laboratory-East	CH-ANLE-0030	Soil and Water Remediation-Argonne National Laboratory-East Remediation Complete (Number of Release Sites)	443	443	443	443	0	443
Argonne National Laboratory-East	CH-ANLE-0040	Nuclear Facility D&D-Argonne National Laboratory-East Radioactive Facility Completions (Number of Facilities)	69	69	78	78	0	78
Chicago Operations Office	CH-OPS-0900	Pre-2004 Completions Low-Level and Mixed Low-Level Waste disposed (Cubic meters) Remediation Complete (Number of Release Sites)	537	537	537	537	0	537
Laboratory for Energy-Related Health Research	LEHR-0040	Nuclear Facility D&D-Laboratory for Energy-Related Health Research Low-Level and Mixed Low-Level Waste disposed (Cubic meters) Industrial Facility Completions (Number of Facilities) Remediation Complete (Number of Release Sites)	30	30	30	30	0	30
California Site Support	VL-FOO-0900-N	Pre-2004 Completions (Non-Defense) Low-Level and Mixed Low-Level Waste disposed (Cubic meters) Remediation Complete (Number of Release Sites)	944	944	944	944	0	944
General Atomics	VL-GA-0012	SNF Stabilization and Disposition- General Atomics Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	1	1	1	1	0	1

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	1,716	1,716	1,716	1,716	0	1,716
		Remediation Complete (Number of Release Sites)	2	2	2	2	0	2
<b>Idaho</b>								
Argonne National Laboratory - West	CH-ANLW-0030	Soil and Water Remediation-Argonne National Laboratory-West Remediation Complete (Number of Release Sites)	37	37	37	37	0	37
Idaho National Laboratory	ID-0011	NM Stabilization and Disposition Enriched Uranium packaged for disposition (Number of Containers)	1,311	1,586	1,587	1,587	0	1,587
		Material Access Areas eliminated (Number of Material Access Areas)	1	1	1	1	0	1
Idaho National Laboratory	ID-0012C	SNF Stabilization and Disposition-2035 Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	0	0	0	0	253	253
Idaho National Laboratory	ID-0013	Solid Waste Stabilization and Disposition Transuranic Waste shipped for disposal (Cubic meters) - CH	18,899	26,492	32,492	38,192	25,977	64,169
		Transuranic Waste shipped for disposal (Cubic meters) - RH	23	72	86	86	0	86
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	58,752	66,599	70,404	74,113	5,286	79,399
Idaho National Laboratory	ID-0014B	Radioactive Liquid Tank Waste Stabilization and Disposition-2012 Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	0	0	900	900
		Liquid Waste Tanks closed (Number of Tanks)	0	7	7	7	4	11
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	623	623
Idaho National	ID-0014C	Radioactive Liquid Tank Waste						

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
Laboratory		Stabilization and Disposition-2035 High-Level Waste packaged for final disposition (Number of Containers)	0	0	0	0	6,660	6,660
Idaho National Laboratory	ID-0030B	Soil and Water Remediation-2012 Transuranic Waste shipped for disposal (Cubic meters) - CH Remediation Complete (Number of Release Sites)	34 218	306 240	806 248	806 327	6,679 6	7,485 333
Idaho National Laboratory	ID-0030C	Soil and Water Remediation-2035 Transuranic Waste shipped for disposal (Cubic meters) - CH Low-Level and Mixed Low-Level Waste disposed (Cubic meters) Remediation Complete (Number of Release Sites)	0 0 0	0 0 0	0 0 0	0 0 0	7,398 31,161 23	7,398 31,161 23
Idaho National Laboratory	ID-0040B	Nuclear Facility D&D-2012 Nuclear Facility Completions (Number of Facilities)	22	24	26	26	18	44
Idaho National Laboratory	ID-0040C	Nuclear Facility D&D-2035 Nuclear Facility Completions (Number of Facilities) Radioactive Facility Completions (Number of Facilities) Industrial Facility Completions (Number of Facilities)	0 0 0	0 0 0	0 0 0	0 0 0	33 10 77	33 10 77
Idaho National Laboratory	ID-0050B	Non-Nuclear Facility D&D-2012 Radioactive Facility Completions (Number of Facilities) Industrial Facility Completions (Number of Facilities)	27 122	32 138	32 139	32 139	12 51	44 190
Idaho Operations Office	ID-0900	Pre-2004 Completions (Defense)						

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
		Remediation Complete (Number of Release Sites)	233	233	233	233	0	233
<b>Oak Ridge</b>								
Oak Ridge National Laboratory	HQ-SW-0013X	Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	7,157	7,157	7,157	7,157	0	7,157
East Tennessee Technology Park	OR-0011Z	Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	131	131
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	0	0	48	498	481	979
Y-12 Plant	HQ-SW-0013Y	Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	16,252	16,252	16,252	16,252	0	16,252
East Tennessee Technology Park	OR-0011Y	NM Stabilization and Disposition-ETTP Uranium Facilities Management						
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	93	93	93	93	0	93
		Nuclear Facility Completions (Number of Facilities)	4	4	4	4	0	4
Oak Ridge Reservation	OR-0013A	Solid Waste Stabilization and Disposition-2006						
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	48,584	48,584	48,584	48,584	0	48,584
Oak Ridge Reservation	OR-0013B	Solid Waste Stabilization and Disposition-2012						
		Transuranic Waste shipped for disposal (Cubic meters) - CH	0	16	296	296	1,118	1,414
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	96	96	504	600
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	11,202	11,593	13,237	13,237	21,061	34,298
Oak Ridge Reservation	OR-0030	Soil and Water Remediation-Melton Valley						

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
		Nuclear Facility Completions (Number of Facilities)	2	2	2	2	0	2
		Radioactive Facility Completions (Number of Facilities)	15	15	15	15	0	15
		Industrial Facility Completions (Number of Facilities)	2	2	2	2	0	2
Oak Ridge Reservation	OR-0031	Remediation Complete (Number of Release Sites)	106	106	106	106	0	106
		Soil and Water Remediation-Offsites Remediation Complete (Number of Release Sites)	6	6	7	8	0	8
East Tennessee Technology Park	OR-0040	Nuclear Facility D&D-East Tennessee Technology Park (D&D Fund)						
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	5,178	5,178	5,178	5,178	0	5,178
		Nuclear Facility Completions (Number of Facilities)	2	2	2	2	2	4
		Radioactive Facility Completions (Number of Facilities)	7	8	8	10	20	30
		Industrial Facility Completions (Number of Facilities)	278	282	291	304	254	558
		Remediation Complete (Number of Release Sites)	87	91	92	112	55	167
Y-12 Plant	OR-0041	Nuclear Facility D&D-Y-12						
		Industrial Facility Completions (Number of Facilities)	1	1	1	1	1	2
		Remediation Complete (Number of Release Sites)	28	28	28	28	110	138
Oak Ridge National Laboratory	OR-0042	Nuclear Facility D&D-Oak Ridge National Laboratory						
		Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	80	80
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	22	22
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	0	366	732	2,351	12,591	14,942



Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
		Nuclear Facility Completions (Number of Facilities)	0	0	0	0	15	15
		Radioactive Facility Completions (Number of Facilities)	3	3	3	3	23	26
		Industrial Facility Completions (Number of Facilities)	7	7	7	7	18	25
		Remediation Complete (Number of Release Sites)	80	80	80	80	98	178
East Tennessee Technology Park	OR-0043	Nuclear Facility D&D-East Tennessee Technology Park (Defense)						
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	32,979	32,979	32,979	32,979	0	32,979
		Industrial Facility Completions (Number of Facilities)	6	6	6	6	31	37
Oak Ridge Operations Office	OR-0900-D	Pre-2004 Completions (Defense) Remediation Complete (Number of Release Sites)	74	74	74	74	0	74
Oak Ridge Operations Office	OR-0900-N	Pre-2004 Completions (Non-Defense) Industrial Facility Completions (Number of Facilities)	3	3	3	3	0	3
		Remediation Complete (Number of Release Sites)	23	23	23	23	0	23
<b>Paducah</b>								
Paducah Gaseous Diffusion Plant	PA-0011	NM Stabilization and Disposition- Paducah Uranium Facilities Management Enriched Uranium packaged for disposition (Number of Containers)	0	0	0	0	182	182
Paducah Gaseous Diffusion Plant	PA-0011X	NM Stabilization and Disposition- Depleted Uranium Hexafluoride Conversion						
		Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	418,960	418,960
Paducah Gaseous Diffusion Plant	PA-0013	Solid Waste Stabilization and Disposition						

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Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	12,680	15,642	20,006	20,752	6,712	27,464
Paducah Gaseous Diffusion Plant	PA-0040	Nuclear Facility D&D-Paducah Nuclear Facility Completions (Number of Facilities)	0	0	0	0	18	18
		Radioactive Facility Completions (Number of Facilities)	2	2	3	3	19	22
		Industrial Facility Completions (Number of Facilities)	12	12	17	17	155	172
		Remediation Complete (Number of Release Sites)	91	93	93	93	112	205
Paducah Gaseous Diffusion Plant	PA-0900	Pre-2004 Completions Remediation Complete (Number of Release Sites)	1	1	1	1	0	1
<b><u>Portsmouth</u></b>								
Portsmouth Gaseous Diffusion Plant	PO-0011X	NM Stabilization and Disposition- Depleted Uranium Hexafluoride Conversion Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	247,740	247,740
Portsmouth Gaseous Diffusion Plant	PO-0013	Solid Waste Stabilization and Disposition Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	24,078	31,907	35,016	35,016	0	35,016
Portsmouth Gaseous Diffusion Plant	PO-0040	Nuclear Facility D&D-Portsmouth Nuclear Facility Completions (Number of Facilities)	0	0	0	0	13	13
		Radioactive Facility Completions (Number of Facilities)	7	7	7	7	20	27
		Industrial Facility Completions (Number of Facilities)	7	7	8	8	113	121
		Remediation Complete (Number of Release Sites)	20	20	20	20	1	21

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
Portsmouth Gaseous Diffusion Plant	PO-0900	Pre-2004 Completions Remediation Complete (Number of Release Sites)	130	130	130	130	0	130
<b>Richland</b>								
Hanford Site	RL-0011	NM Stabilization and Disposition-PFP Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	2,275	2,275	2,275	2,275	0	2,275
		Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	3,437	3,437	3,437	3,437	0	3,437
		Material Access Areas eliminated (Number of Material Access Areas)	1	1	15	15	4	19
		Nuclear Facility Completions (Number of Facilities)	21	21	21	21	10	31
		Radioactive Facility Completions (Number of Facilities)	0	0	0	0	26	26
Hanford Site	RL-0012	SNF Stabilization and Disposition Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	2,117	2,117	2,117	2,117	0	2,117
Hanford Site	RL-0013C	Solid Waste Stabilization and Disposition-200 Area						
		Transuranic Waste shipped for disposal (Cubic meters) - CH	2,481	3,030	3,380	3,380	21,200	24,580
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	858	858
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	45,698	47,213	47,385	47,385	4,065	51,450
Hanford Site	RL-0040	Nuclear Facility D&D-Remainder of Hanford						
		Nuclear Facility Completions (Number of Facilities)	4	4	4	4	35	39
		Radioactive Facility Completions (Number of Facilities)	12	12	12	12	168	180
		Industrial Facility Completions (Number of Facilities)	212	223	223	223	426	649
		Remediation Complete (Number of	39	39	39	39	818	857

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
Hanford Site	RL-0041	Release Sites)						
		Nuclear Facility D&D-River Corridor Closure Project						
		Enriched Uranium packaged for disposition (Number of Containers)	2,958	2,958	2,958	2,958	0	2,958
		Depleted and Other Uranium packaged for disposition (Metric Tons)	3,100	3,100	3,100	3,100	0	3,100
		Nuclear Facility Completions (Number of Facilities)	3	3	3	7	1	8
		Radioactive Facility Completions (Number of Facilities)	34	37	37	40	79	119
		Industrial Facility Completions (Number of Facilities)	100	113	115	127	244	371
Hanford Site	RL-0042	Remediation Complete (Number of Release Sites)	409	429	433	452	352	804
		Nuclear Facility D&D-Fast Flux Test Facility Project						
		Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	7	7	7	7	0	7
		Nuclear Facility Completions (Number of Facilities)	0	0	0	0	4	4
		Radioactive Facility Completions (Number of Facilities)	0	0	0	0	9	9
		Industrial Facility Completions (Number of Facilities)	0	0	0	0	31	31
<b><u>River Protection</u></b>								
River Protection	ORP-0014	Radioactive Liquid Tank Waste Stabilization and Disposition						
		Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	0	0	54,000	54,000
		Liquid Waste Tanks closed (Number of Tanks)	0	0	0	0	177	177
		High-Level Waste packaged for final disposition (Number of Containers)	0	0	0	0	9,667	9,667
		Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	1,555	1,555

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	3,864	3,864
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	6,211	7,952	10,606	12,476	185,356	197,832
		Nuclear Facility Completions (Number of Facilities)	0	0	0	0	18	18
		Radioactive Facility Completions (Number of Facilities)	0	0	0	0	114	114
		Industrial Facility Completions (Number of Facilities)	0	0	0	0	128	128
		Remediation Complete (Number of Release Sites)	5	5	5	5	273	278
River Protection	ORP-0060	Major Construction-Waste Treatment Plant						
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	546	546
<b>Savannah River</b>								
Savannah River Site	SR-0040	Nuclear Facility Completions (Number of Facilities)	11	11	11	11	180	191
		Radioactive Facility Completions (Number of Facilities)	8	8	8	8	32	40
		Industrial Facility Completions (Number of Facilities)	232	232	232	232	527	759
Savannah River Site	SR-0011B	NM Stabilization and Disposition-2012 Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	919	919	919	919	0	919
		Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	490	490	490	490	0	490
Savannah River Site	SR-0011C	NM Stabilization and Disposition-2035 Enriched Uranium packaged for disposition (Number of Containers)	2,717	3,004	3,004	3,184	0	3,184
		Depleted and Other Uranium packaged for disposition (Metric Tons)	8,760	9,974	12,110	12,110	11,072	23,182
Savannah River Site	SR-0012	SNF Stabilization and Disposition Spent Nuclear Fuel packaged for final	3	3	3	3	37	40

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
Savannah River Site	SR-0013	disposition (Metric Tons of Heavy Metal) Solid Waste Stabilization and Disposition Transuranic Waste shipped for disposal (Cubic meters) - CH	5,031	5,691	5,851	5,956	9,634	15,590
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	68	68
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	94,179	100,620	105,064	111,674	25,905	137,579
Savannah River Site	SR-0014C	Radioactive Liquid Tank Waste Stabilization and Disposition-2035 Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	1,174	1,874	2,574	30,526	33,100
		Liquid Waste Tanks closed (Number of Tanks)	2	2	2	2	49	51
Savannah River Site	SR-0020	High-Level Waste packaged for final disposition (Number of Containers)	2,374	2,599	2,785	2,971	3,329	6,300
		Safeguards and Security Material Access Areas eliminated (Number of Material Access Areas)	2	2	2	2	1	3
Savannah River Site	SR-0030	Soil and Water Remediation Remediation Complete (Number of Release Sites)	339	361	372	372	143	515
<b><u>NNSA Sites</u></b>								
Lawrence Livermore National Laboratory	HQ-SW-0013Y	Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	2,546	2,546	2,546	2,546	0	2,546
Offsites	NV-0030	Soil and Water Remediation-Nevada Test Site and Offsites Remediation Complete (Number of Release Sites)	53	53	53	53	0	53
New Mexico Site Support	VL-FAO-0900	Pre-2004 Completions Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	1,319	1,319	1,319	1,319	0	1,319
		Remediation Complete (Number of Release Sites)	155	155	155	155	0	155

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
Kansas City Plant	VL-KCP-0030	Release Sites) Soil and Water Remediation-Kansas City Plant Remediation Complete (Number of Release Sites)	43	43	43	43	0	43
Los Alamos National Laboratory	VL-LANL-0013	Solid Waste Stabilization and Disposition-LANL Legacy Transuranic Waste shipped for disposal (Cubic meters) - CH Transuranic Waste shipped for disposal (Cubic meters) - RH	1,682	2,095	3,037	3,823	6,745	10,568
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	556	567	1,596	3,275	1,328	4,603
Los Alamos National Laboratory	VL-LANL-0030	Soil and Water Remediation-LANL Low-Level and Mixed Low-Level Waste disposed (Cubic meters) Remediation Complete (Number of Release Sites)	5,426	5,426	5,426	5,426	0	5,426
Los Alamos National Laboratory	VL-LANL-0040-D	Nuclear Facility D&D-LANL (Defense) Radioactive Facility Completions (Number of Facilities)	0	0	0	0	84	84
Los Alamos National Laboratory	VL-LANL-0040-N	Nuclear Facility D&D-LANL (Non-Defense) Radioactive Facility Completions (Number of Facilities)	0	0	0	0	1	1
Lawrence Livermore National Laboratory	VL-LLNL-0013	Solid Waste Stabilization and Disposition-Lawrence Livermore National Laboratory Transuranic Waste shipped for disposal (Cubic meters) - CH Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	125	125	125	125	0	125
Lawrence Livermore National Laboratory	VL-LLNL-0030	Soil and Water Remediation-Lawrence Livermore National Laboratory - Main Site	2,766	2,766	2,766	2,766	0	2,766

Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
Lawrence Livermore National Laboratory	VL-LLNL-0031	Remediation Complete (Number of Release Sites) Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300	120	120	120	120	0	120
		Remediation Complete (Number of Release Sites)	73	74	74	74	0	74
Nevada Test Site	VL-NV-0013	Solid Waste Stabilization and Disposition-Nevada Test Site Transuranic Waste shipped for disposal (Cubic meters) - CH	392	449	1,207	1,207	0	1,207
Nevada Test Site	VL-NV-0030	Soil and Water Remediation-Nevada Test Site						
Pantex Plant	VL-PX-0030	Remediation Complete (Number of Release Sites) Soil and Water Remediation-Pantex	935	1,016	1,041	1,051	984	2,035
Pantex Plant	VL-PX-0040	Remediation Complete (Number of Release Sites) Nuclear Facility D&D-Pantex	237	237	237	237	0	237
Sandia National Laboratory	VL-SN-0030	Industrial Facility Completions (Number of Facilities) Soil and Water Remediation-Sandia	4	4	4	4	0	4
		Radioactive Facility Completions (Number of Facilities)	1	1	1	1	0	1
		Remediation Complete (Number of Release Sites)	263	263	264	264	1	265
NNSA Service Center	VL-SPRU-0040	Nuclear Facility D&D-Separations Process Research Unit Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	50	50
		Nuclear Facility Completions (Number of Facilities)	0	0	0	0	4	4
		Remediation Complete (Number of Release Sites)	0	0	4	4	2	6
Nevada Test Site	VL-SV-0100	South Valley Superfund Remediation Complete (Number of	1	1	1	1	0	1



Office / Installation	Project Number	Project Name / Measure	Complete Through 2007	Complete Through 2008	Targeted Completion Through 2009	Targeted Completion Through 2010	Balance Remaining	Life-Cycle Quantity
		Release Sites)						
<b>West Valley</b>								
<b><u>Demonstration Project</u></b>								
West Valley		Solid Waste Stabilization and Disposition-						
Demonstration Project	OH-WV-0013	West Valley						
		High-Level Waste packaged for final disposition (Number of Containers)	275	275	275	275	0	275
		Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	1,142	1,142
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	555	555
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	26,025	26,931	26,931	27,563	223	27,786
West Valley		Nuclear Facility D&D-West Valley						
Demonstration Project	OH-WV-0040	Nuclear Facility Completions (Number of Facilities)	3	3	3	4	10	14
		Radioactive Facility Completions (Number of Facilities)	3	4	4	4	9	13
		Industrial Facility Completions (Number of Facilities)	10	13	22	23	6	29



## Carlsbad

### Funding by Site

(dollars in thousands)

FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010
Carlsbad Field Office	25,704	27,860	27,854
Waste Isolation Pilot Plant	208,881	203,801	192,483
Total, Carlsbad	234,585	231,661	220,337

### Site Overview

The Carlsbad Field Office, located in Carlsbad, New Mexico, was created to serve as the focal point for the nation's transuranic waste management efforts since transuranic waste is currently stored at many DOE sites across the country. The Carlsbad Field Office has the responsibility for management of the National Transuranic Waste Program, whose mission is the implementation and management of a national system that safely and cost-effectively provides for the certification, transportation, and disposal of defense-generated transuranic waste. The Waste Isolation Pilot Plant is the center of the National Transuranic Waste Program and is managed by the Carlsbad Field Office. This plant, near Carlsbad, New Mexico, is the Nation's only mined geologic repository for the permanent disposal of defense-generated transuranic waste. The waste disposal area is 2,150 feet (almost one-half mile) below the surface located in 200-million year old stable salt beds. The transuranic waste that is eligible for disposal at the Waste Isolation Pilot Plant must ultimately be transported from all the generator sites to this repository for receipt, handling, and disposal.

### Site Description

The Waste Isolation Pilot Plant was the world's first permitted deep geologic repository for the permanent disposal of radioactive waste. It is located in Eddy County in southeastern New Mexico, 26 miles southeast of Carlsbad. The Plant's total land area consists of 10,240 acres (16 square miles) with the fenced surface portion of the active site being about 35 acres in size. It is located in an area of low population density, and the area surrounding the facility is used primarily for grazing and development of potash, oil, salt, and natural gas resources.

### Site Cleanup Strategy/Scope of Cleanup

The Waste Isolation Pilot Plant is an operating facility, supporting the disposal of transuranic waste from waste generator and storage sites. It is not a cleanup site.

## Site Completion (End State)

EM's end state for the Waste Isolation Pilot Plant is the cessation of disposal activities for legacy and newly generated transuranic waste from the DOE complex. The life-cycle planning estimate range is 2035 to 2039 for decommissioning of the surface facilities and permanent closure of the underground. This range is subject to change based on changes to DOE cleanup site schedules and transuranic waste inventories.

## Regulatory Framework

Authorized by Congress in 1979, the Waste Isolation Pilot Plant was constructed during the 1980s. In the Waste Isolation Pilot Plant Land Withdrawal Act of 1992, Congress established regulatory conditions and standards covering limits on the types and quantities of waste that DOE could place in the repository. The plant operates under a Resource Conservation and Recovery Act, Part B, Hazardous Waste Permit issued by the New Mexico Environment Department in October 1999. The Environmental Protection Agency issued regulatory standards for waste containment in 40 Code of Federal Regulations 191. Subsequently, then the Environmental Protection Agency formulated Waste Isolation Pilot Plant-specific criteria in 40 CFR 194 that required DOE to demonstrate that the Waste Isolation Pilot Plant would meet its containment standards. The Environmental Protection Agency initially certified the Waste Isolation Pilot Plant's compliance with these regulations on May 18, 1998, and recertified compliance on March 29, 2006. The Department submitted its second Compliance Recertification Application to the Environmental Protection Agency in March 2009.

The Waste Isolation Pilot Plant has four primary regulators: 1) the Environmental Protection Agency, which regulates repository certification and radionuclide regulation in accordance with the Waste Isolation Pilot Plant Land Withdrawal Act of 1996, as amended, and polychlorinated biphenyls; 2) the New Mexico Environment Department, which regulates the Resource Conservation and Recovery Act hazardous constituents, water discharge, air emissions, and ground water; 3) the Nuclear Regulatory Commission, which certifies Type B transportation packaging; 4) and the Department of Transportation, which regulates highway transportation and Type A transportation packaging.

Agreements with States at the Waste Isolation Pilot Plant's generator sites may impact the Waste Isolation Pilot Plant. For instance, the *Idaho Settlement Agreement* contains transuranic waste shipment milestones for the Idaho National Laboratory.

## Critical Project Uncertainties and Assumptions

The ability of generator sites to supply sufficient certifiable waste to support the full utilization of the Waste Isolation Pilot Plant (for emplacement of both remote-handled and contact-handled waste) is a concern. To address this issue, the Headquarters Office of Environmental Management is working with the generator sites to modify their current site contracts and to improve incentives for transuranic waste retrieval and remediation to increase transuranic waste certification. The Carlsbad Field Office is taking action to assist sites' efforts to build a backlog of certified waste to increase waste characterization efficiencies. Carlsbad is participating in weekly and bi-weekly conference calls, site visits and audits, providing assistance to the generator sites with problematic issues or waste, and through National Transuranic Waste Corporate Board meetings and discussions.

**Interdependencies**

The Waste Isolation Pilot Plant is dependent on the waste generator/storage sites to provide waste for certification and disposal. The Waste Isolation Pilot Plant is also dependent on its regulators and their decisions that impact operations, certification of the Waste Isolation Pilot Plant, permit modifications, licenses, shipping, and transportation.

Although this budget request provides the majority of costs associated with the transuranic waste disposal system (repository operations, characterization, transportation resources, etc.), some of the activities associated with the preparation and certification of the transuranic waste is funded by the American Recovery and Reinvestment Act appropriation. This request provides a readiness to receive an average of 21 contact-handled and 5 remote-handled shipments per week.

**Contract Synopsis**

The Carlsbad Field Office currently has four major contracts in place: 1) the Management and Operating Contract for the Waste Isolation Pilot Plant, extended through September 2010. Specific performance incentives were included in the negotiated extension; 2) a technical assistance contract for implementing the independent DOE quality assurance program for the National Transuranic Waste Program through August 2010, awarded on August 11, 2005; 3) a new transportation carrier contract, awarded on March 16, 2007; and 4) another new carrier contract, awarded on September 27, 2007.

**Cleanup Benefits**

The Waste Isolation Pilot Plant is crucial to DOE completing its cleanup/closure mission for transuranic waste. It is the only authorized disposal site for transuranic defense waste. The Waste Isolation Pilot Plant is an essential element in reducing the risks to public health, workers, and the environment.

Direct maintenance and repair at the Carlsbad Field Office is estimated to be \$14,483,000.

**Funding Schedule by Activity**

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Defense Environmental Cleanup			
Waste Isolation Pilot Plant			
CB-0101 / Economic Assistance to the State of New Mexico	25,704	27,860	27,854
CB-0081 / Central Characterization Project	36,899	38,206	13,730
CB-0090 / Transportation-WIPP	26,887	28,170	33,851
CB-0080 / Operate Waste Disposal Facility-WIPP	145,095	137,425	144,902
Subtotal, Waste Isolation Pilot Plant	234,585	231,661	220,337

### Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
Carlsbad					
Geographic Sites Eliminated (number of sites)	0	0	0	1	0%

### Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**CB-0080 / Operate Waste Disposal Facility-WIPP** **145,095**      **137,425**      **144,902**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The Waste Isolation Pilot Plant in Carlsbad, New Mexico, is the nation's only mined geologic repository for the permanent disposal of defense-generated transuranic waste. The Carlsbad Field Office was created to serve as the focal point for DOE transuranic waste management efforts. Transuranic waste is currently stored at multiple sites across the country. All legacy transuranic waste has been removed from 13 sites: ARCO Medical Products Company, Battelle Columbus Laboratory-West Jefferson Site, Brookhaven National Laboratory, Energy Technology Engineering Center, Fernald, Inhalation Toxicology Laboratory, Knolls Power Atomic Laboratory-Nuclear Fuel Services, Lawrence Berkeley National Laboratory, Missouri University Research Reactor, Mound, Rocky Flats Environmental Technology Site, Teledyne-Brown, and U.S. Army Materials Command. Some sites on the list continue to generate or accumulate very small quantities of transuranic waste at Lawrence Berkeley National Laboratory and U.S. Army Materials Command. Defense-generated transuranic waste from all of the generator sites eligible for Waste Isolation Pilot Plant disposal must ultimately be shipped to the Waste Isolation Pilot Plant for receipt, handling, and disposal. The Carlsbad Field Office has the responsibility for management of the National Transuranic Waste Program, whose mission is the implementation and management of a national system to safely and cost effectively provide for the disposal of this waste in a regulatory compliant manner.

This PBS supports all activities related to the disposal of contact-handled and remote-handled transuranic waste at the Waste Isolation Pilot Plant. Key elements of this system are: 1) operation of the disposal facility—including mining, waste handling, and the infrastructure to safely maintain the facility and operations in compliance with all Federal and state laws, regulations, and environmental requirements; 2) Environmental Compliance—maintenance of compliance certification through monitoring and verifying the performance of the systems sensitive parameters; and 3) National Transuranic Waste Integration Program—integration and infrastructure activities required to certify the transuranic waste and coordinate all activities across the transuranic waste complex for shipments of waste to the Waste Isolation Pilot Plant.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Although the volume of waste emplaced each year is somewhat dependent upon the specific waste streams shipped and payload constraints, the target shipping rate (average 21 contact-handled and 5 remote-handled shipments per week) is expected to result in approximately 7,400 cubic meters in both FY 2009 and FY 2010. The table below shows the cumulative actual volumes of transuranic waste (in cubic meters) emplaced at the Waste Isolation Pilot Plant Repository by site and by fiscal year. Contact-handled transuranic waste disposal began in 1999; remote-handled transuranic waste disposal began in 2007.

Waste Emplaced in the WIPP Repository, Cumulative Volume by Site (m <sup>3</sup> )													
Fiscal Year	LANL	INL(CH)	INL(RH)	RFETS	Hanford	SRS	ANL-E	ANL-E (RH)	NTS	LLNL	ORNL	WIPP	Cumulative Total
FY 1999	190	15	0	62		0	0	0	0	0	0	0.0	266
FY 2000	0	87	0	252	13	0	0	0	0	0	0	0.0	618
FY 2001	74	717	0	1,044	68	62	0	0	0	0	0	0.3	2,583
FY 2002	8	2,065	0	2,903	18	141	0	0	0	0	0	0.5	7,717
FY 2003	327	567	0	4,017	250	2,285	97	0	0	0	0	0.0	15,259
FY 2004	0	342	0	4,650	448	3,240	24	0	106	0	0	0.2	24,069
FY 2005	171	2,564	0	2,134	853	1,554	0	0	235	146	0	0.0	31,726
FY 2006	546	7,890	0	0	715	1,340	0	0	64	0	0	0.0	42,282
FY 2007	823	5,390	23	0	765	1,548	0	0	0	0	0	0.0	50,831
FY 2008	689	3,304	47	0	622	1,267	0	2	0	0	12	0.3	56,775
Site Totals:	2,826	22,940	70	15,062	3,752	11,437	121	2	405	146	12	1	

### Site Completion (End-State)

All legacy transuranic waste across the DOE complex will be disposed of at the Waste Isolation Pilot Plant. The statutory limit for transuranic waste to be disposed there is 175,600 cubic meters, which includes 7,080 cubic meters for remote-handled transuranic waste. The surface area will remain under institutional controls for 100 years after the disposal phase ends.

In FY 2010, the following activities are planned:

- Maintain safety and personnel health programs, surface and underground operations and maintenance, program administration, generator site interface, Public Affairs programs, payments to the National Institute of Standards and Technology and other organizations for independent oversight, environmental oversight, and right-of-ways.
- Provide funding for 40 Code of Federal Regulations compliance, site environmental compliance, Resource Conservation and Recovery Act permit compliance, Quality Assurance, and payments to regulatory agencies.
- Provide funding for materials required for storage of contact-handled transuranic waste including slip sheets, and MgO (Magnesium Oxide), as well as engineering services and contact-handled transuranic waste handling. These are required for operations per the Environmental Protection Agency and the New Mexico Environment Department.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Support handling of remote-handled waste, borehole drilling, and shield plugs required at the Waste Isolation Pilot Plant to receive and dispose of remote-handled transuranic waste.
- Provide funding for Waste Isolation Pilot Plant site modifications required to prepare for the receipt of TRUPACT-III shipping containers. These containers are required for shipment of legacy waste stored in over-sized boxes, to mitigate repackaging.
- Support procurement of capital equipment and site upgrades. Examples: resurfacing access roads, removing exhaust shaft surface duct salt build-up, safety upgrades to Building 452, upgrade heating ventilation and air conditioning controls for Building 458, procure 13 ton forklift, replace server, surface loader, underground haul trucks, and several other projects.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Provide large box characterization equipment to Savannah River (October 2008)</li> <li>▪ Submit Compliance Recertification Application to EPA (March 2009)</li> <li>▪ Submit Hazardous Waste Facility Permit Renewal Application (May 2009)</li> <li>▪ Complete Panel 1 final closure (January 2016) (June 2009)</li> <li>▪ Complete Panel 2 final closure (January 2016) (June 2009)</li> <li>▪ Complete Panel 3 Closure (January 2016) (June 2009)</li> <li>▪ Complete Panel 4 closure (January 2016) (December 2009)</li> <li>▪ WIPP facility capable of handling TRUPACT-III (August 2010)</li> </ul>					

**CB-0081 / Central Characterization Project** **36,899**      **38,206**      **13,730**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This PBS scope includes labor, materials and supplies for operation of mobile waste characterization systems that are deployed to Department of Energy generator sites for characterization of transuranic waste to be disposed at the Waste Isolation Pilot Plant, as well as centralized transuranic waste analytical services at Idaho and Carlsbad Environmental Monitoring and Research Center. It also includes generator site services at selected sites to characterize transuranic waste for transportation to Waste Isolation Pilot Plant or to another site for final certification, when cost effective. These services



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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can include acceptable knowledge compilation and reporting, data generation, project level validation and verification, records management, document control, non-destructive examination, non-destructive assay, headspace gas sampling and analysis, mobile visual examination and repackaging, and mobile loading support. The use of mobile systems provides host sites with a highly regulated program that has already been certified for use. DOE reviews have concluded that the Central Characterization Project provides the most cost-effective and reliable characterization capabilities. Development and deployment of these services represents sound management and implementation of value engineering. This PBS also provides a DOE-wide single certification program for remote-handled transuranic waste shipments to Waste Isolation Pilot Plant at the generator/shipping sites and a DOE-wide transuranic waste shipping confirmation process required by the Waste Isolation Pilot Plant hazardous waste permit from the New Mexico Environment Department.

### **Site Completion (End-State)**

All transuranic waste requiring use of the Central Characterization Project across the DOE complex will be disposed of at the Waste Isolation Pilot Plant. The surface area will remain under institutional controls for 100 years after the disposal phase ends.

In FY 2010, the following activities are planned:

- Provide funding for Acceptable Knowledge and procedural support, shipping site waste loading services, waste certification support, headspace gas analysis and soils and solids analysis required for characterization activities.
- Support generator site interface for Central Characterization Project activities, Central Characterization Project administration and Performance Demonstration Program for Resource Conservation and Recovery Act constituents.
- Support Central Characterization Project waste certification for transportation at Idaho National Laboratory. The Central Characterization Project is the transportation certification program for all transuranic waste shipments from Idaho National Laboratory. (The Carlsbad Field Office will be dependent on Idaho National Laboratory to provide the waste.)
- Support Central Characterization Project contact-handled and remote-handled waste for disposal at Los Alamos National Laboratory.
- Support Central Characterization Project contact-handled and remote-handled waste for disposal at Oak Ridge National Laboratory.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>Start standard waste box characterization at the Los Alamos National Laboratory. (March 2009)</li> </ul>					

**CB-0090 / Transportation-WIPP**

**26,887**

**28,170**

**33,851**

This PBS can be found within the Defense Environmental Cleanup appropriation.

It includes all transportation activities required to support the disposal of both contact-handled and remote-handled transuranic waste to the Waste Isolation Pilot Plant, or other designated sites. This includes carrier services, transportation packaging, shipping coordination, and stakeholder interfaces related to transportation. As required in the Waste Isolation Pilot Plant Land Withdrawal Act, this PBS provides for technical assistance for the purpose of training public safety officials and other emergency responders in any State or Indian tribal lands through which DOE plans to transport transuranic waste to or from the Waste Isolation Pilot Plant.

In FY 2010, the following activities are planned:

- Supports fixed price portion of the carrier contracts and contact handled packaging (TRUPACT II) maintenance.
- Supports shipping corridor readiness, remote handled waste packaging and shipping services, including Nuclear Regulatory Commission fees.
- Supports the cost reimbursable portion of the carrier contracts: fuel, state use fees and permits, New Mexico Gross Receipts Tax, driver per diem and safe driving bonus.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>Deliver RH Uprighting Production Trailers (Balance of Fleet) (FY 2008)</li> <li>Projected Nuclear Regulatory Commission Approval of TRUPACT-III. (March 2010)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Start Oak Ridge National Laboratory contact-handled waste shipments (FY 2008)
- Maintain shipping capability at 25 CH shipments per week (September 2010)
- Remote-handling shipping capability goal is 5 per week (September 2010)

**CB-0101 / Economic Assistance to the State of New Mexico**

**25,704            27,860            27,854**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This PBS fulfills a requirement of the Waste Isolation Pilot Plant Land Withdrawal Act (Public Law 102-579) which authorizes payments to the State of New Mexico in the amount of \$20,000,000 (plus inflation) for each of the 14 fiscal years beginning with FY 1998. The purpose of this funding is for road improvements in connection with waste shipments to the Waste Isolation Pilot Plant. A portion of the payment will: 1) be made available to units of local government in Lea and Eddy counties in the state, and 2) provide for independent Environment Assessments and Economic Studies associated with the Waste Isolation Pilot Plant. The DOE has made annual payments to the State of New Mexico as required by the Waste Isolation Pilot Plant Land Withdrawal Act. The requirement under Public Law 102-579 will be completed in FY 2011.

In FY 2010, the following activity is planned:

- Provides economic assistance payments to the State of New Mexico required by the Waste Isolation Pilot Plant Land Withdrawal Act, which is a Federal Law.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Provide funding to the State of New Mexico as required by the Waste Isolation Pilot Plant Land Withdrawal Act. (FY 2008)</li> <li>▪ Provide funding to the State of New Mexico as required by the WIPP Land Withdrawal Act. (September 2009)</li> <li>▪ Provide funding to the State of New Mexico (September 2010)</li> </ul>					

**Total, Carlsbad**

**234,585            231,661            220,337**

## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### Defense Environmental Cleanup

#### Waste Isolation Pilot Plant

##### CB-0080 / Operate Waste Disposal Facility-WIPP

- Increase provides for Waste Isolation Pilot Plant site upgrades to receive and handle TRUPACT III shipping containers in the Contact-Handle Waste Building and processing standard large boxes (TRUPACT-III payload containers) for emplacement in the Waste Isolation Pilot Plant repository. 7,477

##### CB-0081 / Central Characterization Project

- Decrease reflects completion of drum characterization program at the Savannah River Site in FY 2009 and efficiencies in Centralized Characterization Project waste characterization activities achieved through treatment and characterization of consolidated TRU waste from small quantity generators and storage sites at the Idaho National Laboratory. It also reflects that a portion of the Central Characterization Project is included in the American Recovery and Reinvestment Act appropriation. -24,476

##### CB-0090 / Transportation-WIPP

- Supports increases in cost reimbursement portions of the transportation carrier contracts due to increased shipping rates, including increased shipping rates to support intersite transuranic waste shipments to the Idaho National Laboratory for treatment and characterization. 5,681

##### CB-0101 / Economic Assistance to the State of New Mexico

- No significant change. Maintains funding (\$20 million per year in economic assistance to New Mexico per the Waste Isolation Pilot Plant Land Withdrawal Act) escalated by the average of previous fiscal years (since 1999) consumer price indexes. -6

**Total, Carlsbad**

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**-11,324**

## Idaho

### Funding by Site

(dollars in thousands)

	FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010
Idaho National Laboratory	522,838	489,239	467,875	411,168
Total, Idaho	522,838	489,239	467,875	411,168

### Site Overview

Since its establishment in 1949, the Idaho National Laboratory Site has fulfilled numerous Department of Energy (DOE) missions including the designing and testing of 52 nuclear reactors and reprocessing spent nuclear fuel to recover fissile materials. These activities have resulted in an inventory of high-level, transuranic, mixed low-level and low-level wastes, which are being disposed of in accordance with applicable laws and regulations. The laboratory is also responsible for storing and dispositioning approximately 284 metric tons of spent nuclear fuel from a number of sources, including the Navy, foreign and domestic research reactors, and some commercial reactors, along with DOE-owned fuel. The site is on the United States Environmental Protection Agency's National Priorities (Superfund) List, and environmental remediation activities are required at ten Waste Area Groups encompassing 100 operable units, including Naval Reactors Facility Waste Area Group 8 and Material Fuels Complex-West Waste Area Group 9.

The EM program at the Idaho National Laboratory includes treating, storing and disposing of a variety of radioactive and hazardous waste streams, cleaning up the environment, removing or deactivating unneeded facilities, and removal of DOE's inventory of spent nuclear fuel and high-level waste from Idaho. The EM end-state vision is as follows:

- By 2012, the Idaho National Laboratory Site will have achieved significant risk reduction and will have placed materials in safe storage ready for disposal.
- By 2035, all spent nuclear fuel will be shipped offsite and high-level waste (calcine) will be ready to ship.

### Site Description

The Idaho National Laboratory Site is located in southeast Idaho, near the northeast end of Idaho's Snake River Plain, which extends in a broad arc from the Idaho-Oregon border on the west to the Yellowstone Plateau on the east. In 1991, the Environmental Protection Agency designated the Snake River Plain Aquifer a sole-source aquifer.

Although the total land area is 890 square miles, most of the cleanup work at the Idaho National Laboratory Site is performed within the site's primary facility areas: Idaho Nuclear Technology and

Engineering Center, Radioactive Waste Management Complex, Test Area North, and Reactor Technology Complex (formerly the Test Reactor Area), and the Power Burst Facility Areas.

#### Idaho Nuclear Technology and Engineering Center:

The Idaho Nuclear Technology and Engineering Center is situated on 210 acres within a perimeter fence and approximately 55 acres located outside the fence. The Center was built in the 1950s to reprocess spent nuclear fuel to recover uranium. It consists of 290 facilities (approximately 1.2 million square feet). High-level waste calcine in bin sets, sodium-bearing waste within tanks and spent nuclear fuel in wet and dry storage represent the major cleanup activities, in addition to remediation of two active Comprehensive Environmental Response, Compensation, and Liability Act Operable Units.

#### Radioactive Waste Management Complex:

The Radioactive Waste Management Complex consists of 86 facilities and is a controlled area for management and disposal of solid radioactive wastes. It includes a 97-acre Subsurface Disposal Area within a security fence, buildings for Resource Conservation and Recovery Act compliant storage of hazardous transuranic waste, and administration and support buildings. The Subsurface Disposal Area is an unlined landfill that received radioactive waste from Idaho National Laboratory operations and other DOE sites, including large amounts of transuranic waste and alpha-contaminated mixed low-level waste from DOE's Rocky Flats facility in Colorado. The Subsurface Disposal Area will be remediated under a future Comprehensive Environmental Response, Compensation, and Liability Act action, although selected buried waste retrieval actions are underway pursuant to an agreement with the State of Idaho. The above-ground, stored transuranic waste is being treated at the Advanced Mixed Waste Treatment Facility and shipped to the Waste Isolation Pilot Plant for disposal. The Subsurface Disposal Area continues to receive only remote-handled low-level radioactive waste from Idaho National Laboratory Site operations. Contact-handled low-level radioactive waste disposal ceased at the end of FY 2008.

#### Test Area North:

The Test Area North area covers about 220 acres at the north end of the Idaho National Laboratory Site. Test Area North was established in the 1950s by the United States Air Force and the Atomic Energy Commission Aircraft Nuclear Propulsion Program to support nuclear-powered aircraft research. Upon termination of this research, the facilities were converted to support a variety of other DOE research projects. Some Comprehensive Environmental Response, Compensation, and Liability Act remediation remain such as groundwater pump and treat remediation actions.

#### Reactor Technology Complex:

The Reactor Technology Complex covers about 102 acres in the southwest portion of the Idaho National Laboratory Site. The major mission of the Reactor Technology Complex is to conduct scientific and engineering experiments for both nuclear and non-nuclear programs. The Reactor Technology Complex was established in the early 1950s with the development of the Materials Test Reactor followed by two other major reactors, the Engineering Test Reactor and the Advanced Test Reactor. The Advanced Test Reactor continues to operate today. Reactor disposition remains to be completed along with Voluntary Consent Order actions.

## Power Burst Facility Area:

The Power Burst Facility area consists of about 55 acres in the Southwest portion of the Idaho National Laboratory Site. The primary mission of the Power Burst Facility area was the Power Burst Facility Reactor and the conducting tests of different reactor fuels in extreme environments. All facilities deactivation and decommissioning work (footprint reduction) and Comprehensive Environmental Response, Compensation, and Liability Act remediation actions have been completed in FY 2008.

### **Site Cleanup Strategy/Scope of Cleanup**

Over the past decade, considerable progress has been made toward addressing legacy waste and contamination at the Idaho National Laboratory Site:

- Over 950,000 square feet of facilities have been deactivated and decommissioned to date.
- Of the 596 Comprehensive Environmental Response, Compensation, and Liability Act sites identified as being potentially contaminated, 86 percent have been cleaned up or determined not to pose any risk;
- Over eight million gallons of high-level liquid waste have been calcined (dried into a powdered form) into about 4,400 m<sup>3</sup> of calcine, reducing the volume of liquid waste remaining in the tank farm to approximately one million gallons of sodium-bearing waste;
- Eleven of 15 High Level Waste Tanks have been emptied, cleaned and grouted; (7—300,000 gallon tanks and 4—30,000 gallon tanks).
- Approximately 24,000 m<sup>3</sup> of stored transuranic waste has been shipped for permanent disposal at the Waste Isolation Pilot Plant in New Mexico;
- Over 55,000 m<sup>3</sup> of low-level waste has been disposed.
- By weight, 98 percent of Idaho National Laboratory Site EM-owned spent nuclear fuel has been consolidated into dry storage;
- Substantial quantities of volatile organic compounds have been extracted and destroyed from the vadose zone beneath the Radioactive Waste Management Complex and Test Area North.

### **Site Completion (End-State)**

The following EM cleanup activities must be completed to reach the anticipated end-state for the Idaho National Laboratory Site. The lifecycle planning estimate range is 2035 to 2044.

#### ***Idaho Nuclear Technology and Engineering Center***

- Demolish or disposition all excess facilities;
- Treat and ship off-site for disposal liquid sodium-bearing waste stored in underground tanks;
- Empty and disposition all Tank Farm Facility tanks;
- Ship all EM spent nuclear fuel out of the state;
- Disposition all excess nuclear material;

- Complete implementation of the Waste Area Group 3 Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for Operable Unit 3-13 and Operable Unit 3-14;
- Place calcine (4,400 m<sup>3</sup>) in a condition that is road-ready for shipment out of the state by 2035.
- Integration of Nuclear Energy liabilities proposed for transfer into the Idaho Cleanup Projects Baseline.

### ***Radioactive Waste Management Complex***

- Complete shipments of stored contact-handled transuranic waste to the Waste Isolation Pilot Plant.
- Retrieve stored remote-handled transuranic waste, treat at the Idaho National Technology and Engineering Center and package for shipment to Waste Isolation Pilot Plant;
- Demolish and remove facilities no longer needed;
- Complete remediation of buried transuranic waste, including exhumation and disposal as necessary per the Comprehensive Environmental Response, Compensation, and Liability Act;
- Complete and implement Final Comprehensive Record of Decision for Waste Area Group 7 (Operable Unit 7-13/14);

### ***Test Area North***

- Demolish all EM facilities (facilities required for groundwater remediation remain);
- Continue Comprehensive Environmental Response, Compensation, and Liability Act groundwater remedial actions including in-situ bioremediation, pump and treat, and natural attenuation (Operable Unit 1-07B); and
- Complete all activities in the future Comprehensive Environmental Response, Compensation, and Liability Act actions, covered under the site-wide Record of Decision 10-08.

### ***Reactor Technology Complex***

- Demolish all EM-owned facilities and any Nuclear Energy liabilities transferred to EM;
- Disposition the Materials Test Reactor and Materials Test Reactor under the Comprehensive Environmental Response, Compensation, and Liability Act and complete all voluntary Consent Order actions.

### **Regulatory Framework**

There are three primary regulators of the Idaho National Laboratory Site: the United States Environmental Protection Agency, the United States Nuclear Regulatory Commission and the State of



Idaho Department of Environmental Quality. The International Atomic Energy Agency also regulates/monitors via treaty. Several compliance agreements, amendments and consent orders executed between 1991 and 2000 govern cleanup work at the Idaho National Laboratory Site. Those agreements encompass the majority of the cleanup requirements and commitments. The five primary agreements are:

#### Federal Facility Agreement and Consent Order – 1991

In November 1989, the United States Environmental Protection Agency listed the Idaho National Laboratory Site on the Comprehensive Environmental Response, Compensation, and Liability Act National Priorities List. The resulting *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* between the DOE, the United States Environmental Protection Agency, and Idaho Department of Environmental Quality established a strategy and plan for cleanup at the Idaho National Laboratory Site. The agreement divides the Idaho National Laboratory Site into 10 waste area groups based on similar characteristics or geographic boundaries. Nine groups generally correspond to the Site's major facility areas. The tenth group assesses overall risk to the aquifer beneath the Site, addresses sites outside the boundaries of the Idaho National Laboratory Site's primary facility areas, and allows for inclusion of newly identified release sites. These Waste Area Groups are further divided into operable units. Under the agreement, the DOE conducts an environmental investigation at each site that may be contaminated. At the end of each investigation, if it is determined the area needs cleanup, DOE presents for public comment a proposed plan that documents the results of the investigation and proposes alternative cleanup actions. After reviewing and addressing any comments, the DOE, the United States Environmental Protection Agency, and State of Idaho reach a final decision, which is documented in a Record of Decision. Cleanup design and construction can then begin.

#### Notice of Non-Compliance Consent Order – 1992

This consent order (between DOE, the State of Idaho Department of Environmental Quality, and the United States Environmental Protection Agency) establishes actions and milestones to resolve Resource Conservation and Recovery Act inspection issues including configuration of stored transuranic waste and high-level waste in the Idaho Nuclear Technology and Engineering Center tank farm.

#### Idaho Settlement Agreement – 1995

This agreement (between DOE, State of Idaho, and United States Navy) resolved a lawsuit regarding the receipt of spent nuclear fuel at the Idaho National Laboratory. The agreement specifies milestones for the removal of all spent nuclear fuel and certain radioactive waste from Idaho National Laboratory by 2035. Some of the upcoming key milestones include:

- Issuance of a Record of Decision for the treatment of calcined wastes no later than December 31, 2009.
- Completion of calcination of sodium-bearing liquid high-level wastes by December 31, 2012. Necessary discussions with the State regarding the use of steam reform technology (in lieu of calcination) in terms of the sodium-bearing waste treatment have been held. The State agrees with this path forward.

- Shipment of all transuranic waste to the Waste Isolation Pilot Plant or other such facility designated by DOE no later than December 31, 2018.
- Transfer of all spent fuel from wet storage facilities by December 31, 2023.
- Treatment of all high-level waste so it is ready to be moved out of the State of Idaho by 2035.
- Removal of all spent fuel from Idaho by January 1, 2035.

#### Voluntary Consent Order – 2000

The *Consent Order* (Idaho Department of Environmental Quality 2000) is an enforceable agreement with the Idaho Department of Environmental Quality that governs resolution of self-disclosed Resource Conservation and Recovery Act issues, most of which were related to the closure of 912 tanks and tank systems.

#### Site Treatment Plan

To fulfill requirements in the 1992 Federal Facility Compliance Act, the Idaho National Engineering Laboratory prepared the *Idaho National Engineering Laboratory Site Treatment Plan* to address the treatment and long-term storage of mixed low-level waste (radioactive waste mixed with hazardous chemicals). This enforceable plan was approved by the State of Idaho and is updated annually.

Section 3116 of the Ronald W. Reagan National Defense Authorization Act - The Federal Facility Agreement defines the enforceable commitments for completing the closure of non-compliant tanks at Idaho National Laboratory. Originally all tanks were to be closed in accordance with the waste incidental to reprocessing methodology in DOE Order 435.1. In October 2004, Congress passed the Ronald W. Reagan National Defense Authorization Act of FY 2005 (Public Law 108-375, 2004). Section 3116 of the National Defense Authorization Act allows the Secretary of Energy, in consultation with the Nuclear Regulatory Commission, to determine when waste from reprocessing of spent nuclear fuel is appropriate for onsite disposition as other than high level waste when certain criteria are met. To meet criteria established in the statute, DOE must remove waste to the maximum extent practical and submit waste determinations to Nuclear Regulatory Commission for review.

#### **Critical Project Uncertainties and Assumptions**

DOE will identify disposal pathways and schedules for liquid sodium-bearing waste, tank farm closure, and calcined waste, spent nuclear fuel repackaging, and wastes with no existing path for disposal in time to meet key Idaho National Laboratory commitments. In addition, the remediation of the Subsurface Disposal Area (including the buried waste) at the Radioactive Waste Management Complex is dependent on the outcome of the Comprehensive Environmental Response, Compensation, and Liability Act process, as well as ongoing litigation between DOE and the State of Idaho.

Current cost estimates and schedule for the calcined waste support direct disposal at a future geologic repository. It should be noted that this calcine exhibits hazardous characteristics and contains listed hazardous wastes and therefore would not be approved for direct disposal at a mined geologic repository unless it were permitted under the Resource Conservation and Recovery Act or without an Environmental Protection Agency delisting of the hazardous high-level waste.

## **Interdependencies**

The Idaho National Laboratory Site's current interdependencies are the availability of shipping assets (containers, tractors, trailers and drivers) for transuranic waste (TRUPACT IIs) for the shipment of transuranic waste to the Waste Isolation Pilot Plant; the availability of acceptable knowledge documentation and the availability of shipping assets (casks, tractors, trailers, and drivers) for the shipment of remote-handled transuranic waste; delivery of the remote-handled transuranic waste acceptance criteria; receiver sites for nuclear materials; availability of spent nuclear fuel data and inter-site coordination for foreign and domestic research reactor receipts. Off-site disposition of the high-level waste and spent nuclear fuel is required.

## **Contract Synopsis**

In mid-2003, the Idaho National Laboratory Site was restructured into two distinct business units—one for cleanup activities and one for laboratory missions. This was done to allow each organization to focus on its distinct mission. The laboratory focuses on nuclear technology development, and the Idaho National Laboratory Site EM Program focuses on cleaning up historic contamination at the site. The primary EM site contractors are Bechtel BWXT Idaho, LLC for operation of the Advanced Mixed Waste Treatment Project through September 30, 2009, which supports transuranic waste shipments to the Waste Isolation Pilot Plant, and the CH2M Hill Washington Group, whose contract extends through September 30, 2012. A final Advanced Mixed Waste Treatment Project contract is scheduled to be issued later in FY 2009. In March 2006, DOE terminated a contract with Foster Wheeler USA Corporation to build a facility that would repackage spent nuclear fuel into standard canisters to be shipped to an off-site disposal facility.

The Idaho Operations Office conducted a competitive acquisition to select an Indefinite Delivery/Indefinite Quantity contractor to decontaminate and decommission equipment/facilities associated with a planned, but abandoned, buried waste retrieval project in Pit 9. The selection occurred in late November 2006 and the work was completed in July 2007.

## **Cleanup Benefits**

Cleanup of the Idaho National Laboratory Site will reduce the risk of contamination of the Snake River Plain Aquifer from nuclear and hazardous waste and will eliminate infrastructure, surveillance and maintenance costs by aggressively reducing the footprint through consolidation of cleanup operations, (primarily to the Idaho Nuclear Technology and Engineering Center), and deactivation and decommissioning of facilities at several other Idaho National Laboratory Site areas.

The Idaho National Laboratory Site will have packaged and shipped all nuclear material off-site and all EM-owned spent nuclear fuel will be stabilized in interim dry storage. By 2012, the west side of the Tank Farm Facility will be closed, all remediation completed, and most facility demolition at three facility areas (Power Burst Facility and Test Area North and Reactor Technology Complex). The remaining facilities will be in a cold, dark, and dry status, awaiting final disposition.

The targeted transuranic waste identified in the current Idaho Cleanup Project contract buried in the Subsurface Disposal Area will be retrieved and shipped out of Idaho, the stored remote-handled transuranic waste will be packaged and shipped to the Waste Isolation Pilot Plant, the liquid sodium

bearing waste will have been retrieved and stabilized the remaining Tank Farm Facility tanks closed, and the EM footprint will have been consolidated to two facility areas.

Direct maintenance and repair at the Idaho National Laboratory is estimated to be \$9,103,000.

### Funding Schedule by Activity

(dollars in thousands)			
	FY 2008	FY 2009	FY 2010
Defense Environmental Cleanup			
Idaho National Laboratory			
Idaho National Laboratory			
ID-0100 / Idaho Community and Regulatory Support	3,753	3,867	3,900
ID-0014B / Radioactive Liquid Tank Waste Stabilization and Disposition-2012	177,784	132,725	179,500
ID-0040B / Nuclear Facility D&D-2012	32,078	34,133	0
ID-0011 / NM Stabilization and Disposition	2,230	0	0
ID-0012B-D / SNF Stabilization and Disposition-2012 (Defense)	28,922	14,334	14,768
ID-0030B / Soil and Water Remediation-2012	115,366	99,465	71,000
ID-0013 / Solid Waste Stabilization and Disposition	157,354	191,237	137,000
Subtotal, Idaho National Laboratory	517,487	475,761	406,168
Non-Defense Environmental Cleanup			
Small Sites			
Idaho National Laboratory			
ID-0012B-N / SNF Stabilization and Disposition-2012 (Non-Defense)	5,351	13,478	5,000
Total, Idaho	522,838	489,239	411,168

### Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
Idaho					
Geographic Sites Eliminated (number of sites)	4	4	4	5	80.0%
Enriched Uranium packaged for disposition (Number of Containers)	1,586	1,587	1,587	1,587	100.0%
High-Level Waste packaged for final disposition (Number of Containers)	0	0	0	6,660	0%
Industrial Facility Completions (Number of Facilities)	138	139	139	267	52.1%
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	0	900	0%
Liquid Waste Tanks closed (Number of Tanks)	7	7	7	11	63.6%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	66,599	70,404	74,113	110,560	67.0%
Material Access Areas eliminated (Number of Material Access Areas)	1	1	1	1	100.0%
Nuclear Facility Completions (Number of	24	26	26	77	33.8%

Facilities)					
Radioactive Facility Completions (Number of Facilities)	32	32	32	54	59.3%
Remediation Complete (Number of Release Sites)	510	518	597	626	95.4%
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	0	0	0	253	0%
Transuranic Waste shipped for disposal (Cubic meters) - CH	26,798	33,298	38,998	79,052	49.3%
Transuranic Waste shipped for disposal (Cubic meters) - RH	72	86	86	709	12.1%

### Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**ID-0011 / NM Stabilization and Disposition** **2,230** **0** **0**

This PBS can be found within the Defense Environmental Cleanup appropriation.

Special nuclear material is currently stored in several locations at the Idaho National Laboratory Site. To decrease national security risks associated with special nuclear material, the scope of this PBS includes the disposition of approximately 2,771 kgs (total uranium) of special nuclear material stored at the Idaho National Laboratory, either through disposal at an appropriate facility or recycling at an offsite location. Disposition not only provides better security for these materials, but also reduces annual maintenance and security costs by eliminating unnecessary special nuclear material storage locations.

The stabilization and disposition of special nuclear material requires: 1) safe and secure surveillance, monitoring and storage; 2) characterization and waste determination; 3) development of shipping and receiving agreements with the appropriate program office(s) and/or location(s); 4) repackaging of the special nuclear material for shipment, if appropriate; and 5) final shipment and/or disposition at appropriate location(s).

As of FY 2009, all 652 discrete special nuclear material items have been transferred to off-site locations and/or transferred to other program sponsors.

In FY 2010, no activities are planned:

- Project completed in FY 2009.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Enriched Uranium packaged for disposition (Number of Containers)	1,586	1,587	1,587	1,587	100.0%
Material Access Areas eliminated (Number of Material Access Areas)	1	1	1	1	100.0%

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)

- Complete scheduled Experimental Test Reactor/General Electric Test Reactor shipments. (FY 2008)
- Complete scheduled shipments of ULWBR. (FY 2008)
- Complete Packaging and Shipping of all EM-owned special nuclear material. (September 2009)

**ID-0012B-D / SNF Stabilization and Disposition-2012  
(Defense)**

**28,922                      14,334                      14,768**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The scope of this PBS includes stabilizing legacy spent nuclear fuel through 2012 and managing the receipt of off-site spent nuclear fuel shipments. EM currently manages and stores approximately 262 metric tons of spent nuclear fuel at the Idaho National Laboratory. The EM baseline plan includes the receipt of approximately 22 metric tons of spent nuclear fuel from off-site locations, including Foreign and Domestic Research Reactor spent nuclear fuel from FY 2005 through FY 2027. The baseline plan also includes the receipt of approximately 0.5 metric tons spent nuclear fuel through FY 2012 from the on-site operating Advanced Test Reactor.

This PBS also includes support costs for the National Spent Nuclear Fuel Program.

This PBS also includes management and storage costs for the Naval Nuclear Propulsion Program's spent nuclear fuel in Chemical Processing Plant-666. The Navy holds title and is responsible for the transfer of this fuel back to the Naval Reactor Facility. EM also supports the Office of Nuclear Energy through continued receipt and storage of Advanced Test Reactor spent nuclear fuel in Chemical Processing Plant-666. EM will continue to receive and manage this spent nuclear fuel through 2010, but the Office of Nuclear Energy will own and ultimately be responsible for its final disposition. In addition, this PBS includes storage costs for Office of Nuclear Energy-sponsored foreign and domestic research reactor and domestic research reactor spent nuclear fuel.

This PBS includes costs to accelerate the transfer of 3,178 fuel handling units of legacy spent nuclear fuel from wet to dry storage by the end of FY 2012, 11 years ahead of the Idaho Settlement Agreement date of FY 2023 (EM-owned to dry storage by 2009, Navy-owned to dry-storage by 2012).

The end-state for this project is the safe receipt, storage, packaging, and transfer of all legacy and non-legacy spent nuclear fuel (identified within DOE's long-range plan) to an off-site disposal facility. By the end of 2012, all on-site spent nuclear fuel will be in safe, dry storage.

Currently, 2,276 of 3,178 fuel handling units have been transferred to dry storage in Chemical Processing Plant-603, nine spent nuclear fuel receipts were transferred from the Advanced Test Reactor

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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in FY 2007, and one shipment (two casks) of Foreign Research Reactor fuel was received.

In FY 2010, the following activities are planned:

- Maintain the Chemical Processing Plant building-666 and all wet stored fuel.
- Maintain the Chemical Processing Plant building-603, 749, 2707 and all dry stored fuel.
- Complete transfer of all EM-managed spent nuclear fuel to dry storage.
- Receive and unload Domestic or Foreign Research Reactor spent nuclear fuel.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Completed CD-0 for Idaho Spent Fuel Facility (ISFF) (FY 2008)</li> <li>▪ Received Foreign Research Reactor and Domestic Spent Nuclear Fuel shipments. (FY 2008)</li> <li>▪ Receive Foreign Research Reactor and Domestic Spent Nuclear Fuel shipments. (September 2009/September 2010)</li> <li>▪ Complete transfer of all EM-owned SNF to dry storage. (September 2010)</li> <li>▪ Receive up to 31 Advanced Test Reactor fuel shipments (September 2010)</li> </ul>					

**ID-0013 / Solid Waste Stabilization and Disposition                      157,354                      191,237                      137,000**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This waste treatment and disposal activity accelerates the disposition of stored transuranic waste, low-level waste, Resource Conservation and Recovery Act hazardous waste, and mixed low-level waste backlog; closes on-site low-level waste disposal facilities at the Radioactive Waste Management Complex; and accelerates the consolidation of waste management facilities to reduce operating costs. The various waste inventories to be dispositioned by this project were generated primarily by other DOE sites and also by active operations at the Idaho Site. Approximately 65,000 m<sup>3</sup> of stored transuranic waste and alpha mixed low-level waste (comprised of both contact handled and remote-handled waste) will be characterized, treated, and shipped to the Waste Isolation Pilot Plant or another suitable disposition site. The backlog of legacy mixed low-level waste (approximately 2,250 m<sup>3</sup>) has been eliminated.

Contact-handled transuranic waste will be processed in the Advanced Mixed Waste Treatment Facility and shipped to the Waste Isolation Pilot Plant for disposal. On-site low-level waste disposal at the

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Radioactive Waste Management Complex will continue for remote-handled low-level waste. The scope of this PBS includes environmental monitoring and compliance activities for air, water, waste, soils and biota surveillance; and supports the Environmental Oversight and Monitoring Agreement within the State of Idaho.

The end-state for this project will be achieved when all stored contact-handled transuranic waste is disposed of at the Waste Isolation Pilot Plant. Several treatment units and storage facilities have been closed under the Resource Conservation and Recovery Act, including the Waste Experimental Reduction Facility incinerator.

Currently, approximately 25,000 m<sup>3</sup> of contact-handled transuranic waste has been shipped to the Waste Isolation Pilot Plant. The EM owned inventory of legacy remote-handled transuranic waste, (86m<sup>3</sup>) has been shipped to the Waste Isolation Pilot Plant. The Advanced Mixed Waste Treatment Project, located at the Radioactive Waste Management Complex continues the retrieval, characterization, and shipping of contact-handled transuranic waste for disposal at the Waste Isolation Pilot Plant. Disposal of contact handled low-level waste at the Radioactive Waste Management Complex has ceased, but disposal of remote-handled low-level waste in the Subsurface Disposal Area will continue for several more years. Mixed low-level waste is disposed off site.

In FY 2010, the following activities are planned:

- Provide for site-wide environmental compliance.
- Maintenance and operations of the Radioactive Waste Management Complex infrastructure including utility systems, project management, engineering, training, environmental safety and health and quality assurance. This project also includes monitoring of air, water, soils, and biota surveillance.
- Meet requirements of the Idaho Settlement Agreement by disposition of remote-handled low-level waste at the Radioactive Waste Management Complex disposal pit; disposition of mixed low-level waste at appropriate off-site disposal facilities; treat, characterize, and certify remote-handled transuranic waste at the Idaho Nuclear Technology and Engineering Center in preparation for shipment to the Waste Isolation Pilot Plant; ship stored contact-handled transuranic waste to the Waste Isolation Pilot Plant using the Advanced Mixed Waste Treatment Facility; and receive, characterize, certify, transuranic waste from other DOE sites in preparation to the Waste Isolation Pilot Plant.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - CH	26,492	32,492	38,192	64,169	60.0%
Transuranic Waste shipped for disposal (Cubic meters) - RH	72	86	86	86	100.0%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	66,599	70,404	74,113	79,399	93.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"><li>▪ Dispose of 3,805 cubic meters of LLW and MLLW (September 2009)</li><li>▪ Ship 5700 cubic meters of CH-TRU waste to the WIPP (September 2009)</li></ul>					

**ID-0014B / Radioactive Liquid Tank Waste  
Stabilization and Disposition-2012**

**177,784      132,725      179,500**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The overall objectives of this project are to treat and dispose of the sodium-bearing tank wastes, close the tank farm tanks, maintain Idaho Nuclear Technology and Engineering Center infrastructure, and perform initial tank soil remediation work. The primary focus is the design, construction and operation of a facility that will retrieve and treat the sodium bearing liquids and associated tank solids for disposal off-site. The type of facility and technology for treatment of sodium-bearing waste was determined with the award of the Idaho Cleanup Project contract in FY 2005, with design of the treatment facility starting in late FY 2005. Other activities include facility maintenance and operation of the Idaho Nuclear Technology and Engineering Center and accelerated cleaning and closure of the tank farm tanks and associated equipment by 2012.

This PBS also includes activities to support the preparation of stored high-level waste calcine for final disposition. These activities include: 1) demonstration of bin set retrieval technology; 2) Resource Conservation and Recovery Act regulatory initiatives to allow disposal of calcine; 3) issuance of a Record of Decision by 2009 and calcine treatment technology selection and development; 4) conceptual and preliminary design; and 5) submission of a Resource Conservation and Recovery Act Part B Permit in 2012 for a calcine retrieval and packaging facility.

The end-state for this project is a tank farm facility that has been emptied, decontaminated and closed under Resource Conservation and Recovery Act requirements.

Issuance of a Section 3116 Waste Determination and Amended Record of Decision for the Idaho High Level Waste and Facility Disposition Environmental Impact Statement allowed tank grouting to commence in November of 2006 as part of the final Idaho Nuclear Technology and Engineering Center tank farm facility closure. There are a total of 15 tanks. To date, all but 4 (300,000 gallon) tanks have been emptied, cleaned, and fully grouted along with their associated lines. The 4 large tanks will be



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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via a Voluntary Consent Order, to reduce risk to the Snake River Plain Aquifer. The technical approach is based on achieving compliance with the cleanup requirements of the Consent Order. It also provides for remediation, transportation, and permanent disposition of contaminated soil and debris from various waste sites across the Idaho Site.

This project scope also includes all environmental monitoring to confirm effectiveness of selected record of decision remedies for protection of the Snake River Plain Aquifer and maintenance of institutional controls. In addition, assessment of the contamination present, the risk of aquifer contamination, and the technical removal and disposal of chemical contamination, stabilization of short-lived radioactive contamination, controlling access through institutional controls, consolidation of mixed waste in the Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility, implementation of groundwater bioremediation, and implementation of long-term monitoring of the aquifer and ecosystem.

Currently, all active remediation of Waste Area Group 2 (Test Reactor Area), Waste Area Group 4 (Central Facility Area), Waste Area Group 5 (Power Burst Facility/Auxiliary Reactor Area), and Waste Area Group 6 (Experimental Reactor/BORAX Reactor Area) has been completed. Waste Area Group 1 (Test Area North) remediation of groundwater will continue until such time that Maximum Containment Levels in the aquifer are achieved. The remediation of Waste Area Group 3 (Idaho Nuclear Technology and Engineering Center) Waste Area Group 7 (Radioactive Waste Management Complex) and Waste Area Group 10 will continue beyond 2012. Under the Voluntary Consent Order, hazardous waste/empty determinations will have been completed on more than 700 tanks on the SITE-TANK-005 list. Only limited Voluntary Consent Order work may continue beyond 2012.

The future end-state for this project is the completion of remedial actions for all but three of the Waste Area Groups (Waste Area Group 1, 1-07N, Waste Area Group 3, Waste Area Group 7 and Waste Area Group 10) by 2012, and they will be well underway. As cleanup actions are completed for a Waste Area Group, long-term management and control functions (including institutional controls, groundwater monitoring, and maintenance, etc.) are implemented.

Under Waste Area Group 7, the OU 7-13/14 Record of Decision was finalized in FY 2008. Sequential Comprehensive Environmental Response, Compensation, and Liability Act documents will be prepared and remediation actions will begin. Through FY 2008, approximately 9,550 drums of targeted waste had been packaged from the subsurface disposal area and 1,281 of those packaged drums have been sent to the Waste Isolation Pilot plant for disposal. Under Waste Area Group 1, treatment of V-tank contents was completed. Under Waste Area Group 3, the Remedial Investigation and Feasibility Study Reports were finalized and the proposed plan issued for public comment. The Record of Decision was completed in May 2007 and remedial action, planning and design began. Under Waste Area Group 10, the proposed plan was issued for public comment and the draft Record of Decision is being prepared.

In FY 2010, the following activities are planned:

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Continue risk reduction through implementation of the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for buried transuranic waste at the Waste Area Group 7 (Radioactive Waste Management Complex) subsurface disposal area.
- Continue shipping retrieved Waste Area Group 7 contact-handled targeted waste out of Idaho for disposal.
- Continue groundwater treatment and monitoring at Waste Area Group 1 (Test Area North).
- Continue maintenance of remedies at Waste Area Group 2 (Test Reactor Area); Waste Area Group 4 (Central Facility Area); Waste Area Group 5 (Power Burst Facility/Auxiliary Reactor Area); and Waste Area Group 6 (Experimental Breeder Reactor/BORAX).
- Continue implementation of the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for the Waste Area Group 3 (Idaho Nuclear Technology and Engineering Center) tank farm soils and groundwater.
- Continue implementation of the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for Waste Area Group 10 (Site wide) site wide ground water.
- Complete all Voluntary Consent Order Resource Conservation and Recovery Act closure milestones based on prior characterizations.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - CH	306	806	806	7,485	11.0%
Remediation Complete (Number of Release Sites)	240	248	327	333	98.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Completed the V-Tanks Remedial Action Report. (FY 2008)</li> <li>▪ Submitted for review Draft Record of Decision for Operable Unit 7-13/14. (FY 2008)</li> <li>▪ Finalized WAG 7 Rod (FY 2008)</li> <li>▪ Continue buried waste retrievals ~850 cubic meters. (September 2009/September 2010)</li> <li>▪ Plan to dispose of 4718 cubic meters of LLW and MLLW generated from ER &amp; D&amp;D Activities (September 2009/September 2010)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**ID-0040B / Nuclear Facility D&D-2012** **32,078**      **34,133**      **0**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This project scope includes deactivation and final disposition of EM-owned, high-risk radiologically contaminated Idaho National Laboratory buildings, deactivation of four spent fuel storage pools, disposition of four excess nuclear test reactors, and disposition of a nuclear fuel reprocessing complex. The spent nuclear fuel storage pools have had spent fuel removed and all 4 basins have been dewatered with remediation actions completed to date. The spent fuel storage pools contained contaminated water which could leak into the Snake River Plain Aquifer-- a critical concern for regional stakeholders and State agencies. The total contaminated water volume in the four pools is nearly 2.5 million gallons.

The future end-state for this project is the disposition of the last nuclear reactor (Material Test Reactor), and disposition of a fuel reprocessing complex, (the Chemical Processing Plant-601/640 nuclear fuel reprocessing complex) and final disposition of all excess facilities, under the current contract.

Currently, cleanup efforts have focused on the deactivation and disposition of the high-risk facilities. Significant accomplishments include issuance of the Comprehensive Environmental Response, Compensation, and Liability Act Action Memorandum for the final disposition of the Engineering Test Reactor, Test Area North-607 (Hot Shop), Power Burst Facility Reactor Building and the issuance of the Comprehensive Environmental Response, Compensation, and Liability Act Engineering Evaluation/Cost Analysis for the Materials Test Reactor complex and Chemical Processing Plant-601/640 fuel reprocessing complex.

Final decontamination and decommission was completed on the Test Area North-607A High Bay Area and all the support buildings around the Engineering Test Reactor Building have been demolished, along with the Engineering Test Reactor and Power Burst Facility Reactor.

In FY 2010, no activities are planned:

- No planned accomplishments in FY 2010; the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Nuclear Facility Completions (Number of Facilities)	24	26	26	44	59.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Issued Chemical Processing Plant-601/640 Engineering Evaluation/cost Analysis. (FY 2008)</li> <li>▪ Complete decommissioning of the CPP Coal Plant (September 2009)</li> <li>▪ Complete decommissioning of the Experimental Test Reactor Complex (September 2009)</li> <li>▪ Complete Final decommissioning of the PBF Reactor Building (September 2009)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**ID-0100 / Idaho Community and Regulatory Support**                      **3,753**                      **3,867**                      **3,900**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This project scope includes work in three major areas for environmental regulatory oversight and stakeholder interactions and support:

- 1) State of Idaho Department of Environmental Quality Grant and Air Quality Permitting Fees. All industries subject to Clean Air Act Title V regulations are required to pay fees to support the state authorized program to be in compliance with the regulations. Technical assistance by the Idaho Department of Environmental Quality for compliance support and assistance on hazardous waste management project completion activities is also included.
  
- 2) The United States Geological Survey performs groundwater monitoring and subsurface investigation on the regional (Eastern Snake River Plain Aquifer) and subregional (site-wide) scale for the Idaho Site. The management and operating contractor monitors for compliance and immediate impacts only. The United States Geological Survey groundwater monitoring, conducted on and off the Idaho Site, supports the Idaho Site and cleanup activities by providing understanding of the effects of past waste disposal practices and by defining the capacity of the geohydraulic system to accept and assimilate the waste, and provides surveillance data and an independent source of groundwater information for stakeholders. The United States Geological Survey monitoring information is used by EM programs for making site-remediation decisions and performing risk assessments necessary for accelerated cleanup.
  
- 3) The Idaho Site Citizens Advisory Board is chartered by the DOE as an EM Site-Specific Advisory Board. The Citizens Advisory Board provides informed recommendations to the Office of Nuclear Energy, Science and Technology/Idaho Operations Office and EM Headquarters regarding environmental restoration, waste management, and economic issues. The benefits of this work allow the DOE to reflect public values and concerns in remediation decisions. The Idaho Department of Environmental Quality task will be complete when the Idaho Site no longer has any operating hazardous waste management facilities and no air emissions requiring a Clean Air Act Title V operating permit. Any other remaining scope will continue through the end of site operations.

This PBS will be complete at the end of the EM cleanup mission at the Idaho site.

In FY 2010, the following activities are planned:

- Continue the United States Geological Survey groundwater monitoring and subsurface investigation with analysis of contaminants and transport mechanisms affecting the Snake River Aquifer, both on-site and off-site.
  
- Payment of fees for the Title V Air Permit and technical assistance for air quality compliance.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Continue support for the Idaho Site Citizen Advisory Board.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>Department of Environmental Quality grants will enable obtaining hazardous waste management closure plans, permits or permit modifications; Comprehensive Environmental Response, Compensation, and Liability Act. (FY 2008/September 2009/September 2010)</li> </ul>					

**ID-0012B-N / SNF Stabilization and Disposition-2012**

**(Non-Defense)**

**5,351**

**13,478**

**5,000**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

The purpose of this PBS is to maintain and operate the Nuclear Regulatory Commission licensed facilities. This includes the management of approximately 15 metric tons of spent nuclear fuel presently stored at Fort St. Vrain in Colorado and approximately 82 metric tons of spent nuclear fuel presently stored on-site in the Three Mile Island Independent Spent Nuclear Fuel Storage Installations.

Currently, the two facilities continue to operate within their license.

In FY 2010, the following activities are planned:

- Provide payments to the Nuclear Regulatory Commission for licensing-related activities related to both Fort St. Vrain and Three Mile Island-2 Spent Nuclear Fuel.
- Provide security for Fort St. Vrain Spent Nuclear Fuel.
- Monitor Three Mile Island-2 Spent Nuclear Fuel.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**Total, Idaho**

**522,838**

**489,239**

**411,168**

## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### Defense Environmental Cleanup

#### Idaho National Laboratory

##### **ID-0012B-D / SNF Stabilization and Disposition-2012 (Defense)**

- No significant change. 434

##### **ID-0013 / Solid Waste Stabilization and Disposition**

- Decrease reflects the completion of the EM owned legacy remote-handled transuranic waste shipments to the Waste Isolation Pilot Plant and that a portion of this scope of work is included in the American Recovery and Reinvestment Act appropriation. -54,237

##### **ID-0014B / Radioactive Liquid Tank Waste Stabilization and Disposition-2012**

- Increase is due to the one year extension of construction activities at the Sodium Bearing Waste Treatment Facility. 46,775

##### **ID-0030B / Soil and Water Remediation-2012**

- Decrease is due to the acceleration of both contact and remote handled transuranic waste shipments to the Waste Isolation Pilot Plant, and also reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. -28,465

##### **ID-0040B / Nuclear Facility D&D-2012**

- Decrease reflects the scope of work that was included in the American Recovery and Reinvestment Act appropriation. -34,133

##### **ID-0100 / Idaho Community and Regulatory Support**

- No significant change. 33

### Non-Defense Environmental Cleanup

#### Small Sites

##### **ID-0012B-N / SNF Stabilization and Disposition-2012 (Non-Defense)**

- The decrease reflects the completion of cleanup activities of excess radioactive contaminated facilities transferred from the Office of Nuclear Energy to EM in FY 2009. -8,478

### Total, Idaho

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**-78,071**



**06-D-401, Sodium Bearing Waste Treatment Project, Idaho National Laboratory (INL) Idaho**

**1. Significant Changes**

The most recent DOE Order 413.3A approved critical decision is Critical Decision-3c, start of construction, approved on August 28, 2007 with a Total Project Cost of \$461,608K. The latest approved baseline change was on December 8, 2008 with a Total Project Cost of \$570,893K. A Federal Project Director with certification level II has been assigned to this project.

**2. Design, Construction, and D&D Schedule**

*(fiscal quarter or date)*

	CD-0	CD-1 (Design Start)	Design/PED Complete	CD-2	CD-3 (Construction Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2006	2Q FY2005	N/A	4Q FY2006	N/A	1Q FY2008	3Q FY2009	TBD	TBD
FY 2007	4Q FY2005	N/A	1Q FY2007	N/A	1Q FY2007	3Q FY2008	N/A	N/A
FY 2006 Reprogram	4Q FY2005	N/A	2Q FY2007	N/A	3Q FY2007	2Q FY2009	N/A	N/A
FY 2008	4Q FY2005	N/A	3Q FY2007	N/A	3Q FY2007	4Q FY2010	N/A	N/A
FY 2009	4Q FY2005	4Q FY2005	4Q FY2007	1Q FY2007	4Q FY2007	4Q FY2010	N/A	N/A
FY 2009 Notification	4Q FY2005	4Q FY2005	4Q FY2007	1Q FY2007	4Q FY2007	4Q FY2011	N/A	N/A
FY 2010	4Q FY2005	4Q FY2005	4Q FY2007	1Q FY2007	4Q FY2007	4Q FY2011	N/A	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete – Completion of D&D work

Note (D&D): The "one-for-one" requirement is planned to be offset with D&D "banked excess".

*(fiscal quarter or date)*

Performance Baseline Validation	CD-2/3A (Start of Construction for long lead items)	CD-3B (Early Site Preparation)	CD-3C (Start Balance of Construction)	CD-4			

FY 2006

FY 2007

FY 2006

Reprogram

FY 2008

FY 2009 1Q FY2007 4Q FY2006 1Q FY2007 TBD TBD

FY 2009

Notification 1Q FY2007 4Q FY2006 1Q FY2007 4Q FY2007 4Q FY2011

CD-2A/3A/3B: Long Lead for Equipment, Early Site Preparation  
 CD-3C: Start Balance of Construction  
 CD-4: Approve Start of Operations or Project Closeout

### 3. Baseline and Validation Status

(Fiscal Quarter)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2006	54,280	250,230	304,510	74,700	0	74,700	379,210
FY 2007	54,188	249,992	304,180	74,700	0	74,700	378,880
FY 2008	86,188	257,520	343,708	117,900	0	117,900	461,608
FY 2009	86,188	269,620	355,808	105,800	0	105,800	461,608
FY 2009 Notification	86,188	351,170	437,358	133,535	0	133,535	570,893
FY 2010	86,188	351,170	437,358	133,535	0	133,535	570,893

Note (D&D): The "one-for-one" requirement is planned to be offset with D&D "banked excess".  
 The FY 2008 and FY 2009 values in this table include \$37,500,000 of pre Critical Decision-0 Other Project Costs for this project, which was not explicitly identified in the previous data sheet values.

The Total Estimated Cost includes design funds requested under Project Engineering and Design 04-D-414. Other Project Costs except D&D total includes contractor fee.

### 4. Project Description, Justification, and Scope

This project supports the equipment procurement, construction, construction management, quality assurance, and project management for the Sodium Bearing Waste Treatment Project. The design effort will develop the final detailed design of the treatment facility and establish the scope, schedule, and cost baselines for the project. Design funding has been appropriated on a separate Project Engineering and Design line item project (04-D-414). The Sodium Bearing Waste Treatment Project is one of several projects that are managed under Idaho National Laboratory's Idaho Cleanup Project and are part of the process to close the Idaho Nuclear Technology and Engineering Center's Tank Farm Facility. In order for these projects to meet the cleanup schedule, they will be managed together and their activities coordinated under the Idaho Cleanup Project.

The Sodium Bearing Waste Treatment Project supports the Department of Energy's EM mission of safely storing/treating liquid radioactive wastes. The Sodium Bearing Waste Treatment Project, as planned, supports the EM cleanup initiative and reduces risk to the environment. In addition, it supports several Federal Facilities Compliance Act commitments made with the State of Idaho.

The current DOE mission at the Idaho Nuclear Technology and Engineering Center includes cleaning up and managing radioactive and hazardous waste previously generated from nuclear fuel reprocessing activities. One of the major remaining waste forms is liquid mixed transuranic waste, which is stored in three of the eleven tanks. This waste is locally defined as sodium bearing waste due to its high content of sodium and potassium. Sodium Bearing Waste and Newly Generated Liquid Waste were primarily generated from past and on-going waste management and decontamination activities at Idaho Nuclear Technology and Engineering Center. The present inventory of approximately 900,000 gallons of sodium bearing waste is stored in three 300,000 gallon, underground tanks in the Tank Farm Facility. These tanks

are between 35 and 45 years old and were constructed prior to the establishment of the Resource Conservation and Recovery Act regulations. Five of the eleven storage tanks are located in concrete vaults of a design that do not meet present structural safety requirements (the "pillar and panel vaults"), and none of the tanks have secondary containment capabilities that meet current Resource Conservation and Recovery Act regulations. The waste management/storage systems at Idaho Nuclear Technology and Engineering Center currently operate under Resource Conservation and Recovery Act Part A interim status and a notice of non-compliance consent order.

A series of disputes over waste management and treatment, new waste, and spent nuclear fuel shipments into the State of Idaho resulted in a court-ordered Settlement Agreement between Idaho, the DOE and the U.S. Navy in October 1995. Among other things, the Settlement Agreement requires DOE to "cease-use" of the Tank Farm Facility tanks by December 31, 2012, because of their age, Resource Conservation and Recovery Act non-compliant configuration, and the seismic risk of potential release of their contents to the underlying Snake River Plain Aquifer. The evacuation of the tank contents by "calcination" (or other treatment) is also required. The 1998 Notice of Noncompliance-Consent Order Modification also requires cease-use of the Tank Farm Facility by December 31, 2012.

The scope and primary goal of the project is to design and construct a treatment process system using the steam reforming process to treat the sodium bearing waste (including solids) currently stored in the Tank Farm Facility tanks, along with any newly generated liquid waste produced through 2012. The steam reforming treatment process will convert the waste to a final waste form suitable for transport to and disposal at the Waste Isolation Pilot Plant in New Mexico or to an off-site disposal facility. Sending the sodium bearing waste to the Waste Isolation Pilot Plant depends on a future decision/determination under the Resource Conservation and Recovery Act permitting process of the State of New Mexico.

The Sodium Bearing Waste Treatment Project has unique political, technical, cost, and schedule risks. The facility will mitigate two major technical risks by being designed and constructed so that it could be converted to treat sodium bearing waste for alternate waste disposal off-site, and to allow processing of the calcine high level waste at an off-site disposal facility, if direct disposal cannot be accomplished. These design features include increased cell shielding and seismic protection. Further facility and equipment upgrades would be needed to develop these additional capabilities if they become necessary.

The FY 2010 budget request will accomplish the following:

- Completion of Fabrication and Procurements Activities
- Completion of Construction Activities
- Completion of Construction Turnover Activities

The project is being conducted in accordance with the project management requirements in DOE O 413.3A and DOE M 413.3-1, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

## 5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2004	20,379	0	0
FY 2005	24,701	45,080	4,000
FY 2006	41,108	41,108	50,088
FY 2007	0	0	28,831
FY 2008	0	0	3,269
FY 2009	0	0	0
FY 2010	0	0	0
FY 2011	0	0	0
Total, PED	86,188	86,188	86,188
Construction			
FY 2006	30,729	30,729	1,000
FY 2007	31,000	31,000	44,420
FY 2008	111,600	111,600	75,775
FY 2009	86,700	86,700	130,573
FY 2010	83,700	83,700	91,674
FY 2011	7,441	7,441	7,728
Total, Construction	351,170	351,170	351,170
TEC			
FY 2004	20,379	0	0
FY 2005	24,701	45,080	4,000
FY 2006	71,837	71,837	51,088
FY 2007	31,000	31,000	73,251
FY 2008	111,600	111,600	79,044
FY 2009	86,700	86,700	130,573
FY 2010	83,700	83,700	91,674
FY 2011	7,441	7,441	7,728
Total, TEC	437,358	437,358	437,358
Other Project Cost (OPC)			
OPC except D&D			
FY 2004	37,500	37,500	37,500
FY 2005	12,795	12,795	10,405
FY 2006	3,469	3,469	3,469
FY 2007	6,140	6,140	6,538
FY 2008	1,351	1,351	3,343
FY 2009	4,873	4,873	4,873
FY 2010	19,902	19,902	19,902
FY 2011	47,505	47,505	47,505
Total, OPC except D&D	133,535	133,535	133,535
OPC			
FY 2004	37,500	37,500	37,500
FY 2005	12,795	12,795	10,405
FY 2006	3,469	3,469	3,469
FY 2007	6,140	6,140	6,538

(dollars in thousands)

	Appropriations	Obligations	Costs
FY 2008	1,351	1,351	3,343
FY 2009	4,873	4,873	4,873
FY 2010	19,902	19,902	19,902
FY 2011	47,505	47,505	47,505
Total, OPC	133,535	133,535	133,535

Total Project Cost (TPC)			
FY 2004	57,879	37,500	37,500
FY 2005	37,496	57,875	14,405
FY 2006	75,306	75,306	54,557
FY 2007	37,140	37,140	79,789
FY 2008	112,951	112,951	82,387
FY 2009	91,573	91,573	135,446
FY 2010	103,602	103,602	111,576
FY 2011	54,946	54,946	55,233
Total, TPC	570,893	570,893	570,893

Note (D&D): The "one-for-one" requirement is planned to be offset with D&D "banked excess".

General Note: \$37,500,000 of pre Critical Decision-0 costs for the Sodium Bearing Waste Treatment Facility is included in FY 2004 Other Project Costs (OPC).

## 6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	86,188	86,188	86,188
Contingency	0	0	0
Total, PED	86,188	86,188	86,188
Construction			
Site Preparation	24,850	24,850	24,850
Equipment	94,887	94,887	94,887
Other Construction	200,533	115,383	115,383
Contingency	30,900	34,500	34,500
Total, Construction	351,170	269,620	269,620
Total, TEC	437,358	355,808	355,808
Contingency, TEC	30,900	34,500	34,500
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	37,500	37,500	37,500
Conceptual Design	44,330	56,865	56,865
Start-Up	30,505	6,935	6,935
Contingency	21,200	4,500	4,500
Total, OPC except D&D	133,535	105,800	105,800

(dollars in thousands)

Current Total Estimate	Previous Total Estimate	Original Validated Baseline
------------------------	-------------------------	-----------------------------

D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, OPC	133,535	105,800	105,800
Contingency, OPC	21,200	4,500	4,500
Total, TPC	570,893	461,608	461,608
Total, Contingency	52,100	39,000	39,000

General Note: Other Project Costs Other than D&D total includes contractor fee and \$37,500,000 of pre Critical Decision-0 costs.

Note (D&D): The "one-for-one" requirement is planned to be offset with D&D "banked excess".

### 7. Schedule of Project Costs

For schedule of project costs, see Section 5, "Financial Schedule."

### 8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal year)	4Q FY2011
Expected Useful Life (number of years)	TBD
Expected Future Start of D&D (fiscal year)	TBD

#### (Related Funding requirements)

(Dollars in Thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	43,100	32,000	61,000	46,645
Maintenance	4,200	4,372	6,000	7,913
Total, Operations & Maintenance	47,300	36,372	67,000	54,558

General Note: The "one-for-one" requirement is planned to be offset with D&D "banked excess".

## 9. Required D&D Information

Area	Square Feet
Area of new construction	58,000
Area of existing facility(s) being replaced	TBD
Area of additional D&D space to meet the "one-for-one" requirement	TBD

General Note: The "one-for-one" requirement is planned to be offset with D&D "banked excess".

## 10. Acquisition Approach

Design and construction services will be obtained through the new Idaho Cleanup Project Contractor and that contractor will manage the overall design and construction effort and interfaces with the existing operating plant.

The project will be conducted in accordance with the project management requirements in DOE Order 413.3A, Program and Project Management for the Acquisition of Capital Assets.





## Oak Ridge

### Funding by Site

(dollars in thousands)

	FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010
East Tennessee Technology Park	282,204	208,938	197,000	225,100
Oak Ridge National Laboratory	87,705	122,825	151,110	77,800
Oak Ridge Reservation	86,833	91,513	80,000	41,868
Y-12 Plant	19,674	48,392	327,000	34,000
Total, Oak Ridge	476,416	471,668	755,110	378,768

### Site Overview

The cleanup program mission in Oak Ridge will be complete when cleanup has safely reduced risks to the public, workers, and the environment at the East Tennessee Technology Park, Oak Ridge National Laboratory (Bethel Valley and Melton Valley watersheds), Y-12 National Security Complex, and Off-site Areas. These risks include potential exposure to contamination and industrial hazards resulting from decades of uranium enrichment, research, and nuclear weapons-related operations.

### Site Description

The Oak Ridge Reservation is in east Tennessee and is comprised of three facilities: the East Tennessee Technology Park; the Oak Ridge National Laboratory; and the Y-12 Plant. These facilities are described in detail below. In addition, there are some private properties that are not located on the Oak Ridge Reservation (the Atomic City Auto Parts Site and the David Witherspoon Sites) that are being cleaned up under the auspices of the Oak Ridge program.

#### *Oak Ridge - East Tennessee Technology Park*

The East Tennessee Technology Park site occupies approximately 5,000 administrative acres adjacent to the Clinch River and located approximately 13 miles west of Oak Ridge, Tennessee. Approximately 2,200 of these acres are to be addressed under the Comprehensive Environmental Response, Compensation, and Liability Act. It was originally built as a uranium enrichment facility for defense programs. The majority of the 125 major buildings on the site have been inactive since uranium enrichment production ceased in 1985.

#### *Oak Ridge National Laboratory*

Activities carried out at the 3,300-acre Oak Ridge National Laboratory historically have supported both the defense production operations and civilian energy research effort. Cleanup addresses contamination from a variety of research and development activities, which were supported by multiple DOE programs

over a long period of time. Significant waste management activities took place within the Melton Valley area of the Laboratory. The Oak Ridge National Laboratory currently conducts applied and basic research in energy technologies and the physical and life sciences. Cleanup includes environmental remediation, decontamination, decommissioning and demolition of hazardous and radioactively contaminated facilities, and disposition of legacy low, mixed low-level, and transuranic waste.

### *Oak Ridge - Y-12*

The Y-12 site is approximately 811 acres and is located about two miles southwest of Oak Ridge, Tennessee. The Y-12 site originally was a uranium processing facility and now dismantles nuclear weapons components and serves as one of the nation's storehouses for special nuclear materials. The types of contamination found within the Y-12 site include radioactive, hazardous, and mixed wastes. The sanitary landfills for all of the Oak Ridge Reservation are located at Y-12. The Environmental Management Waste Management Facility (a Comprehensive Environmental Response, Compensation, and Liability Act disposal facility supporting the cleanup) is also located at Y-12.

### **Site Cleanup Strategy/Scope of Cleanup**

The Oak Ridge cleanup strategy is a risk-based approach that focuses first on those contaminant sources that are the greatest contributors to risk. The overall strategy is based on surface and groundwater considerations, encompassing watersheds that feed the Clinch River and are impacted by the DOE sites. Key Records of Decision have been signed for these watersheds. Final Records of Decision will be necessary for all watersheds to deal with the remaining ecological and groundwater concerns.

While risk reduction is the major cleanup driver, other factors that must be considered to achieve risk reduction are execution logic and mortgage reduction, which will ultimately reduce the cost and schedule to complete cleanup.

Having established the risk-based prioritization for the work, a number of substantive changes to work practices have also been implemented that will facilitate work execution. These changes can be categorized as either improved work flow or alternative technical approaches, and these are considered to be enabling innovations for the plans to complete cleanup.

### **Site Completion (End State)**

Planned completion of the East Tennessee Technology Park is no earlier than FY 2017. A significant number of additional contaminated facilities at the Oak Ridge National Laboratory and Y-12 are expected to be transferred to EM from the Office of Science and the National Nuclear Security Administration over the next few years. After cleanup is complete, the Oak Ridge National Laboratory will continue to operate as a world-class research facility and Y-12 will continue to operate, fulfilling its national security mission. The planned lifecycle completion date is 2021 to 2022.

### *Short-Term Projects:*

*Oak Ridge National Laboratory:* The short-term scope at this site includes performing surveillance and maintenance of surplus facilities; operating waste treatment facilities; and conducting high-risk

reduction cleanup projects at Oak Ridge National Laboratory. A final Record of Decision addressing groundwater concerns at the site will be needed.

*Bethel Valley at Oak Ridge National Laboratory:* Specific high-risk reduction actions planned include preparing Building 3019 for U-233 downblending operations; restarting excavation of Tank W-1A (Corehole 8) and associated transuranic soils; remediating radiologically and chemically contaminated soils and sediments that present risks to workers and groundwater sources; acquisition planning and baseline development for completing all required remediation and decommissioning and decontamination of surplus facilities at Oak Ridge National Laboratory.

*Melton Valley at Oak Ridge National Laboratory:* This Comprehensive Environmental Response, Compensation, and Liability Act remedial action project was completed in FY 2006. However, because a significant amount of waste remains in situ, a final Record of Decision is required to address potential residual groundwater, sediment and ecological concerns within the watershed. In addition, pyrophoric material remains in one burial trench pending a decision with the regulators on any future remedial actions that may be required.

*East Tennessee Technology Park:* This project addresses decommissioning of facilities and remedial actions for contaminated sites at the East Tennessee Technology Park. Site closure will be no earlier than FY 2016. Approximately 2,200 acres of the 5,000 administrative acres that comprise the East Tennessee Technology Park contain 167 known release sites that need to be remediated to mitigate contamination from plumes originated by contaminated soils and burial grounds from migrating off-site. In addition, there are approximately 500 facilities, including 125 major buildings that require decommissioning. The highest priority at the site is the decommissioning and decontamination of the K-25 and K-27 gaseous diffusion process buildings due to the deteriorating condition of the buildings affecting worker safety. A final Site-Wide Record of Decision is being prepared to address all groundwater, surface water, sediments, ecological and long-term stewardship concerns at the site. Site closure assumes the demolition of the K-25, K-27 and K-31 buildings.

*Y-12:* The short-term scope at this site includes performing surveillance and maintenance of surplus facilities; operating the on-site Environmental Management Waste Management Facility and sanitary landfills; and conducting high risk reduction cleanup projects at the Y-12 National Security Complex.

Specific high-risk reduction actions planned include initiation of soil and scrap-yard remediation activities designed to reduce ongoing migration of mercury and other contamination into groundwater and surface water draining from the site.

*Offsite Areas:* This project reduces risk and cleans up three privately owned properties that were contaminated due to the sale of contaminated materials from the DOE to private companies. DOE is responsible for the cleanup of these sites under the Tennessee Superfund law. The three sites are the Atomic City Auto Parts Site in Oak Ridge and the David Witherspoon, Inc. 901 and 1630 sites in Knoxville. The properties, which cover 64 acres combined, are in residential and commercial areas and are accessible to the public. Primary contaminants include uranium, polychlorinated biphenyls, and heavy metals. The Atomic City Auto Parts Site was completed in FY 2005 and the David Witherspoon, Inc. 901 site was completed in FY 2006. The remaining David Witherspoon, Inc. 1630 site field work will be completed in FY 2009.

### *Longer Term Projects:*

All of the remaining actions to complete the EM mission are summarized below.

*Y-12:* Surveillance and maintenance of surplus facilities and the operation of waste disposal facilities will continue at this site. A significant number of additional contaminated facilities at this site are expected to be transferred to EM from the National Nuclear Security Administration over the next several years as described in the Critical Decision 1 for the Integrated Facilities Disposition Project.

*Oak Ridge National Laboratory:* Surveillance and maintenance of surplus facilities, removal of Molten Salt Reactor Experiment fuel salts and the operation of waste treatment facilities will continue at this site. U-233 material stored in Building 3019 will be downblended and dispositioned. A significant number of additional contaminated facilities at this site are expected to be transferred to EM from the Office of Science over the next several years as described in the Critical Decision 1 for the Integrated Facilities Disposition Project.

*Long-Term Stewardship:* The Comprehensive Environmental Response, Compensation, and Liability Act process will determine any necessary final actions for groundwater in the five watersheds subsequent to completion of the actions described above. Since most of the contaminated sites, media, and facilities left standing will not permit unrestricted use of the soil, groundwater, and surface water, extensive monitoring and long-term stewardship actions will be required.

### **Regulatory Framework**

Cleanup of the Oak Ridge Reservation is primarily governed by three regulatory agreements/compliance orders. The first, the *Federal Facility Agreement for the Oak Ridge Reservation*, was signed by DOE, the United States Environmental Protection Agency, and the Tennessee Department of Environment and Conservation and implemented on January 1, 1992, to establish a procedure framework and schedule for developing, implementing, and monitoring appropriate site response actions under the Comprehensive Environmental Response, Compensation, and Liability Act.

In conjunction with the Federal Facility Agreement, DOE, the Environmental Protection Agency and the Tennessee Department of Environment and Conservation signed the *Oak Ridge Accelerated Cleanup Plan Agreement* on June 18, 2002. The purpose of this Agreement was to describe a streamlined decision-making process to facilitate the accelerated implementation of cleanup activities, to resolve the current Oak Ridge Reservation Federal Facility Agreement milestone dispute, and to establish future actions needed to complete the plan for accelerated cleanup.

The second, the *Oak Ridge Reservation Compliance Order*, was signed on September 26, 1995, by DOE and the Tennessee Department of Environment and Conservation, to enforce treatment of mixed low-level wastes under the Resource Conservation and Recovery Act. This order establishes milestones to complete treatment of all Oak Ridge mixed low-level wastes by 2012.

The third, the *Oak Ridge Reservation Polychlorinated Biphenyl Federal Facilities Compliance Agreement*, was signed by DOE and the Environmental Protection Agency on October 28, 1996, to establish a framework for treatment of polychlorinated biphenyl-contaminated wastes under the Toxic

Substances Control Act. This agreement requires substantive annual progress in disposition of Polychlorinated Biphenyl contaminated waste at Oak Ridge.

### **Critical Site Uncertainties and Assumptions**

Major uncertainties include: final agreement with the regulators on the extent of remediation to be accomplished under future Records of Decision; the reindustrialization of the decontaminated K-31 gaseous diffusion plant building at East Tennessee Technology Park which will eliminate the need for demolition; and the nature and amount of cleanup that will be required for the additional contaminated facilities that are expected to be transferred from the National Nuclear Security Administration (Y-12 site) and the Office of Science (Oak Ridge National Laboratory) to EM over the next few years.

### **Interdependencies**

The success of the Oak Ridge Environmental Management Program requires effective project interfaces with the following:

*Other DOE Sites:* The Oak Ridge Toxic Substances Control Act Incinerator accepts waste from a number of other DOE sites throughout the DOE complex. In addition, Oak Ridge requires a disposition path for waste at the Hanford Site, the Nevada Test Site, Energy Solutions (formerly known as Envirocare), and the Waste Isolation Pilot Plant.

*National Nuclear Security Administration:* Certain material recovered during the high risk equipment removal from the gaseous diffusion plant buildings at East Tennessee Technology Park will be shipped to Y-12 for storage.

*United States Enrichment Corporation:* United States Enrichment Corporation has a lease with DOE to access the K-1600 building at East Tennessee Technology Park and its centrifuge technology.

*Office of Science:* Close coordination with this office is critical to maintain the security posture for Building 3019 at the Oak Ridge National Laboratory.

### **Contract Synopsis**

Oak Ridge Reservation currently utilizes three different prime contracts to implement its cleanup strategy: (1) Oak Ridge Environmental Management Cleanup Contract; (2) the Transuranic Waste Treatment Contract and (3) the U-233 Downblend Contract.

*Oak Ridge Environmental Management Cleanup Contract:* The Oak Ridge Closure Contract with Bechtel Jacobs Company, LLC was signed September 2003 with the singular focus of achieving specified milestones in the safest, most cost effective manner. This contract, which is due to expire in December 2011, was restructured in 2008, as a cost-plus-fixed-fee contract with schedule incentives to focus efforts on the demolition of the K-25 Building.

*Transuranic Waste Treatment Contract:* A privatization contract was signed with Foster Wheeler Environmental Corporation in August 1998 for the construction of a transuranic waste treatment facility

and the treatment of remote-handled alpha low-level waste, and contact- and remote-handled transuranic waste. Foster Wheeler Environmental Corporation has constructed the Transuranic Waste Processing Facility and has begun the processing of transuranic waste. The original fixed-price contract with Foster Wheeler was converted to a cost-plus-fixed-fee contract in September 2006 and novated to EnergX, on January 15, 2008.

*U-233 Downblend Contract:* The contract for U-233 downblending and Building 3019 shutdown was awarded to Isotek Systems, LLC in October 2003. The original contract was awarded when the project was being managed by the Office of Nuclear Energy and included the extraction of U-233 daughter products for research in medical applications. Congress directed the Department in the FY 2006 Energy and Water Appropriations Act to transfer the management of this project to the Office of Environmental Management and to terminate the medical isotope production. The contract has been revised accordingly. The contract is a cost reimbursement contract that encompasses three phases. Phase I is the planning and design which includes a fixed fee provision. Phase II is project implementation which includes both performance-based fee and fixed-fee provisions. Phase III is Building 3019 shutdown which includes a fixed-fee provision.

### Cleanup Benefits

#### *Near Term:*

Field work for the David Witherspoon, Inc. 1630 site will be completed in FY 2009. The cleanup actions will allow the industrial reuse of the property and eliminate the potential exposure of the public to hazardous and radioactive contamination.

#### *Longer Term:*

Closure of the East Tennessee Technology Park site is the next complex-wide opportunity for the EM Program to divest itself of a major liability. Remedial actions and decommissioning and decontamination of surplus facilities will be initiated at the Y-12 National Security Complex and Oak Ridge National Laboratory to reduce contamination which will protect on-site workers, mitigate off-site releases and provide strategic real estate for modernization strategies.

Direct maintenance and repair at Oak Ridge is estimated to be \$13,573,000.

### Funding Schedule by Activity

(dollars in thousands)

	FY 2008	FY 2009	FY 2010
Defense Environmental Cleanup			
Oak Ridge			
Oak Ridge			
OR-0100 / Oak Ridge Reservation Community & Regulatory Support (Defense)	5,912	6,100	6,253
OR-0011Z / Downblend of U-233 in Building 3019	29,727	58,000	38,900
OR-0042 / Nuclear Facility D&D-Oak Ridge National	57,978	64,825	38,900

(dollars in thousands)

	FY 2008	FY 2009	FY 2010
Laboratory			
OR-0041 / Nuclear Facility D&D-Y-12	19,674	48,392	34,000
OR-0043 / Nuclear Facility D&D-East Tennessee Technology Park (Defense)	23	105	100
OR-0031 / Soil and Water Remediation-Offsites	9,294	1,230	0
OR-0013B / Solid Waste Stabilization and Disposition- 2012	71,627	84,183	35,615
Subtotal, Oak Ridge	194,235	262,835	153,768
Uranium Enrichment Decontamination and Decommissioning Fund			
D&D Activities			
Oak Ridge			
OR-0040 / Nuclear Facility D&D-East Tennessee Technology Park (D&D Fund)	267,561	190,663	207,800
OR-0102 / East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration	14,620	18,170	17,200
Subtotal, Oak Ridge	282,181	208,833	225,000
Total, Oak Ridge	476,416	471,668	378,768

### Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
Oak Ridge					
Geographic Sites Eliminated (number of sites)	28	28	28	29	96.6%
Industrial Facility Completions (Number of Facilities)	301	310	323	627	51.5%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	122,202	124,260	126,329	160,462	78.7%
Nuclear Facility Completions (Number of Facilities)	8	8	8	25	32.0%
Radioactive Facility Completions (Number of Facilities)	26	26	28	71	39.4%
Remediation Complete (Number of Release Sites)	408	410	431	694	62.1%
Transuranic Waste shipped for disposal (Cubic meters) - CH	16	296	296	1,494	19.8%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	96	96	753	12.8%

## Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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<b>OR-0011Z / Downblend of U-233 in Building 3019</b>	<b>29,727</b>	<b>58,000</b>	<b>38,900</b>
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This PBS is within the Defense Environmental Cleanup appropriation.

Oak Ridge has a significant inventory of Uranium-233 (U-233) currently stored in Building 3019 at the Oak Ridge National Laboratory. U-233 is a special nuclear material which requires strict safeguards and security controls to protect against access. In addition, the Defense Nuclear Facilities Safety Board issued Recommendation 97-1, *Safe Storage of Uranium-233*, that identified concerns related to long-term storage of the inventory in Building 3019. The primary objectives of this project are to: 1) address safeguards and security requirements; 2) eliminate safety and nuclear criticality concerns; and 3) place the material in interim storage for future disposal. Treating the U-233 inventory as expeditiously as possible will reduce the substantial annual costs associated with safeguards and security requirements, which are funded by the Office of Science. Further, the risk of a nuclear criticality event will be eliminated as well as the need for future facility upgrades to Building 3019 to ensure safe storage of the inventory.

The contractor for the Project was transitioned into Building 3019A on February 28, 2007, and took responsibility for surveillance and maintenance operations. An environmental assessment was completed in accordance with the National Environmental Policy Act (NEPA) and a Finding of No Significant Impact was issued on March 9, 2007. The U-233 Project received approval of the performance baseline (Critical Decision 2) and limited construction/dismantling (Critical Decision 3A) on May 25, 2007. A datasheet for the expense-funded project is provided in the Appendix.

In FY 2010, the following activities are planned:

- Maintain compliance with requirements for National Repository for U-233, which requires Category 1 Security and 10 Code of Federal Regulations 830 and 835.
- Continue surveillance and maintenance operations on Building 3019 Complex.
- Initiate demolition of 3020 stack.
- Continue construction of the Uranium down blending process system.



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	100.0%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	131	0%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	0	48	498	979	51.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Continue design of U-233 down-blending equipment and Building 3019 modifications (September 2009)</li> <li>▪ Obtain Critical Decision-3B from EM-1 to allow construction of the downblending process (April 2010)</li> </ul>					

**OR-0013B / Solid Waste Stabilization and Disposition-2012**

**71,627                      84,183                      35,615**

This PBS is within the Defense Environmental Cleanup appropriation.

This project funds storage and Resource Conservation and Recovery Act closure, treatment and disposal of low-level, mixed low-level, hazardous, industrial, and sanitary waste from the East Tennessee Technology Park, Oak Ridge National Laboratory, and Polychlorinated Biphenyl Federal Facility Compliance Agreement mixed waste from Y-12. It also includes the operation of the Toxic Substances Control Act Incinerator and the Central Neutralization Facility. In addition, this project funds the management of the reservations of transuranic waste and the management of waste stored at East Tennessee Technology Park.

Contact-handled transuranic debris processing was initiated in FY 2006 and processing of remote-handled transuranic debris started in FY 2008 at the Transuranic Waste Processing Center. Processed waste is shipped to the Waste Isolation Pilot Plant or the Nevada Test Site for disposal. Processing and disposal of contact-handled and remote-handled transuranic debris will be funded through the America Recovery and Reinvestment Act funding of FY2010.

As of September 2008, all legacy hazardous waste and approximately 11,900 m<sup>3</sup> of low-level/mixed low-level Polychlorinated Biphenyl Federal Facility Compliance Agreement waste have been dispositioned. The project has treated approximately 2,400,000 kg of liquid waste and 600,000 kg of solid waste from Tennessee and out-of-state DOE sites from FY 2001 to date at the Toxic Substance Control Incinerator. In addition, Oak Ridge has shipped 16m<sup>3</sup> of contact handled transuranic waste to the Waste Isolation Pilot Plant.

In FY 2010, the following activities are planned:

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Continue regulatory requirement for a Resource Conservation and Recovery Act closure of the Toxic Substances Control Act Incinerator.
- Store and transfer remote-handled and contact-handled to Transuranic Waste Treatment Facility.
- Maintain regulatory safety basis documents and permits for, and operate, waste storage facilities.
- Continue shipment of Polychlorinated biphenyls contaminated waste in accordance with the Federal Facility Compliance Agreement.
- A portion of the scope of work typically covered in this PBS is planned to be executed with the American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - CH	16	296	296	1,414	21.0%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	96	96	600	16.0%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	11,593	13,237	13,237	34,298	39.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Continue disposition of the East Tennessee Technology Park legacy Polychlorinated Biphenyl Federal Facility Compliance Agreement waste. (FY 2008)</li> <li>▪ Continue processing contact-handled and remote-handled transuranic debris. (September 2009)</li> <li>▪ Continue treating waste at the TSCA Incinerator in accordance with permits (FY 2008)</li> <li>▪ Manage and store Mixed Low Level Waste in compliance with regulations (FY 2008)</li> </ul>					

**OR-0031 / Soil and Water Remediation-Offsites** **9,294**      **1,230**      **0**

This PBS is within the Defense Environmental Cleanup appropriation.

This project reduces risk and accelerates the cleanup of three privately owned properties that were contaminated due to the sale of contaminated materials from the DOE to private companies. DOE is responsible for the cleanup of these sites under the Tennessee Superfund law. The three sites are the

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Atomic City Auto Parts Site in Oak Ridge and the David Witherspoon, Inc. 901 and 1630 sites in Knoxville. The properties, which cover 64 acres combined, are in residential and commercial areas and are accessible to the public. Primary contaminants include uranium, polychlorinated biphenyls, and heavy metals. The Atomic City Auto Parts site was completed in FY 2005. The David Witherspoon, Inc. 901 site was completed in FY 2006. The cleanup actions at these sites will consist of removing, treating, and disposing of contaminated materials, equipment, soil, and sediment and demolishing facilities. At completion, all three sites are expected to be suitable for future industrial use. The scope also includes Offsite Program Site Evaluations, which are dependent on the results of a study released by the Agency for Toxic Substances and Disease Registry in late FY 2006. The study indicated there were no significant risks found.

As of September 2008, remediation has been completed at the David Witherspoon, Inc. 901 site and 85 percent complete at the David Witherspoon, Inc. 1630 site. Scheduled completion of 1630 site will be in FY 2009.

In FY 2010, no activities are planned:

- Complete field work on David Witherspoon 1630 in FY 2009.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Remediation Complete (Number of Release Sites)	6	7	8	8	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Complete Field Work on David Witherspoon 1630 (September 2009)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**OR-0041 / Nuclear Facility D&D-Y-12**

**19,674**

**48,392**

**34,000**

This PBS is within the Defense Environmental Cleanup appropriation.

This project funds the cleanup at the Y-12 National Security Complex, focusing on high-risk reduction projects in the near-term; cost-effective cleanup of the Oak Ridge Reservation through the construction and operation of the Environmental Management Waste Management Facility and the Oak Ridge Reservation Landfills; surveillance and maintenance of currently surplus facilities awaiting future decontamination and decommissioning; and groundwater and surface water monitoring to assess the effectiveness of completed cleanup actions and support future remediation decisions.

Located in a water-rich environment, Y-12 National Security Complex is a significant contributor of mercury, radionuclides, and volatile organic compounds, and polychlorinated biphenyls to the Upper East Fork of Poplar Creek (which flows through the City of Oak Ridge). In addition, Bear Creek Valley, which is located just west of the Y-12 plant, is the site of numerous liquid and solid waste disposal areas. To date, several high-risk reduction projects have been completed, including construction and operation of a water treatment system to reduce mercury contamination in surface water leaving the site, initial phases of remediation of the East End Volatile Organic Compound Plume to prevent further off-site migration of contaminated groundwater, and excavation of the Boneyard/Burnyard burial ground in Bear Creek Valley to reduce uranium contamination migration into surface water leaving the site. In FY 2009 and beyond, the remaining cleanup activities include demolition of contaminated EM facilities, additional sediment and soils removal to address mercury and polychlorinated biphenyls contamination and completion of Phase II Record of Decision for Bear Creek Valley.

This PBS scope also includes incremental construction, operation, and final closure of the Environmental Management Waste Management Facility disposal facility. The facility currently has a capacity of 1.2 million cubic yards, with a final build out capacity of 1.7 million cubic yards. A total of \$14,000,000 in payments to a State of Tennessee trust fund will fund the perpetual care of the Environmental Management Waste Management Facility after final closure. This project also includes the incremental construction and operation of the Oak Ridge Reservation Landfills (Sanitary/Industrial, Construction/Demolition, and Classified Materials) that accept and dispose of waste from all on-site DOE program offices including the National Nuclear Security Administration's Y-12 Security Complex. Surveillance and maintenance activities for the Y-12 National Security Complex and coordination of environmental monitoring of soils, sediments, surface water, and groundwater throughout the Oak Ridge Reservation to assess the effectiveness of cleanup actions are also included in the scope of this PBS.

As of September 2008, one facility and 28 release sites have been completed, including the S-3 Ponds (Western Plume Pathways 1 and 2) and the Boneyard/Burnyard burial ground.

In FY 2010, the following activities are planned:

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Continue operations of Environmental Management Waste Management Facility and other Oak Ridge Reservation Landfills in accordance with Department of Energy Order requirements for groundwater and surface water monitoring, including Environmental Management Waste Management Facility waste acceptance criteria attainment activities.
- Continue surveillance and maintenance of waste sites, inactive facilities, and annual remediation effectiveness report for compliance with legal agreements between DOE, U.S. Environmental Protection Agency Region 4, the State of Tennessee, and environmental laws and regulations.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Industrial Facility Completions (Number of Facilities)	1	1	1	2	50.0%
Remediation Complete (Number of Release Sites)	28	28	28	138	20.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Continue operations of the EMWMF and landfills and maintain facilities in safe and compliant manner (September 2009)</li> </ul>					

**OR-0042 / Nuclear Facility D&D-Oak Ridge National Laboratory**

**57,978                      64,825                      38,900**

This PBS is within the Defense Environmental Cleanup appropriation.

Due to the many multi-disciplinary research activities conducted over the years at the Oak Ridge National Laboratory, environmental media and facilities became contaminated as a result of operations, leaks, spills, and past waste disposal practices. The presence of creeks and shallow groundwater provides a ready transport mechanism of contaminants into White Oak Creek, which flows to the Clinch River, a major drinking water source and recreational area.

Areas requiring remediation include more than 50 inactive facilities (including six inactive research reactors), three significant plumes of contaminated groundwater, contaminated surface water, and numerous areas of soil and sediment contamination. These projects include excavation of highly contaminated sediments from surface impoundments located adjacent to White Oak Creek; and decontamination and decommissioning of high-priority facilities to ensure worker safety and mitigate the potential for contaminant release. Cleanup actions currently in the EM scope will be completed by FY 2015, including the decontamination and decommissioning of remaining inactive facilities, capping

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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of buried waste areas, bioremediation of groundwater contamination, and soil/sediment removal.

Additional scope has been identified that needs to be added to the Oak Ridge lifecycle cost and schedule to address Department environmental liabilities consisting of facilities, structures, outdated waste treatment facilities and contaminated legacy materials excess to the Oak Ridge National Laboratory, including soils under facilities, groundwater, and surface water. Critical Decision-1 was approved on November 17, 2008. Oak Ridge is currently working on baseline development and acquisition planning for Critical Decision-2.

This project also includes surveillance and maintenance activities to maintain contaminated sites in accordance with safety basis documents until final decommissioning, decontamination and remedial actions are undertaken.

As of September 2008, 10 facilities and 80 release sites have been completed. These include the Main Plant Surface Impoundments, including clean-out and stabilization of the eight large Gunitite Tanks and the Metal Recovery Facility.

In FY 2010, the following activities are planned:

- Monitor groundwater and surface water in accordance with the Melton Valley and Bethel Valley Records of Decision.
- Perform surveillance and maintenance for Environmental Management inactive facilities and reactors at the Oak Ridge National Laboratory to maintain a safe and compliant condition.
- Complete Acquisition Planning and Baseline development to support Critical Decision 2/3A for Integrated Facilities Disposition Project.
- Maintain liquid, gaseous and process waste operations systems in support of the missions of the Office of Science and the Office of Environmental Management.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	80	0%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	22	0%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	366	732	2,351	14,942	16.0%
Nuclear Facility Completions (Number of Facilities)	0	0	0	15	0%
Radioactive Facility Completions (Number of Facilities)	3	3	3	26	12.0%
Industrial Facility Completions (Number of Facilities)	7	7	7	25	28.0%
Remediation Complete (Number of Release Sites)	80	80	80	178	45.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Maintain facilities in safe and compliant manner (September 2009)</li> <li>▪ continue operation of liquid, gaseous, and process waste operations systems (September 2009)</li> </ul>					

**OR-0043 / Nuclear Facility D&D-East Tennessee  
Technology Park (Defense)**

**23                      105                      100**

This PBS is within the Defense Environmental Cleanup appropriation.

This project, in combination with PBS OR-0040, Nuclear Facility D&D East Tennessee Technology Park (Uranium Enrichment Decontamination and Decommissioning Fund) will accomplish the closure of East Tennessee Technology Park. This project funds decontamination, decommissioning, and demolition for the East Tennessee Technology Park facilities that were not involved in enriching uranium for commercial clients (per the Energy Policy Act of 1992). The centrifuge facilities subproject includes 32 facilities covering 234,000 square feet.

This project also provides for the surveillance and maintenance required to maintain the facilities in accordance with safety basis documents while they await decontamination and decommissioning.

As of September 2008, six facilities have been demolished and the waste disposed of. Hazardous materials and equipment have been removed from the Centrifuge Facilities.

In FY 2010, the following activities are planned:

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Perform surveillance and maintenance of the Centrifuge Facilities complex, to maintain in a safe and secure condition.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	32,979	32,979	32,979	32,979	100.0%
Radioactive Facility Completions (Number of Facilities)	0	0	0	0	100.0%
Industrial Facility Completions (Number of Facilities)	6	6	6	37	16.0%

**OR-0100 / Oak Ridge Reservation Community & Regulatory Support (Defense)**

**5,912                      6,100                      6,253**

This PBS is within the Defense Environmental Cleanup appropriation.

This project funds two Tennessee non-regulatory Agreement-In-Principle grants, one Tennessee regulatory Federal Facility Agreement grant, and the activities of the Oak Ridge Site Specific Advisory Board. The first Agreement-In-Principle supports the Tennessee Department of Environment and Conservation's independent environmental oversight and monitoring of DOE activities taking place both on-site and off-site associated with the Oak Ridge Reservation. The second Agreement-In-Principle supports the Tennessee Emergency Management Agency in emergency response planning initiatives, including cooperative planning, conducting joint training exercises and developing public information regarding preparedness activities. The Federal Facility Agreement grant supports the Tennessee Department of Environment and Conservation, provides oversight of the requirements of the interagency agreement under the Comprehensive Environmental Response, Compensation, and Liability Act. The support for the Site Specific Advisory Board is chartered under the Federal Advisory Committee Act.

In FY 2010, the following activities are planned:

- Continue support to the State of Tennessee for conducting annual oversight, monitoring, and reporting. This includes: annual reports to the public; independent monitoring program of all environmental media; off reservation monitoring program of wells owned by private citizens adjacent to DOE land; establishment of background levels; DOE facility surveillance walkthroughs; Federal Facility Agreement activities; and emergency management exercises.
- Continue activities by the Site Specific Advisory Board sponsored by DOE-EM to assist in public participation activities.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**OR-0040 / Nuclear Facility D&D-East Tennessee  
Technology Park (D&D Fund)**

**267,561      190,663      207,800**

This PBS is within the Uranium Enrichment Decontamination and Decommissioning Fund appropriation.

This project funds decommissioning and decontamination of facilities and remedial actions for contaminated sites at the East Tennessee Technology Park. It also funds the site infrastructure services. Approximately 2,200 acres of the 5,000 administrative acres at the site contain potential contamination, including known groundwater contaminant plumes from former burial grounds and contaminated soils. This project includes approximately 160 release sites requiring remediation and 500 facilities (125 major buildings) requiring decommissioning and decontamination. The decommissioning in FY 2005 of the K-29, 31 and 33 gaseous diffusion process buildings (covering 110 acres) completed the largest decommissioning project ever undertaken by DOE. The decommissioning of the K-25 gaseous diffusion process-building is the current priority because of worker safety concerns stemming from the continuing deteriorating condition of the buildings. The scope of the K-25 building subproject is to abate the hazardous materials, remove the process equipment and excess materials stored in the buildings, demolish the building structures, and appropriately characterize, package, transport and dispose of all the associated wastes. The decontamination and decommissioning of these other facilities include the planning, deactivation of utilities, asbestos and other hazardous material abatement, equipment dismantlement and disposal, structure demolition and waste disposal. Site infrastructure services include fire protection, utility services, environmental, safety, and health programs, real property management, power operations and maintenance, and capital improvements and repairs.

The end state of the site will be appropriate for uncontrolled industrial use for all areas of land down to a grade of ten feet below the surface.

As of September 2008, 292 facilities have been decommissioned and 91 release sites have been completed. The K-25 Decontamination and Decommissioning Subproject progress includes continued immobilization (foaming) of process equipment with 270 of 334 cells on the west wing cell floor area completed; completed removal, non-destructive assay, and necessary segmentation/mining 377 of 409 High Risk Equipment items. The demolition of the K-1401 building, K-1501 Steam Plant, K-1420 building, and the K-29 building (the first gaseous diffusion plant to be demolished) are completed.

In FY 2010, the following activities are planned:

- Maintain East Tennessee Technology Park in a safe and secure condition.
- Continue demolition of K-25 Building, including decontamination and decommission of 19 process-building units.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Provide infrastructure support for decontamination and decommissioning and remedial action projects.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	5,178	5,178	5,178	5,178	100.0%
Nuclear Facility Completions (Number of Facilities)	2	2	2	4	50.0%
Radioactive Facility Completions (Number of Facilities)	8	8	10	30	33.0%
Industrial Facility Completions (Number of Facilities)	282	291	304	558	54.0%
Remediation Complete (Number of Release Sites)	91	92	112	167	67.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>Provide infrastructure support for ETP cleanup activities (September 2009)</li> <li>Continue field work on the K-25 Building (September 2009)</li> </ul>					

**OR-0102 / East Tennessee Technology Park**

**Contract/Post-Closure Liabilities/Administration 14,620 18,170 17,200**

This PBS is within the Uranium Enrichment Decontamination and Decommissioning Fund appropriation.

This project funds on-going, long-term contractor obligations including post-retirement life and medical, long-term disability and pension benefits for pre-April 1998 retirees, who supported Oak Ridge enrichment facility programs.

In FY 2010, the following activities are planned:

- Continue funding of contractor liabilities associated with post-retirement life, medical benefits and pensions.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**Total, Oak Ridge 476,416 471,668 378,768**

## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### Defense Environmental Cleanup

#### Oak Ridge

##### **OR-0011Z / Downblend of U-233 in Building 3019**

- Decrease reflects the reduction in funding requirements for U-233 downblending operations in accordance with the current financial schedule. -19,100

##### **OR-0013B / Solid Waste Stabilization and Disposition-2012**

- Decrease reflects scope of work that is included in the American Recovery and Reinvestment Act appropriation. -48,568

##### **OR-0031 / Soil and Water Remediation-Offsites**

- Decrease reflects completion of the David Witherspoon 1630 site cleanup. -1,230

##### **OR-0041 / Nuclear Facility D&D-Y-12**

- Decrease reflects scope of work that is included in the American Recovery and Reinvestment Act appropriation. -14,392

##### **OR-0042 / Nuclear Facility D&D-Oak Ridge National Laboratory**

- Decrease reflects scope of work that is included in the American Recovery and Reinvestment Act appropriation. -25,925

##### **OR-0043 / Nuclear Facility D&D-East Tennessee Technology Park (Defense)**

- No significant change. -5

##### **OR-0100 / Oak Ridge Reservation Community & Regulatory Support (Defense)**

- No significant change. 153

### Uranium Enrichment Decontamination and Decommissioning Fund

#### D&D Activities

##### **OR-0040 / Nuclear Facility D&D-East Tennessee Technology Park (D&D Fund)**

- Increase reflects additional funding required for planned demolition activities at the K-25 process facility. 17,137

##### **OR-0102 / East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration**

- No significant change. -970

### Total, Oak Ridge

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**-92,900**



**OR-0011Z Uranium-233 Down Blending and Disposition Project  
Oak Ridge National Laboratory, Oak Ridge, Tennessee  
Project Data Sheet is for Construction (Operating Expense Data Sheet)**

**(a) Significant Changes**

The most recent DOE O 413.3A approved Critical Decision is CD2/3A, approval of performance baseline and limited construction/dismantling, approved on May 25, 2007. The Total Project Cost is \$240,821,000.

A Federal Project Director with certification level III has been assigned to this project.

This Data Sheet is a resubmission of the FY 2009 data sheet. The <sup>233</sup>U project is currently in the design phase and is also maintaining the safe and secure operations of Building 3019. During a recent design review of the project (<sup>233</sup>U), building 3019 was found to have structural integrity issues that prohibit its use for a portion of the processing. This resulted in the necessary addition of an Annex to facilitate the back end processing (drying). Also, it was recently discovered during the Waste Isolation Pilot Plant's Acceptable Knowledge Review, that a large percent of the <sup>233</sup>U inventory, the Consolidated Edison Uranium Solidification Project material does not have sufficient transuranic content for disposal at the Waste Isolation Pilot Plant. This finding resulted in the need to revise the design to account for the presence of Resource Conservation and Recovery Act metals. This finding will require the waste to be disposed of at the Nevada Test Site in lieu of the planned disposal at the Waste Isolation Pilot Plant. Both of the discoveries listed above require significant design changes to the facility; however, these currently appear to decrease the construction and operational risk associated with the planned facility. The Department of Energy (DOE) plans to continue the design effort through 90% design before requesting a new baseline for construction and operations, in order to ensure that the construction estimate will have the accuracy necessary to complete the project on schedule and within budget. Following completion of 90% project design, DOE will make appropriate Congressional notifications. In the meantime, Project Engineering and Design costs have increased, and will continue to increase, based on additional design-related activities. The section 5 Financial Schedule has not been updated to reflect total costs through FY 2008 of \$75,329,000 for the <sup>233</sup>U project. Updates to the financial schedule will occur upon the completion of 90% project design.

**2. Design, Construction, and D&D Schedule**

(fiscal quarter or date)

	CD-0	CD-1 (Design Start)	(Design/P ED Complete)	CD-2	CD-3 (Constructi on Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2008	1Q FY 2006 4Q FY03 (reconfirmed by EM 1Q FY 2007)	1Q FY 2004 3Q FY04 (approved by EM 1Q FY 2007)	3Q FY 2009	4Q FY 2007	3Q FY 2009	3Q FY 2012		
FY2009				3Q FY 2007	3Q FY07 (CD-3A)	4Q FY 2012 (CD-4A)		

- CD-0 – Approve Mission Need
- CD-1 – Approve Alternative Selection and Cost Range
- CD-2 – Approve Performance Baseline
- CD-3 – Approve Start of Construction
- CD-4 – Approve Start of Operations or Project Closeout
- D&D Start – Start of Demolition & Decontamination (D&D) work
- D&D Complete –Completion of D&D work

### 3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY08	N/A	N/A	218,686	14,756	N/A	14,756	233,442
FY09a	N/A	N/A	226,643	14,178	N/A	14,178	240,821

### 4. Project Description, Justification, and Scope

The Defense Nuclear Facilities Safety Board in a report to the Department of Energy (Defense Nuclear Facilities Safety Board 97-1) has determined that the long-term storage of Uranium-233 (<sup>233</sup>U) in Building 3019 at the Oak Ridge National Laboratory poses potential nuclear criticality accident and worker exposure concerns. The scope of this project addresses safeguards and security requirements, eliminates long-term worker safety and criticality concerns, and places the <sup>233</sup>U material in interim storage in preparation for future disposal. <sup>233</sup>U is a special nuclear material which requires extensive safeguard and security measures to protect against access. In addition, treating the <sup>233</sup>U inventory as quickly as possible would reduce the substantial annual costs associated with safeguards and security.

The Department developed a three-phased approach to allow for systematic decision-making and to increase the Department’s flexibility. The base contract award consisted only of Phase I/Planning and Design. On October 9, 2003, a contract was awarded to Isotek Systems, LLC (Isotek), a limited-liability corporation formed by Duratek Federal Services, Inc., Nuclear Fuel Services, Inc., and Burns and Roe Enterprises, Inc., to perform Phase I of the work. Phase II/Project Implementation and Phase III/ Building 3019 Complex Shutdown are contract options that may be unilaterally exercised by the Department.

In FY 2006, this project transferred from the Office of Nuclear Energy to the Office of Environmental Management. In the Conference Report (109-275) accompanying the Energy and Water Development

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a The costs of facility operations and facility shutdown (\$120,028,000) are not included here; they are reported in Section 8 – Related Operations and Maintenance Funding Requirements. Also, DOE project contingency (\$23,972,000) is not included in this estimate.

Appropriations Act for 2006, the conferees directed, “the Department to provide a report within 60 days of enactment of this Act that details the Department’s path forward in managing this material.” The Department delivered a report to Congress in February 2006 that discusses alternatives to safely disposition the Building 3019 inventory. After delivery of the report to Congress, DOE directed Isotek to begin a re-baselining effort to reflect the change in approach from long-term storage to final disposition of the material, address all material in the inventory, and to delete thorium extraction from the baseline. The baseline was further revised in FY 2007 to address newly identified safety concerns. Approval of Critical Decision 2/3A, performance baseline and limited construction/dismantling, for the U233 Disposition Project, Building 3019, was received on May 25, 2007. The approved baseline of \$384,821,000 includes unfunded DOE contingency of \$23,972,000 and related operations and maintenance funding requirements of \$120,028,000

#### Phase I - Planning and Design:

Phase I consists of detailed project planning, process and facility modification designs, development of safety documentation, and development of detailed Phase II cost estimates. Phase I is being conducted on a cost-plus-fixed-fee basis.

The criteria used to determine whether to proceed with Phase II/Project Implementation and current status is provided below.

- The acceptability of the safety analysis, security plan, management plans and final design;  
Status - Redesign progressed under EM and was reviewed by an External Independent Review Team which validated that the project design and risks were adequately bounded by cost and schedule in November 2006. The team concluded that the design adequately supports the preliminary documented safety analysis. In addition, the requirement to receive a DOE approved Safety Evaluation Report prior to fabrication of long-lead procurement items ensures safety is integrated through construction. The Project management plans (e.g. Project Execution Plan and Risk Management Plan) have been updated to capture changes to the project scope and were approved as part of the Critical Decision-2/3A package. The project is operating under an approved Documented Safety Analysis and interim security plan.
- The acceptability of the detailed cost estimate to complete the project, as determined by an independent cost analysis (“should cost analysis”) by DOE using the contractor’s design and processing approach;  
Status - EM conducted an independent cost evaluation in preparation to proceed with Phases II and III of the project.
- The overall performance of the contractor in meeting the DOE cost, schedule, and safety requirements; and  
Status - The overall performance of the contractor is evaluated consistent with the terms of the contract. Cost and schedule progress are tracked and monitored through weekly progress meetings, review of monthly progress reports, and the evaluation of contractor invoices. No contractor performance issues have been identified that would affect DOE’s decision to proceed with the next phase of the contract. A detailed earned value system will be established consistent with DOE Order 413.3A now that EM has received Critical Decision-2 approval.

- The confirmation of existing National Environmental Policy Act documentation supporting the planned activities.

Status – The Department prepared a revised Environmental Assessment to confirm adequate National Environmental Policy Act documentation for the project. The draft Environmental Assessment considered nine alternatives to the current preferred alternative. The draft was published in December 2006 and issued for public comment. After a 60 day comment period a final Environmental Assessment and Finding of No Significant Impact were published in March 2007.

### Phase II - Project Implementation

During Phase II, the contractor will begin the necessary facility modifications and processing equipment installation. Total estimated cost and total project cost data reflect estimates for Phase I design costs and Phase II modifications to the Building 3019 Complex costs and are consistent with the validated baseline. Included in Phase II, the contractor would down-blend the enriched <sup>233</sup>U with depleted uranium, and transfer containers of down-blended material to an on-site storage facility. Execution of the project activities during Phase II would satisfy all of the project objectives including resolution of Defense Nuclear Facilities Safety Board Recommendation 97-1.

During Phase II, the contractor would also be responsible for operation of the Building 3019 Complex, including the characterization, packaging, transportation and disposal of secondary wastes (*e.g.*, personal protection equipment, construction debris, liquid residues, etc.)

During Phase II, the contractor would also be required to develop transition plans to place the Building 3019 Complex in a safe and stable shutdown configuration prior to transfer to the DOE decommissioning program. The contractor would also be required to develop a post-transition surveillance and maintenance plan. These plans would ensure that any contamination present is adequately contained, and that potential hazards to workers, the public, and the environment are minimized and controlled.

Upon completion of Phase II/Project Implementation processing activities, the contractor would be required to purge all processing systems and equipment of residual process materials in accordance with criteria specified by DOE. After cleanup has been completed, the contractor would characterize these systems and equipment and provide the characterization data to DOE.

### Phase III - Building 3019 Complex Shutdown

Phase III will consist of performance of facility stabilization to ready the facility for decommissioning. The estimated duration of Phase III is 6 months.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3A and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.



## 5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
<b>Total Estimated Cost (TEC)</b>			
<b>PED</b>			
Prior Years	22,694	22,694	19,852
FY06	17,821	17,821	11,530
FY07	13,706	13,706	14,388
FY08	0	0	8,304
FY 09	0	0	147
<b>Total, PED</b>	<b>54,221</b>	<b>54,221</b>	<b>54,221</b>
<b>Construction</b>			
FY07	21,794	21,794	0
FY08	30,000	30,000	36,963
FY09	57,500	57,500	52,243
FY10	37,400	37,400	53,209
FY11	25,092	25,092	24,018
FY12	636	636	5,989
<b>Total, Construction</b>	<b>172,422</b>	<b>172,422</b>	<b>172,422</b>
<b>TEC</b>			
Prior Years	22,694	22,694	19,852
FY06	17,821	17,821	11,530
FY07	35,500	35,500	14,388
FY08	30,000	30,000	45,267
FY09	57,500	57,500	52,390
FY10	37,400	37,400	53,209
FY11	25,092	25,092	24,018
FY12	636	636	5,989
<b>Total, TEC</b>	<b>226,643</b>	<b>226,643</b>	<b>226,643</b>
<b>Other Project Cost (OPC)</b>			
<b>OPC except D&amp;D</b>			
FY09	500	500	432
FY10	1,500	1,500	1,549
FY11	3,008	3,008	3,008
FY12	9,170	9,170	9,189
<b>Total, OPC except D&amp;D</b>	<b>14,178</b>	<b>14,178</b>	<b>14,178</b>
<b>D&amp;D</b>			
FY	0	0	0
<b>Total, D&amp;D</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total OPC</b>			
FY09	500	500	432
FY10	1,500	1,500	1,549
FY11	3,008	3,008	3,008

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY12	9,170	9,170	9,189
Total, OPC	14,178	14,178	14,178
<b>Total Project Cost (TPC)</b>			
FY05	22,694	22,694	19,852
FY06	17,821	17,821	11,530
FY07	35,500	35,500	14,388
FY08	30,000	30,000	45,267
FY09	58,000	58,000	52,822
FY10	38,900	38,900	54,758
FY11	28,100	28,100	27,026
FY12	9,806	9,806	15,178
Total, TPCa	240,821	240,821	240,821

## 6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
<b>Total Estimated Cost (TEC)</b>			
<b>Design (PED)</b>			
Design	53,880	NA	53,880
Mgt. Reserve	341	NA	341
Total, PED	54,221	NA	54,221
<b>Construction</b>			
Site Preparation	3,803	NA	3,803
Equipment	72,734	NA	72,734
Other Construction	72,253	NA	72,253
Mgt. Reserve	23,632	NA	23,632
Total, Construction	172,422	NA	172,422
Total, TEC	226,643	NA	226,643
Mgt. Reserve, TEC	23,973	NA	23,973
<b>Other Project Cost (OPC)</b>			
<b>OPC except D&amp;D</b>			
Conceptual Planning	NA	NA	NA
Conceptual Design	NA	NA	NA

a The costs of facility operations and facility shutdown (\$120,028,000) are not included here; they are reported in Section 8 – Related Operations and Maintenance Funding Requirements. Also, DOE project contingency (\$23,972,000) is not included in this estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Start-Up	7,909	NA	7,909
Mgt. Reserve	6,269	NA	6,269
Total, OPC except D&D	14,178	NA	14,178
D&D			
D&D	NA	NA	NA
Mgt. Reserve	NA	NA	NA
Total, D&D	NA	NA	NA
Total, OPC			
Mgt. Reserve, OPC	14,178	NA	14,178
	6,269	NA	6,269
Total, TPC			
Total, Mgt. Reserve	240,821	NA	240,821
	30,242	NA	30,242

## 7. Schedule of Project Costs

For schedule of project costs, see Section 5, "Financial Schedule."

## 8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4Q FY12
Expected Useful Life (number of years)	8 yrs
Expected Future Start of D&D of this capital asset (fiscal quarter)	TBD

### (Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Total Operations & Maintenance	See footnote 4	N/A	120,028	120,051

a Annual O&M (for down blending operations and facility shutdown) as follows: FY12 \$23,494,000; FY13 \$45,000,000; FY14 \$44,600,000; FY15 \$6,934,000.

## 9. Required D&D Information

Area	Square Feet
Area of new construction	NA
Area of existing facility(s) being replaced	NA
Area of additional D&D space to meet the “one-for-one” requirement	NA

The existing facility is being converted to carry out this project’s mission. The facility will be demolished under a separate project upon completion of the Uranium-233 Downblending and Disposition Project.

## 10. Acquisition Approach

The DOE Oak Ridge Office is responsible for implementation of the  $^{233}\text{U}$  project (including selection of principal contractor) and approval of specified procurement actions. Project deliverables are performed under a negotiated contract which was awarded on the basis of competitive bidding. A dedicated Federal Director at the Oak Ridge Office oversees the efforts of the selected contractor, Isotek Systems, LLC. In addition, an Integrated Project Team, including members and support from Headquarters and potential receiver sites, has been established. An updated Acquisition Strategy for this project was approved by the Acquisition Executive on November 3, 2006.

## Paducah

### Funding by Site

(dollars in thousands)

FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010	
Paducah Gaseous Diffusion Plant	148,211	161,751	78,800	136,667
Total, Paducah	148,211	161,751	78,800	136,667

### Site Overview

For approximately 50 years, the Paducah Gaseous Diffusion Plant in Paducah, Kentucky supported the Federal Government and commercial nuclear power missions. Decades of nuclear energy and national security missions left radioactive and chemical contamination. The mission of the site is transitioning from primarily enrichment operations to shared missions with environmental cleanup, waste management, depleted uranium conversion, deactivation and decommissioning, and long-term stewardship.

The original mission at the Paducah Gaseous Diffusion Plant was to produce low-assay enriched uranium for use as commercial nuclear reactor fuel. In 1993, uranium enrichment operations were turned over to the United States Enrichment Corporation in accordance with the Energy Policy Act of 1992. Under the United States Enrichment Corporation, production of enriched uranium for use in the United States and abroad continues today. The United States Enrichment Corporation operates the enrichment program; however, the Department owns the physical plant and is responsible for the environmental remediation. The United States Enrichment Corporation is responsible for the operation and maintenance of all primary process and auxiliary facilities at Paducah.

It is assumed that the United States Enrichment Corporation will continue commercial gaseous diffusion operations beyond the date when the new centrifuge facility at Portsmouth becomes operational. DOE continues to be responsible for management of the site, administration of the lease with the United States Enrichment Corporation, environmental remediation, and legacy waste/materials management.

#### Depleted Uranium Hexafluoride Conversion Facilities

Since the 1950s, the depleted uranium hexafluoride produced during enrichment operations at the Portsmouth and Paducah Gaseous Diffusion Plants (and the East Tennessee Technology Park in Tennessee) has been stored in large steel cylinders at the sites. DOE is currently responsible for the management of approximately 700,000 metric tons of depleted uranium hexafluoride stored in about 60,000 cylinders (~440,748 metric tons at Paducah). DOE awarded a contract and started construction in July 2004 for a depleted uranium hexafluoride conversion facility at Paducah to convert the depleted uranium hexafluoride to a more stable form for reuse or disposal. This facility will operate over the next two decades. DOE is ultimately responsible for the deactivation and decommissioning of the facilities.

The Department is committed to the cleanup of the Paducah Gaseous Diffusion Plant to industrial standards. Limited land areas will require institutional controls following remediation. Excess buildings at Paducah that are not being leased are being assessed for reuse by the Department and will be scheduled for demolition if they are not suitable for reuse. Equipment and material removed from buildings will be decontaminated, reused, or recycled to the extent practicable.

### **Site Description**

The Paducah site, comprising approximately 3,400 acres, is located in rural western Kentucky, 15 miles west of Paducah, Kentucky, near the confluence of the Ohio and Mississippi rivers.

### **Site Cleanup Strategy/Scope of Cleanup**

Historic operations at Paducah produced contaminated areas onsite and beyond site boundaries. Principal contaminants of concern include uranium (from enrichment processing), technetium, trichloroethylene, and polychlorinated biphenyls. Through spills and disposal operations, these contaminants have entered groundwater aquifers, formed plumes, and in some cases, have migrated offsite and contaminated private drinking water wells. Since its inception, the Paducah site has generated, stored, and disposed of hazardous, nonhazardous, radioactive, polychlorinated biphenyls, transuranic, and mixed waste, as well as large quantities of scrap metal.

### **Site Completion (End State)**

The overall environmental cleanup strategy at Paducah is based on taking near-term actions to control or eliminate ongoing sources of contamination, along with continued investigation of other potential sources. DOE's plan includes completion milestones for groundwater sources in 2010, soils in 2015, surface water in 2017, and burial grounds in 2019.

In addition, Paducah completed construction of the depleted uranium hexafluoride conversion facility. Including the known workscope for decontamination and decommissioning of the main gaseous diffusion plant facilities, the lifecycle planning estimate is 2040.

### **Regulatory Framework**

In May 1994, the Paducah site was placed on the Environmental Protection Agency's National Priorities List under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. The 1997 Federal Facility Agreement among the Department, the Commonwealth of Kentucky, and the Environmental Protection Agency - Region IV established the framework for cleanup at Paducah, instituted enforceable milestones, and coordinated site-specific cleanup requirements under the Comprehensive Environmental Response, Compensation, and Liability Act and the Resource Conservation and Recovery Act. The Department also achieved resolution of long-standing regulatory disputes through the Agreed Order with the Commonwealth of Kentucky.

The Environmental Protection Agency (EPA) and the Kentucky Department for Environmental Protection are the principal regulatory agencies for Paducah's waste management operations. Requirements applicable to Paducah's waste management activities include provisions of the Resource Conservation and Recovery Act - Part B, Hazardous Waste Management Permits; the Toxic Substances Control Act (TSCA) regulations for polychlorinated biphenyl wastes, DOE Order 435.1 - Radioactive

Waste Management, Kentucky surface water discharge regulations, and Kentucky solid and hazardous waste regulations.

Agreements related to the implementation of these requirements include the Site Treatment Plan and associated Agreed Order and the Toxic Substance Control Act - Federal Facility Compliance Agreement for use, cleanup, storage, treatment, and disposal of polychlorinated biphenyls. Discharges to surface water are regulated under a Kentucky Pollutant Discharge Elimination System permit.

Future use of the site will support ongoing and anticipated DOE missions, United States Enrichment Corporation enrichment operations, and other current users. Power distribution functions and facility utilization by the private sector at site is not expected to substantially change. Support has been expressed for various forms of passive recreational and public use that are compatible with anticipated industrial and conservation uses of the reservation.

### **Critical Site Uncertainties and Assumptions**

The Department does not have a clear regulatory agreement on polychlorinated biphenyl cleanup levels. Therefore this remains a long-term, end-state issue.

The final Comprehensive Environmental Response, Compensation and Liability Act action for the Paducah environmental remedial activities is subject to the ongoing Comprehensive Environmental Response, Compensation and Liability Act process. Until the Record of Decision is agreed upon, a high degree of project uncertainty exists in the project risk management plan.

The assumption that no more than three burial ground operable units will require excavation, and that the other burial grounds operable units will be capped and managed in situ, is a significant uncertainty associated with the project lifecycle cost estimate. In addition, the current planning assumptions do not include long-term ground water plume remediation to drinking water standards.

Future decontamination and decommissioning costs will be subject to several significant uncertainties including the extent of final environmental contamination, regulatory frameworks (Resource Conservation and Recovery Act vs. Comprehensive Environmental Response, Compensation and Liability Act cleanup levels), disposal options, and stakeholder/regulator acceptance. KPDES effluent limits on radionuclides go into effect in November of 2009. Kentucky is in the process of amending its regulations to change the effluent limits for radionuclides. If the regulations are amended as anticipated, the radionuclide limits should drop-out of the KPDES permit.

### **Interdependencies**

Paducah is dependent upon the Toxic Substance Control Act Incinerator at the East Tennessee Technology Park site in Oak Ridge, Tennessee, for Toxic Substance Control Act waste treatment, and the Nevada Test Site waste facility in Nevada for low level waste disposal.

### **Contract Synopsis**

The Portsmouth/Paducah Project Office awarded remediation and infrastructure contracts for each site. This strategy provided the optimum potential for achieving accelerated performance of the remediation and infrastructure efforts. The infrastructure contract provides information technology, human

resources, mail, site security planning, road and ground maintenance, janitorial, and real and personal property inventory and disposition services. The infrastructure contractor at the Paducah site is Swift & Staley Mechanical Contractors, Inc. The contract is an award-fee contract expiring in March 2010. The scope of the remediation contract at the Paducah site includes cleanup and closure of all inactive facilities not leased to the United States Enrichment Corporation, cleanup of soils, groundwater, landfills, storage yards, and the disposal of legacy waste (excluding the United States Enrichment Corporation leased units). The remediation contractor at Paducah is Paducah Remediation Services, LLC. The contract is a cost-plus-incentive-fee contract expiring in September 2009, contract rebid activities are ongoing. Deactivation and decommissioning of the diffusion plant process facilities is not part of the remediation contract.

### Cleanup Benefits

The intent of the Federal Government is to manage the site and its missions in an integrated manner. DOE retains overall responsibility for the site. Significant portions of the site are managed by the United States Enrichment Corporation under the provisions of a lease with DOE. Achievement of DOE responsibilities in environmental cleanup and legacy material disposition will reduce environmental health and safety risks.

Direct maintenance and repair at the Paducah Gaseous Diffusion Plant is estimated to be \$3,697,000.

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Non-Defense Environmental Cleanup			
Gaseous Diffusion Plants			
Paducah Gaseous Diffusion Plant			
PA-0011 / NM Stabilization and Disposition-Paducah Uranium Facilities Management	11	1,767	257
PA-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	32,586	43,538	48,909
Subtotal, Paducah Gaseous Diffusion Plant	32,597	45,305	49,166
Uranium Enrichment Decontamination and Decommissioning Fund			
D&D Activities			
Paducah Gaseous Diffusion Plant			
PA-0013 / Solid Waste Stabilization and Disposition	16,305	13,218	9,283
PA-0040 / Nuclear Facility D&D-Paducah	95,620	99,045	74,160
PA-0102 / Paducah Contract/Post-Closure Liabilities/Administration (D&D Fund)	1,206	1,536	1,529
PA-0103 / Paducah Community and Regulatory Support (D&D Fund)	2,483	2,647	2,529
Subtotal, Paducah Gaseous Diffusion Plant	115,614	116,446	87,501
Total, Paducah	148,211	161,751	136,667



### Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
<b>Paducah</b>					
Geographic Sites Eliminated (number of sites)	0	0	0	1	0%
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	418,960	0%
Enriched Uranium packaged for disposition (Number of Containers)	0	0	0	182	0%
Industrial Facility Completions (Number of Facilities)	12	17	17	172	9.9%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	15,642	20,006	20,752	27,464	75.6%
Nuclear Facility Completions (Number of Facilities)	0	0	0	18	0%
Radioactive Facility Completions (Number of Facilities)	2	3	3	22	13.6%
Remediation Complete (Number of Release Sites)	94	94	94	206	45.6%

### Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**PA-0011 / NM Stabilization and Disposition-Paducah Uranium Facilities Management**

**11                      1,767                      257**

This PBS is within the Non-Defense Environmental Cleanup appropriation.

This project scope includes surveillance and maintenance of inactive facilities, management of legacy polychlorinated biphenyl remediation activities, and support to the Nuclear Regulatory Commission for the five-year report to Congress on environmental, safety, and health.

Surveillance and maintenance of inactive facilities prevents significant deterioration of the buildings and/or support systems until the decommissioning, decontamination, and demolition processes are complete. It also avoids exposure to unsafe conditions for personnel requiring access for compliance inspections, housekeeping assessments, corrective maintenance, fire protection, security, and/or emergency response. Of the fifteen inactive facilities that were originally part of this PBS, only four are receiving surveillance and maintenance support. The other facilities have been decontaminated and decommissioned, and the remaining four are scheduled for completion by FY 2010.

This PBS scope also includes management of polychlorinated biphenyl remediation activities. Gaskets

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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impregnated with polychlorinated biphenyl were used in the ventilation duct systems of the Paducah Gaseous Diffusion Plant, and operations have resulted in leakage of polychlorinated biphenyl contaminated lubrication oils used in motor and compressor bearings. The polychlorinated biphenyl project includes activities related to maintaining compliance with the Toxic Substances Control Act (40 CFR 761) and the Uranium Enrichment Toxic Substances Control Act Federal Facilities Compliance Agreement of 1992, as well as DOE Orders and other applicable requirements. Polychlorinated biphenyl activities include inspections of transformers, checks of spill sites, inspection, repair, and maintenance of troughs and collection systems, cleanup of spills, sampling and analysis of spills and equipment, and compliance reporting.

Currently, approximately 2,681 polychlorinated biphenyl spills have been cleaned up.

In FY 2010, the following activities are planned:

- Conduct safe and compliant surveillance and maintenance of inactive facilities.
- Inspect and maintain polychlorinated biphenyl collection and containment systems.
- Conduct cleanup, sampling and disposal of polychlorinated biphenyl spills.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Enriched Uranium packaged for disposition (Number of Containers)	0	0	0	182	0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Conduct surveillance and maintenance of up to fifteen inactive facilities. (September 2009/September 2010)</li> <li>▪ Continue management of polychlorinated biphenyl collection and containment system (FY 2008)</li> <li>▪ Inspect and maintain the polychlorinated biphenyl collection and containment system. (September 2009/September 2010)</li> </ul>					

**PA-0011X / NM Stabilization and Disposition-  
Depleted Uranium Hexafluoride Conversion**

**32,586                      43,538                      48,909**

This PBS is within the Non-Defense Environmental Cleanup appropriation.

Approximately 700,000 metric tons of depleted uranium hexafluoride are stored in 60,000 cylinders at the Paducah and Portsmouth Gaseous Diffusion Plant sites. This PBS scope includes design, permitting, building, and operating a depleted uranium hexafluoride conversion facility at the Portsmouth Gaseous Diffusion Plant site. The facility will convert depleted uranium hexafluoride into a more stable form a depleted uranium oxide suitable for reuse or disposition. The depleted uranium oxide will be sent to a

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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disposal facility, and the hydrogen fluoride co-products will be sold on the commercial market. The empty cylinders will be sent to disposal or reused.

This project also includes surveillance and maintenance of all cylinders during conversion of the existing stockpile, which will take about 25 years. The conversion facility contractor assumed responsibility for maintenance and surveillance of all depleted uranium hexafluoride cylinders in FY 2005.

Construction of the facility was completed in December 2008, two months early. Testing and commissioning activities continue into FY 2011, with hot operations expected to commence in second quarter FY 2011.

In FY 2010, the following activities are planned:

- Complete the Operational Readiness Review and initiate operations of conversion facility.
- Conduct cylinder surveillance and maintenance, to keep existing material in a safe, stable condition.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	418,960	0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
▪ Completed major equipment installation. (N/A)					
▪ Initiate beneficial occupancy of the conversion building (N/A)					
▪ Complete systems testing (September 2009)					
▪ Complete integrated system testing (September 2010)					

**PA-0013 / Solid Waste Stabilization and Disposition**                      **16,305**                      **13,218**                      **9,283**

This PBS is within the Uranium Enrichment Decontamination and Decommissioning Fund appropriation.

This project scope includes activities related to maintaining compliance with the Resource Conservation and Recovery Act Permit, Site Treatment Plan, and the C-746-U Contained Landfill Permit. This project scope includes storage, treatment, and disposition of all legacy waste generated by activities at the Paducah Gaseous Diffusion Plant prior to 1993 and all newly-generated waste from waste storage, treatment, and disposal operations. Although the United States Enrichment Corporation handles its own waste treatment and disposal through DOE's lease agreement with them, DOE remains responsible for some waste streams which are generated by the United States Enrichment Corporation's operation of the plant. DOE handles this waste as newly-generated waste. The primary waste streams are low-level,

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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mixed low-level, hazardous, transuranic, polychlorinated biphenyl, and sanitary/industrial/construction wastes. DOE plans to disposition all the remaining legacy waste by the end of FY 2009. Disposition of waste will reduce risk and storage costs. Disposition of the low-level/mixed low-level legacy waste is critical to accelerating site cleanup. The Transuranic and Mixed Transuranic wastes are scheduled for disposition by 2016. This project scope also includes the operation of the onsite sanitary landfill (C-746-U) and its auxiliary buildings.

Currently, approximately 15,640m<sup>3</sup> (cumulative) of low-level/mixed low-level legacy waste has been disposed of either on- or off-site. Most of the remaining legacy waste was sorted, repackaged and characterized prior to on- or off-site treatment and/or disposal at the C-746 U Landfill.

In FY 2010, the following activities are planned:

- Continue landfill operations and maintenance.
- Disposition newly generated waste.
- Conduct surveillance and maintenance of the waste storage buildings.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	15,642	20,006	20,752	27,464	76.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Complete ongoing characterization, treatment, and disposal of all legacy mixed low-level waste (FY 2008)</li> <li>▪ Dispose of 2,960 cubic meters of newly-generated waste and legacy mixed waste (FY 2008)</li> <li>▪ Expand the on-site landfill, resulting in five cells for non-hazardous waste disposal (September 2009)</li> <li>▪ Dispose of 1,669 cubic meters of newly-generated waste and legacy mixed waste (September 2009)</li> <li>▪ Dispose of 741 cubic meters of newly-generated waste (September 2010)</li> <li>▪ Operate and maintain the C-746-U landfill and various on-site waste storage facilities (September 2010)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**PA-0040 / Nuclear Facility D&D-Paducah**

**95,620**

**99,045**

**74,160**

This PBS is within the Uranium Enrichment Decontamination and Decommissioning Fund appropriation.

This project scope includes environmental cleanup and risk reduction through focused response actions and surveillance and maintenance activities, including decontamination and decommissioning of inactive or excess facilities at the Paducah Gaseous Diffusion Plant. Decontamination and decommissioning of the Paducah Gaseous Diffusion Plant itself is not yet included in the project scope, but initial planning is to begin for the return (from lease by the United States Enrichment Corporation) and transition to DOE for decontamination and decommissioning.

This plant is an active uranium enrichment facility surrounded by a wildlife management area. Past environmental operations created on- and off-site groundwater contamination which migrated to residential water wells and contaminated surface water. Past operations also contaminated sediments and soil with both radioactive and chemical contaminants. The current and future land uses at Paducah Gaseous Diffusion Plant are assumed to be industrial areas located primarily inside or immediately adjacent to the security fence, and recreational areas located outside the security fence. Some adjacent private property includes residential areas. The Commonwealth of Kentucky and the DOE will work to complete remediation activities at the plant in a manner that is safe, protects human health and the environment, and complies with state and federal environmental laws. Initiatives for cleanup and risk reduction include removal of groundwater contamination sources contributing to off-site contamination, decontamination and decommissioning of inactive facilities on-site; investigation and necessary mitigating actions at the on-site burial grounds, and characterization and removal of contaminated soils. The basic strategy includes implementation of a phased and sequenced approach.

This project scope includes remediation of C-400, the largest single source of groundwater contamination; decontamination and decommissioning of inactive soil facilities; surface water hot-spot removal actions; soils remediation; and groundwater dissolve phase plume actions. There are 12 burial grounds containing a variety of radioactive and hazardous wastes, 160 DOE Material Storage Areas that must be characterized and dispositioned, and several contaminated surplus facilities which must be decontaminated and decommissioned.

Currently, progress includes approval of the Remedial Investigation Work Plan and completed remedial investigation field work at the burial ground operable unit. Evaluation of the data is ongoing. An assessment was completed which determined that C-404 was not the source of increased levels of trichloroethylene. A well evaluation plan at C-404 has also been completed. For the waste disposal cell, draft waste acceptance criteria has been submitted to DOE, as well as a sitting document and a cost estimate of various alternatives and proposed disposal sites. The contractor has also proposed a regulatory strategy for moving forward.

The United States Enrichment Corporation continues to provide support for Government Furnished Services & Items. The infrastructure contractor continues to provide services such as road repair,

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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mowing, building repairs, IT, real property and fleet management, janitorial services, records management, and other services as necessary within the scope of the contract. For DOE Material Storage Areas, progress includes completion of 64 Final Inventory and Characterization Reports, 42 Closure certifications, characterization of 807,000 cubic feet of material, and disposal of 568,000 cubic feet of material.

In FY 2010, the following activities are planned:

- Conduct emergency management and infrastructure surveillance and maintenance.
- Transition expenses related to the remediation contract.
- Conduct pump and treat operations and environmental surveillance, monitoring, and reporting.
- Continue TCE source removal of C-400 groundwater remediation, and Dissolve Phase Plume actions.
- Completion of the remediation of the surface water operable units and three inactive soils facilities.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Nuclear Facility Completions (Number of Facilities)	0	0	0	18	0%
Radioactive Facility Completions (Number of Facilities)	2	3	3	22	14.0%
Industrial Facility Completions (Number of Facilities)	12	17	17	172	10.0%
Remediation Complete (Number of Release Sites)	93	93	93	205	45.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Complete Remedial Investigation Field Work including waste disposal for Burial Ground Operable Unit. (FY 2008)</li> <li>▪ Complete decontamination and decommissioning of the C-746-A West End Smelter and C-405 Incinerator (FY 2008)</li> <li>▪ Continue decontamination and decommissioning of the C-410 Complex (FY 2008)</li> <li>▪ Continue remedial action activities for the Southwest plume/sources and removal action activities for the surface water (onsite) project (FY 2008)</li> <li>▪ Continue remedial action for full-scale deployment of dense non-aqueous phase liquids source treatment associated with groundwater contamination at C-400 (FY 2008)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Complete Phase 1 operations at C-400 groundwater source term removal (September 2009)
- Complete construction of Outfall 11 sediment basin (September 2009)
- Begin field work for Surface Water Operable Unit (September 2009)
- Meet Agreed Order requirement to characterize all materials within the DOE Materials Storage Areas (DMSA) and dispose of all wastes from DMSAs (September 2009)
- Initiate and complete construction/drilling for Phase 2 of C-400 groundwater remediation (September 2010)
- Begin operations for Phase 2 of C-400 groundwater remediation (September 2010)

**PA-0102 / Paducah Contract/Post-Closure Liabilities/Administration (D&D Fund)**

**1,206                      1,536                      1,529**

This PBS is within the Uranium Enrichment Decontamination and Decommissioning Fund.

This project scope supports a contract liability to provide for record searches performed for DOE and the Department of Justice investigations/studies, pending litigation, Freedom of Information Act requests, and information requests from both state and Federal regulatory and elected officials.

In FY 2010, the following activities are planned:

- Provide support to DOE and Department of Justice for all investigations and litigation.
- Support the audit of the Uranium Enrichment D&D Fund under the Energy Policy Act of 1992.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Provide support to the Department and Department of Justice for all investigations and litigations (September 2010)</li> </ul>					

**PA-0103 / Paducah Community and Regulatory Support (D&D Fund)**

**2,483                      2,647                      2,529**

This PBS is within the Uranium Enrichment Decontamination and Decommissioning Fund.

This project scope includes an Agreement-in-Principle grant to the Commonwealth of Kentucky to provide independent oversight of the environmental programs at the Paducah Gaseous Diffusion Plant. Kentucky uses the grant funds to provide independent surface water, groundwater, air and other

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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environmental monitoring at Paducah. These funds are not used by the state to provide regulatory oversight. This project scope also supports the Federal Facility Agreement regulatory grant with the Commonwealth of Kentucky, which provides for the administrative support necessary to oversee the requirements of the interagency agreement under the Comprehensive Environmental Response, Compensation, and Liability Act. This project scope also supports the activities performed by the Paducah Citizens Advisory Board.

In FY 2010, the following activities are planned:

- Continue support to the Citizens Advisory Board to assist in the public participation activities required by the Comprehensive Environmental Response, Compensation, and Liability Act.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>Provide financial support to the Commonwealth of Kentucky as required by the Agreement-in-Principle (FY 2008/September 2009/September 2010)</li> <li>Provide financial support to the State for all Federal Facility Agreement administrative activities, including review/approval of Comprehensive Environmental Response, Compensation, and Liability Act documents (FY 2008/September 2009/September 2010)</li> </ul>					

**Total, Paducah**

**148,211**

**161,751**

**136,667**

**Explanation of Funding Changes**

FY 2010 vs. FY 2009 (\$000)
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**Non-Defense Environmental Cleanup**

**Gaseous Diffusion Plants**

**Paducah Gaseous Diffusion Plant**

**PA-0011 / NM Stabilization and Disposition-Paducah Uranium Facilities Management**

- Decrease reflects a one-time reconciliation of utilizing carryover so that budget authority can be transferred to higher priority projects at the Paducah site.

-1,510



FY 2010 vs. FY 2009 (\$000)
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**PA-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion**

- Increase supports initiation of DUF6 operations at approximately 10,000 metric tons of material. 5,371

**Uranium Enrichment Decontamination and Decommissioning Fund  
D&D Activities**

**PA-0013 / Solid Waste Stabilization and Disposition**

- Decrease reflects completion of the legacy waste disposition in FY 2010 and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. -3,935

**PA-0040 / Nuclear Facility D&D-Paducah**

- Decrease reflects completion of DOE Material Storage Areas, completion of decontamination and decommissioning of inactive facilities, and completion of Phase I of C-400 groundwater remediation and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. -24,885

**PA-0102 / Paducah Contract/Post-Closure Liabilities/Administration (D&D Fund)**

- No significant change. -7

**PA-0103 / Paducah Community and Regulatory Support (D&D Fund)**

- No significant change. -118

**Total, Paducah** -25,084



## Portsmouth

### Funding by Site

(dollars in thousands)

FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010
Portsmouth Gaseous Diffusion Plant	224,260	236,215	302,154
Total, Portsmouth	224,260	236,215	302,154

### Site Overview

For approximately 50 years, the Portsmouth Gaseous Diffusion Plant in Portsmouth, Ohio, supported Federal Government and commercial nuclear power missions. Decades of nuclear energy and national security missions left a legacy of radioactive and chemical contamination. The mission of the site has transitioned from enrichment operations to environmental cleanup, waste management, depleted uranium conversion, deactivation and decommissioning, re-industrialization, and long-term stewardship.

From 1991 until production ceased in 2001, the Portsmouth Gaseous Diffusion Plant produced only low-enriched uranium for commercial power plants. In 1993, uranium enrichment operations were turned over to the United States Enrichment Corporation in accordance with the Energy Policy Act of 1992. The United States Enrichment Corporation was privatized in 1998, and corporate business decisions were made in 2000 to terminate uranium enrichment at Portsmouth and to keep the Paducah facility operating. Some of the facilities were no longer required by the United States Enrichment Corporation and subsequently returned to DOE. The Department maintained the Portsmouth Gaseous Diffusion Plant facilities in cold standby from 2001 to 2005. In 2005, the facilities were transitioned to cold shutdown and decontamination and decommissioning of the Portsmouth Gaseous Diffusion Plant was initiated. In FY 2007, the Department formally established the approach to implement decontamination, decommissioning and cleanup of the site. In FY 2009, procurement began in expectation of awarding the decontamination and decommissioning contract in FY 2010.

The United States Enrichment Corporation selected the Portsmouth site in 2004 as the location for deployment of a commercial centrifuge plant by the end of the decade. As a result, the United States Enrichment Corporation identified a number of buildings and areas that were needed for the centrifuge plant. The Department and the United States Enrichment Corporation agreed to a number of facility transfers to the United States Enrichment Corporation for centrifuge plans and facility transfers for office space to the Department to replace those transferred to the United States Enrichment Corporation.

The Department is committed to clean up the Portsmouth site. The Department's decontamination and decommissioning cleanup responsibilities for the Gaseous Diffusion Plant facilities were specified in the Energy Policy Act of 1992. The Department is now working with the regulators and the local community to finalize the cleanup goals for the site.

### Depleted Uranium Hexafluoride Conversion Facilities

Since the 1950s, the depleted uranium hexafluoride produced during enrichment operations at the Portsmouth and Paducah Gaseous Diffusion Plants (and the East Tennessee Technology Park in Tennessee) has been stored in large steel cylinders at the sites. DOE is responsible for the management of approximately 700,000 metric tons of depleted uranium hexafluoride stored in about 60,000 cylinders (~250,046 metric tons at Portsmouth). In July 2004, DOE awarded a contract for construction of a depleted uranium hexafluoride conversion facility at Portsmouth to convert the depleted uranium to a more stable form for reuse or disposal. Construction of the Portsmouth facility was completed in FY 2008, and operations are scheduled to begin in FY 2011. This facility will operate over the next two decades, and DOE is ultimately responsible for the decontamination and decommissioning of the facility.

### Technetium-99 Cleanup

A significant portion of the Department's surplus (excess to defense requirements) uranium inventory is contaminated with technetium-99, eliminating the value of this asset in commercial markets. The only operational facility for removing technetium-99 contamination from uranium feed in the United States is leased and operated by the United States Enrichment Corporation under their Nuclear Regulatory Commission operating certificate at Portsmouth, with the resultant product being further processed at the Paducah Gaseous Diffusion Plant. The United States Enrichment Corporation processes the contaminated uranium for the Department. The Department has funded this work through a barter transfer of uranium to United States Enrichment Corporation, appropriated funding, and from the proceeds of DOE uranium sales.

All contaminated uranium from the original material transferred to the United States Enrichment Corporation from DOE was cleaned up, exchanged, or replaced as of November 2006. In April 2007, United States Enrichment Corporation released DOE from all liabilities associated with the original material, and 3,493 metric tons of DOE's uranium inventory remained to be processed to American Society for Testing and Materials standards. This was completed in early FY 2009. In addition, residual contaminated material separate from the original inventory was identified, and USEC will complete cleanup of this material by the end of FY 2009.

### **Site Description**

The Portsmouth site is located approximately 75 miles south of Columbus, Ohio in the foothills of the Appalachian Mountains.

### **Site Cleanup Strategy/Scope of Cleanup**

The Portsmouth site's use of recycled reactor fuel (or reactor returns) as feed material in the 1950's introduced fission products such as technetium, cesium, and strontium into the system, as well as small quantities of transuranics, primarily plutonium and neptunium. Spills and waste disposal during past operations also resulted in contamination from various industrial solvents (e.g. trichloroethylene), uranium, technetium, and metals. Groundwater contamination is limited to a shallow aquifer that is not used as a drinking water source. A layer of bedrock only 30 feet beneath the surface has helped to contain the groundwater plumes. Although all direct discharges from DOE operations have been

monitored through a National Pollutant Discharge Elimination System permit since the early years of plant operation, minor levels of contaminants have been detected in nearby stream sediments.

DOE has focused environmental cleanup on high-risk areas first. DOE has completed all initial assessments required under the Resource Conservation and Recovery Act and has remediated several hazardous and solid waste sites. Completion of decontamination and decommissioning activities will be completed under the Comprehensive Environmental Response, Compensation, and Liability Act. DOE is currently working with state and federal regulators as the site transitions to decontamination and decommissioning, including remedial action completion of the formally deferred units as they are de-leased and returned to the Department from the United States Enrichment Corporation. Facility decontamination and decommissioning is anticipated to be cleaned up in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act and environmental media (soil and groundwater) remediated in accordance with the Resource Conservation and Recovery Act Consent Decree with the Ohio Environmental Protection Agency and Consent Order with the United States Environmental Protection Agency. In addition, DOE will process and disposition the depleted uranium hexafluoride cylinders to a more stable form, for reuse or disposal.

The United States Enrichment Corporation-leased facilities are presently being deactivated to minimize future surveillance and maintenance costs. The deactivation is conducted to address the highest risk conditions in the facilities, including the removal of large uranium deposits, and to stabilize the facilities for future decontamination and decommissioning. The current strategy is to implement full-scale decontamination and decommissioning upon award of a new contract in FY 2010 and to complete the decontamination and decommissioning activities in a timely manner.

### **Site Completion (End State)**

With the decision to proceed with the Portsmouth decontamination and decommissioning project, the current end state completion for environmental restoration coincides with that of decontamination and decommissioning and completion of the depleted uranium hexafluoride conversion operations. The primary objectives of the near-term cleanup program during this period will be to implement the approved remediation at the X-701B Area (land sites and groundwater), to continue operations of groundwater treatment facilities in support of installed remedies, and remove all currently stored legacy low-level and mixed waste streams contaminated with hazardous or toxic chemicals. Portsmouth will also decontaminate and decommission inactive ancillary facilities and complete disposition of currently stored highly enriched uranium. In addition, Portsmouth will operate the depleted uranium hexafluoride conversion facility.

The DOE obligation for decontamination and decommissioning of the Portsmouth Gaseous Diffusion Plant is a requirement of the Energy Policy Act of 1992. In addition to the decontamination and decommissioning of the gaseous diffusion plant (GDP) being a legal mandate, it is also an effective method to reduce risks and limit long-term costs associated with disposition of excess facilities and systems at the site. The approval of the currently proposed Critical Decision-1, *Approve Alternative Selection and Cost Range*, approved EM to prepare for an efficient and strategically planned D&D project.

Current plans include the transfer of leased gaseous diffusion plant facilities to the Department for surveillance, maintenance, and deactivation in preparation for decontamination and decommissioning.

DOE anticipates the depleted uranium hexafluoride conversion operations to continue for approximately twenty years (including decontamination and decommissioning of the facility).

### **Regulatory Framework**

Oversight of cleanup activities at the Portsmouth site is the responsibility of the Environmental Protection Agency - Region V and the Ohio Environmental Protection Agency. The program is being conducted in accordance with a State of Ohio Consent Decree and an Environmental Protection Agency Administrative Consent Order. The 1989 Administrative Consent Order was amended in 1997 to streamline environmental oversight by identifying the Ohio Environmental Protection Agency as the lead agency responsible for day-to-day oversight.

The primary role of the Environmental Protection Agency is to concur on remedy decisions for final actions. The Portsmouth site is not on the Comprehensive Environmental Response, Compensation and Liability Act's National Priorities List, but undertakes cleanup in compliance with both Resource Conservation and Recovery Act and Comprehensive Environmental Response, Compensation and Liability Act requirements. To facilitate site investigations and final cleanup actions, the Portsmouth site was divided into four quadrants based on groundwater flow and surface water runoff. Each quadrant contains multiple solid waste management units. The regulatory framework for final decontamination and decommissioning is currently being discussed with regulators and is anticipated to be an integration of decontamination and decommissioning under the Comprehensive Environmental Response, Compensation and Liability Act with ongoing environmental media cleanup activities under the Resource Conservation and Recovery Act (Consent order and Consent Decree). Discussions with the state and federal regulators are currently ongoing.

### **Critical Site Uncertainties and Assumptions**

It is assumed that DOE will support the need for the United States Enrichment Corporation's future centrifuge plant construction, operation, and use of site facilities for uranium enrichment activities. It is also assumed that the United States Enrichment Corporation will support the timely return of leased gaseous diffusion plant facilities to the Department for decontamination and decommissioning.

Future decontamination and decommissioning costs will be dependent upon the extent of final environmental contamination, regulatory frameworks (Resource Conservation and Recovery Act vs. Comprehensive Environmental Response, Compensation, and Liability Act cleanup levels), disposal options for the decontamination and decommissioning waste, and stakeholder/regulator acceptance.

### **Interdependencies**

Portsmouth is dependent upon the Nevada Test Site waste facility and other commercial waste disposal sites for low-level waste disposal.

The Portsmouth decontamination and decommissioning plan is incorporating lessons learned from the ongoing East Tennessee Technology Park decontamination and decommissioning project and the completed Fernald cleanup project.

## Contract Synopsis

The Portsmouth/Paducah Project Office awarded remediation and infrastructure contracts in 2005 at the Portsmouth site. The contracts provide incentives for improving remediation and infrastructure activities. The infrastructure contracts provide information technology, human resources, mail, site security planning, road and ground maintenance, janitorial, and real and personal property inventory and disposition services. The infrastructure contract was awarded to Theta Pro2Serve Management Company, LLC at the Portsmouth site. The infrastructure contract is a cost-plus-award-fee contract and expires in March 2010. The remediation contract scope includes cleanup and closure of all inactive facilities not leased to the United States Enrichment Corporation, cleanup of soil, groundwater, landfills, and storage yards, and disposal of legacy waste (excluding leased units). The remediation contract was awarded to LATA/Parallax Portsmouth, LLC at the Portsmouth. The remediation contract is a cost-plus-incentive-fee contract and expires September 2009. Extensions for both contracts are expected pending award of the new decontamination and decommissioning contract since subsequent activities are assumed to be part of the decontamination and decommissioning contract.

The main process buildings are currently leased by the United States Enrichment Corporation who performs surveillance and maintenance under a contract with the Department. After the formal decision was made to proceed with decontamination and decommissioning of the main gaseous diffusion plant buildings, DOE began developing its acquisition strategy for the decontamination and decommissioning work scope. DOE is scheduled to issue the Request for Proposal in FY 2009 and award the contract in FY 2010. DOE is pursuing a strategy to significantly accelerate the decontamination and decommissioning activities and achieve completion in an expeditious manner.

## Cleanup Benefits

The intent of the Federal government is to manage the site and its missions in an integrated manner. DOE retains overall responsibility for the site. Significant portions of the site footprint are managed by the United States Enrichment Corporation under the provisions of a lease with DOE. Achievement of DOE responsibilities for environmental cleanup and legacy material disposition will allow for and reduced environmental health and safety risks.

Direct maintenance and repair at the Portsmouth Project Office is estimated to be \$5,356,000.

## Funding Schedule by Activity

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Non-Defense Environmental Cleanup			
Gaseous Diffusion Plants			
Portsmouth Gaseous Diffusion Plant			
PO-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	19,700	27,427	46,332
PO-0011 / NM Stabilization and Disposition-Portsmouth			
Other Uranium Facilities Management	11	8,564	8,946
Subtotal, Portsmouth Gaseous Diffusion Plant	19,711	35,991	55,278

Uranium Enrichment Decontamination and Decommissioning Fund

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
D&D Activities			
Portsmouth Gaseous Diffusion Plant			
PO-0013 / Solid Waste Stabilization and Disposition	33,999	35,000	15,797
PO-0040 / Nuclear Facility D&D-Portsmouth	169,274	164,276	229,756
PO-0103 / Portsmouth Contract/Post-Closure Liabilities/Administration (D&D Fund)	720	635	652
PO-0104 / Portsmouth Community and Regulatory Support (D&D Fund)	556	313	671
Subtotal, Portsmouth Gaseous Diffusion Plant	204,549	200,224	246,876
Total, Portsmouth	224,260	236,215	302,154

### Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
Portsmouth					
Geographic Sites Eliminated (number of sites)	0	0	0	1	0%
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	247,740	0%
Industrial Facility Completions (Number of Facilities)	7	8	8	121	6.6%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	31,907	35,016	35,016	35,016	100.0%
Nuclear Facility Completions (Number of Facilities)	0	0	0	13	0%
Radioactive Facility Completions (Number of Facilities)	7	7	7	27	25.9%
Remediation Complete (Number of Release Sites)	150	150	150	151	99.3%

### Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**PO-0011 / NM Stabilization and Disposition- Portsmouth Other Uranium Facilities Management** **11**      **8,564**      **8,946**

This PBS is within the Non-Defense Environmental Cleanup appropriation.

This project scope includes the Highly Enriched Uranium Program, surveillance and maintenance of the former Uranium Program facilities and the management of legacy polychlorinated biphenyl contamination activities. The Highly Enriched Uranium Program activities will continue until the final



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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disposition of the highly enriched uranium in FY 2009. The project scope includes interim storage and eventual processing of highly enriched uranium materials; surveillance and maintenance of 158 permanently shut-down highly enriched uranium cells in X-326, DOE non-leased facilities, two cylinder yards, and special nuclear materials; and related technical support activities. Polychlorinated biphenyl activities include inspections of transformers, checks of spill sites, inspections, repair, and maintenance of troughs and collection systems to maintain compliance with the Toxic Substances Control Act (40 CFR 761), the Uranium Enrichment Toxic Substances Control Act Federal Facilities Compliance Agreement of 1992, as well as DOE Orders and other applicable requirements. Gaskets impregnated with polychlorinated biphenyl were used in the ventilation duct systems of the Portsmouth Gaseous Diffusion Plant, and operations have resulted in leaks of polychlorinated biphenyl-contaminated lubrication oils used in motor and compressor bearings.

In FY 2010, the following activities are planned:

- Perform polychlorinated biphenyl containment/remediation activities in the former process buildings to maintain compliance with the Toxic Substances Control Act Federal Facilities Compliance Agreement.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Complete conversion and final processing of highly enriched uranium. (September 2009)</li> <li>▪ Continue disposition activities associated with approximately 2,048 large LEU cylinders. (September 2009)</li> <li>▪ Perform polychlorinated biphenyl activities in the process buildings to maintain compliance. (September 2009)</li> <li>▪ Perform polychlorinated biphenyl activities in process buildings to maintain compliance. (September 2010)</li> </ul>					

**PO-0011X / NM Stabilization and Disposition- Depleted Uranium Hexafluoride Conversion**

**19,700                      27,427                      46,332**

This PBS is within the Non-Defense Environmental Cleanup appropriation.

Approximately 700,000 metric tons of depleted uranium hexafluoride are stored in 60,000 cylinders at the Paducah and Portsmouth Gaseous Diffusion Plant sites. This PBS scope includes design, permitting, building, and operating a depleted uranium hexafluoride conversion facility at the Portsmouth Gaseous Diffusion Plant site. The facility will convert depleted uranium hexafluoride into a more stable form a depleted uranium oxide suitable for reuse or disposition. The depleted uranium oxide will be sent to a disposal facility, and the hydrogen fluoride co-products will be sold on the commercial market. The



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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natural and low-enriched uranium, material from universities no longer used in research programs and material generated during cascade operations at Portsmouth. Beginning in FY 2009, the principle inventory considered for disposition includes depleted uranium metal.

In FY 2010, the following activities are planned:

- Characterize, treat, and dispose of any newly generated waste.
- Continue disposition of uranium materials stored at the Uranium Management Center.
- Maintain waste minimization and pollution prevention programs to reduce waste costs.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	31,907	35,016	35,016	35,016	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Complete Site Treatment Plan milestone for macro-encapsulation. (FY 2008)</li> <li>▪ Dispose of low-level waste associated with 438 converter shells in storage. (FY 2008)</li> <li>▪ Disposition excess site equipment and poly-bottle solutions. (FY 2008)</li> <li>▪ Disposition of classified material in DOE Material Storage Areas 11 and 12. (FY 2008)</li> <li>▪ Complete disposition of low-level waste associated with 438 converter shells in storage, classified material in DOE Material Storage Areas 11 and 12, and disposition of small cylinders. (September 2009)</li> </ul>					

**PO-0040 / Nuclear Facility D&D-Portsmouth** **169,274**      **164,276**      **229,756**

This PBS is within the Uranium Enrichment Decontamination and Decommissioning Fund appropriation.

This project scope includes remedial actions due to contamination resulting from the plant’s historical uranium enrichment operations, inactive facility decontamination and decommissioning, and surveillance and maintenance activities at the Portsmouth Gaseous Diffusion Plant. Groundwater, sediment, and soil contamination exists at the site. Contaminants of concern include radioactive technetium-99, polychlorinated biphenyls, trichloroethylene, and heavy metals. DOE will continue to operate active and passive groundwater treatment systems until regulatory cleanup levels are achieved.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Portsmouth began the transition from cold standby to final shutdown and initiated preliminary decontamination and decommissioning activities in FY 2006. These activities included initiating plans for an integrated final decommissioning strategy for the gaseous diffusion facilities. DOE is developing procurement strategies and evaluating the regulatory transition from the Nuclear Regulatory Commission to the DOE. This will require additional regulatory coordination with the State of Ohio and the Environmental Protection Agency and public involvement in planning efforts. The Department issued a draft Request for Proposal for the decontamination and decommissioning project in January 2009, and the final Request for Proposal is anticipated to be issued in FY 2009 third quarter. The contract award is expected in FY 2010. In addition to the decontamination and decommissioning of the gaseous diffusion plant being a legal mandate, it is also an effective method to reduce risks and limit long-term costs associated with disposition of excess facilities and systems at the site.

Currently, Quadrant I, III, and IV corrective actions have been completed in preparation for final remedial actions. All initial remedial investigations and corrective measures studies required under the applicable regulations and agreements have been completed. Corrective measures have been implemented at the five groundwater plumes; one of the plumes is migrating off the southern reservation boundary onto private property. Additional remedial actions are being implemented to address off-site migration. The Quadrant II Corrective Measure Study/Corrective Measure Implementation has been submitted to the Ohio Environmental Protection Agency. DOE is awaiting the issuance of a Quadrant II decision document by the Ohio Environmental Protection Agency. Formal Department approval for the decontamination and decommissioning of the Portsmouth Gaseous Diffusion Plant occurred in August 2007. The Department held an Industry Day for the decontamination and decommissioning project in March 2008 and issued a draft Request for Proposals to solicit industry and public comments for the decontamination and decommissioning contract in January 2009.

In FY 2010, the following activities are planned.

- Perform removal activities to reduce Planned Expeditious Handling deposits in both X-326 and X-330 facilities in accordance with the Deposit Removal Plan.
- Reduce cell monitoring on applicable shutdown cells to minimum level necessary to meet Nuclear Criticality Safety requirements.
- Perform deactivation activities on specified returned facilities and leased areas.
- Eliminate utilities/support systems and monitoring/buffering control systems no longer required.
- Conduct removal of interior building excess DOE materials and removal of chemical and hazardous materials.
- Conduct site-wide infrastructure surveillance and maintenance to maintain compliance.
- Conduct environmental monitoring and reporting for groundwater, surface water, sediment, biological, vegetation, and associated sample collection to maintain compliance.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Upon award, transition activities in the former gaseous diffusion operations facilities to full-scale decontamination and decommissioning.
- Submit initial regulatory submission for decontamination and decommissioning to Ohio Environmental Protection Agency.
- Submit initial regulatory submission for waste disposition to Ohio Environmental Protection Agency.
- Complete investigation of seven-unit plum in Quadrant II.
- Continue deferred unit remediation activities (buildings for which Resource Conservation and Recovery Act facility investigation has been deferred) in accordance with the deferred unit strategy.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Nuclear Facility Completions (Number of Facilities)	0	0	0	13	0%
Radioactive Facility Completions (Number of Facilities)	7	7	7	27	26.0%
Industrial Facility Completions (Number of Facilities)	7	8	8	121	7.0%
Remediation Complete (Number of Release Sites)	20	20	20	21	95.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Continue oil removal and complete deposit removal. (FY 2008)</li> <li>▪ Continue X-701B Oxidation Treatment Field activities (FY 2008)</li> <li>▪ Award decontamination and decommissioning and surveillance and maintenance contract. (September 2009)</li> </ul>					

**PO-0103 / Portsmouth Contract/Post-Closure Liabilities/Administration (D&D Fund)**

**720                      635                      652**

This PBS is within the Uranium Enrichment Decontamination and Decommissioning Fund.

The scope of this project supports ongoing litigation expenses and record searches in support of litigation. These are ongoing tasks requiring annual funding. The litigation funding supports the defense of numerous legal claims filed by plaintiffs alleging damages from or relating to the Portsmouth Gaseous Diffusion Plant. Record searches support legal claims, DOE and Department of Justice

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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investigations/studies, Freedom of Information Act requests, and requests from both state and Federal regulatory and elected officials. There is no clean end-state to these activities. DOE is required to defend itself against all current and future litigation.

In FY 2010, the following activities are planned:

- Continue to provide defense against legal claims filed against the Government and its contractors.
- Continue record searches in support of legal claims, DOE and Department of Justice investigations/studies, Freedom of Information Act requests, and requests from both state and Federal regulatory and elected officials.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Continue record searches in support of legal claims, DOE/DOJ investigations/studies, FOIA, (FY 2008)</li> <li>▪ Defend against legal claims filed against the Government's contractors. (FY 2008/September 2009)</li> <li>▪ Continue record searches in support of legal claims, DOE and Department of Justice investigations/studies, Freedom of Information Act requests, and requests from both State and Federal regulatory and elected officials. (September 2009)</li> </ul>					

**PO-0104 / Portsmouth Community and Regulatory Support (D&D Fund)**

**556                      313                      671**

This PBS is within the Uranium Enrichment Decontamination and Decommissioning Fund.

This PBS supports the Ohio Environmental Protection Agency responsible for oversight of EM cleanup activities at the Portsmouth Gaseous Diffusion Plant and a local community Site Specific Advisory Board. These activities promote active involvement with the state and local stakeholders in the EM planning and decision-making processes and provide the opportunity for meaningful involvement in managing the cleanup and closure of the site. This project scope includes Payments-In-Lieu-Of-Taxes for Ohio's Pike County.

In FY 2010, the following activities are planned:

- Continue to support oversight activities of the Ohio Environmental Protection Agency.
- Continue support for the designated Site Specific Advisory Board.
- Continue Payments-In-Lieu-Of-Taxes to Ohio's Pike County.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Support the Ohio EPA grant to support activities associated with the Portsmouth Consent Decree. (FY 2008)</li> <li>▪ Continue support to the Ohio Environmental Protection Agency associated with the Portsmouth Consent Decree oversight activities. (September 2009)</li> <li>▪ Support the Ohio Environmental Protection Agency grant to support activities associated with the Portsmouth Consent Decree oversight. (September 2009)</li> </ul>					

**Total, Portsmouth**

**224,260**

**236,215**

**302,154**

**Explanation of Funding Changes**

FY 2010 vs. FY 2009 (\$000)
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**Non-Defense Environmental Cleanup**

**Gaseous Diffusion Plants**

**Portsmouth Gaseous Diffusion Plant**

**PO-0011 / NM Stabilization and Disposition-Portsmouth Other Uranium Facilities Management**

- No significant change. 382

**PO-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion**

- Increase in funding supports training, qualification, and evaluation of facility staff and operators; complete the Operational Readiness Review; and conduct cylinder surveillance and maintenance. 18,905

**Uranium Enrichment Decontamination and Decommissioning Fund**

**D&D Activities**

**PO-0013 / Solid Waste Stabilization and Disposition**

- Decrease reflects the completion of several waste disposition projects, including the converter shell project, small cylinders project, and DOE Material Storage Areas 11 and 12 projects and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. -19,203

FY 2010 vs. FY 2009 (\$000)
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**PO-0040 / Nuclear Facility D&D-Portsmouth**

- Increase reflects transition to full scale decontamination and decommissioning; removal of chemical and hazardous materials; and the reduction of Planned Expeditious Handling deposits in both X-326 and X-330 facilities.

65,480

**PO-0103 / Portsmouth Contract/Post-Closure Liabilities/Administration (D&D Fund)**

- No significant change.

17

**PO-0104 / Portsmouth Community and Regulatory Support (D&D Fund)**

- No significant change.

358

**Total, Portsmouth**

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**65,939**



## Richland

### Funding by Site

(dollars in thousands)

FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010	
Hanford Site	895,805	958,111	1,634,500	888,792
Richland Operations Office	19,441	19,620	0	21,940
Total, Richland	915,246	977,731	1,634,500	910,732

### Site Overview

The Richland Operations Office manages cleanup of the Hanford Site, with the exception of the work managed by the Office of River Protection and the Pacific Northwest National Laboratory (managed by the Office of Science, Pacific Northwest Site Office).

The Hanford Site was established during World War II to produce plutonium for the nation's nuclear weapons. Peak production years were reached in the 1960s when nine production reactors were in operation along the Columbia River. The last reactor to be decommissioned was the N-Reactor, and its spent nuclear fuel, originally stored in the K-Basins, has since been relocated to dry storage on the Central Plateau (also known as the 200 Area). The Central Plateau (200 Area) is the location of the former processing facilities where special nuclear materials were recovered and converted into forms that could be shipped to other sites for weapons manufacture and assembly. Support facilities are located in the 1100 Area, most of which have been turned over to the local community. The Hanford mission is now primarily site cleanup and environmental restoration to protect the Columbia River. The cleanup is addressed in commitments in a 1989 consent agreement, known as the Tri-Party Agreement. Parties to the agreement include the DOE, the U.S. Environmental Protection Agency, and the Washington State Department of Ecology.

### Site Description

**Hanford Site - Richland Operations Office:** As noted above, the Richland Operations Office manages the majority of the Hanford Site in southeastern Washington State. The 1,533 square kilometer (586 square mile) site contains the Central Plateau, the River Corridor, the Fast Flux Test Facility, and the 600 Area.

#### Central Plateau:

The central part of the site is known as the 200 Area or the Central Plateau. It is called the "plateau" because it is elevated about 61 - 76 meters (200 -250 feet) above the water table at the Columbia River shore (100 and 300 areas). The 200 Area is the location of chemical processing facilities used to separate and recover plutonium for use in nuclear weapons. Several other valuable isotopes were also

recovered. During World War II, two processing and separation plant areas (200 East and 200 West) were constructed about five miles apart. Three separation plants were initially built in the 200 Areas: T Plant, B Plant and U Plant. The U Plant was initially used to train operators for the other two plants. During the 1950s, U Plant had a special mission to recover uranium that had been placed in waste tanks during the rush of World War II. The S Plant (Reduction-Oxide) and the Plutonium Uranium Extraction Plant followed with second and third generation improvements in product outputs.

A part of the legacy of Hanford operations is a significant waste inventory of radioactive and regulated chemical materials. Past releases of these materials have contaminated Hanford's facilities, groundwater, soils, and environment. Over 625,000 cubic meters of solid waste were buried in Hanford site soils, while more than 1.7 trillion liters of liquid waste containing radioactive and chemical contamination were discharged to the ground. The 200 Area's current mission involves cleanup of radioactivity and chemical contamination in about 800 waste sites, and approximately 1,000 buildings and structures.

The Central Plateau also has ongoing waste management activities which include storage of spent nuclear fuel at the Canister Storage Building, cesium and strontium capsules in the Waste Encapsulation and Storage Facility, and transuranic waste, mixed low-level waste and low-level waste generated at the Hanford Site and other offsite locations and stored at Central Waste Complex. Transuranic waste will be processed in the T-Plant and Waste Receiving and Processing facility for shipment to the Waste Isolation Pilot Plant. The non-transuranic waste is permanently disposed at the Environmental Restoration Disposal Facility. Other Central Plateau activities include operations of mixed low-level waste trenches, treatment of mixed low-level waste to meet regulatory requirements, disposition of over 200 defueled naval reactor compartments in a dedicated trench, and treatment of generated liquid wastes at the Effluent Treatment Facility, Liquid Effluent Retention Facility, and Treated Effluent Disposal Facility.

Much of the Hanford Site's existing infrastructure has its roots in the Manhattan project. Railroads, utilities, roads and buildings were constructed during the 1940's as part of the wartime effort. The infrastructure supports the various projects at Hanford with a majority of the centralized system existing in the 200 Area. Sufficient infrastructure will be maintained as the cleanup mission progresses. As the need for the infrastructure diminishes, these systems and components will be demolished, removed or placed in long-term stewardship. The Central Plateau contains the following areas:

- 200 East Area: The 200 East Area covers approximately 9.1 square kilometers (3.5 square miles). The area has two processing plants: B Plant and Plutonium Uranium Extraction Plant. B Plant was deactivated in 1998 and Plutonium Uranium Extraction Plant was shutdown in 1997. The Effluent Treatment Facility, the Treated Effluent Disposal Facility, the Waste Encapsulation and Storage Facility, and the Canister Storage Building used in waste management activities are located in this area. The Canister Storage Building and surrounding areas store spent nuclear fuel and include the necessary security controls, including facility upgrades for the balance of spent fuel consolidation to this location. Offices and infrastructure support facilities are also located in the 200 East Area.
- 200 West Area: The 200 West Area covers just under 13 square kilometers (5 square miles) and is located about 13 kilometers (8 miles) from the Columbia River and 40 kilometers (25 miles) from Richland. The 200 West Area includes Central Waste Complex, Waste Receiving and Processing,

Environmental Restoration and Disposal Facility and three processing plants: T Plant, U Plant and S Plant. T Plant and U Plant were nearly identical in function at the time they were constructed in 1943 and 1944. S Plant was a second-generation processing plant that began operation in 1952. The duplication of facilities was done for safety as well as security. U Plant and S Plant have been shut down, and T Plant is now used as the site's decontamination facility. The T Plant has not conducted plutonium recovery since 1956 and is now being used on a limited basis to perform characterization and packaging activities of remote-handled wastes. The Plutonium Finishing Plant complex consists of multiple buildings that were used for defense production of plutonium nitrates, oxides and metal from 1950 through early 1989.

### River Corridor

The River Corridor includes the eight production reactors (100 Area) and associated facilities as well as the fuel fabrication, research and development facilities in the 300 Area located in north Richland. When the 100 Area reactors were operated, water was pumped from the Columbia River to provide cooling to the reactor core. Chemicals were added to the cooling and the water was pumped to/from the reactors via underground pipes and then to retention basins. The water was temporarily kept in the basins to allow it to both cool and to allow the short-lived radionuclides to decay before being discharged to the river. Over time the retention basins and piping systems leaked resulting in extensive contamination of the soil in the area. Cooling water was also discharged to engineered cribs and trenches in the 100-K and 100-N Areas. Each reactor area also included numerous solid waste burial grounds that are now being exhumed. The contaminated soil and waste from the burial grounds is transported to the on-site Environmental Restoration Disposal Facility (located in the Central Plateau) for safe, long-term disposal. The following areas are located along the Columbia River in southeastern Washington State:

- 100 B & C Areas: B Reactor, the world's first full-scale nuclear reactor, was named a National Historic Landmark by the Department of the Interior in August 2008. Most of the soil contamination at 100-B has been remediated but there are several small waste sites that still require remediation.

The C Reactor is adjacent to the B Reactor and has been placed in interim safe storage (cocooned) for up to 75 years. Interim safe storage involved removing the fuel storage basin, the fuel examination facility, the surrounding support buildings, and portions of the C Reactor building structure. This reduced the size of the original footprint by 81 percent. A new weatherproof roof and a remote monitoring system were then put in place. Putting the reactor into a safe condition not only will shield the reactor core for up to 75 years, but it will also reduce the time and money needed for regular surveillance and maintenance. Site personnel will only be required to enter the reactor once every five years to check conditions. In the interim, the reactor is checked via a remote system.

- 100 K-West & K-East Areas: K-West and K-East reactors were built in 1955 and were shut down in 1970 and 1971. Even though the reactors were shut down, their fuel storage basins remained in operation, providing storage for up to 2,100 metric tons of spent nuclear fuel. The fuel came from N Reactor operations during the 1970s and 1980s. The highly radioactive spent nuclear fuel from the K Basins has now been retrieved, cleaned, packaged and safely stored away from the Columbia River in the 200 Area. In addition, approximately 300 tons of highly radioactive debris has been

removed from the K Basins and disposed. However, 29 cubic meters of radioactive sludge remain in K-West Basin that must be removed and treated. The K-East Basin is currently undergoing demolition activities to be followed by waste site remedial activities.

- 100 N Area: N Reactor operated from 1963 to 1987 when it was shut down for maintenance, refueling, and safety upgrades. In April 1986 the accident at the Chernobyl nuclear plant in the Soviet Union drew public attention to N Reactor. After the Energy Department ordered safety enhancements, restart was planned. However, in early 1988, DOE decided to place N Reactor in standby. With the end of the Cold War, there was no longer a need for plutonium production and thus, N Reactor was never restarted. The N Reactor has been deactivated and the Interim Safe Storage process was initiated in FY09. This area contains slightly more than 100 buildings of which 23 have been demolished.
- 100 D & DR Areas: D Reactor was one of the three original reactors built in World War II. The reactor next to it is known as DR, or the D Replacement. The two reactors operated side-by-side until the mid-1960s. The D and DR Reactors have been placed into interim safe storage. Cleanup of high priority liquid waste sites in the 100-D Area began in 1996 and remediation of the burial grounds started in 2008.
- 100 H Area: Construction of H Reactor began in March 1948 and began operations in 1949. It was shut down in 1965. It was built as part of Hanford's first Cold War expansion, in response to some of the earliest events of the Cold War. H Reactor was placed into interim safe storage in October 2005 and remediation of the burial grounds started in 2008.
- 100 F Area: F Reactor went into production in February 1945 during World War II and was shut down in 1965. Upon completion, 100-F Area contained 29 permanent buildings and 24 facilities. F Reactor was placed into interim safe storage in January 2004. A majority of the 100-F Area soil site remediation was completed in December 2008 and all of the burial grounds have been remediated. The remaining waste sites will be completed by December 2012.
- 300 Area: The 300 Area's two main functions were production (or fabrication) of fuel for the reactors (performed in the north end of the area) and chemical research to improve the entire fuel fabrication and processing capability. Some of the buildings in the 300 Area were constructed during World War II. During the Cold War, many of the 300 Area laboratories performed research to expand and improve the efficiency of weapons production. Now, many of them are undergoing cleanout, deactivation, and demolition. The 300 Area buildings that remain active include laboratories, technical shops, engineering offices, their support facilities and the 310 Treated Effluent Disposal Facility (water treatment facility) and the 340 Facility.

### Fast Flux Test Facility

This Fast Flux Test Facility is located in the 400 Area of the Hanford Site. Construction planning began in 1965, during the height of commercial nuclear power building and experimentation. Four years later, the conceptual design was completed. Construction was completed in 1980, and full critical operations got underway in early 1982. The reactor, built to be the prototype for America's breeder reactor program, was to be a bridge to a newer, non-defense role for the Hanford Site. The Fast Flux Test

Facility was the world's largest test reactor of its kind and was designed primarily to test fuels and materials for the nation's advanced reactor program. Final shut down of the facility took place in January 2001. The facility is currently undergoing deactivation and will be placed in low-cost surveillance and maintenance mode prior to initiating full-scale decommissioning activities.

### 600 Area

The 600 Area includes all of the Hanford Site not occupied by the 100, 200, 300 and 400 areas. The Eberhart/Fitzner Arid Lands Ecology Reserve and the Hanford Reach National Monument/Saddle Mountain National Wildlife Refuge, managed by the U.S. Fish and Wildlife, serve as a security buffer for the activities conducted in the 100 and 200 Areas. Also located in this area is Energy Northwest Power which operates a nuclear power plant on leased land. The 600 Area also hosts utility corridors and remediation sites, such as 618-10 and 618-11 Burial Grounds.

### Transfer to Non-Federal Entity

Hanford's 1100 Area served for half a century as the hub of the site's support services, including vehicle maintenance and motor pool; warehousing and property receiving and distribution; mail services; and other infrastructure services. The area also was the hub for the site's approximately 201 kilometers (125 miles) of rail track. The largest building here, the 1171 Building, has rail tracks running through it, and housed a rail overhaul and repair shop.

On September 30, 1998, the 1100 Area, the 26 facilities within it, and the 16 southern-most miles of the Hanford Railroad were transferred by DOE to Richland's Port of Benton for use in regional economic development. Transfer of the 768-acre 1100 Area (about 3.6 square kilometers, or 1.4 square miles) pushed the Hanford Site border north by about a mile.

### **Site Cleanup Strategy/Scope of Cleanup**

The primary focus for the Hanford Site is the safe storage, treatment and disposal of Hanford's legacy wastes and environmental restoration. The cleanup strategy is a risk-based approach that focuses first on those contaminant sources that are the greatest contributors to risk. Risk to the public, workers, and environment will be reduced by removing or stabilizing contamination before it migrates to the Columbia River or the groundwater. This includes cleanup of facilities and waste sites in the 100, 200, 300, 400 and 600 Areas, as well as retrieval of suspect transuranic waste for final disposition off-site. The final focus is the cleanup of the 200 Area Central Plateau with priority on the decontamination and decommissioning of the Plutonium Finishing Plant and completion of groundwater remediation. Safe and secure interim storage of special nuclear material and spent nuclear fuel will continue to be maintained.

### **Site Completion (End State)**

The Federal government is expected to maintain ownership of most of the site once cleanup is complete. Based on the approved baseline, the lifecycle planning estimate is 2050 to 2062. To date, about 50 percent of Hanford Site lands have been cleaned up or transferred for alternate uses. The North Slope has been put under the management of other Federal and Washington State agencies, but remains under

DOE ownership as a safety buffer zone and pristine habitat. In 1999, DOE completed an environmental impact statement for the Final Comprehensive Land Use Plan. Final decisions on the level of cleanup to be performed on individual waste sites continue to be made through the Comprehensive Environmental Response Compensation and Liability Act and the Resource Conservation and Recovery Act decision processes.

- **K Basin Closure:** K Basin's closure is the highest risk reduction project due to its proximity to the Columbia River. Significant risk reduction has been achieved through removal of 2,100 metric tons of spent nuclear fuel from K Basins, representing over 55 million curies of radioactivity (95 percent of the radioactivity in Hanford's River Corridor) from near the Columbia River. Additional risk reduction will be achieved by treating the remote-handled transuranic sludge and placing it in a form suitable for disposition at the Waste Isolation Pilot Plant. The schedule for sludge treatment and disposition is currently being developed.
- **River Corridor Closure Project:** The River Corridor Closure Project will remediate 761 contaminated waste sites (including 50 burial grounds); deactivate, decontaminate, decommission and demolish 379 facilities adjacent to the Columbia River; and place eight reactors into interim safe storage condition. Completion of the project is expected by the contract end date of 2015 or earlier. The work includes excavating and disposing of contaminated soil, backfilling with clean soil, constructing interim safe storage for the reactors, and demolishing the old reactor complexes and facilities in the 300 Area. The project has the goal of ensuring that the land is sufficiently clean to support land management by the Department of Interior. At that time, the footprint of active Hanford cleanup will be reduced from the present 586 square miles to about 75 square miles.
- **Transuranic Retrieval:** All contact-handled suspect transuranic waste in the low-level burial grounds will be retrieved by December 2017, with the expectation that about half will be disposed as transuranic waste and half as low-level and mixed low-level wastes. Retrieval of the remote-handled waste will be performed by 2018. Processing of transuranic waste for shipment to the Waste Isolation Pilot Plant will occur in the Waste Receiving and Processing facility and T Plant. Upon completion of this cleanup work, all retrievably stored waste will have been retrieved and transferred to a treatment, storage, and/or disposal facility. Newly generated transuranic waste activities will continue in support of the Hanford mission.
- **Groundwater Remediation:** This project includes remediation and monitoring of groundwater/vadose zone to address contamination by carbon tetrachloride, chromium, technetium, strontium, and uranium. The end-state and cleanup decisions for existing groundwater plumes are to be completed by December 2011. Final groundwater remediation systems will be constructed as final cleanup decisions are made. Completion of Groundwater remediation facilities construction is projected to be accomplished and the facilities operating by 2015.
- **Solid Waste Disposal:** About 70,000 cubic meters of mixed low-level waste will be treated to meet regulatory requirements and then disposed of on-site in the mixed waste trenches (i.e. Burial Ground 218-W-5, or Trenches 31 and 34) or the Environmental Restoration Disposal Facility. About 130,000 cubic meters of low-level waste will be disposed of on-site in the mixed waste trenches and the Environmental Restoration Disposal Facility. In addition, liquid waste will be treated through the Effluent Treatment Facility, the Liquid Effluent Retention Facility, and the Treated Effluent

Disposal Facility. The liquid waste processed through these facilities will be disposed to the soil through Washington State permitted disposal systems. Hanford will continue to operate facilities for the disposal of low-level and mixed low-level waste from Hanford and offsite generators.

- **Plutonium Finishing Plant Project:** The Plutonium Finishing Plant consisted of over 60 facilities that were used for production of plutonium from 1950 to 1989. The project provides storage of special nuclear materials and maintains the facilities in a safe and secure manner until the completion of demolition. Upon removal of all special nuclear material and fuels, the security area will be eliminated and the Plutonium Finishing Plant complex will be demolished to slab-on-grade.
- **Central Plateau Cleanup:** One legacy of Hanford operations is a significant waste inventory of radioactive and regulated chemical materials. Past releases of these materials have contaminated Hanford's facilities, groundwater, soils, and environment. Over 625,000 cubic meters of solid waste were buried in Hanford site soils, while more than 1.7 trillion liters of liquid waste containing radioactive and chemical contamination have been discharged to the ground. DOE will clean up radioactivity and chemical contamination in about 800 waste sites that have the potential to impact groundwater, and demolish approximately 900 facilities on the Central Plateau and South Hanford Industrial Area.
- **Fast Flux Test Facility:** DOE has completed major elements of deactivation, including reactor defueling, fuel washing, dry packaging, storage (in storage casks) of the mixed oxide fuel (367 reactor fuel assemblies), transfer of all sodium-bonded fuel to the Idaho National Laboratory (11 shipments), and the draining of 260,000 gallons of bulk sodium in plant systems, reactor vessel and fuel storage vessels. DOE's contractor is completing final deactivation to place the facilities into long-term surveillance and maintenance which includes disposition of PCB transformers, reconfiguring electrical systems for surveillance and maintenance, cutting and capping water lines.

## Regulatory Framework

As noted earlier, the U. S. Department of Energy, the U. S. Environmental Protection Agency, and the State of Washington Department of Ecology signed a comprehensive cleanup and compliance agreement on May 15, 1989. The Hanford Federal Facility Agreement and Consent Order, or Tri-Party Agreement, is an agreement for achieving compliance with the Comprehensive Environmental Response Compensation and Liability Act remedial action provisions and with the Resource Conservation and Recovery Act treatment, storage, and disposal unit regulations and corrective action provisions. More specifically, the Tri-Party Agreement: 1) defines and ranks cleanup commitments; 2) establishes responsibilities; 3) provides a basis for budgeting; and 4) reflects a concerted goal of achieving full regulatory compliance and remediation with enforceable milestones in an aggressive manner. The three parties are currently re-negotiating significant portions of the agreement. The following milestones marked with an asterisk are currently subject to potential renegotiation.

### Tri-Party Agreement/Compliance Milestones:

Tri-Party Agreement significant milestones for K Basin Closure

- M-034-00A, Complete Removal of K Basins and their Content by March 2009\*
- M-034-31, Complete Sludge Treatment by November 2009\*

Tri-Party Agreement significant milestones for Plutonium Finishing Plant Project

- M-083-00A, Plutonium Finishing Plant Facility Transition and Selected Disposition Activities by September 2016

Tri-Party Agreement significant milestones for Transuranic Retrieval

- M-091-40, Complete Retrieval of Contact-Handled Waste by December 2010\*
- M-091-41A, Complete Retrieval of Non-Caisson Remote-Handled Waste by December 2014
- M-091-42, Complete Treatment or Certification of Contact Handled Transuranic Mixed Waste by December 2011\*
- M-091-414B, Complete Retrieval of the 200A Caisson Remote-Handled Waste in 218-W-4B by December 2018

Tri-Party Agreement significant milestones for Fast Flux Test Facility

- M-081-00A, Complete Fast Flux Test Facility Transition by February 2011

Tri-Party Agreement significant milestones for River Corridor Closure Project

- M-016-58, Initiate Soil Remediation at K-West Basin by April 2009\*
- M-016-00A, Complete All Interim Response Actions for the 100 Areas by December 2012\*
- M-093-22, Complete 105-KE and 105-KW Reactor Interim Safe Storage by September 2011\*
- M-094-00, Complete disposition of 300 Area surplus facilities by September 2015\*
- M-016-69, Complete All Interim 300 Area Remedial Actions by September 2015

Tri-Party Agreement significant milestones for the Central Plateau clean up activities

- M-015-00, Complete 200 Area Remedial Investigation/Feasibility Study Process for all Non-Tank Farm Operable Units by December 2011\*
- M-016-00, Complete Remedial Actions for all Non-Tank Farm Operable Units by December 2024\*

### **Critical Site Uncertainties and Assumptions**

The Richland Operations Office is currently addressing a number of significant known uncertainties including:

- Availability of off-site disposal for spent fuel and high-level waste;
- The acceptance of cleanup levels in Records of Decision by regulators to support deletion of the Hanford Site from the National Priority List;
- Records of Decision for the Central Plateau that will define cleanup actions of Central Plateau waste sites;
- Unexpected contamination at some waste sites or facilities;
- The final disposition of the cesium and strontium capsules (including any needed treatment and re-packaging).



## **Interdependencies**

Richland has identified the following near term interdependencies needed for mission execution:

- **Transuranic Waste Shipments:** About 27,000 cubic meters of transuranic waste is to be processed and shipped to the Waste Isolation Pilot Plant from the Hanford Site.
- **Department of Defense Naval Reactors:** Over 200 defueled naval reactor compartments will be disposed of in a dedicated trench at the Hanford Site in the 200 Area.
- **Approximately 2,100 metric tons of spent nuclear fuel** currently in interim storage at the Hanford Site are awaiting off-site disposal.
- **Approximately 1,936 cesium and strontium capsules** currently in interim storage at the Hanford Site are awaiting off-site disposal.
- **Remediation of Central Plateau waste sites** will need to be coordinated with the Office of River Protection's tank farm and Waste Treatment and Immobilization Plant activities.
- **Consolidation of special nuclear materials** must be coordinated with sites presently storing materials, NNSA transportation assets and the Savannah River Site.

## **Contract Synopsis**

In June 2008, the Plateau Remediation Contract was awarded. This cleanup contract, managed through the Richland Operations Office, deals with the cleanup of the central portion of the Hanford Site, which once housed five chemical separations buildings and other facilities that separated and recovered plutonium and other materials for use in nuclear weapons.

The work managed by the Richland Operations Office is also executed through two other contract vehicles. The River Corridor Closure contract, a cost-plus-incentive-fee type contract awarded in June 2005, covers cleanup of the nuclear reactor sites and the industrial 300 Area along the Columbia River as well as facilities in the 400 Area and two burial grounds in the 600 Area. The cost-plus-incentive-fee type contract was implemented to increase efficiency and accelerate the schedule for cleanup. The third contract will be the Mission Support Contract. Much of the work scope to be performed under the Mission Support Contract is currently being performed under the Project Hanford Management Contract, which was recently extended into FY 2009. It is anticipated that the Mission Support Contract will be awarded in 2009 and will provide cost-effective infrastructure and site services integral and necessary to accomplish the Hanford Site's environmental cleanup mission. The scope of the Mission Support Contract includes five primary functions: Safety, Security and Environment; Site Infrastructure and Utilities; Site Business Management; Information Resources/Content Management; and Portfolio Management.

## **Cleanup Benefits**

## **Near Term**

Cleaning up the Hanford Site and protecting the Columbia River is a vast and complex task—one that has often been called the world’s largest environmental cleanup project in the United States. The legacy of Hanford’s 40 years of nuclear weapons production for the nation’s defense includes enormous quantities of spent nuclear fuel, leftover plutonium in various forms, buried waste, contaminated soil and groundwater, and contaminated buildings that must undergo cleanup and be torn down. Forty percent of the approximately one billion curies of human-made radioactivity that exist across the nuclear weapons complex resides at Hanford and must be dealt with to protect human health and the environment.

The cleanup momentum over the past several years has been and continues to be focused on completing cleanup along the Columbia River Corridor, which is expected to be complete by 2015, and transitioning the Central Plateau of the Hanford Site to a modern, protective waste management operation—driving down the risks to workers, the community and the environment.

- Spent Nuclear Fuel (K Basins Closure) project completed and removed more than 55 million curies of radioactivity—more than 95 percent of the radioactivity in Hanford’s River Corridor.
- Reactor Interim Safe Storage has been completed for five of the eight reactors to be placed in interim safe storage at Hanford.
- With the September 2007 decision to consolidate plutonium at the Savannah River Site, ninety-nine percent of the plutonium at the Plutonium Finishing Plant will be shipped off-site to eliminate risk (the remaining one percent will be dispositioned elsewhere) and allow the Plutonium Finishing Plant to be decontaminated and decommissioned.
- Risks associated with the radioactive fuel and liquid sodium coolant at the Fast Flux Test Facility will be reduced and the facility will be placed in long-term surveillance and maintenance.

## **Longer Term**

- Complete Comprehensive Environmental Response Compensation and Liability Act Records of Decision for the Central Plateau and initiate remediation activities.
- Complete retrieval of contact-handled transuranic waste by 2010 reducing the environmental risks in the 200 Area.
- Complete remedial actions in the 100 B/C, 100F and 100H areas.
- Complete K Basins sludge treatment, demolition of the basins, and 100 K Area remediation.
- Complete conversion of KE, KW and N reactors to interim safe storage—the last of the eight reactors to be placed in interim safe storage.
- Once remedial actions have been implemented per the Records of Decision, transition to Long Term Stewardship.

Direct maintenance and repair at the Richland Operations Office is estimated to be \$76,203,000.

### Funding Schedule by Activity

(dollars in thousands)			
	FY 2008	FY 2009	FY 2010
Defense Environmental Cleanup			
Hanford Site			
2012 Accelerated Completions			
RL-0041 / Nuclear Facility D&D-River Corridor Closure Project	241,172	231,837	327,955
RL-0011 / NM Stabilization and Disposition-PFP	97,610	122,483	118,087
RL-0012 / SNF Stabilization and Disposition	98,907	122,171	55,325
Subtotal, 2012 Accelerated Completions	437,689	476,491	501,367
2035 Accelerated Completions			
RL-0100 / Richland Community and Regulatory Support	19,441	19,620	21,940
RL-0040 / Nuclear Facility D&D-Remainder of Hanford - 2035	97,854	89,903	70,250
RL-0080 / Operate Waste Disposal Facility	3,299	0	0
RL-0030 / Soil and Water Remediation-Groundwater/Vadose Zone - 2035	104,591	182,532	176,766
RL-0013C / Solid Waste Stabilization and Disposition-2035	242,124	198,430	132,757
Subtotal, 2035 Accelerated Completions	467,309	490,485	401,713
Total, Hanford Site	904,998	966,976	903,080
Non-Defense Environmental Cleanup			
Fast Flux Test Reactor Facility D&D			
RL-0042 / Nuclear Facility D&D-Fast Flux Test Facility Project	10,248	10,755	7,652
Total, Richland	915,246	977,731	910,732

### Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
Richland					
Geographic Sites Eliminated (number of sites)	0	0	0	1	0%
Depleted and Other Uranium packaged for disposition (Metric Tons)	3,100	3,100	3,100	3,100	100.0%
Enriched Uranium packaged for disposition (Number of Containers)	2,958	2,958	2,958	2,958	100.0%
Industrial Facility Completions (Number of Facilities)	336	338	350	1,051	33.3%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	47,213	47,385	47,385	51,450	92.1%



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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The end-state for this PBS is dismantlement of the nuclear facilities in the Plutonium Finishing Plant complex to slab-on-grade.

In FY 2010, the following activities are planned:

- Support safe and essential services for over forty radiological and nuclear Plutonium Finishing Plant facilities and systems, and surveillance of residual radioactive and chemical contamination to ensure safe and compliant conditions.
- Provide for program management and support activities necessary for safe operations and essential services.
- Provide for quality assurance support, management assessment and corrective action development, regulatory compliance monitoring, performance assessment support, and records management.
- Provide for site-wide services for day-to-day operations of general utilities, fire department, and analytical services.
- Support completion of de-inventory of special nuclear materials in FY 2010.
- Complete shipment of 21 Fast Flux Test Facility fuel assemblies and Slightly Irradiated Fuel to the Canister Storage Building.
- Continue deactivation, decontamination and removal of Plutonium Finishing Plant process and support systems and structures as needed to prepare facilities for ultimate disposition.
- Support Hanford's 2015 vision by transitioning Building 234-5Z Remote Mechanical A line, Building 234-5Z Balance of Plant, Building 236-Z 1st floor set and cell/canyon, and Building 2736-Z/ZB Complex.
- Complete transition and dismantlement of the Plutonium Reclamation Facility and Tri-Party Agreement (TPA) Milestone M-83-43.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	2,275	2,275	2,275	2,275	100.0%
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	3,437	3,437	3,437	3,437	100.0%

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Material Access Areas eliminated (Number of Material Access Areas)	1	15	15	19	79.0%
Nuclear Facility Completions (Number of Facilities)	21	21	21	31	68.0%
Radioactive Facility Completions (Number of Facilities)	0	0	0	26	0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"><li>▪ Continue shipment of Plutonium off-site (FY 2008/September 2009)</li><li>▪ Initiate D&amp;D and removal of the Remote Mechanical A line and Building 234-5Z Balance of Plant (December 2009)</li><li>▪ Complete de-inventory of the Slightly Irradiated Fuel (December 2009)</li><li>▪ Complete Protected Area Closure Activities (January 2010)</li></ul>					

**RL-0012 / SNF Stabilization and Disposition**

**98,907**

**122,171**

**55,325**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This project supports Richland's mission for accelerated clean up of the River Corridor through stabilization, removal, and off-shipment of nuclear materials including spent nuclear fuel, radioactively contaminated sludge, water and debris from the K Basins. This PBS also supports basin removal and transition of the 100 K Area facilities and remaining waste sites to the River Corridor Contractor. The scope of this project encompasses the removal, packaging, and transportation of approximately 2,100 metric tons of degrading spent nuclear fuel from wet storage in the K Basins (K-East and K-West) near the Columbia River to a safe, dry interim storage on the 200 Area Central Plateau. Additionally, an estimated 44 cubic meters of radioactively contaminated sludge that currently resides in the basins will be removed from the basins and treated into its final disposal form, ready for permanent disposal off the Hanford site.

As of September 30, 2008, all spent nuclear fuel and sludge has been removed from the K-East Basin. K-East Basin decommissioning and decontamination is underway. Containerization of K-West residual sludge from the final pass vacuuming is completed.

The end-state of this PBS is the removal of all spent nuclear fuel from the K Basins, subsequent repackaging, drying and transportation to the Canister Storage Building for interim storage, removal of radioactively contaminated sludge from the K Basins, and removal and shipment of radioactively contaminated K Basin water to the 200 Area for treatment and disposal. All 100 Area K-East and K-West facilities will be transitioned to the River Corridor Contractor for final disposition. This end state represents significant risk reduction the basins posed to the Columbia River. With completion of the removal of 2,100 metric tons of spent nuclear fuel, more than 55 million curies of radioactivity (more

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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than 95 percent of the radioactivity in Hanford’s River Corridor) has been moved away from the Columbia River. Additional risk reduction has also been accomplished through the removal of significant debris from the basins. Further risk reductions are anticipated through removal of contaminated basin water, the basins themselves, and treatment of various sludge streams remaining in the K-West Basin.

In FY 2010, the following activities are planned:

- Provide for site-wide services of day-to-day operations of general utilities, fire department, and analytical services.
- Operate and maintain K-West Basin and associated structures in a safe and compliant manner. Also, support required surveillance and maintenance activities.
- Support the continuation of sludge treatment design as well as characterization sampling and testing of the Knockout Pots, Engineered Containers and Settler Tubes.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	2,117	2,117	2,117	2,117	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Complete K-West Basin final pass cleanup. (FY 2008)</li> <li>▪ Complete Decontamination &amp; Decommissioning of K East Basin (September 2009)</li> <li>▪ Continuation of sludge treatment design, characterization sampling and testing (September 2010)</li> <li>▪ Continue K West Basin safe and compliant and fuel processing capabilities (September 2010)</li> </ul>					

**RL-0041 / Nuclear Facility D&D-River Corridor Closure Project**

**241,172      231,837      327,955**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The River Corridor Closure Project will complete the remediation of 761 contaminated waste sites (including liquid waste sites, solid waste sites, and burial grounds); complete the deactivation, decontamination, decommissioning, and demolition of 379 excess facilities/structures that are adjacent to the Columbia River; and complete the placement of eight reactors into an interim safe storage

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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condition. This cleanup will be completed in accordance with the interim Records of Decision. The work scope includes the excavation of contaminated soil; the construction of interim safe storage (cocooning) of the reactors; deactivation, decontamination, decommissioning, and demolition of facilities/structures in the old reactor complexes and the facilities/structures in the 300 Area and 400 Area; operation of the Environmental Restoration Disposal Facility (or the Central Waste Complex in the case of Transuranic waste) for the disposal of the wastes generated by the project; construction of additional Environmental Restoration Disposal Facility disposal cells and surface barriers/caps over contaminated sites; activities supporting end state and final closure; surveillance and maintenance; utility operations; and closure and program management and support. Operation of the Environmental Restoration Disposal Facility is funded under this PBS because the River Corridor Closure Project is currently the primary user of the disposal facility.

As of September 30, 2008, activities completed include: remediation of 429 of the 761 life-cycle waste sites and burial grounds; deactivating, decontaminating, decommissioning, and demolishing 154 of the 379 excess facilities; placing into an interim safe storage (“cocooning”) 5 of 8 reactors; removing 2.3 metric tons of spent nuclear fuel from the 300 Area, which is in close proximity to the Columbia River and the local community; packaging and disposing of 2,958 containers of enriched uranium; packaging 3,100 containers of depleted and other uranium; and dispositioning 6.9 million tons of remediation waste into the Environmental Restoration Disposal Facility or Central Waste Complex (transuranic waste).

At project completion, DOE will seek approval to remove the project sites remediated according to interim Records of Decision from the National Priority List. There will be limited DOE activities remaining in the River Corridor after completion. At that time, the footprint of active Hanford Site cleanup will be significantly reduced from the present 586 square miles to about 75 square miles.

In FY 2010, the following activities are planned:

- Provide surveillance and maintenance of nuclear and support facilities and continue operations of key utilities (water, sewer electrical).
- Provide site-wide services for day-to-day operations of general utilities, fire department, and analytical services.
- Complete selected removal/remediation of 6 of 19 high priority surplus facilities in the 300 Area
- Complete 6 waste sites in Operable Unit 300-FF-2.
- Continue deactivation of Building 324 and demolition of Building 327.
- Complete disposition of 13 surplus facilities.



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Initiate interim safe storage of the 109-N Reactor.
- Operate the Environmental Restoration Disposal Facility to support field remediation and demolition activities (1.04 million tons).
- Support continued field remediation of 16 ancillary facilities and 59 waste sites in the 100 K-Area.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Enriched Uranium packaged for disposition (Number of Containers)	2,958	2,958	2,958	2,958	100.0%
Depleted and Other Uranium packaged for disposition (Metric Tons)	3,100	3,100	3,100	3,100	100.0%
Nuclear Facility Completions (Number of Facilities)	3	3	7	8	88.0%
Radioactive Facility Completions (Number of Facilities)	37	37	40	119	34.0%
Industrial Facility Completions (Number of Facilities)	113	115	127	371	34.0%
Remediation Complete (Number of Release Sites)	429	433	452	804	56.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Complete removal and/or remedial actions for 3 high priority facilities in the 300 Area (FY 2008)</li> <li>▪ Over Target Milestone: Initiate Remedial Actions for the Remaining 100 H Waste Sites (FY 2008)</li> <li>▪ Complete Burial Ground 118-H-1 Load out. (FY 2008)</li> <li>▪ Dispose of over 550,000 tons of remediation waste at the ERDF at Hanford. (FY 2008)</li> <li>▪ Complete Burial Grounds 100-D-32, 100-D-45, and 100-D-41 Load out. (December 2008)</li> <li>▪ Complete Waste Site 300-48 and Burial Ground 100-D-41 Load out. (March 2009)</li> <li>▪ Complete Removal 6/19 High Priority Facilities (December 2009)</li> <li>▪ Complete disposition of 13 surplus facilities in the 300 and 100 Areas (September 2010)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Complete Interim Remedial Actions for 6 Specific Wastes Sites in the 300-FF-2 OU. (September 2010)
- Continue field remediation in the 100 K-Area (September 2010)

**RL-0013C / Solid Waste Stabilization and Disposition-2035**

**242,124      198,430      132,757**

This PBS can be found within the Defense Environmental Cleanup appropriation.

Scope of this PBS includes storage of spent nuclear fuel, transuranic waste, mixed low-level waste, and low-level waste generated at the Hanford Site and other DOE and Department of Defense facilities. The transfer of 72 spent nuclear fuel elements to the Canister Storage Building is complete for this PBS.

This PBS includes packaging of EM legacy and non-legacy spent nuclear fuel and storage in the Canister Storage Building or 200 Area Interim Storage Area prior to shipment to a geologic repository. This PBS also includes wet storage of 1,936 cesium and strontium capsules in the Waste Encapsulation and Storage Facility, which will be transferred to dry storage while awaiting shipment to a geological repository. Retrieval of contact- and remote-handled suspect transuranic waste in the low-level burial grounds will also be performed. About 27,000 cubic meters of transuranic waste is to be processed and shipped to the Waste Isolation Pilot Plant including: transuranic waste generated during retrieval operations, transuranic waste currently in storage, 618-10/11 waste site remediation waste, and facility decontamination and decommissioning waste. Additional sources of transuranic waste which could change the forecast waste volumes include pre-1970 burial ground remediation waste, canyon demolition waste, and transuranic tank waste. Processing of transuranic waste for shipment to the Waste Isolation Pilot Plant will occur in the Waste Receiving and Processing facility or the T Plant facility. About 70,000 cubic meters of mixed low-level waste will be treated to meet regulatory requirements and disposed in the mixed waste trenches or other facilities such as the Environmental Restoration Disposal Facility. This mixed low-level waste is either currently in storage or will be generated during retrieval operations, facility demolition, or from other on-site/off-site sources. Over 200 de-fueled naval reactor compartments will be disposed of in a dedicated trench. About 130,000 cubic meters of low-level waste will be disposed through site closure. This low-level waste is to be generated during facility demolition, or from other on-site and off-site sources, or is currently stored onsite. The 200 Area Effluent Treatment Facility, Liquid Effluent Retention Facility, and 300 Area Treated Effluent Disposal Facility provide treatment of cleanup generated liquid waste. Technical support is provided to all waste generators for all waste types. Other site-wide storage and disposal facilities will be transferred to this PBS in order to consolidate similar activities.

As of September 30, 2008, 9,700 cubic meters of suspect transuranic waste have been retrieved; over 3,030 cubic meters of transuranic waste to be shipped to the Waste Isolation Pilot Plant certified; over 5,900 cubic meters of mixed low-level waste treated since January 2003; and the Tri-Party agreement

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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milestone for thermal treatment of 600 cubic meters of mixed low-level waste has been completed.

The end-state for this project will be that all retrievably stored, suspect transuranic waste is retrieved and transferred to a treatment, storage, and/or disposal facility; all spent nuclear fuel, cesium and strontium capsules are sent to an off-site disposal facility; all site waste disposal operations are complete; and, facilities are transitioned for decontamination and decommissioning.

In FY 2010, the following activities are planned:

- Provide site-wide services for day-to-day operations of general utilities, fire department, and analytical services.
- Support the base operations of the Canister Storage Building and Interim Fuel Storage Area.
- Provide base operations of the Integrated Disposal Facility.
- Provide project management for the mixed waste treatment program.
- Provide the required surveillance and maintenance of the Low-Level Burial Grounds.
- Provide base operations necessary to store low-level waste, mixed low-level waste, and transuranic waste at the Central Waste Complex.
- Support the operation and necessary upgrades at the 200 Area Liquid Effluent Treatment Facility and Liquid Effluent Retention Facility.
- Provide the base operations necessary to store and treat mixed low-level waste and transuranic waste at the T Plant Complex. Also, provide upgrades necessary to maintain the facility and support for K Basin Project.
- Provide base operations for storage of cesium and strontium capsules at the Waste Encapsulation and Storage Facility (WESF).
- Provide the base operations of the Waste Receiving and Processing Facility (WRAP) necessary to support repackaging.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - CH	3,030	3,380	3,380	24,580	14.0%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	858	0%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	47,213	47,385	47,385	51,450	92.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"><li>▪ Begin Treating RH MLLW &amp; Boxes &amp; Large Containers Of CH MLLW (300m3) (FY 2008)</li><li>▪ Retrieve CH-RSW 9700 Cubic Meters (Cumulative) (FY 2008)</li><li>▪ Treat/certify 600 cubic meters contact handled TRU in FY08 (FY 2008)</li><li>▪ Treat 7220 cubic meters (cumulative) of MLLW by 12/31/08. (December 2008)</li><li>▪ Continue to operate 200 Area Liquid Effluent Facility (December 2009)</li><li>▪ Retrieve suspect TRU from the burial ground (12,200 m3) (December 2009)</li><li>▪ Continued base operations and minimal upgrades to treat MLLW and transuranic waste (September 2010)</li><li>▪ Maintain base ops of the LLW and MLLW disposal facilities (LLW BG 218-W-5, trench 31 &amp; 34) (September 2010)</li></ul>					

**RL-0030 / Soil and Water Remediation-  
Groundwater/Vadose Zone - 2035**

**104,591      182,532      176,766**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This PBS scope includes groundwater/vadose zone remediation activities that address groundwater contamination (e.g. carbon tetrachloride, chromium, technetium 99, strontium, and uranium plumes) and protection of the groundwater resources on the Hanford Site. Final substantive groundwater remedial actions are to be completed by 2024. Long-term monitoring, natural attenuation and other regulatory review completion activities will continue through the 2042 time frame. The principal activities for this PBS include: 1) field characterization for movement of radionuclides and chemicals in the vadose zone and groundwater including treatability testing for deep vadose zone contamination; 2) assessing the soil and groundwater characterization results to determine the type and extent of contamination and evaluate various remedial alternatives to support completion of final remedial action decision-making for both the soil and groundwater; 3) vadose zone, groundwater and risk assessment modeling for selection of remedial alternatives and evaluating cumulative impacts to the Hanford groundwater and Columbia River; 4) operation of groundwater remediation systems and implementation of alternative methods to

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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complete actions; 5) installation of wells to maintain Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and Resource Conservation and Recovery Act integrated, compliant, network to address emerging groundwater plumes, remediation requirements to conduct site-wide groundwater monitoring; and 6) groundwater well drilling, maintenance, decommissioning; and 7) complete final restoration of groundwater on the Hanford Site.

Final Comprehensive Environmental Response, Compensation, and Liability Act feasibility studies and proposed plans for all soil and groundwater operable units at the Hanford Site will be completed by December 31, 2011. Groundwater completion activities will follow waste site closure activities through the 2024 time frame. By 2024, all existing unused wells will be physically decommissioned.

As of September 30, 2008: 1) achieved remedial action objective concentrations in all but one well for the H portion of the 100-HR3 groundwater operable unit cleanup site. (The pump and treat system has been reconfigured to extract water to address the remaining contamination.); 2) decommissioned 90 high risk wells to eliminate these pathways to the groundwater; 3) completed key field investigations for the carbon tetrachloride Dense Non-Aqueous Phase Liquid investigation in the 200 West Area; 4) continued to operate four pump and treatment systems for groundwater remediation; 5) suspended the pump and treat system at 100-NR-2 and implemented an alternative passive barrier demonstration; 6) successfully completed a year-long rebound study for UP-1 groundwater cleanup in 200 West; 7) completed an alternative chromium remediation treatability test for the 100-KR4 groundwater plume and 8) completed construction of another pump and treat system in 100-KR-4.

In FY 2010, the following activities are planned:

- Provide site-wide services for day-to-day operations of general utilities, fire department, and analytical services.
- Perform remedial investigation and feasibility study to obtain final Records of Decision for the River Corridor 100-NR-2 Operable Unit, 100-KR-4 Operable Unit, 100-BC-5 Operable Unit, 300-FF-5 Operable Unit and 100-HR-3 Operable Unit.
- Continue operation of the soil vapor extraction system removing contaminants from the vadose zone in the 200-PW-1 (formerly titled 200-ZP-2) operable unit in accordance with the Record of Decision. Also, connect additional wells expanding the network of soil vapor extraction wells needed to maintain the efficiency of carbon tetrachloride contamination removal from soil.
- Operate and maintain existing pump and treat remediation systems at 200-UP-1, 200-ZP-1, 100-HR-3, and 100-KR-4.
- Achieve progress in completing remedial investigation characterization and monitoring that is

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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necessary to complete the 200-PO-1 contaminated groundwater operable unit in support of Comprehensive Environmental Response, Compensation and Liability Act cleanup process.

- Construct new groundwater wells necessary to support continued existing operation as well as new operations for the ground water pump and treat systems located in the River Corridor.
- Provide required groundwater monitoring program at Hanford and maintain compliance with the current laws and regulations for groundwater monitoring.
- Achieve progress on completing the Comprehensive Environmental Response, Compensation and Liability Act Process (Remedial Investigation / Feasibility Study and Proposed Plan) to obtain final Record of Decision for the 100-FR-3 groundwater operable unit.
- Integrate groundwater and vadose zone field support activities including essential operations and maintenance, safety personnel, worker training, and field equipment purchases for Hanford site cleanup activities.
- Complete regulatory milestones related to soil desiccation and reactive gas technology testing to comply with the Deep Vadose Zone Treatability Test work plan.
- Implement 200-ZP-1 Record of Decision to design and construct a pump & treat environmental remediation system by 9/30/2010.
- Completion of regulatory milestones related to soil desiccation and reactive gas technology testing to comply with the Deep Vadose Zone Treatability Test work plan which targets identification of improved methods for remediating deep soil contamination that poses a potential threat to groundwater.
- Initiate installation of a 100-HR-3 final remedy Pump and Treat Environmental Remediation System to remediate the highest concentrated plume of hexavalent chromium on the Hanford site.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"><li>▪ Complete cumulative installation of 75 groundwater protection, monitoring, and remediation wells. (FY 2008)</li><li>▪ Conduct Biennial Assessments of Information and Data Access Needs with EPA and Ecology. (FY 2008)</li><li>▪ Complete an additional installation of 30 groundwater compliance wells to support (December 2008)</li><li>▪ Over Target Milestone: Submit Closure/Post-Closure Plans For 216-A-10, 216-A-36B, 216-A-37-1, 207-A South Retention Basin, 216-S-10 Pond, 216-S-10 Ditch, 241-CX-70, 241-CX-71, And 241-CX-72. (December 2008)</li><li>▪ Over Target Milestone: Submit Part B Permit Applications or Closure/Postclosure Plans for All RCRA TSD Units except 303-M Oxside Facility and 1706-KE Waste Treatment System. (December 2008)</li><li>▪ Submit 241-CX-70 Storage Tank, 241-CX-71 Neutralization Tank, 241-CX-72 Storage Tank Closure/Post Closure Plan to Ecology. (December 2008)</li><li>▪ Initiate design for final remedial actions for the ZP-1 groundwater operable unit in 200 West (September 2009)</li><li>▪ Initiate design for the final remedial action for 100-D Area. (September 2009)</li><li>▪ Complete an additional installation of 30 groundwater compliance wells (December 2009)</li><li>▪ Submit a draft CERCLA Proposed Plan (December 2009)</li><li>▪ Continue to construct groundwater wells to support existing pump and treat operations (September 2010)</li><li>▪ Initiate installation of 100-HR-3 Pump &amp; Treat Environmental Remediation System (September 2010)</li><li>▪ Initiate physical testing of soil desiccation &amp; reactive gas soil clean up technologies (September 2010)</li><li>▪ Perform remedial investigation and feasibility study in support of 100-NR-2 Operable Unit (September 2010)</li></ul>					

**RL-0040 / Nuclear Facility D&D-Remainder of  
Hanford - 2035**

**97,854**

**89,903**

**70,250**

This PBS can be found within the Defense Environmental Cleanup appropriation.

One legacy of Hanford operations is a significant waste inventory of radioactive and regulated chemical materials. Past releases of these materials have contaminated Hanford's facilities, groundwater, soils,

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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and environment. Over 625,000 cubic meters of solid waste were buried in Hanford site soils, while more than 1.7 trillion liters of liquid waste containing radioactive and chemical contamination have been discharged to the ground. This PBS scope includes implementation of various Hanford Site cleanup initiatives: cleanup of radioactivity and chemical contamination in about 800 waste sites with potential impact to groundwater, and approximately 900 facilities primarily on the Central Plateau; continuing litigation support; and infrastructure operations. Life-cycle work scope includes: decontamination, decommissioning, dismantlement, and disposition of surplus facilities (including canyon facilities); remediation of all 200 Area waste sites containing large inventories of mobile contaminants that may migrate into groundwater plumes (includes removal of contaminants or construction of surface barrier caps over waste sites); deactivation and disposition of contaminated equipment; final disposition of Cold War legacy wastes; site occupational medicine program; safe operation of facilities awaiting deactivation and demolition; and maintenance and repair of system infrastructure.

As of September 30, 2008, activities completed include: remediation of 39 out of 857 waste sites and burial grounds; disposition of 235 excess facilities; and procurement of capital equipment replacements. Other activities include regulatory document development, surveillance and maintenance, infrastructure operations, and litigation support.

In FY 2010, the following activities are planned:

- Provide surveillance and maintenance activities necessary to ensure safety for inactive waste sites and facilities on Hanford's Central Plateau.
- Provide for day-to-day operations of general utilities, fire department and analytical services.
- Provide environmental Safety and Health oversight, quality management, safety and job hazards analysis, technical support and integration with site activities.
- Provide site infrastructure upgrades, replacements and repairs such as cranes, general plant facility HVAC replacements, fire truck and mobile response unit replacement, HLAN network upgrades, roadway repair and sealing, and water line replacement/refurbishment.
- Provide steam for critical site heating systems.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Nuclear Facility Completions (Number of Facilities)	4	4	4	39	10.0%
Radioactive Facility Completions (Number of Facilities)	12	12	12	180	7.0%
Industrial Facility Completions (Number of Facilities)	223	223	223	649	34.0%
Remediation Complete (Number of Release Sites)	39	39	39	857	5.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Continue remedial investigations and characterization. (FY 2008)</li> <li>▪ Prepare CERCLA/RCRA documentation for waste sites and surplus facilities. (FY 2008)</li> <li>▪ Maintain minimum safe surveillance and maintenance for the Central Plateau (September 2010)</li> <li>▪ Maintain minimum safe/essential services for the Central Plateau (September 2010)</li> </ul>					

**RL-0080 / Operate Waste Disposal Facility****3,299****0****0**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This PBS scope provided on-going operations of the Hanford low-level waste and mixed low-level waste disposal facilities, e.g., burial grounds. In FY 2009, the workscope was transferred to PBS RL-0013C.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Operations of Waste Disposal Facilities. (FY 2008)</li> </ul>					

**RL-0100 / Richland Community and Regulatory Support****19,441****19,620****21,940**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The scope of this PBS includes regulatory and stakeholder support and assistance payments to offset lost

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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property taxes (i.e., payments in lieu of taxes). The activities included in this PBS are: 1) regulatory costs as required by Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, Tri-Party Agreement, Clean Air Act, and other State and local laws and regulations. These include payment of the Resource Conservation and Recovery Act Mixed Waste fee and the Comprehensive Environmental Response, Compensation, and Liability Act grant to the Washington State Department of Ecology as required by the Tri-Party Agreement, reimbursement to Washington State Department of Health for costs associated with fulfilling their Clean Air Act responsibilities as well as other miscellaneous air monitoring support activities, payment of waste discharge permit fees to Washington State Department of Ecology and other miscellaneous permits and fees. These activities fulfill regulatory requirements necessary for the continuation of site activities; 2) grants to Washington State and Oregon State for their participation in Hanford related activities including environmental oversight and emergency preparedness activities; 3) payments in lieu of taxes made to the three host counties where the Hanford reservation is located; 4) grant for Self Reliance Foundation to provide the Hispanic community with energy and environmental information allowing the community to more effectively participate in DOE public outreach activities; 5) funding to support the Hanford Advisory Board and related activities; and 6) Hanford Natural Resources Trustee activities. This PBS scope will end upon completion of the Hanford EM mission in 2048.

As of September 30, 2008, all required permits, fees, and invoices have been paid.

In FY 2010, the following activities are planned:

- Provide support to the Natural Resource Trustee Council and maintain RL responsibilities to serve as Trustee.
- Provide support for the Hanford Advisory Board for public involvement related to the cleanup mission at the Hanford site.
- Provide funding for Washington State Department of Ecology Resource Conservation and Recovery Act Mixed Waste Fee, Washington State Department of Health's air emissions monitoring invoice, and the Payment in Lieu of Taxes for Grant, Benton, and Franklin Counties.
- Provide funding for offsite agency emergency preparedness programs enabling them to respond to an emergency on the Hanford site, State of Oregon's input on Hanford activities and relative priorities for risk-based cleanup, and essential independent monitoring during events from the Washington State Department of Health.
- Initiate injury assessment phase of Natural Resource Damage Assessment.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Provide for Payment-in-Lieu-of-Taxes. (FY 2008)</li> <li>▪ Reimburse the Department of Ecology and the Department of Health for (FY 2008/September 2009)</li> <li>▪ Support activities required by regulations. (FY 2008)</li> <li>▪ Support Washington and Oregon States emergency preparedness, environmental (FY 2008/September 2009)</li> <li>▪ Support activities required by the Resource Conservation and Recovery Act, Comprehensive (September 2009)</li> <li>▪ Support the Hanford Advisory Board for public involvement related to the cleanup mission. (September 2009)</li> <li>▪ Continue to provide support to the Natural Resource Trustee Council and the HAB. (September 2010)</li> <li>▪ Continue to support various programs such as Resource Conservation &amp; Recovery Act, WA State DOH... (September 2010)</li> </ul>					

**RL-0042 / Nuclear Facility D&D-Fast Flux Test Facility Project**

**10,248                      10,755                      7,652**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

A Record of Decision, issued January 26, 2001, established that the Fast Flux Test Facility would be permanently deactivated, and a subsequent decision made by the Secretary of Energy on December 19, 2001, concluded that this facility would be permanently closed. At that time, sodium drain from the plant’s secondary system, which constitutes 34 percent of the sodium inventory, was completed and activities related to fuel washing, removal, and storage had been initiated. This PBS scope includes deactivation and decommissioning the Fast Flux Test Facility, a 400-megawatt (thermal) liquid metal (sodium) cooled fast neutron flux nuclear test reactor, and 44 support buildings and structures. The deactivation activities consist of: reactor de-fueling; disposition of 376 reactor fuel assemblies by washing, drying, loading in storage casks and transferring to appropriate storage locations; draining approximately 260,000 gallons of sodium from operating plant systems, reactor vessel, and fuel storage vessels; sodium residual cleaning of all plant systems and vessels; disposition of the 260,000 gallons of bulk sodium by conversion to sodium hydroxide for use by the Waste Treatment Plant; and the shutdown of Fast Flux Test Facility auxiliary systems.

The current approach for the Fast Flux Test Facility Project is to complete sodium drain from the Fast

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Flux Test Facility to the Sodium Storage Facility, offload and store the reactor nuclear fuel and place the facilities in long-term surveillance and maintenance. The disposition of bulk and residual sodium and facility decommissioning and demolition will be deferred due to higher Hanford site priorities.

As of September 30, 2008, all of the bulk sodium has been drained from the reactor plant and the fuel storage vessels. Sodium-potassium was flushed from the in-containment cooling loops and sodium-potassium was drained from the Fuel Storage Facility cooling loop. The bulk sodium drained and transferred to the Sodium Storage Facility constitutes ~260,000 gallons (100 percent) of the bulk sodium inventory. Sodium residuals remain throughout all the sodium systems. Of the original 376 fuel assemblies, 368 fuel assemblies have been washed, dried, and loaded into above ground Interim Storage Casks. Interim Storage Casks loaded with fuel assemblies were shipped to either the Plutonium Finishing Plant or the 200 Area Interim Storage Area. The remaining fuel assemblies were sodium-bonded and were transferred to the Idaho National Laboratory.

The facility end-state for the Fast Flux Test Facility containment building, including the de-fueled reactor vessel, will be determined following the appropriate environmental analysis process. For planning purposes, it is assumed the reactor containment dome will be removed, the below-grade reactor containment building will be grouted and entombed, and the support facilities and structures will be demolished to three feet below grade and backfilled. The Fast Flux Test Facility end state alternatives are being evaluated in the Tank Closure/Waste Management Environmental Impact Statement.

In FY 2010 the following activities are planned:

- Maintain long-term safe and compliant surveillance and maintenance for Fast Flux Test Facility and support facilities.
- Maintain the Sodium Storage Facility and 260,000 gallons of sodium under an inert atmosphere.
- Provide site-wide services for day-to-day operations of general utilities, fire department, and analytical services.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	0	0	0	0	100.0%
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	7	7	7	7	100.0%
Nuclear Facility Completions (Number of Facilities)	0	0	0	4	0%

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Radioactive Facility Completions (Number of Facilities)	0	0	0	9	0%
Industrial Facility Completions (Number of Facilities)	0	0	0	31	0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Complete sodium bonded fuel transfer to the Idaho National Laboratory. (FY 2008)</li> <li>▪ Complete FFTF operating systems deactivation to enable low cost surveillance and maintenance (August 2009)</li> <li>▪ Transition Fast Flux Test Facility to long-term surveillance and maintenance. (August 2009)</li> <li>▪ Maintain minimum safe surveillance and maintenance for Fast Flux Test Facility. (September 2010)</li> </ul>					

**Total, Richland**

**915,246**

**977,731**

**910,732**

**Explanation of Funding Changes**

FY 2010 vs. FY 2009 (\$000)
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**Defense Environmental Cleanup**

**Hanford Site**

**2012 Accelerated Completions**

**RL-0011 / NM Stabilization and Disposition-PFP**

- The decrease is due to the completion of shipment of special nuclear materials from the Plutonium Finishing Plant to the Savannah River Site. -4,396
- **RL-0012 / SNF Stabilization and Disposition**
- The decrease is due to the completion of K-East Basin demolition. -66,846
- **RL-0041 / Nuclear Facility D&D-River Corridor Closure Project**
- The increase is due to activities for deactivation, decontamination, decommissioning, and demolition of facilities and structures in the 100 and 300 Areas and waste site and burial ground remediation in the 100 Areas. In addition, reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. 96,118

FY 2010 vs. FY 2009 (\$000)
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**2035 Accelerated Completions**

**RL-0013C / Solid Waste Stabilization and Disposition- 2035**

- The decrease is due to reduced retrieval of suspect transuranic waste and deferral of mixed low-level waste treatment and disposition and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. -65,673

**RL-0030 / Soil and Water Remediation-Groundwater/Vadose Zone - 2035**

- The decrease is due to completion of the expansion capability construction in the 100-K Area and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. -5,766

**RL-0040 / Nuclear Facility D&D-Remainder of Hanford - 2035**

- Decrease reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. -19,653

**RL-0100 / Richland Community and Regulatory Support**

- The increase is due to additional activities required for initiation of injury assessment activities for an iterative process. 2,320

**Non-Defense Environmental Cleanup**

**Fast Flux Test Reactor Facility D&D**

**RL-0042 / Nuclear Facility D&D-Fast Flux Test Facility Project**

- The decrease is due to the transition to long-term surveillance and maintenance. -3,103

**Total, Richland**

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**-66,999**

## River Protection

### Funding by Site

(dollars in thousands)

	FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010
River Protection	976,540	1,009,943	326,035	1,098,000
Total, River Protection	976,540	1,009,943	326,035	1,098,000

### Site Overview

Hanford Site cleanup is managed by two Department of Energy offices, the DOE Richland Operations Office and the DOE Office of River Protection. Each office reports to the Office of Environmental Management.

In order to more effectively manage the River Protection Project and in response to Section 3139 of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999, the Secretary of Energy established the Office of River Protection at the Hanford Site in the State of Washington. The Office is responsible for the storage, retrieval, treatment, immobilization, and disposal of tank waste and the operation, maintenance, engineering, and construction activities in the 200 Area Tank Farms. These Tank Farms include 177 underground storage tanks (149 single-shell tanks and 28 double-shell tanks) that contain approximately 190 million curies in approximately 53 million gallons of chemically hazardous radioactive waste from past processing operations. A multi-year construction project to build a Waste Treatment and Immobilization Plant to process and immobilize the tank waste is ongoing. The processed waste will be disposed in the national geologic repository when available and lower hazard waste forms will be deposited in approved buried waste facilities on the Hanford site.

### Site Description

The Hanford Site is the largest of the three original defense production sites founded in World War II as part of the Manhattan Project. The Hanford reservation is about half the size of the State of Rhode Island, at 586 square miles. Over its 40 years of operations, the site produced approximately 74 tons of plutonium—nearly two-thirds of all the plutonium recovered for government purposes in the United States. Between 1943 and 1963, nine plutonium production reactors were built along the Columbia River. Plutonium and reusable uranium were separated from irradiated fuel using various chemical precipitation and solvent extraction techniques. The plutonium and uranium were shipped to other DOE sites for eventual use in United States nuclear weapons.

During plutonium production, highly radioactive waste resulting from site operations was piped to underground tanks. In some cases small amounts of radioactive waste, representing small amounts of radioactivity, were discharged underground. For example, uncontaminated and slightly contaminated liquids and cooling water were pumped to ditches and ponds. Contaminated water discharged from the reactors was pumped to nearby soil as well as into the Columbia River. Solid waste was buried in shallow trenches or stored inside facilities. The result is more than 1,600 identified waste sites and more

than 500 waste facilities at Hanford. Forty percent of the approximately one billion curies of radioactivity within the DOE nuclear weapons complex resides at Hanford. These materials must be dealt with in a safe and protective manner.

The DOE Office of River Protection is responsible for cleanup of the approximately 53 million gallons of waste in 177 underground storage tanks, as well as contaminated equipment and soils in the 18 tank farms where these tanks are located on the Central Plateau of the Hanford site. Up to sixty-seven of the 177 tanks are suspected to have leaked waste in the environment.

### **Site Cleanup Strategy/Scope of Cleanup**

Office of River Protection's cleanup strategy is a risk-based approach that focuses on contamination sources that are the greatest contributors to risk. Significant cleanup progress has already occurred. For example:

- Interim stabilization (in which transfer of pumpable liquids from Hanford's 149 single-shell tanks to safer double-shell tanks) has been completed, to reduce the risk of future tank leaks to the environment.
- Retrieval of remaining solids and sludges from seven single-shell tanks and three additional tanks to the limits of the first technology has been completed. Retrieval process on two single-shell tanks has been initiated, and design initiated on another. To date, approximately 12,500,000 curies and 1,100,000 gallons of waste have been retrieved and transferred to compliant double-shell tanks.
- The Waste Treatment and Immobilization Plant is being designed and constructed to vitrify the radioactive tank waste. It is the largest radioactive-chemical processing facility in the world: approximately 67 percent complete with design, approximately 39 percent complete with construction, and approximately 42 percent complete overall.
- Demonstration Bulk Vitrification System Full Scale Dryer Test and Integrated Dryer/Melter Test has been completed and design finalized. Bulk vitrification is a possible supplemental technology to increase the ability to treat Hanford's low-activity tank waste to supplement the Waste Treatment and Immobilization Plant capability.
- Retrieval of sludge/saltcake waste from the remainder of single-shell tanks continues.
- Construction of the Hanford integrated disposal facility, which will be used for the disposal of mixed low-activity wastes and low-level wastes, has been completed.
- Installation of the T Farm Interim Surface Barrier has been completed.
- The Interim Pretreatment System Project definition work related to technology testing and down selection, siting, feed selection and secondary waste management has been completed.
- The Draft Tank Closure and Waste Management Environmental Impact Statement has been completed and is available for internal review.



## Site Completion (End State)

The River Protection Project end state is to clean up the tank waste and tank farms in a compliant manner; immobilize and facilitate safe disposal of associated radioactive and chemical wastes; and protect human health, the environment, and Columbia River resources. The lifecycle planning estimate end date is 2042 to 2050. The following will have been accomplished at the completion of the Office of River Protection mission:

- High-level waste will be vitrified and ready for off-site disposal. Prior to shipment, all high-level waste forms will be stored in the interim on-site;
- Low-activity wastes will be stabilized and disposed of onsite;
- Appropriate remediation measures will be implemented for contaminated soils;
- Tanks and related equipment will be stabilized in place pending a residual waste classification determination by the Nuclear Regulatory Commission for tank closure criteria and completion of a Record of Decision under the National Environmental Policy Act;
- Waste treatment systems will be decommissioned;
- Measures will be implemented to ensure the durability of protective conditions established throughout cleanup (e.g., durable surface barriers, long-term monitoring, markers, records, etc.).

## Regulatory Framework

The principal regulatory drivers at the Hanford Site are the Resource Conservation and Recovery Act; Comprehensive Environmental Response, Compensation, and Liability Act; and the Atomic Energy Act. In May 1989, DOE, the U.S. Environmental Protection Agency and the Washington State Department of Ecology signed the Hanford Federal Facility Agreement and Consent Order, commonly known as the Tri-Party Agreement. The Tri-Party Agreement defines legally enforceable milestones for Hanford cleanup in accordance with Resource Conservation and Recovery Act and Comprehensive Environmental Response, Compensation, and Liability Act.

The Tri-Party Agreement milestones listed below are subject to ongoing litigation in *State of Washington v. Bodman*, Case No. CV-08-5085-FVS (Eastern District, Washington) based on the allegation that DOE has either missed, or is certain to miss:

- M-045-00B - Complete the retrieval of waste from sixteen C-Farm Single-Shell Tanks.
- M-045-05A - Complete waste retrieval from tank S-102.
- M-045-05 - Single-shell tank retrievals complete by September 30, 2018.
  - M-062-00 - Complete Pretreatment processing and vitrification of Hanford high-level and low-activity tank wastes by December 31, 2028.
- M-062-00A - Complete Waste Treatment and Immobilization Plant pretreatment and high-level and low-activity vitrification of no less than 10 percent Hanford tank waste by volume and 25 percent by activity by February 28, 2018.
- M-062-07B – Complete assembly of the Low-Activity Waste melter; move High-Level Waste melter number 1 into the High-Level Waste building by December 31, 2007.

- M-062-08 - Submit Hanford Tank Waste Supplemental Treatment Technologies Report by June 30, 2006.
- M-062-09 - Start cold commissioning of the Waste Treatment and Immobilization Plant by February 28, 2009.
- M-062-10 - Complete hot commissioning of the Waste Treatment and Immobilization Plant by January 31, 2011.

### **Critical Site Uncertainties and Assumptions**

The River Protection Project is currently addressing a number of significant known uncertainties that are impacting the ability of the Hanford Site to disposition waste and complete the cleanup mission. Some of these uncertainties include:

- Delays in offsite disposal will require increased interim storage capacity for the vitrified canisters of high-level waste on site.
- Uncertainties regarding tank waste determination decisions because the State of Washington is not a “covered State” under Section 3116 of the National Defense Authorization Act of FY 2005. This could impact overall site tank closures, costs, and schedules because alternative approaches for tank closure may need to be developed.
- The retrieval, treatment, and disposal of tank waste as transuranic waste at the Waste Isolation Pilot Plant is affected by the timing of National Environmental Policy Act decisions, a Waste Isolation Pilot Plant Class III permit modification decision, and a State of Washington Resource Conservation and Recovery Act permit.
- Successful identification, demonstration and regulator approval of a supplemental technology to immobilize a portion of the low-activity waste.

### **Interdependencies**

The Office of River Protection has identified the following near-term interdependencies needed for mission execution:

- Technical consultation by the Nuclear Regulatory Commission on allowable waste residuals in the Hanford single-shell tanks.
- U.S. Environmental Protection Agency approval of the Hanford transuranic tank waste inventory included in the Waste Isolation Pilot Plant compliance recertification application.
- State of New Mexico Department of Environment approval of the Waste Isolation Pilot Plant Class III Permit Modification for disposition of Hanford transuranic tank waste.
- Availability of off-site disposal for high-level waste.

## **Contract Synopsis**

The Office of River Protection currently has two major prime contracts to implement its cleanup strategy: the Tank Farm Operation contract and the Waste Treatment and Immobilization Plant contract. The Tank Farm Operation contract was awarded to Washington River Protection Solutions, LLC, towards the end of FY 2008. The contract is a five year contract term with options for up to five additional years and addresses the following: (1) storage, operation, and interim stabilization of Hanford tank waste; (2) retrieval and disposition of waste from, and interim closure of single-shell tanks; (3) retrieval and disposition of waste from double-shell tanks, including completion of upgrades and waste retrieval and transfer systems; (4) construction, operation, and maintenance of facilities necessary for storage/disposal of immobilized waste whether on- or off-site, including balance of plant construction; (5) stabilization of facilities and preparation of tank closure plans for single-shell tanks; and (6) decommissioning and decontamination to support improved long-term operational efficiencies. This contract is a cost-plus-award-fee contract with performance-based incentives.

The Waste Treatment and Immobilization Plant contract with Bechtel National, Inc., includes the design, construction, and commissioning of the Waste Treatment and Immobilization Plant which includes: completing the Process and Facility Design; managing construction and procurement; conducting acceptance testing; commissioning of the facility; conducting all required environment, safety, quality, and health actions; assuming Full Design Authority; and having full accountability for plant performance, cost, and schedule. This contract type is a cost-plus-incentive-fee contract with cost, schedule, and operational incentives. DOE is renegotiating the contract based on the new Waste Treatment and Immobilization Plant Performance Baseline approved on December 22, 2006.

## **Cleanup Benefits**

### **Near Term**

- Retrieve liquid waste from single-shell tanks and transfer the waste to double-shell tanks for safe storage until the waste can be treated through the Waste Treatment and Immobilization Plant.
- Determine necessary supplemental treatment technologies for treating a portion of the low activity waste.
- Complete the Tank Closure and Waste Management Environmental Impact Statement.
- Continue development of technology for hard-heel tank waste removal.

### **Longer Term**

- Significant environmental risk reduction due to retrievals and treatment of Hanford's tank waste and closure of the tank farms to protect the Columbia River.

Direct maintenance and repair at the Office of River Protection is estimated to be \$27,335,000.

## Funding Schedule by Activity

(dollars in thousands)

	FY 2008	FY 2009	FY 2010
Defense Environmental Cleanup			
Office of River Protection			
Tank Farm Activities			
ORP-0100 / River Protection Community and Regulatory Support	467	0	0
ORP-0014 / Radioactive Liquid Tank Waste Stabilization and Disposition	292,351	319,943	408,000
Subtotal, Tank Farm Activities	292,818	319,943	408,000
Waste Treatment and Immobilization Plant			
ORP-0060 / Major Construction-Waste Treatment Plant	683,722	690,000	690,000
Total, Office of River Protection	976,540	1,009,943	1,098,000

## Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
River Protection					
High-Level Waste packaged for final disposition (Number of Containers)	0	0	0	9,667	0%
Industrial Facility Completions (Number of Facilities)	0	0	0	128	0%
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	0	54,000	0%
Liquid Waste Tanks closed (Number of Tanks)	0	0	0	177	0%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	7,952	10,606	12,476	197,832	6.3%
Nuclear Facility Completions (Number of Facilities)	0	0	0	18	0%
Radioactive Facility Completions (Number of Facilities)	0	0	0	114	0%
Remediation Complete (Number of Release Sites)	5	5	5	278	1.8%
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	1,555	0%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	4,410	0%

## Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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### **ORP-0014 / Radioactive Liquid Tank Waste Stabilization and Disposition**

**292,351      319,943      408,000**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This PBS includes activities required to stabilize approximately 53 million gallons of radioactive waste stored underground in 177 tanks, including retrieval, treatment, disposal and closure of the facilities.

The radioactive waste stored in the Hanford tanks was produced as part of the nation's defense program and has been accumulating since 1944. Due to the age of the tanks, up to sixty-seven tanks are suspected of leaking a total of about one million gallons of waste into the soil. Continued leakage could threaten the Columbia River, located between seven and ten miles away. In order to protect the river, the waste must be removed and processed to a form suitable for disposal, and the tanks stabilized. DOE's plan is to process tank waste and disposition it as vitrified high-level waste, transuranic waste at the Waste Isolation Pilot Plant (if approved), or low-level waste at an approved disposal facility on the Hanford Site. A Tank Closure and Waste Management Environmental Impact Statement is being prepared to decide how to close the tanks, ancillary equipment below grade, and any residual waste that cannot be retrieved, as well as above ground facilities. Appropriate caps and barriers will be used to remediate the contaminated soil surrounding the tanks as required.

Specific activities in the scope of this PBS include:

- Design, construction, and operation of tank waste retrieval and transfer systems to transport the waste from the tanks for stabilization in either the Waste Treatment and Immobilization Plant or supplemental/alternative treatment facilities;
- Operation of treatment facilities to complete the tank waste program;
- Closure of 149 single-shell tanks, 28 double-shell tanks, tank farms, and facilities including completing necessary cleanup actions on tanks, ancillary equipment, contaminated soils, treatment facilities, facilities to store the vitrified high-level waste pending off-site disposal; and on-site low-activity waste disposal facilities;
- Construction of storage facilities where vitrified high-level waste canisters will be stored;
- Construction of a shipping facility;
- Development of a supplemental pretreatment and immobilization treatment technologies for low-activity waste;

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Disposal of low-activity waste containers at the Hanford Site until all tank waste is stabilized;
- Package tank waste that is determined to be contact- or remote-handled transuranic waste, and ship that waste to the Waste Isolation Pilot Plant for final disposition pending appropriate National Environmental Policy Act and regulatory approval;
- Manage the tank farms in a safe and compliant manner until the waste is retrieved for processing and the tank farms are closed;
- Operate the Waste Treatment and Immobilization Plant after construction and perform decontamination and decommissioning of the facility;
- Operate the 222-S Laboratory and the 242-A Evaporator;
- Conduct scientific applied research and technology development activities to advance solutions for the treatment of radioactive waste including pre-treatment processes, tank structural integrity, and advanced retrieval technologies.

Currently, tank farm activities include: initiation of the retrieval system design and construction to support waste feed delivery to the Waste Treatment and Immobilization Plant; continued development of additional single-shell tank retrieval technology demonstrations; and operation of the 222-S Laboratory and the 242-A Evaporator. In addition, retrieval of the remaining solids and sludges from seven single-shell tanks has been completed. Construction of the integrated disposal facility was completed for future use in disposing of low-activity waste and mixed low-level waste. Initial design and engineering scale tests to resolve outstanding technical issues were successfully completed for the Demonstration Bulk Vitrification System, a supplemental technology to increase the ability to treat and dispose of Hanford's low-activity tank waste. The Demonstration Bulk Vitrification System Project Integrated Dryer/Full-Scale Melt Test final report was issued and laboratory analyses of samples from this test confirmed a successful melt and resolution of the molten ionic salt issue. Completed installation of the first interim barrier in T Farm to mitigate known contaminate plumes in the vadose zone under single-shell tanks.

DOE is developing a strategy to accomplish the tank cleanup mission within a 25 to 35 year timeframe. The Waste Treatment and Immobilization Plant has the capacity to immobilize 100 percent of the high level waste and 50 percent of the low activity waste within this timeframe. To address the remaining 50 percent of low activity waste, the approach is to conduct studies, evaluate alternative technologies, and conduct testing as needed for future options for low activity waste treatment. These activities will support a future DOE decision for pretreating and immobilizing the low activity waste.

In FY 2010, the following activities are planned:

- Complete two Evaporator Campaigns for space management.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Complete retrieval of two C-Farm Single-Shell Tanks.
- Continue to perform single-shell tank integrity evaluations.
- Conduct double-shell tank space evaluation and provide necessary updates for continued safe storage.
- Operate the 222-S laboratory and 242-A evaporator.
- Remove hose-in-hose transfer lines.
- Complete installation of the TY Farm Interim Barrier.
- Initiate design and procurement activities to retrieve the next single-shell tanks.
- Conduct scientific applied research and technology development activities to advance solutions for the treatment of radioactive waste including pre-treatment processes, tank structural integrity, and advanced retrieval technologies.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	0	54,000	0%
Liquid Waste Tanks closed (Number of Tanks)	0	0	0	177	0%
High-Level Waste packaged for final disposition (Number of Containers)	0	0	0	9,667	0%
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	1,555	0%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	3,864	0%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	7,952	10,606	12,476	197,832	6.0%
Nuclear Facility Completions (Number of Facilities)	0	0	0	18	0%
Radioactive Facility Completions (Number of Facilities)	0	0	0	114	0%
Industrial Facility Completions (Number of Facilities)	0	0	0	128	0%
Remediation Complete (Number of Release Sites)	5	5	5	278	2.0%

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)

- Complete 242-A Evaporator Integrity Assessment. (FY 2008)
- Complete Demonstration Bulk Vitrification System design. (FY 2008)
- Complete double-shell tank integrity activities. (FY 2008)
- Complete retrieval of one C-Farm single-shell tank. (FY 2008)
- Complete T-Farm Interim Surface Barrier. (FY 2008)
- Complete two Evaporator Campaign for space management. (FY 2008)
- Initiate conceptual design for the interim pre-treatment system. (FY 2008)
- Select Expert Panel Oversight Committee and initiate single-shell tank integrity evaluations. (FY 2008)
- Complete AP Tank Farm Level Rise for double-shell tank space management. (September 2009)
- Perform three double-shell tank core samples and analysis to support tank integrity. (September 2009)
- Complete two evaporator campaigns for space management. (September 2009)
- Continue to perform single-shell tank integrity evaluations. (September 2009)
- Perform three double-shell tank and two cross-site transfers. (September 2009)
- Continue to perform single-shell tank integrity evaluations (September 2009/September 2010)
- Complete installation of the TY Farm Interim Barrier (September 2010)
- Complete two evaporator campaigns for space management (September 2010)
- Initiate design and procurement activities to retrieve the next C Farm single-shell tank (September 2010)
- Operate the 222-S laboratory and 242-A evaporator (September 2010)
- Perform Surveillance, monitoring and corrective maintenance of the Tank Farm facilities (September 2010)
- Remove Hose-in-Hose Transfer Lines (September 2010)



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**ORP-0100 / River Protection Community and Regulatory Support**

**467                      0                      0**

Scope of this PBS has been transferred to RL-0100 in FY 2009 to consolidate all similar activities into one PBS for clarity.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**ORP-0060 / Major Construction-Waste Treatment Plant**

**683,722                      690,000                      690,000**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The scope of this PBS includes: design, construction, and commissioning of the line-item project 01-D-416, Waste Treatment and Immobilization Plant. In FY 2006, funds were appropriated at the line-item subproject level and the five subprojects are as follows: 01-D-16A - Low-Activity Waste Facility, 01-D-16B - Analytical Laboratory, 01-D-16C - Balance of Facilities, 01-D-16D - High-Level Waste Facility, and 01-D-16E - Pretreatment Facility.

The Waste Treatment and Immobilization Plant is critical to the completion of the Hanford tank waste program by providing the primary treatment capability to immobilize (vitrify) the radioactive tank waste at the Hanford Site. The Waste Treatment and Immobilization Plant complex includes five major facilities: Pretreatment Facility, High-Level Waste Facility, Low-Activity Waste Facility, Analytical Laboratory, and the Balance of Facilities. The Pretreatment Facility will separate the radioactive tank waste into low-activity and high-level fractions. The high-level fraction will be transferred to the High-Level Waste Facility for immobilization (i.e., vitrified into glass), ready for disposal. At least 40 percent of the low-activity waste fraction will be transferred and immobilized (vitrified into glass) in the Low-Activity Waste Facility, with the balance immobilized using an alternative, supplemental treatment being developed on the Hanford Site. The Analytical Laboratory will provide real-time analytical support for plant operations. The Balance of Facilities includes office facilities, chemical storage, site utilities, and infrastructure.

This PBS also includes technical and managerial support to the Federal Project Director for the Waste Treatment and Immobilization Plant. Examples of this type of support include: project management and assessment of contractor performance. This allows the Department to be more proactive in identifying emerging cost and schedule issues. The Federal Project Director maintains full responsibility and accountability for the successful completion of the Waste Treatment Plant and Immobilization Plant project.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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As of September, 2008, progress to date for the Waste Treatment and Immobilization Plant project is as follows:

- Overall approximately 67 percent design and 39 percent construction complete.
- Low- Activity Waste Facility – Eighty-four percent design complete and 55 percent construction complete. Ninety-two percent of the concrete and 90 percent of the structural steel has been installed, as well as approximately 63 percent of piping. Civil/structural design and switchgear building design is complete and 90 percent of the electrical design is complete. The Annex Facility siding and roofing is complete. Installation of the export bay crane rails, structural steel, and cooling water pumps is also complete.
- Analytical Laboratory Facility – Seventy-seven percent design complete and 47 percent construction complete. Ninety-six percent of concrete and 97 percent of structural steel installation is complete. Piping installation is 29 percent complete. Piping fabrication designs have been completed along with final control and instrumentation conduit design. Installation of the laboratory siding and roofing and structural steel fireproofing is complete. The heating, ventilation and air-conditioning quality level duct installation is also complete.
- Balance of Facilities – Seventy percent design complete and 60 percent construction complete. The guardhouse facility, maintenance shop and warehouse buildings are complete. Construction of the steam plant is complete. Construction is 81 percent complete on both the main switchgear and switchgear buildings. The cooling tower and steam plant facility are 99 percent complete and the chiller compressor plant is 90 percent complete. In addition, 95 percent of the underground conduit has been installed.
- The High-Level Waste Facility – Through the end of fiscal year 2008 design reached 71 percent complete. Construction is 21 percent complete and includes completion of forming, rebar and embed installation and placement of concrete for sixteen walls and nine slabs, setting of the Silver Mordenite Crane and initial erection of the structural steel for the 14-foot elevation of the facility. Fifty-six percent of the concrete and 9 percent of the structural steel has been installed.
- Pretreatment Facility – Design is 60 percent complete and construction is 25 percent complete. Approximately 1,300 cubic yards of concrete has been placed since construction start-up. Erection of the building structural steel has been completed up to the 28-foot elevation. The building structural analysis report, revised to the current seismic criteria, was completed. Shakedown testing was initiated on the Pretreatment Engineering Platform.

The end-state of this project is completion of hot commissioning and transfer of the facilities to an operations contractor to run the plant. In December 2006, the Department approved a Total Project Cost of \$12,263,000,000 and a revised schedule completion date of November 2019 for completion of construction, start-up, commissioning, and transfer of operations to the operating contractor. Based on the revised Total Project Cost and schedule, and further scope definition and ongoing technical issues, the Department entered into contract renegotiations with the Waste Treatment and Immobilization Plant

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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contractor. After protracted discussions, a revised contract was signed on January 16, 2009. In parallel, the contractor had developed an Internal Replan to the baseline, to align the baseline with the revised contract. The Internal Replan was implemented in December 2008, and maintained the overall Total Project Cost value for the project. However, the Internal Replan resulted in revised Total Project Cost values for each of the five facilities (subprojects). These revised Total Project Cost values are reflected in the individual subproject Construction Project Data Sheets for Fiscal Year 2010.

In FY 2010, the following activities are planned:

Low-Activity Waste Facility –

- Complete piping fabrication drawings.
- Complete interior architectural engineering.
- Complete electrical engineering.
- Complete controls and instrumentation instrument rack release for fabrication.
- Receive offgas mercury absorber (carbon bed absorber).
- Complete fabrication of the melter #1 and #2 lid and balance of components.
- Receive packaged carbon dioxide storage vessel and refrigeration unit.
- Complete erection of the switchgear building and truck bay.
- Continue installation of bulk electrical wiring, conduit, and support racks.

Analytical Laboratory Facility –

- Complete electrical design tie-ins with vendor designed equipment.
- Complete Mechanical Handling (i.e. heating and ventilation air handler) design.
- Deliver the Autosampler System equipment.
- Deliver the shield window glass to the equipment staging area.
- Deliver the exhaust gas ventilation stack discharge monitoring instruments to the equipment staging area.
- Complete fabrication of in-cell lighting.
- Complete installation of the waste collection tank pit elevated concrete.
- Continue to install bulk piping.
- Continue to install commercial and Quality Level heating ventilation and air-conditioning duct.

Balance of Facilities –

- Finalize electrical capacity calculations for the Waste Treatment and Immobilization Plant.
- Complete acquisition package for the Wet Chemical Facility.
- Complete construction on the Water Treatment Building.
- Complete concrete slab and wall placement for the Ammonia Facility, including slab piping and conduit.
- Continue installation of instrumentation and electrical commodities in the Water Treatment Facility.

High-Level Waste Facility –

- Complete Autosampling System design by subcontractor.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Maintain backlog of materials supporting construction, with the following significant achievements:
  - Receive melter cave #1 crane maintenance shield door.
  - Receive two melter feed vessel agitators.
- Continue civil build out, installation of piping, hangers, heating, ventilation, and air-conditioning duct, and other commodities, with the following significant achievements:
  - Erect structural steel and decking slabs.
  - Complete prerequisite civil/structural construction to release the installation of pipe hangers at the 0-foot elevation.
- Complete forming, rebar, and placement of concrete for 25 walls and 11 slabs on the 0- to 37-foot elevations (second and third stories) for a total of 4,720 cubic yards of concrete placed.

Pretreatment Facility –

- Plant Design will release an additional 50,000 linear feet of engineered pipe sections for fabrication, taking the total released for construction to 450,000 linear feet out of a total of 540,000 linear feet.
- Civil design will issue for construction the 12-inch floor slabs at the 77-foot elevation.
- Civil design will issue for construction the fifth lift walls for the 77-foot to 98-foot elevations, in the north-west corner of the building.
- Total concrete released for construction by the end of the year will be 110,600 cubic yards, out of the total of 114,000 cubic yards in the facility.
- Three demister vessels will be delivered, and are part of the high-integrity filtration system, and are located in the radioactive air filtration room.
- Material management will have delivered a total of 340,000 linear feet of engineered pipe sections.
- Steel work deliveries will total 10,500 tons of structural steel.
- Set into position one of four ultrafiltration vessels.
- Concrete placements through the year will total approximately 3,000 cubic yards, with completion of walls and slabs to the upper elevation of the facility.
- Structural steel erection will continue for the 56-foot to 77-foot elevations in an east-west direction, with an additional 1,900 tons of steelwork being erected throughout the year.
- Pipe section installation will progress, with a total of 16,800 additional linear feet of pipe being installed in the building, taking the total to 60,000 linear feet installed.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	546	0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Certified contractor's Earned Value Management System. (FY 2008)</li> <li>▪ Continued Waste Treatment and Immobilization Plant facility construction for the Low-Activity Waste Facility, Analytical Laboratory, and Balance of Facilities; resumed construction on the Pretreatment and High-Level Waste facilities. (FY 2008)</li> <li>▪ Completed construction for the following support systems at the Balance of Facilities: Tanks for Process &amp; Potable Water Supply. (FY 2008)</li> <li>▪ Analytical Laboratory Facility, Engineering – Title II Design Complete. (January 2009)</li> <li>▪ Analytical Laboratory Facility, receive Waste Transfer Equipment. (April 2009)</li> <li>▪ Issue-For-Construction Drawings for Pretreatment Concrete Walls, Elevation 56 – 77 feet. (April 2009)</li> <li>▪ Analytical Laboratory Facility – Delivery of the HEPA Filter Housing Assemblies. (August 2009)</li> <li>▪ Complete design for the Low-Activity Waste Facility (Title II). (September 2009)</li> <li>▪ Balance of Facilities - Complete Installation of Cathodic Protection System. (September 2009)</li> <li>▪ Complete construction for the following support systems at the Balance of Facilities: Steam Plant Facility; Non-Dangerous, Non-Radioactive Effluent Facility; and Firewater Pump House Facility. (September 2009)</li> <li>▪ Low-Activity Waste Facility, construction – Erect Switchgear Building. (October 2009)</li> <li>▪ Low-Activity Waste Facility, construction – Receive Offgas Mercury Adsorber. (October 2009)</li> <li>▪ High-Level Waste Facility – Receive and Accept Melter Cave 1 Crane Maintenance Shield Door. (November 2009)</li> <li>▪ DOE Approval of M-12 Closure. (December 2009)</li> <li>▪ Issue-For-Construction Drawings for the Pretreatment Rack Design. (December 2009)</li> <li>▪ Pretreatment Facility – Release for construction all steel work for the 4th floor (77 Ft. level). (January 2010)</li> <li>▪ High-Level Waste Facility– Erect Structural Steel, Elevation 0 – 14 feet. (January 2010)</li> <li>▪ Install Hot Cell cranes and shield doors in the Pretreatment Facility (February 2010)</li> <li>▪ Analytical Laboratory Facility – Receive Autosampler Equipment.</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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(February 2010)

- Low-Activity Waste Facility – Melter 2 lid and Balance of Components – Ready for Assembly. (June 2010)
- Balance of Facilities - Complete Construction of Water Treatment Building. (July 2010)
- High-Level Waste Facility, Engineering – Complete HVAC Design (Title II). (September 2010)

**Total, River Protection**

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**976,540      1,009,943      1,098,000**

## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### Defense Environmental Cleanup

#### Office of River Protection

##### Tank Farm Activities

##### **ORP-0014 / Radioactive Liquid Tank Waste Stabilization and Disposition**

- The increase is primarily due to retrieval of an additional Single-Shell Tank, scientific applied research and technology development for Tank Waste, and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation.

88,057

#### **Total, River Protection**

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**88,057**





## **01-D-416 Waste Treatment and Immobilization Plant, Hanford, WA**

### **1. Significant Changes**

The estimated cost and schedule dates included with this Construction Project Data Sheet are based on the January 2009 project baseline, which has been updated to reflect a contract modification implemented January 16, 2009. As a result, individual facility (subproject) Total Project Cost values and schedule dates have changed; however, the Total Project Cost of \$12,263,000,000 and completion date of November 2019 for the Waste Treatment and Immobilization Plant Project has not changed.

The Federal Project Director in charge of the Waste Treatment and Immobilization Plant has been certified to a level IV project manager in accordance with DOE's Project Management Career Development Program. A level IV certification is the highest level and is required for projects where the Total Project Cost is greater than \$400,000,000.

#### **Contract Modification**

On January 16, 2009, a contract modification was signed between the Department and the Waste Treatment and Immobilization Plant contractor to reflect the approved Total Project Cost of \$12,263,000,000. The modified contract updates the statement of work for the project, and provides updated incentives for the contractor. The modified contract clearly defines for the contractor, the technical, cost, and schedule performance expectations of DOE. The contract modifications and the incentives were structured to ensure strong performance accountability and motivation for the contractor to achieve the contract requirements. These changes will improve the overall management of the contractor and provide added accountability to the oversight process.

As part of the improved contract management the fee structure was updated. The contract modification has five fee elements: final fee determination for fee to date (\$103M), award fee determination for project management and cost performance (\$139M), schedule (\$227M), operations (\$91M), and enhanced (\$60M). The total max fee is \$620M or 6% if final cost is \$11.1B.

The operations fee incentive is roughly the same structure as the previous, and establishes expected capacity rates which will be achieved during cold and hot commissioning. For schedule, there are "hard" milestones for substantial construction completions, the start of cold commissioning and completion of hot commissioning. There are also "target" milestones for the completion of about 60 milestones up to the beginning of cold commissioning. For project management award fee DOE will assess such things as: resolution of technical issues, engineering/construction performance, etc. For cost award fee DOE will look at a number of factors and indices with the overall evaluation of whether the contractor is on-track to complete the project within the Total Estimate Contract Cost. For the enhanced, DOE wanted to incentivize "step-function" improvements in demonstration of plant capacity, reduction of sodium additions during processing, reduced time for plant turnover, and the sustained achievement of production after plant turnover.

The following table provides a summary of the updated Earned Value Measurement Performance Measurement Baseline, Management Reserve/Fee identification, and Contingency use as established in the January 2009 contract revision. The January 2009 Baseline reflects updates to the approved December 2006 Baseline through a baseline revision effort implemented in December 2008.

	FY 2008 CPDS	FY 2009 CPDS	FY 2010 CPDS	
	(dollars in thousands)			
Description	December 2006 Baseline	Sept. 2007 Status	Jan. 2009 Baseline	Baseline Delta Dec. 06 to Jan. 09
Performance Measurement Baseline	8,786,000	9,331,000	9,963,558	1,177,558
Management Reserve/Contract Contingency/Fee	2,278,000	2,082,000	1,102,940 <sup>1</sup>	(1,175,060)
<b>Subtotal, Contract Scope Costs</b>	<b>\$11,064,000</b>	<b>\$11,413,000</b>	<b>\$11,066,498</b>	<b>\$2,498</b>
Project Contingency	1,014,000	665,000	1,011,502	(2,498)
Other Project Costs	135,000	135,000	135,000	0
Transition Cost (from Privatization Contract)	50,000	50,000	50,000	0
<b>Subtotal, Other Scope Costs</b>	<b>\$1,199,000</b>	<b>\$850,000</b>	<b>\$1,196,502</b>	<b>(\$2,498)</b>
<b>Total Project Cost</b>	<b>\$12,263,000</b>	<b>\$12,263,000</b>	<b>\$12,263,000</b>	<b>\$0</b>

1: This includes Management Reserve and Fee only. The Contract Contingency value of \$400 million has been included in the Project Contingency, in accordance with the January 2009 contract revision.

There is no change in the Total Project Cost for the Fiscal Year 2009 Construction Project Data Sheet. Changes to the Performance Measurement Baseline from the December 2006 Baseline of \$1,177,558,000 has utilized \$1,175,060,000 of Management Reserve/Project Contingency funds which includes \$868,000,000 of Management Reserve and \$309,498,000 of Project Contingency funds. Contingency funds have been used for the resolution of issues from the External Flowsheet Review Team review of 2005, incorporation of capacity increase modifications, and an increase in the anticipated contractor Fee per the revised January 2009 contract.

The project still maintains a Management Reserve of about \$483,000,000, and a Project Contingency of about \$1,011,500,000 for the remaining scope.

The increase in the Performance Measurement Baseline of \$1,177,558,000 is divided in the following functional areas:

Functional Area	\$ in thousands
	Performance Management Baseline Increase
Engineering	299,449
Research & Testing	146,121
Procurement (equip/material)	217,841
Construction	208,553
Startup & Commissioning	67,575
Support & Overheads	238,019
<b>Total</b>	<b>1,177,558</b>

About \$80,850,000 of additional pending changes due to technical changes are being reviewed by DOE and the contractor, and procurement issues that are currently being worked by the contractor (see chart below). These changes could require the use of Management Reserve or Project Contingency, but will not increase the current Total Project Cost of \$12,263,000,000.

Description of Changes	Likely cost impact
Technical Changes being reviewed by the Department: <ul style="list-style-type: none"> <li>• Change in the seismic analysis criteria for specific components and systems.</li> <li>• Seismic and temperature testing requirements for non-components that are not facility safety related.</li> </ul>	Cost increases for construction, but cost avoidance for commissioning and facility operations.
Procurement technical issues <ul style="list-style-type: none"> <li>• Procurement and design requirements for Melter off-gas components.</li> <li>• Waste sample “grab” and transfer system.</li> <li>• Tank waste mixing using pulse jet mixers.</li> </ul>	Cost increases for procurement and installation.

### Revised Baseline

In December 2008 the contractor aligned the baseline with the revised contract, reflecting additional engineering effort required to complete design and support construction efforts, and move commissioning of the Low-Activity Waste Vitrification Facility, Analytical Laboratory, and Balance of Facilities in line with the commissioning of the Pretreatment Facility and the High-Level Waste Vitrification facility. The revision maintains funding compliance (no increase in annual funding or increase in Total Project Cost) - while maintaining the Waste Treatment and Immobilization Plant completion schedule. However, the completion date for engineering, including engineering support through start-up and commissioning, is November 2015.

Prior to the Revised Baseline, the Performance Measurement Baseline had increased by \$718,031,000. The Revised Baseline identified the use of additional Management Reserve of about \$460,000,000, which resulted in a total increase in the Performance Measurement Baseline of \$1,177,588,000 as noted above, and use of seven months of contractor schedule contingency. Identification of this amount of Management Reserve and schedule contingency only 24 months after the June 2006 rebaseline is of concern to the Department and efforts are underway by the contractor to identify efficiencies which could increase the available Management Reserve. The Department continues aggressive oversight and engagement with the contractor’s corporate senior executives to resolve remaining technical issues, and reverse unfavorable cost and schedule performance.

### Earned Value Management System Certification

The Waste Treatment and Immobilization Plant contractor has implemented an Earned Value Management System that complies with the American National Standards Institute 748-A-1998 Standard. The Waste Treatment and Immobilization Plant contractor received Earned Value Management System certification in March 2008.

### Status of Major Technical and Performance Issues

The Department along with the contractor and other independent experts are working towards resolving these issues in FY 2009:

1) **Inadequate vessel mixing** - This issue relates to whether adequate mixing of the fluids and solids in the vessels can be achieved using the pulse jet mixers. Inadequate Newtonian fluid mixing could limit the capability of the Waste Treatment and Immobilization Plant and extend the facility's treatment mission. The testing program is designed to fully demonstrate the technology. Parametric testing was completed in August 2008, and the test report was issued in December 2008. Concurrently, a design assessment was conducted by the contractor to determine which vessels were at risk of not meeting their mixing requirements. The assessment was provided to DOE at the end of October 2008. DOE and the contractor are currently assessing whether there is a need to continue with a large scale test platform.

2) **Ultrafiltration and Undemonstrated Leaching Process** – This issue relates to the concern that the ultrafiltration system and leaching process had not been demonstrated beyond small-scale laboratory tests. The contractor is performing modeling to develop optimum ultrafiltration system operating approaches, testing tank waste samples using the optimized flowsheet, and developing simulants. These activities are complete or are in final stages of report writing. The final action of the issue response plan requires testing the ultrafiltration flowsheet at engineering scale. This testing is underway with the Pretreatment Engineering Platform.

The Pretreatment Engineering Platform is a 1:4.5 scale non-radioactive integrated equipment platform which will demonstrate the ultrafiltration system, leaching process design, system scale-up, and improve projections of system capacity. System integration and integrated water testing has been completed. Simulant testing is currently underway and is planned to be completed by April 2009. These tests will provide critical information needed to confirm ultrafiltration system design by demonstrating caustic leaching, oxidative leaching, solids washing, and process control strategies. Evaluation of this data, in conjunction with other laboratory testing and modeling, will confirm ultrafiltration system design and provide improved estimates of system capacity and projection of mission duration. Closure of this technical issue is expected to occur in June 2009.

## **Defense Nuclear Facilities Safety Board Oversight**

The Defense Nuclear Facilities Safety Board (Board) provides nuclear safety oversight of the Waste Treatment and Immobilization Plant Project. The Board has identified three issues with the Waste Treatment and Immobilization Project in their quarterly report to Congress on defense DOE projects in design and construction. These include: 1) concerns with structural analysis of the High-Level Waste and Pretreatment facilities, including modeling, definition of a seismic load transfer capability in the structure, and the finite element analysis; 2) lack of fire protection coatings on secondary structural steel members; and 3) alternative means of protecting the final exhaust High-Efficiency Particulate Air filters of the confinement ventilation systems equivalent to that of the features prescribed in DOE Standard 1066, *Fire Protection Design Criteria*. The Department is working diligently to resolve the following issues:

1) **Structural Analysis of High-Level Waste and Pretreatment facilities** – In 2008, the Department completed the last of the technical analyses to support resolution of this issue. This was the documentation of the load path analysis of the High-Level Waste and Pretreatment facilities under a design seismic event in High-Level Waste and Pretreatment Structural Summary Reports. The project has incorporated technical and editorial comments by the Board and is submitting to the Defense Nuclear Facilities Safety Board.

2) Fire Protection Coatings of Structural Steel - In January 2009, the Board sent DOE a letter that noted that the High-Level Waste and Pretreatment facilities essentially meet International Building Code criteria for fire resistant construction. The letter noted that the Board agreed with the conclusion that the fire protection strategy for structural steel was adequate based on consequence of nuclear safety, but that to fully resolve the issue it needed confirmation that chemical consequences from a fire would be acceptable

3) Application of DOE criteria for fire protection of confinement ventilation systems – The project has included the requirements of a DOE technical standard for fire protection of filters in confinement ventilation systems that preclude the release of radioactive materials. The DOE has performed studies that indicate such protective features are not necessary for purposes of nuclear safety. The DOE desires to propose alternative means of meeting the protective requirements of the standard and has been engaged with the Board in pursuing this approach.

The Defense Nuclear Facilities Safety Board has also identified some concerns with recent Waste Treatment and Immobilization Plant initiatives to reduce complexity associated with future operations of the plant. The DOE is evaluating refinement to more realistic – but still conservative source terms, through advances in characterizing tank farm wastes, as a means of minimizing operational complexity and enhancing operational safety of the plant.

## Background

This Construction Project Data Sheet is structured with summary information at the project level with details provided at the subproject level. The five subprojects for the Waste Treatment and Immobilization Plant Project are:

- 01-D-16A, Low-Activity Waste Facility
- 01-D-16B, Analytical Laboratory
- 01-D-16C, Balance of Facilities
- 01-D-16D, High-Level Waste Facility
- 01-D-16E, Pretreatment Facility

## 2. Design, Construction, and D&D Schedule

*(fiscal quarter or date)*

	CD-0	CD-1 (Design Start)	Design/PED Complete	CD-2	CD-3 (Construction Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2001 Budget Request	4Q FY1995	4Q FY1996	4Q FY2005	4Q FY1998	1Q FY2001	1Q FY2007	N/A	N/A
FY 2002 Budget Request	4Q FY1995	4Q FY1996	4Q FY2005	4Q FY1998	3Q FY2002	1Q FY2007	N/A	N/A
FY 2003 Budget Request	4Q FY1995	4Q FY1996	4Q FY2005	4Q FY1998	3Q FY2002	1Q FY2007	N/A	N/A
FY 2004 Budget Request	4Q FY1995	4Q FY1996	4Q FY2005	4Q FY1998	4Q FY2002	1Q FY2007	N/A	N/A
FY 2003 Congressional Notification	4Q FY1995	4Q FY1996	4Q FY2005	3Q FY2003	3Q FY2003	3Q FY2008	N/A	N/A
<b>Defense Environmental Cleanup/01-D-416/ Waste Treatment and Immobilization Plant/River Protection</b>								<b>FY 2010 Congressional Budget</b>

(fiscal quarter or date)

	CD-0	CD-1 (Design Start)	Design/PED Complete	CD-2	CD-3 (Constructio n Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2005 Budget Request FY 2004	4Q FY1995	4Q FY1996	4Q FY2005	3Q FY2003	3Q FY2003	3Q FY2008	N/A	N/A
Reprogramming FY 2006 Budget Request	4Q FY1995	4Q FY1996	4Q FY2005	3Q FY2003	3Q FY2003	3Q FY2008	N/A	N/A
FY 2007 Budget Request	4Q FY1995	4Q FY1996	4Q FY2007	3Q FY2003	3Q FY2003	3Q FY2008	N/A	N/A
FY 2008 Budget Request	4Q FY1995	4Q FY1996	4Q FY2010	3Q FY2003	3Q FY2003	2Q FY2017	N/A	N/A
FY 2009 Budget Request	4Q FY1995	4Q FY1996	4Q FY2013	3Q FY2003	3Q FY2003	1Q FY2020	N/A	N/A
FY 2010 Budget Request	4Q FY1995	4Q FY1996	1Q FY2016	3Q FY2003	3Q FY2003	1Q FY2020	N/A	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete – Completion of D&D work

Notes:

- 1) The FY 2009 Budget Request Design/PED Complete date was based on the June 2007 Execution Revision schedule.
- 2) The FY 2008 Budget Request date of 4Q FY 2002 represented the start of physical construction. The FY 2009 Critical Decision - 3C represents the date approval was granted to begin full construction.
- 3) The FY 2008 Budget Request date of 2Q FY 2017 represented the completion of physical construction of the WTP facilities. In the FY 2009 Budget Request, the Critical Decision - 4 completion date represented the completion of construction, start-up, commissioning and transfer of the Waste Treatment Plant to the operations contractor.
- 4) In the FY 2010 Budget Request the dates reflect contract dates from the revised January 2009 contract.

### 3. Baseline and Validation Status

(Fiscal Quarter)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2001	0	5,466,000	5,466,000	7,022,000	0	7,022,000	12,488,000
FY 2002	0	4,350,000	4,350,000	0	0	0	4,350,000
FY 2003	0	4,350,000	4,350,000	0	0	0	4,350,000
FY 2004	0	4,350,000	4,350,000	0	0	0	4,350,000
FY 2003 Cong. Notification	0	5,781,000	5,781,000	0	0	0	5,781,000
FY 2005	0	5,781,000	5,781,000	0	0	0	5,781,000
FY 2006	0	5,781,000	5,781,000	0	0	0	5,781,000
FY 2007	0	5,781,000	5,781,000	0	0	0	5,781,000
FY 2008	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2009	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2010	0	12,263,000	12,263,000	0	0	0	12,263,000

The FY 2001 Budget Request presented the contract value using a privatization approach for this project. The contract included design, construction, and commissioning (at a Total Estimated Cost of \$5,466,000,000), and ten years of initial operations, which would treat approximately 10 percent of waste by volume, and 25 percent of the waste, by radioactivity, for a Total Project Cost of \$12,488,000,000. The plant was designed to have a 40 year operational life, during which time it would process a total of 40 percent of the waste by volume. A second plant (not part of the current project contract) would be necessary to treat and immobilize the balance of the low-activity waste. In May 2000, the Secretary of Energy terminated the privatization contract, because of the dramatic cost increase submitted by the contractor to complete the project.

In December 2000, the Department awarded a Cost-Plus Incentive-Fee contract estimated at \$4,350,000,000 to design, construct and commission the Waste Treatment and Immobilization Plant. In April 2003, a contract modification was negotiated with the principal change of increasing the throughput capacity of the Pretreatment and High-Level Waste Facilities, with the goal of pretreating all of the waste during the 40 year life of the facility, immobilizing all high-level fraction and at least 40 percent of the low-activity fraction. The Department approved a Performance Baseline with a Total Project Cost of \$5,781,000,000. In December 2006, due to over-optimistic cost estimates, and seismic and technical issues, the Department approved a new Performance Baseline with a revised Total Project Cost of \$12,263,000,000.

#### **4. Project Description, Justification, and Scope**

The Waste Treatment and Immobilization Plant is the cornerstone of the River Protection Project's mission to clean up hazardous and radioactive waste contained in underground storage tanks at the Hanford Site in southeastern Washington State. Approximately 53,000,000 gallons of waste containing approximately 240,000 metric tons of processed chemicals and 190,000,000 curies of radio nuclides are currently stored in 170 tanks (seven tanks have been emptied). These caustic wastes are in the form of liquids, slurries, saltcakes, and sludge, and are the result of more than four decades, starting in 1944, of reactor operations and plutonium production for national defense. The infrastructure that supports storage of this waste is aging. The construction of the Waste Treatment and Immobilization Plant and its operations once completed will treat and stabilize these waste-forms.

The Waste Treatment and Immobilization Plant, the world's largest most complex nuclear waste treatment plant, covers 65 acres and includes three major nuclear facilities - Pretreatment Facility, High-Level Waste Facility, and Low-Activity Waste Facility - along with a large Analytical Laboratory, and supporting buildings and utilities collectively known as the Balance of Facilities.

The Department's Office of River Protection is responsible for managing the critically important effort to design, build, and commissioning the waste treatment plant. The Waste Treatment and Immobilization Plant is an unprecedented engineering and construction challenge equivalent to simultaneously building two nuclear power plants. Through a process known as vitrification, most of Hanford's tank waste volume will be transformed into a sturdy, durable form by blending the waste with molten glass and pouring it into stainless steel canisters. In that form, the waste will remain stable and impervious to the environment while its radioactivity dissipates over hundreds to thousands of years.

The Office of River Protection is implementing cleanup under two contract vehicles:

- The Tank Operations Contractor provides for safe storage and retrieval of tank wastes, storage and disposal of treated waste, decontamination and decommissioning of tanks, and initiation of post closure monitoring of the tank farms. The scope of work for this contract also includes providing the infrastructure to support hot commissioning.
- The Waste Treatment and Immobilization Plant Project's Contractor is to design, construct, commission, and support transition of the plant into full operation.

The Waste Treatment and Immobilization Plant contractor will complete process and facility design; perform construction and procurement; conduct acceptance testing; select and integrate a subcontractor into the project team to provide the necessary operating and commissioning capability; and conduct all required environmental, safety, quality, and health actions. From contract award, the contractor is the design authority responsible for the design of the plant.

When operating, the Waste Treatment and Immobilization Plant will pretreat tank waste through separation into a high-level fraction and a low-activity fraction. Both fractions will be immobilized through vitrification into glass. The immobilized high-level fraction will be temporarily stored on the Hanford site in a canister storage building. The immobilized low-activity fraction will be placed in a disposal facility on the Hanford site. The plant is composed of five facilities which are integrated to accomplish the mission for the Waste Treatment and Immobilization Plant Project. The Pretreatment Facility accomplishes the separation of the wastes. The High-Level Waste Facility will immobilize,



through vitrification, the entire high-level fraction. The Low-Activity Waste Facility will immobilize, through vitrification, a substantial portion of the low-activity fraction. The Analytical Laboratory Facility will provide the necessary sample analysis needed throughout the processing facilities. The Balance of Facilities includes the plant infrastructure and support facilities (steam plant, electrical switch yards, chiller plant, etc.).

The River Protection Project regulatory vehicle for cleanup is documented in the Hanford Federal Facility Agreement and Consent Order, commonly known as the Tri-Party Agreement. Under the Tri-Party Agreement, the Department of Energy, the U.S. Environmental Protection Agency, and the Washington State Department of Ecology agreed to a timetable for cleanup of the Hanford Site. Currently the Washington State Department of Ecology is in litigation with the Department of Energy.

#### FY 2008 Accomplishments:

After a near two-year curtailment to resolve seismic criteria issues and complete readiness reviews, construction activities resumed at the Pretreatment and High-Level Waste Facilities by December 2007. By the spring of 2008, all major steel to the second story and all concrete wall placements to the third story had been completed at the Pretreatment Facility. By year end, several concrete placements for slabs and walls at the first to second stories, and erection of structural steel at the first story were completed for the High-Level Waste facility. The project continued to focus on release and delivery of key equipment and components to support construction efforts.

During this time, design, procurement, and construction activities continued to advance at the Low-Activity Waste Facility, Analytical Laboratory Facility, and Balance of Facilities. Balance of Facilities progress included receipt of standby diesel generators, receipt and installation of the Glass Former Storage Facility silos, construction completion of the steam plant, and turnover of a portion of the firewater distribution system from Construction to Startup. Civil/structural design activities, Annex Facility siding and roofing, export bay crane rails and structural steel, and installation of cooling water pumps were completed for the Low-Activity Waste Facility. For the Analytical Laboratory, 65 percent of the heating, ventilation and air conditioning, quality-level ducting was installed, siding and roofing installation was completed, and the facility exhaust stack was installed. Site acceptance testing for the laser ablation system was also completed. The laser ablation system provides rapid waste sample analysis capabilities for the Waste Treatment and Immobilization Plant operation and increases overall operational efficiency. Approximately 10,000 waste samples are analyzed annually.

Many technical issues were also resolved during the year that had impeded engineering/design progress. To date, 26 of the 31 issues identified by the External Flowsheet Review Team have been resolved and approved by the Office of River Protection Project Manager. Delivery and installation of the Pretreatment Engineering Platform was completed. Initial readiness testing on the test program progressed, with the objective to confirm process system design and process operations. The Pretreatment Engineering Platform will be used to verify the operational capabilities of critical systems prior to full scale operation of the Pretreatment Facility.

#### FY 2009 Planned Activities:

Engineering and construction activities will continue across all facilities. By year end, major design activities will be complete for the Analytical Laboratory. For the Low-Activity Waste Facility, 3-dimensional piping drawings will continue to be released, and all final committed designs issued at the

Pretreatment Facility. Research and Technology will focus on bringing to final closure the confirmatory testing activities on the remaining External Flowsheet Review Team test programs, process operations, and pulse jet mixer testing. Testing on the process operations undemonstrated leaching process will complete, bringing to closure testing on the Pretreatment Engineering Platform equipment and issuance of the final closure report.

For the Analytical Laboratory, fabrication will be complete for the remote mechanical manipulator for the hot cell, as well as installation of approximately 55 percent of the commercial heating ventilation and air-conditioning ducting. For the Low-Activity Waste Facility, fabrication and shipment of the second melter base, and installation of the main facility elevator, will be completed, as well as continued installation of miscellaneous steel, piping, and electrical wiring and conduits. The Balance of Facilities will receive additional Glass Former Facility equipment, and installation of the Cathodic Protection System will be completed. High-Level Waste Facility activities will continue with completion of forming, rebar, and placement of concrete for 30 walls and 16 slabs, totaling 5,480 cubic yards. For the Pretreatment Facility, 30 slab and wall placements totaling 6,900 cubic yards will be completed, as well as the erection of 2,000 tons of structural steel.

#### FY 2010 Proposed Activities:

For the Low-Activity Waste Facility, the remaining piping fabrication, architectural, and electrical engineering will be complete. Construction activities will continue with the installation of miscellaneous steel and piping, heating, ventilation, and air conditioning duct, cable trays, conduit, and cable and wire. Erection of the switchgear building and truck bay will also be completed. Major equipment installations will include the carbon bed absorber, and fabrication and shipment of the lids for both melters.

For the Analytical Laboratory, electrical, heating, ventilation and air conditioning, and mechanical handling design activities will be completed. The Autosampler System, shield window glass, and stack discharge monitoring instruments will be delivered to the site. Fabrication of the in-cell lighting will be complete, along with installation of elevated concrete for the waste collection tank pit. Miscellaneous piping and heating, ventilation and air conditioning ducting will continue to be installed.

For the Balance of Facilities, mechanical handling design will be completed for multiple facilities. Construction of the Water Treatment building will be completed. Installation of commodity racks, piping, and electrical systems for various facilities will also continue to progress.

For the High-Level Waste Facility, the Waste Treatment and Immobilization Plant contractor will complete the Autosampling System design and maintain a backlog of materials to support construction. Installation of piping, hangers, heating, ventilation, and air conditioning duct, and other commodities will continue. Rebar and embeds installation, and placement of concrete for 25 walls and 11 slabs will be completed from the first to third stories, for a total of 4,270 cubic yards of concrete.

For the Pretreatment Facility, 50,000 linear feet of engineered pipe will be released for fabrication. Total concrete released for construction by the end of the year will be 110,600 cubic yards, out of the total of 114,000 cubic yards in the facility. Three demister vessels, a cumulative total of 340,000 linear feet of engineered pipe sections, and 10,500 tons of structural steel will have been delivered to the site. The first ultrafiltration vessel will be set into position. Concrete placements throughout the year will total 3,000 cubic yards, with completion of walls and slabs to the upper elevation of the facility. Structural steel erection will continue from the third to fourth stories in an east-west direction, with an additional 1,900

tons of steelwork being erected throughout the year. Pipe work installation will also progress in the out-cell and in-cell areas with a total of 16,800 additional liner feet of pipe being installed in the building, taking the total to 60,000 linear feet installed.

Estimated Engineering and Design Status through FY 2010. The Waste Treatment and Immobilization Plant contractor identified the need for additional engineering work to support the completion of facility design and support construction activities. Completion of the Title II design (work required to allow the placement of walls and installation of piping, cable and structural steel, and procurement of major equipment) is more difficult than originally anticipated. Earlier Engineering estimates excluded sufficient hours to support vendor design changes and resolve unforeseen technical issues during the construction of the facilities. Two million additional engineering hours has been added across the five Waste Treatment and Immobilization Plant facilities resulting in an overall decrease in the engineering/design percent complete. The following table provides the estimated design status for each of the five subprojects at fiscal year end, for FY 2008 through FY 2010.

<b>Engineering/Design Complete</b>	<b>FY 2008</b>	<b>FY 2009</b>	<b>FY 2010</b>
Low-Activity Waste	84%	91%	96%
Analytical Laboratory	77%	84%	91%
Balance of Facilities	70%	75%	83%
High-Level Waste	71%	80%	86%
Pretreatment	60%	66%	75%
<b>Total WTP</b>	<b>67%</b>	<b>75%</b>	<b>82%</b>

The project is being conducted in accordance with the project management requirements in DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, and all appropriate project management requirements have been met.

## 5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Construction			
FY 2001 <sup>a</sup>	401,171	401,171	226,311
FY 2002	665,000	665,000	488,469
FY 2003 <sup>b,c</sup>	671,898	671,898	621,574
FY 2004 <sup>d</sup>	697,530	682,402	725,246
FY 2005 <sup>e</sup>	684,480	695,552	811,862
FY 2006 <sup>f</sup>	520,759	524,815	516,002
FY 2007 <sup>g</sup>	690,000	621,000	550,991
FY 2008 <sup>i</sup>	683,721	752,721	727,764
FY 2009	690,000	690,000	798,378
FY 2010	690,000	690,000	805,576
FY 2011	690,000	690,000	744,236
FY 2012	690,000	690,000	680,281
FY 2013	690,000	690,000	719,176
FY 2014	690,000	690,000	684,141
FY 2015	690,000	690,000	706,851
FY 2016	690,000	690,000	644,505
FY 2017	690,000	690,000	634,265
FY 2018	640,000	640,000	673,236
FY 2019	398,441	398,441	416,036
FY 2020	0	0	88,100
Total, Construction	12,263,000	12,263,000	12,263,000

(a) FY 2001 Appropriations reflect a FY 2001 Rescission of \$829,000 and FY 2001 Supplemental Appropriation of \$25,000,000. The original appropriation was \$377,000,000.

(b) FY 2003 Appropriations reflect approved FY 2003 reprogramming of \$83,981,567 to increase the project from \$606,018,433 to \$690,000,000 to meet project requirements.

(c) FY 2003 Appropriations and Obligations reflect a reduction of \$18,102,000 as part of the FY 2004 Energy and Water Development Appropriation Act prior year reduction.

(d) FY 2004 Appropriations reflect a reduction of \$3,964,000 due to FY 2004 Government-wide Rescission of 0.59 percent and increase of \$11,494,000 due to a reprogramming.

(e) FY 2005 Appropriations reflect a reduction of \$5,520,000 due to FY 2005 Government-wide Rescission of 0.8 percent.

(f) New WTP Project Performance Baseline as approved on December 22, 2006.

(g) The FY 2007 National Defense Authorization Act states that only 90 percent of funds may be obligated until the Secretary of Energy certifies the WTP Earned Value Management System. In March of 2008 the WTP Earned Value Management System received certification.

(h) The Prior Year Appropriations, Obligations, and Costs have been updated to reflect a more current estimate of the anticipated utilization of the non-facility specific carryover funding remaining in the WTP line-item, 01-D-416.

(i) FY 2008 Enacted Appropriations reflect a reduction of \$6,278,000 due to the FY 2008 rescission of 0.91 percent.

The following table breaks out appropriations by Subproject:

(\$ thousands)

WTP Project	Prior	FY08	FY09	FY10	Outyears	Total
Low-Activity	1,015,500	141,699	160,000	100,000	666,801	2,084,000
Analytical Laboratory	229,500	44,590	65,000	55,000	395,910	790,000
Balance of Facilities	451,500	71,345	75,000	50,000	562,155	1,210,000
High-Level Waste	1,101,500	175,389	125,000	160,000	1,678,111	3,240,000
Pretreatment	1,532,838	250,698	265,000	325,000	2,565,464	4,939,000
Total Project Costs	4,330,838	683,721	690,000	690,000	5,868,441	12,263,000

The following table breaks out estimated costs by Subproject:

(\$ thousands)

WTP Project	Prior	FY08	FY09	FY10	Outyears	Total
Low-Activity	945,516	194,278	140,044	122,283	681,879	2,084,000
Analytical Laboratory	205,731	54,490	61,308	39,012	429,459	790,000
Balance of Facilities	426,263	63,198	60,729	51,573	608,237	1,210,000
High-Level Waste	941,815	176,302	195,883	239,584	1,686,416	3,240,000
Pretreatment	1,421,130	239,496	340,414	353,124	2,584,836	4,939,000
Total Project Costs	3,940,455	727,764	798,378	805,576	5,990,827	12,263,000

The following tables provide a breakdown of planned spending for engineering, procurement, construction, and commissioning for each facility for FY 2009 and FY 2010.

Planned Spend for FY 2009 (dollars in thousands)

Facility	Engineering	Procurement	Construction	Commissioning	Total
Low-Activity Waste	39,149	33,024	64,047	3,824	140,044
Analytical Laboratory	17,985	11,337	28,768	3,218	61,308
Balance of Facilities	18,754	11,342	27,157	3,477	60,729
High-Level Waste	60,259	49,764	82,066	3,794	195,883
Pretreatment	145,015	95,492	92,332	7,575	340,414
<b>Total</b>	<b>281,162</b>	<b>200,959</b>	<b>294,370</b>	<b>21,887</b>	<b>798,378</b>

Planned Spend for FY 2010 (dollars in thousands)

Facility	Engineering	Procurement	Construction	Commissioning	Total
Low-Activity Waste	25,091	34,432	58,500	4,260	122,283
Analytical Laboratory	7,089	7,269	21,975	2,679	39,012
Balance of Facilities	13,188	7,592	28,361	2,432	51,573
High-Level Waste	45,993	91,156	94,790	7,645	239,584
Pretreatment	82,781	137,802	120,524	12,016	353,124
<b>Total</b>	<b>174,142</b>	<b>278,251</b>	<b>324,150</b>	<b>29,034</b>	<b>805,576</b>

## 6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Total, PED	N/A	N/A	N/A
Construction			
Site Preparation	n/a	n/a	n/a
Engineering/Design	2,493,233	2,013,350	1,475,000
Equipment/Procurement <sup>1</sup>	2,443,355	2,409,024	1,125,000
Facility Construction <sup>2</sup>	3,714,187	3,686,664	2,155,000
Commissioning <sup>3</sup>	1,360,225	1,221,962	876,000
Technical Support/Transition	185,000	185,000	50,000
Contingency/Fee <sup>4</sup>	2,067,000	2,747,000	100,000
Total, Construction	12,263,000	12,263,000	5,781,000
Total, TEC	12,263,000	12,263,000	5,781,000
Contingency, TEC	[2,067,000]	[2,747,000]	[100,000]
Other Project Cost (OPC)			
Contingency, OPC	N/A	N/A	N/A
Total, TPC	12,263,000	12,263,000	5,781,000
Total, Contingency	[2,067,000]	[2,747,000]	[100,000]

Note: The dollars above may not necessarily match the dollar values in the Section 1 tables. The dollars in the table above represent financial actuals through FY 2008 and the anticipated spend through FY 2020 and the Section 1 tables are based on Earned Value Management values. A majority of the delta in values is related to financial accruals for equipment purchase orders ongoing in the project.

1. Equipment/Procurement dollars represent costs of plant equipment, bulk plant material, and Acquisition Services.
2. Facility Construction dollars represent construction costs through system turnover.
3. Commissioning dollars represent the cost of Start-up, Cold Commissioning, and Hot Commissioning.
4. Contingency/Fee dollars represent the contractor's Management Reserve, Fee, and DOE Project Contingency.

The following table provides a comparison of the total costs by facility for the Current Estimate and the Previous Estimate.

WTP Total Project by Facility	(dollars in thousands)	
	Current Estimate	Previous Estimate
Low-Activity Waste Facility	2,084,000	1,748,000
Analytical Laboratory	790,000	676,000
Balance of Facilities	1,210,000	1,137,000
High-Level Waste Facility	3,240,000	3,308,000
Pretreatment Facility	4,939,000	5,394,000
<b>Total Project Cost</b>	<b>12,263,000</b>	<b>12,263,000</b>

The Total Project Costs for each of the five facilities have changed from the December 2006 Performance Baseline values as a result of the December 2008 Revised Baseline and revised January 2009 contract. Commissioning of the Low-Activity Waste, Analytical Laboratory, and Balance of Facilities are now aligned with the commissioning of the Pretreatment and High-Level Waste facilities. Funds for completion of Low-Activity Waste, Analytical Laboratory, and Balance of Facilities are now spread over several years instead of ending in FY 2012. This permits increased progress on the Pretreatment and High-Level Waste facilities. The allocation of General and Administration (i.e. support costs for management, human resources, etc.) and overhead costs is dependent on the annual spending value of each facility. The Low-Activity Waste, Analytical Laboratory, and Balance of Facilities higher cost estimates reflect an increased expenditure of funds and allocation of General and Administration and overhead costs over a longer duration of time. The Pretreatment and High-Level Waste facilities reflect lower overall cost estimates due to reductions in their share of General and Administration and overhead costs.

## 7. Schedule of Project Costs

For schedule of project costs, see Section 5, "Financial Schedule."

## 8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1Q FY 2020
Expected Useful Life (number of years)	40
Expected Future Start of D&D of this capital asset (fiscal quarter)	TBD

### (Related Funding requirements)

(Dollars in Thousands)

Annual Costs		Life Cycle Costs	
Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
N/A	N/A	N/A	N/A

N/A



Operations will start after the project is completed in November 2019. The annual facility operating costs for the Waste Treatment and Immobilization Plant (following start-up and commissioning) and subsequent Decommissioning and Demolition are not included in this line item project or in the five subprojects. These costs are included in PBS ORP-0014, Office of River Protection - Radioactive Liquid Tank Waste Stabilization and Disposition project, and are therefore not included in this Construction Project Data Sheet.

### 9. Required D&D Information

Area	Square Feet
------	-------------

This project is providing new capability for the Hanford site, and is not replacing a current capability. Thus, this project was not justified on the basis of replacing current facilities. Therefore, no existing facilities will be demolished in conjunction with this project.

## 10. Acquisition Approach

The acquisition of a waste treatment facility to treat Hanford waste was initially planned as a privatized procurement and the project was referred to as the Tank Waste Remediation System. The strategy was for the contractor to design, build, finance, and operate the facility for 10 years and the Department would pay for waste processed. Two privatization contracts were signed in September 1996 for the preparation of conceptual designs: (1) a subsidiary of BNFL plc, with Bechtel National, Incorporated as a subcontractor, and (2) Lockheed-Martin. In May 1998, BNFL, Incorporated was authorized to proceed with preliminary design. Construction was scheduled to commence in December 2000 and hot operations were to start in December 2007, to treat approximately 10 percent of the tank waste (by mass) and 25 percent of the tank waste radioactivity inventory. This plant was expected to have a 40 year operational life and would process a total of 40 percent of the waste by volume. A second plant would be necessary to treat and immobilize the balance of the waste. Planning associated with this privatization contract completed the following Critical Decision milestones:

1. Critical Decision 0: Approved Mission Need - September 1995
2. Critical Decision 1: Approved Preliminary Baseline Range - September 1996
3. Critical Decision 2: Approved Performance Baseline - August 1998

The project is being executed in accordance with the project management requirements in DOE Order 413.3A and DOE Manual 413.3-1, *Program and Project Management for the Acquisition of Capital Assets*. The following critical decisions were approved after the December 2000 award:

1. Critical Decision 3A: Approved Limited Construction - October 2001
2. Critical Decision 3B: Approved Preliminary Construction - May 2002
3. Critical Decision 3C: Approved Full Construction - April 2003
4. Approval of Revised Cost and Schedule Baseline - December 2006

The following critical decision is planned for the future.

1. Critical Decision 4: Approved Start of Operation - 1Q FY 2020  
(Based on completion of hot commissioning by July 30, 2019, and transition of operations to the Tank Operations Contractor by November 30, 2019.)

The following facility milestone dates are based on the recently signed revised contract with the Waste Treatment and Immobilization Plant contractor. On November 26, 2008, the State of Washington filed suit against DOE in the U.S. District Court for the Eastern District of Washington under the citizen suit provisions of the Resource Conservation and Recovery Act. The suit occurred after an extensive 18 month negotiation process between the Department of Energy, State of Washington, and the Environmental Protection Agency.

### Waste Treatment and Immobilization Plant Milestones

WTP Project Milestone Description	Schedule Date
Start of Construction	July 10, 2002 A
Start Cold Commissioning*	September 30, 2017
Completion of Hot Commissioning*	July 30, 2019
Completion of Contract Requirements	November 2019
* Contract Dates - January 2009 Revision	

Note: The planned dates represent the contract dates and may differ from dates displayed in Section 2, which are the DOE Critical Decision approval dates.



**01-D-16A, Low-Activity Waste Facility, Hanford, WA Project Data Sheet is for Construction**

**1. Significant Changes**

The estimated cost and schedule dates included with this Construction Project Data Sheet are based on the Revised Baseline implemented by the contractor in December 2008. As a result of the Revised Baseline, individual facility (subproject) Total Project Cost values and schedule dates have changed; however, the approved Total Project Cost of \$12,263,000,000 and completion date of November 2019 for the Waste Treatment and Immobilization Plant Project has not changed.

The revised Total Project Cost for the Low-Activity Waste Facility is \$2,084,000,000. Facility milestone dates have been changed to be consistent with the revised contract, signed on January 16, 2009. The Total Project Cost value increased substantially for the Low-Activity Waste Facility as a result of increased engineering hours, realignment of the construction completion and commissioning with the Pretreatment and High-Level Waste facilities, and an increased out-year allocation of support costs consistent with the contract modification. Most of the schedule changes result from elimination of the early Low-Activity Waste Facility commissioning strategy. The facility will now commission sequentially along with the other facilities.

A Federal Sub-Project Director with a current level II certification has been assigned to the Low-Activity Waste Facility, per the DOE Project Management Career Development Program.

**2. Design, Construction, and D&D Schedule**

*(fiscal quarter or date)*

	CD-0	CD-1 (Design Start)	Design/PED Complete	CD-2	CD-3 (Construction Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2007	4Q FY1995	4Q FY1996	4Q FY2007	3Q FY2003	3Q FY2002	3Q FY2008	N/A	N/A
FY 2008	4Q FY1995	4Q FY1996	4Q FY2008	3Q FY2003	3Q FY2002	2Q FY2012	N/A	N/A
FY 2009	4Q FY1995	4Q FY1996	3Q FY2009	3Q FY2003	3Q FY2003	1Q FY2014	N/A	N/A
FY 2010	4Q FY1995	4Q FY1996	4Q FY2011	3Q FY2003	3Q FY2003	1Q FY2020	N/A	N/A

- CD-0 – Approve Mission Need
- CD-1 – Approve Alternative Selection and Cost Range
- CD-2 – Approve Performance Baseline
- CD-3 – Approve Start of Construction
- CD-4 – Approve Start of Operations or Project Closeout
- D&D Start – Start of Demolition & Decontamination (D&D) work
- D&D Complete – Completion of D&D work

Notes:

- 1) The FY 2009 Budget Request Design/PED Complete date is based on the June 2007 Execution Revision schedule.
- 2) The FY 2008 Budget Request date for 'CD-4' of 2Q FY 2012 represented the completion of physical construction of the facility. In the FY 2009 budget request the Critical Decision 'CD-4' completion date represents the completion of construction, start-up, commissioning, and the transfer of the facility to the operations contractor (based on the Early LAW concept).
- 3) The FY 2010 Budget Request 'Design Complete' and 'CD-4' dates are from the revised January 2009 contract, and the 'CD-4' date now represents the completion of construction, start-up, commissioning and the transfer of the WTP Project to the operations contractor.

The Mission Need (Critical Decision-0) for the Waste Treatment and Immobilization Plant Project was approved in September 1995, followed by Critical Decision-1 in September 1996, and Critical Decision-2 in August 1998. The Waste Treatment and Immobilization Plant Project was initiated as a privatization contract in 1998, and then was re-bid to a conventional cost reimbursable type contract in December 2000. In May 2002, Critical Decision-3b - Preliminary Construction - was approved, which authorized basemat concrete and concrete walls to grade, and allowed the first concrete placement for the Low-Activity Waste Facility in July 2002. In April 2003, a revised Performance Baseline (Critical Decision -2) and Full Construction Authorization (Critical Decision -3c) were formally approved for the Waste Treatment and Immobilization Plant Project.

### 3. Baseline and Validation Status

(Fiscal Quarter)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2007	0	1,060,740	1,060,740	0	0	0	1,060,740
FY 2008	0	1,748,000	1,748,000	0	0	0	1,748,000
FY 2009	0	1,748,000	1,748,000	0	0	0	1,748,000
FY 2010	0	2,084,000	2,084,000	0	0	0	2,084,000

Note: FY 2007 budget submittal values above did not include the facility costs prior to FY 2006. These prior year costs (FY 2001 - FY 2005, included in Line Item 01-D-416) were added to the FY 2008 budget submittal values to provide the total estimated cost for the facility.

A revised Performance Baseline for the overall Waste Treatment and Immobilization Plant Project was validated and approved on December 22, 2006, with a Total Project Cost of \$12,263,000,000. The estimated Low-Activity Waste Facility portion of the current Total Project Cost is now \$2,084,000,000.

### 4. Project Description, Justification, and Scope

The Low-Activity Waste Facility is an integral part of the tank waste cleanup project. The facility is a seven story concrete and steel framed building that covers an area one football field long by one-and-a-half football fields wide. It is constructed from 28,000 cubic yards of concrete and 6,000 tons of structural steel, includes 19 miles of piping. The low-activity waste will be mixed with glass formers, converted to glass, and placed in stainless steel canisters (7 feet high, 4 feet in diameter), which will be disposed in the on-site Integrated Disposal Facility. The facility utilizes two melters that have a design capacity (name plate) and treatment capacity (at 70 percent plant availability) of 30 metric tons and 21 metric tons, respectively, of glass per day. The facility is designed for contact maintenance, as the melters are self shielded. An annex abutting the facility will provide control rooms, entries, and operations and maintenance support areas.

#### FY 2008 Accomplishments:

##### **Design Activities:**

- Completed Low-Activity Waste Facility civil/structural design.
- Completed 90 percent of electrical design.
- Completed switchgear building design which provides all the power to the Low-Activity Waste Facility from Balance of Facilities distribution system.

**Procurement Activities:**

- Completed factory acceptance testing and receipt of the startup and discharge heater power supplies.
- Delivered five complex pipe headers with waste containment.
- Delivered heating ventilation and air-conditioning cooling panels.
- Delivered melter external electrical distribution bar.

**Construction Activities:**

- Completed Annex Facility siding and roofing installation.
- Commenced installation of the process area partition wall subcontractor.
- Completed process cell floor structural steel fire proofing.
- Completed installation and turnover of the process cell floor crane to the Startup organization for constructions beneficial use.
- Completed export bay crane rails.
- Completed export bay structural steel.
- Completed installation of cooling water pumps.

Planned FY 2009 Activities:**Design Activities:**

- Release the control and instrumentation terminations design to construction.
- Continue releasing piping fabrication drawings.

**Procurement Activities:**

- Receive the container transporter.
- Receive the 48-foot elevation (third story) important-to-safety uninterruptible power supply system.
- Complete fabrication of the melter #2 base.
- Receive the melter piping inter-connections connections (batches 1 and 2).

**Construction Activities:**

- Complete installation of the main elevator.
- Continue installation of miscellaneous steel.
- Continue installation of bulk pipe and hangers.
- Completed Fabrication of Melter #1 base.
- Continue installation of electrical wiring, conduit, and support racks.

Planned FY 2010 Activities:**Design Activities:**

- Complete the remaining piping fabrication drawings.
- Complete interior architectural engineering.
- Complete electrical engineering.
- Complete controls and instrumentation instrument rack release for fabrication.

**Procurement Activities:**

- Receive offgas mercury absorber (carbon bed absorber).
- Complete fabrication of melter #1 and #2 lid and balance of components.
- Receive packaged carbon dioxide storage vessel and refrigeration unit.

**Construction Activities:**

- Complete erection of the switchgear building and truck bay.
- Place concrete Transformer Pad.
- Continue installation of miscellaneous steel in the Process Gallery.
- Continue installation of bulk electrical wiring, conduit, and support racks.
- Complete erection of the switchgear building and truck bay.

The following table provides the status for each phase by the end of each fiscal year: accomplished for FY 2008, planned for FY 2009, and proposed for FY 2010.

Phase	FY 2008	FY 2009	FY 2010
Design	84%	91%	96%
Procurement	70%	73%	84%
Construction	55%	58%	67%
Commissioning	3%	4%	4%
Overall Facility	61%	68%	75%

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, and all appropriate project management requirements have been met.

**5. Financial Schedule**

(dollars in thousands)

Appropriations	Obligations	Costs
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Total Estimated Cost (TEC)

Construction			
FY 2005 <sup>a</sup>	668,124	668,124	585,620
FY 2006	161,376	161,376	172,147
FY 2007	186,000	186,000	187,749
FY 2008	141,699	141,699	194,278
FY 2009	160,000	160,000	140,044
FY 2010	100,000	100,000	122,283
FY 2011	60,000	60,000	70,594
FY 2012	75,000	75,000	72,808
FY 2013	55,000	55,000	55,750
FY 2014	50,000	50,000	49,317
FY 2015	70,000	70,000	73,166
FY 2016	125,000	125,000	113,932
FY 2017	100,000	100,000	90,326
FY 2018	100,000	100,000	106,249
FY 2019	31,801	31,801	49,737
FY 2020	0	0	0
Total, Construction	2,084,000	2,084,000	2,084,000

Notes:

a) The FY 2005 line is based on facility costs prior the split of the WTP into the five facilities.



2) The final Low-Activity Waste Facility Construction Complete milestone is June 2015. After construction and in preparation of Cold Commissioning, component and system testing will be conducted on 11 process systems as well as operator training.

The following table provides a breakdown of planned spending by design, procurement, construction, and commissioning for the next few fiscal years (in thousand of dollars):

Phase	FY 2008	FY 2009	FY 2010
Design	19,773	39,149	25,091
Procurement	101,808	33,024	34,432
Construction	64,705	64,047	58,500
Commissioning	7,992	3,824	4,260
Total Facility	194,278	140,044	122,283

## 6. Details of Project Cost Estimate

(dollars in thousands)

Current Total Estimate	Previous Total Estimate	Original Validated Baseline <sup>5</sup>
------------------------	-------------------------	--

Total Estimated Cost (TEC)

Design (PED)

Total, PED

N/A

N/A

N/A

Construction

Site Preparation

n/a

n/a

n/a

Engineering/Design

471,435

389,500

n/a

Equipment/Procurement<sup>1</sup>

433,122

361,100

n/a

Facility Construction<sup>2</sup>

644,084

471,300

1,175,000

Commissioning<sup>3</sup>

262,359

142,900

n/a

Technical Support/Transition

33,000

37,000

n/a

Contingency/Fee<sup>4</sup>

240,000

346,200

n/a

Total, Construction

2,084,000

1,748,000

1,175,000

Total, TEC

2,084,000

1,748,000

1,175,000

Contingency, TEC

[240,000]

[346,200]

n/a

Other Project Cost (OPC)

N/A

N/A

N/A

Contingency, OPC

Total, TPC

2,084,000

1,748,000

1,175,000

Total, Contingency

[240,000]

[346,200]

n/a

Notes:

1. Equipment/Procurement dollars represent of costs of plant equipment, plant material, and Acquisition Services.
2. Facility Construction dollars represent construction costs through system turnover.
3. Commissioning dollars represent the cost of Start-up, Cold Commissioning, and Hot Commissioning.
4. Contingency/Fee represents the contractor's Management Reserve, Fee, and DOE Project Contingency.

5. The value listed in the "Original Validated Baseline - Facility Construction" is a total number for all the values that would normally appear in this column. A breakout for the March 2003 Baseline is not available, as until FY 2006 the facilities were not separated but totaled for the whole project, and the current breakout methodology was implemented in FY 2008.

## **7. Schedule of Project Costs**

For schedule of project costs, see Section 5, "Financial Schedule."

## **8. Related Operations and Maintenance Funding Requirements**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

## **9. Required D&D Information**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

## **10. Acquisition Approach**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

The following facility milestone dates are based on the December 2008 Revised Baseline and revised contract signed in January 2009.

**Low-Activity Waste Facility Milestones**

Milestone Title	Milestones - January 2009
Start Construction	July 10, 2002 A
Complete Design	September 30, 2011
Substantially Complete Construction*	December 31, 2014
Complete Construction	June 2015
Start Cold Commissioning*	February 28, 2018
Complete Hot Commissioning*	May 30, 2019
A = Actual date construction started which followed approval of CD-3B.  * Contract Milestones-January 2009 Contract	

Note: The final Low-Activity Waste Facility Construction Complete milestone is June 2015. After construction and in preparation of Cold Commissioning, component and system testing will be conducted on 11 process systems as well as operator training.



## 01-D-16B, Analytical Laboratory, Hanford, WA Project Data Sheet is for Construction

### 1. Significant Changes

The estimated cost and schedule dates included with this Construction Project Data Sheet are based on the Revised Baseline implemented by the contractor in December 2008. As a result of the Revised Baseline, individual facility (subproject) Total Project Cost values and schedule dates have changed; however, the approved Total Project Cost of \$12,263,000,000 and completion date of November 2019 for the Waste Treatment and Immobilization Plant Project has not changed.

The revised Total Project Cost for the Analytical Laboratory is \$790,000,000. Facility milestone dates have been changed to be consistent with the revised contract, signed on January 16, 2009. The Total Project Cost value increased for the Analytical Laboratory as a result of realignment of the construction completion and commissioning with the Pretreatment and High-Level Waste facilities, and an increased out-year allocation of support costs consistent with the contract modification. Most of the schedule changes result from elimination of the early Low-Activity Waste Facility commissioning strategy. The laboratory will now commission just ahead of the other facilities.

A Federal Sub-Project Director with a current level II certification has been assigned to the Analytical Laboratory, per the DOE Project Management Career Development Program.

### 2. Design, Construction, and D&D Schedule

*(fiscal quarter or date)*

	CD-0	CD-1 (Design Start)	Design/PED Complete	CD-2	CD-3 (Constructi on Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2007	4Q FY1995	4Q FY1996	4Q FY2007	3Q FY2003	3Q FY2003	3Q FY2008	N/A	N/A
FY 2008	4Q FY1995	4Q FY1996	4Q FY2009	3Q FY2003	3Q FY2003	1Q FY2011	N/A	N/A
FY 2009	4Q FY1995	4Q FY1996	1Q FY2010	3Q FY2003	3Q FY2003	1Q FY2014	N/A	N/A
FY 2010	4Q FY1995	4Q FY1996	4Q FY2012	3Q FY2003	3Q FY2003	1Q FY2020	N/A	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete – Completion of D&D work

Notes:

1) The FY 2009 Budget Request Design/PED Complete date is based on the June 2007 Execution Revision schedule.

2) The FY 2008 Budget Request date for 'CD-4' of 1Q FY 2011 represented the completion of physical construction of the facility. In the FY 2009 budget request, the Critical Decision 'CD-4' completion date represents the completion of construction, start-up, commissioning and the transfer of the laboratory to the operations contractor (based on the Early Law concept).

3) The FY 2010 Budget Request 'Design Complete' and 'CD-4' dates are from the revised January 2009 contract, and the Critical Decision 'CD-4' date now represents the completion of construction, start-up, commissioning and the transfer of the WTP Project to the operations contractor.

The Mission Need (Critical Decision-0) for the Waste Treatment and Immobilization Plant Project was approved in September 1995, followed by Critical Decision -1 in September 1996, and Critical Decision -2 in August 1998. The Waste Treatment and Immobilization Plant Project was initiated as a privatization contract in 1998, and then was re-bid to a conventional cost reimbursable type contract in December 2000. In May 2002, Critical Decision -3b - Preliminary Construction - was approved, which authorized basemat concrete and concrete walls to grade. In April 2003, a revised Performance Baseline (Critical Decision -2) and Full Construction Authorization (Critical Decision -3c) were formally approved for the Waste Treatment and Immobilization Plant Project. The first concrete placement for the Analytical Laboratory was in July 2004.

### 3. Baseline and Validation Status

(Fiscal Quarter)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2007	0	267,140	267,140	0	0	0	267,140
FY 2008	0	676,000	676,000	0	0	0	676,000
FY 2009	0	676,000	676,000	0	0	0	676,000
FY 2010	0	790,000	790,000	0	0	0	790,000

Note: FY 2007 budget submittal values above did not include the facility costs prior to FY 2006. These prior year costs (FY 2001 - FY 2005, included in Line Item 01-D-416) were added to the FY 2008 budget submittal values to provide the total estimated cost for the facility.

A revised Performance Baseline for the overall Waste Treatment and Immobilization Plant Project was validated and approved on December 22, 2006, with a Total Project Cost of \$12,263,000,000. The estimated Analytical Laboratory portion of the current Total Project Cost is \$790,000,000.

### 4. Project Description, Justification, and Scope

The Analytical Laboratory is a vital production link that drives waste vitrification process control and waste form qualification for the main production facilities, i.e., Pretreatment, High-Level Waste and Low-Activity Waste facilities. The facility is a four-story building that covers an area about the size of one football field, with a building volume of over 2.5 million cubic feet. Overall construction will include 12,000 cubic yards of concrete, 1,700 tons of structural steel, and 7 miles of piping. The Lab's importance centers on its around-the-clock ability to analyze waste samples from the Pretreatment Facility, as well as from the two vitrification facilities, with its key function being to ensure the final glass product meets all regulatory requirements and standards. Nearly 10,000 waste samples per year will be analyzed in the Analytical Laboratory.

The Laboratory will incorporate features and capabilities necessary to ensure efficient operations including: (1) receipt/handling of Hanford Tank Farm samples for waste feed acceptance, (2) process control, (3) waste form qualification testing, (4) environmental and authorization basis compliance, and (5) limited technology testing. The Laboratory contains eight main areas: (1) administrative areas, (2) 14 radiological laboratories which house fume hoods and related equipment to support low-activity sample analysis activities, (3) 14 hot cells that house equipment necessary for high-activity waste analysis activities, (4) maintenance and decontamination areas that house tools and equipment necessary to support facility maintenance and operations, (5) mechanical and utility areas house equipment that

provide ventilation, electricity, laboratory gases, and water supplies, (6) below grade Radioactive Liquid Waste Disposal system cells and pits house vessels and equipment for handling effluents from the processes and operations of the lab, (7) two bulk storage tanks - one tank contains liquid nitrogen and the other holds liquid argon which supports lab operations, and (8) pressurized helium bottle storage area.

### **FY 2008 Accomplishments:**

#### **Design Activities:**

- Completed production of piping fabrication designs this will allow construction installation of piping systems.
- Completed final control and instrumentation conduit design this will allow construction to install the conduit.
- Completed laser ablation site acceptance testing which provides rapid waste sample analysis capabilities for Waste Treatment and Immobilization Plant operations.

#### **Procurement Activities:**

- Delivery of fabricated pipe is currently 87 percent complete.

#### **Construction Activities:**

- Completed installation of all siding and roofing for the facility.
- Completed the installation of the structural steel fireproofing.
- Set facility exhaust gas ventilation stack to allow installation of stack instrumentation, running of exhauster fans, and downstream ventilation characterization system testing.
- Completed installation of maintenance room radioactive contamination work area (glovebox).
- Completed approximately 65 percent of the heating ventilation and air-conditioning Quality Level duct installation.
- Completed coating installation on the exterior of the highly radioactive sample analysis area (hot cell).
- Commenced installation of the interior wall partitions to support installation of electrical and piping systems.

### **Planned FY 2009 Activities:**

#### **Design Activities:**

- Complete prime contractor design (excludes some vendor designs).

#### **Procurement Activities:**

- Receive the waste transfer system equipment which allows samples to be distributed to specific analysis stations within the laboratory hot cell.
- Receive the vacuum pump receiver equipment to support the analysis of waste.
- Complete fabrication of the remote mechanical manipulator for the hot cell.

#### **Construction Activities:**

- Complete installation of approximately 55 percent of the Commercial Level heating ventilation and air-conditioning duct.
- Continue installation of 9,973 linear feet bulk pipe and piping supports.
- Continue installation of partition walls.
- Completed the heating ventilation and air-conditioning Quality Level duct installation.

## **Planned FY 2010 Activities:**

### **Design Activities:**

- Complete electrical design tie-ins with vendor designed equipment.
- Complete Mechanical Handling (i.e. heating and ventilation air handler) design.
- Continue to review vendor drawings.

### **Procurement Activities:**

- Deliver the Autosampler System equipment.
- Deliver the shield window glass to the equipment staging area.
- Deliver the exhaust gas ventilation stack discharge monitoring instruments to the equipment staging area.
- Complete fabrication of in cell lighting to support installation in the hot cell.

### **Construction Activities:**

- Complete installation of the waste collection tank pit elevated concrete.
- Continue to install bulk piping.
- Continue to install commercial and Quality Level heating ventilation and air-conditioning duct.

The following table provides the status for each phase by the end of each fiscal year: accomplished for FY 2008, planned for FY 2009, and proposed for FY 2010.

Phase	FY 2008	FY 2009	FY 2010
Design	77%	84%	91%
Procurement	61%	63%	70%
Construction	47%	66%	74%
Commissioning	6%	6%	7%
Overall	38%	43%	48%

Note: The percentages of completion for FY 2008 and FY 2009 have been adjusted to reflect a replan of the baseline, which may have resulted in lower percentages of completions than previously reported.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, and all appropriate project management requirements have been met.



## 5. Financial Schedule

(dollars in thousands)

Appropriations	Obligations	Costs
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Total Estimated Cost (TEC)

Construction			
FY 2005 <sup>a</sup>	125,948	125,948	116,790
FY 2006	44,552	44,552	25,966
FY 2007	59,000	59,000	62,975
FY 2008	44,590	44,590	54,490
FY 2009	65,000	65,000	61,308
FY 2010	55,000	55,000	39,012
FY 2011	5,000	5,000	21,125
FY 2012	10,000	10,000	25,192
FY 2013	35,000	35,000	29,476
FY 2014	35,000	35,000	33,743
FY 2015	45,000	45,000	53,615
FY 2016	75,000	75,000	64,788
FY 2017	70,000	70,000	71,729
FY 2018	85,000	85,000	92,781
FY 2019	35,910	35,910	37,010
FY 2020	0	0	0
Total, Construction	790,000	790,000	790,000

a) The FY2005 line is based on facility costs prior the split of the WTP into the five facilities

The following table provides a breakdown of current and planned spending by design, procurement, construction, and commissioning for the next few fiscal years (in thousand of dollars):

Phase	FY 2008	FY 2009	FY 2010
Design	6,387	17,985	7,089
Procurement	23,773	11,337	7,269
Construction	20,755	28,768	21,975
Commissioning	3,575	3,218	2,679
Total	54,490	61,308	39,012

## 6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline <sup>5</sup>
Total Estimated Cost (TEC)			
Design (PED)			
Total, PED	N/A	N/A	N/A
Construction			
Site Preparation	n/a	n/a	n/a
Engineering/Design	108,000	77,250	n/a
Equipment/Procurement <sup>1</sup>	106,500	88,100	n/a
Facility Construction <sup>2</sup>	162,000	136,850	426,000
Commissioning <sup>3</sup>	243,500	232,100	n/a
Technical Support/Transition	19,300	32,000	n/a
Contingency/Fee <sup>4</sup>	150,700	109,700	n/a
Total, Construction	790,000	676,000	426,000
Total, TEC	790,000	676,000	426,000
Contingency, TEC	[150,700]	[109,700]	n/a
Other Project Cost (OPC)	N/A	N/A	N/A
Contingency, OPC			
Total, TPC	790,000	676,000	426,000
Total, Contingency	[150,700]	[109,700]	n/a

### Notes:

1. Equipment/Procurement dollars represent of costs of plant equipment, plant material, and Acquisition Services.
2. Facility Construction dollars represent construction costs through system turnover.
3. Commissioning dollars represent the cost of Start-up, Cold Commissioning, and Hot Commissioning.
4. Contingency/Fee represents the contractor's Management Reserve, Fee, and DOE Project Contingency.
5. The value listed in the "Original Validated Baseline - Facility Construction" is a total number for all the values that would normally appear in this column. A breakout for the March 2003 Baseline is not available, as until FY 2006 the facilities were not separated but totaled for the whole project, and the current breakout methodology was implemented in FY 2008.

## 7. Schedule of Project Costs

For schedule of project costs, see Section 5, "Financial Schedule."

## 8. Related Operations and Maintenance Funding Requirements

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

## **9. Required D&D Information**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

## **10. Acquisition Approach**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

The following facility milestone dates are based on the December 2008 Revised Baseline and revised contract signed in January 2009.

### Analytical Laboratory Milestones

Milestone Title	Milestones - January 2009
Start Construction	August 2, 2004 A
Complete Design	September 30, 2012
Substantially Complete Construction*	December 31, 2012
Complete Construction	June 2014
A=Actual date construction started which followed approval of CD-3C * Contract Milestones-January 2009 Contract	

## 01-D-16C, Balance of Facilities, Hanford, WA

### 1. Significant Changes

The estimated cost and schedule dates included with this Construction Project Data Sheet are based on the Revised Baseline implemented by the contractor in December 2008. As a result of the Revised Baseline, individual facility (subproject) Total Project Cost values and schedule dates have changed; however, the approved Total Project Cost of \$12,263,000,000 and completion date of November 2019 for the Waste Treatment and Immobilization Plant Project has not changed.

The revised Total Project Cost for the Balance of Facilities is \$1,210,000,000. Facility milestone dates have been changed to be consistent with the revised contract, signed on January 16, 2009. The Total Project Cost value increased for the Balance of Facilities as a result of realignment of the construction completion and commissioning with the Pretreatment and High-Level Waste facilities, and an increased out-year allocation of support costs consistent with the contract modification. Most of the schedule changes result from elimination of the early Low-Activity Waste Facility commissioning strategy. The Balance of Facilities will now commission just ahead of the other facilities.

A Federal Sub-Project Director with a current level II certification has been assigned to the Balance of Facilities per the DOE Project Management Career Development Program.

### 2. Design, Construction, and D&D Schedule

*(fiscal quarter or date)*

	CD-0	CD-1 (Design Start)	Design/PED Complete	CD-2	CD-3 (Construction Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2007	4Q FY1995	4Q FY1995	4Q FY2007	3Q FY2003	3Q FY2002	3Q FY2008	N/A	N/A
FY 2008	4Q FY1995	4Q FY1996	4Q FY2009	3Q FY2003	3Q FY2002	2Q FY2012	N/A	N/A
FY 2009	4Q FY1995	4Q FY1996	4Q FY2011	3Q FY2003	3Q FY2002	1Q FY2014	N/A	N/A
FY 2010	4Q FY1995	4Q FY1996	1Q FY2015	3Q FY2003	3Q FY2002	1Q FY2020	N/A	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete – Completion of D&D work

Notes:

1. The FY 2009 Budget Request date for Design Complete is based on the June 2007 Execution Revision schedule.
2. The FY 2008 Budget Request date for Critical Decision - 4 of 2Q FY 2012 represents the completion of physical construction of the facility. In the FY 2009 Budget Request, the Critical Decision - 4 date represents the completion of construction, start-up, commissioning, and the transfer of the Balance of Facilities to the operations contractor (based on the Early LAW concept).
3. The FY 2010 Budget Request 'Design Complete' and 'CD-4' dates are from the revised January 2009 contract, and the Critical Decision - 4 date now represents the completion of construction, start-up, commissioning and the transfer of the WTP Project to the operations contractor.

The Mission Need (Critical Decision-0) for the Waste Treatment and Immobilization Plant Project was approved in September 1995, followed by Critical Decision-1 in September 1996, and Critical Decision -2 in August 1998. The Waste Treatment and Immobilization Plant Project was initiated as a privatization contract in 1998, and then was re-bid to a conventional cost reimbursable type contract in December 2000. In October 2001, Critical Decision -3a - Limited Construction - was approved, which authorized site work and utilities. In April 2003, a revised Performance Baseline (Critical Decision -2) and Full Construction Authorization (Critical Decision -3c) were formally approved for the Waste Treatment and Immobilization Plant Project.

### 3. Baseline and Validation Status

(Fiscal Quarter)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2007	0	596,741	596,741	0	0	0	596,741
FY 2008	0	1,137,000	1,137,000	0	0	0	1,137,000
FY 2009	0	1,137,000	1,137,000	0	0	0	1,137,000
FY 2010	0	1,210,000	1,210,000	0	0	0	1,210,000

Note: FY 2007 budget submittal values above did not include the facility costs prior to FY 2006. These prior year costs (FY 2001 - FY 2005, included in Line Item 01-D-416) were added to the FY 2008 budget submittal values to provide the total estimated cost for the facility.

A revised Performance Baseline for the overall Waste Treatment and Immobilization Plant Project was validated and approved on December 22, 2006, with a Total Project Cost of \$12,263,000,000. The estimated Balance of Facilities portion of the current Total Project Cost is \$1,210,000,000.

### 4. Project Description, Justification, and Scope

The Balance of Facilities comprises 20 support buildings (165,000 square feet in footprint) and approximately 100 systems across the 65-acre plant site, providing interconnecting utilities and support to the Pretreatment, High-Level Waste, and Low-Activity Waste facilities and to the Analytical Laboratory. The Balance of Facility construction entails 900 tons of structural steel, 17,000 cubic yards of concrete, 30 miles of piping, 110 miles of electrical cable, and over 2.3 million cubic yards of earthwork. While not directly involved with the processing or vitrification of radiological material, these facilities make up the overall services infrastructure essential to operation of the plant.

The Balance of Facilities infrastructure and facilities are comprised of the following groups: power, steam, water, air, process support, waste facilities, and miscellaneous support buildings. The power group consists of three switchgear buildings and two diesel generator facilities. The steam group consists of a steam plant and a fuel oil facility. The water group consists of cooling towers, water treatment facility, chiller/compressor facility, and the firewater facility. The air group is made up of the compressors. The process support group consists of the glass former storage facility, wet chemical storage facility, and the anhydrous ammonia storage facility. The waste facilities group consists of the spent melter staging pad, failed melter storage facility, and the non-dangerous, non-radioactive effluent facility. The miscellaneous support buildings group includes the administration building, simulator facility, warehouse, and site infrastructure (roads, grading, lights, sanitary waste, storm drains, etc.).

## **FY 2008 Accomplishments:**

### **Design Activities:**

- Completed general arrangement drawings for the Anhydrous Ammonia Tank Facility.
- Issued pipe rack support detail drawings for the Wet Chemical Storage Facility.

### **Procurement Activities:**

- Received standby diesel generators to support emergency power for the Pretreatment and High Level Waste Facilities.
- Received the majority of the Glass Former Storage Facility silo equipment to support the start of construction installation

### **Construction Activities:**

- Completed a portion of the construction fire system turnover to Startup to provide a higher level of fire protection for the site.
- Completed placement of concrete, installation of embeds and rails for the second melter assembly pad.
- Completed bulk piping installation in the important-to-safety Switchgear Building.
- Completed radiological transfer pipe installation to support Pretreatment and High-Level Waste Facilities.
- Completed bulk installation of the underground corrosion control system housing.
- Completed Chiller Compressor Plant air expansion tank, dryer, and fire protection pipe installation to provide compressed air and chilled water necessary for glass making operations.
- Completed installation of cable trays in Switchgear Building 91 to support installation of electrical cable.
- Completed excavating for rectifiers 2 & 8 to support temporary power west of the Pretreatment Facility.
- Completed Hydro-pressure testing of the potable water system lines to support startup.

The following table provides design and site construction status for the overall Balance of Facilities grouping; including progress specific to individual facilities and work that supports multiple facilities. The "Balance of Facilities common scope" listed here comprises mostly design work that is common to the facilities; "site work" consists of the general earthwork and utilities across the Waste Treatment and Immobilization Plant construction site and between facilities, and is not associated with a particular facility.

Facility	Engineering % Complete Jan 09	Construction % Complete Jan 09	Scheduled Completion Date
Guard House Facility	100.0%	100.0%	Complete
Erected Tanks – Process/Potable	100.0%	100.0%	Complete
Maintenance Shop	100.0%	100.0%	Complete
Warehouse Building	100.0%	100.0%	Complete
Fire Water Pump House Facility	100.0%	100%	Complete
Steam Plant Facility	100.0%	99.1%	Jun 2009
Balance of Facilities Switchgear Building	95.1%	82.8%	Mar 2010
Cooling Tower Facility	100%	99.1%	Apr 2010
Water Treatment Building	100.0%	66.3%	Jul 2010
Fuel Oil Facility	100.0%	91.9%	Aug 2010
Anhydrous Ammonia	83.5%	1.4%	Feb 2012
Chiller Compressor Plant	99.7%	91.1%	Mar 2012
Non-Dangerous, Non-Radioactive Effluent Facility	98.3%	77.4%	Apr 2012
Glass Former Storage Facility	87.2%	14.3%	Aug 2012
Failed Melter Storage Facility	13.9%	2.3%	Sep 2012
Switchgear Building	97.1%	80.2%	May 2013
Administration Building	21.9%	0.0%	Feb 2014
Simulator Facility	99.8%	85.8%	Mar 2014
Wet Chemical Storage Facility	67.2%	0.0%	Aug 2015
Diesel Generators Facility	51.4%	0.0%	Oct 2015

Note: The percentages of completion have been adjusted to reflect a replan of the baseline, which may have resulted in lower percentages of completions than previously reported.

### **Planned FY 2009 Activities:**

#### **Design Activities:**

- Issue remaining Balance of Facilities, Anhydrous Ammonia Tank Facility civil design (concrete slab).
- Commence the technical specification for the procurement of the emergency diesel generators to support emergency power for the Pretreatment and High-Level Waste facilities.
- Complete design of Anhydrous Ammonia System which neutralizes the NOX (a poisonous gas) in the melter off-gas systems.

#### **Procurement Activities:**

- Receive the remaining Glass Former Facility equipment which receives, stores, blends, and pneumatically transports the glass formers to High-Level Waste and Low-Activity Waste facilities.

#### **Construction Activities:**

- Complete construction of the Steam Plant which provides high pressure steam to ejectors for waste transfer and Low-Activity Waste melter film coolers and low pressure steam to support process and space heating.



- Complete installation of the Cathodic Protection System to provide added corrosion protection of underground piping systems.
- Continue installation of bulk pipe.
- Continue installation of instrumentation and electrical components in the Cooling Tower Facility to exhaust excess heat from plant operations and the Chiller Compressor Building which supplies chilled water to the facilities for heating, ventilation, and process cooling.

**Planned FY 2010 Activities:**

**Design Activities:**

- Finalize electrical capacity calculations for the Waste Treatment and Immobilization Plant.
- Complete acquisition package for the Wet Chemical Facility, this facilities function is to receive chemicals, dilute the chemicals, and transport the chemicals to support the operations in the Pretreatment, Low-Activity Waste and High-Level Waste facilities.

**Construction Activities:**

- Complete construction on the Water Treatment Building which supplies de-mineralized water to plant processes such as steam plant, ion exchange processes, decontamination, and Laboratory operations.
- Complete concrete slab (560 cubic yards) and wall placement for the Anhydrous Ammonia Tank Facility, including slab piping and conduit.
- Complete construction of the Radioactive Liquid Effluent Line.

The following table provides the status for each phase by the end of each fiscal year: accomplished for FY 2008, planned for FY 2009, and proposed for FY 2010.

Phase	FY 2008	FY 2009	FY 2010
Design	70%	75%	83%
Procurement	33%	38%	39%
Construction	60%	61%	65%
Commissioning	4%	4%	5%
Overall	48%	52%	56%

Note: The percentages of completion for FY 2008 and FY 2009 have been adjusted to reflect a replan of the baseline, which may have resulted in lower percentages of completions than previously reported.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, and all appropriate project management requirements have been met.

## 5. Financial Schedule

(dollars in thousands)

Appropriations	Obligations	Costs
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### Total Estimated Cost (TEC)

#### Construction

FY 2005 <sup>a</sup>	330,148	330,148	330,080
FY 2006	64,352	64,352	41,610
FY 2007 <sup>b</sup>	57,000	51,300	54,573
FY 2008 <sup>c</sup>	71,345	77,045	63,198
FY 2009	75,000	75,000	60,729
FY 2010	50,000	50,000	51,573
FY 2011	5,000	5,000	44,663
FY 2012	50,000	50,000	51,675
FY 2013	75,000	75,000	77,129
FY 2014	105,000	105,000	107,000
FY 2015	90,000	90,000	89,711
FY 2016	70,000	70,000	64,408
FY 2017	70,000	70,000	66,915
FY 2018	70,000	70,000	73,944
FY 2019	27,155	27,155	32,792
FY 2020	0	0	0
<b>Total, Construction</b>	<b>1,210,000</b>	<b>1,210,000</b>	<b>1,210,000</b>

- a) The prior year appropriations and obligation have been updated to reflect a more current estimate of the anticipated utilization of the non-facility specific carryover funding remaining in the WTP line item 01-D-416. The FY 2005 line is based on facility costs prior the split of the WTP into the five facilities.
- b) 10 percent of the FY 2007 Appropriation has been held back as a result of not achieving Secretarial certification of the contractor's Earned Value Management System by September 30, 2007. The certification was received in FY 2008, at which time the \$69,000,000 will be obligated to the project. Balance of Facilities portion of the hold-back is \$5,700,000.
- c) FY 2008 Enacted Appropriations reflect a reduction of \$1,301,000 due to the FY 2008 Government-wide Rescission of 0.91 percent.

The following table provides a breakdown of planned spending by design, procurement, construction, and commissioning for the next few fiscal years (in thousand of dollars):

Phase	FY 2008	FY 2009	FY 2010
Design	17,032	18,754	13,188
Procurement	23,193	11,342	7,592
Construction	18,676	27,157	28,361
Commissioning	4,297	3,476	2,432
<b>Total</b>	<b>63,198</b>	<b>60,729</b>	<b>51,573</b>

## 6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline <sup>5</sup>
Total Estimated Cost (TEC)			
Design (PED)			
Total, PED	N/A	N/A	N/A
Construction			
Site Preparation	n/a	n/a	n/a
Engineering/Design	171,796	130,850	n/a
Equipment/Procurement <sup>1</sup>	151,508	147,200	n/a
Facility Construction <sup>2</sup>	433,681	399,650	610,000
Commissioning <sup>3</sup>	240,015	266,500	n/a
Technical Support/Transition	21,200	32,000	n/a
Contingency/Fee <sup>4</sup>	191,800	160,800	n/a
Total, Construction	1,210,000	1,137,000	610,000
Total, TEC	1,210,000	1,137,000	610,000
Contingency, TEC	[191,800]	[160,800]	n/a
Other Project Cost (OPC)			
Contingency, OPC	N/A	N/A	N/A
Total, TPC	1,210,000	1,137,000	610,000
Total, Contingency	[191,800]	[160,800]	n/a

### Notes:

1. Equipment/Procurement dollars represent of costs of plant equipment, plant material, and Acquisition Services.
2. Facility Construction dollars represent construction costs through system turnover.
3. Commissioning dollars represent the cost of Start-up, Cold Commissioning, and Hot Commissioning.
4. Contingency/Fee represents the contractor's Management Reserve, Fee, and DOE Project Contingency.
5. The value listed in the "Original Validated Baseline - Facility Construction" is a total number for all the values that would normally appear in this column. A breakout for the March 2003 Baseline is not available, as until FY 2006 the facilities were not separated but totaled for the whole project, and the current breakout methodology was implemented in FY 2008.

## 7. Schedule of Project Costs

For schedule of project costs, see Section 5, "Financial Schedule."

## **8. Related Operations and Maintenance Funding Requirements**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

## **9. Required D&D Information**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

## **10. Acquisition Approach**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant Project level data sheet.

The following facility milestone dates are based on the December 2008 Revised Baseline and revised contract signed in January 2009.

**Balance of Facilities Milestones**

Milestone Title	Milestones - January 2009
Start Construction (Site Work)	November 15, 2001 A
Complete Construction Water Treatment Building*	July 27, 2010
Complete Chiller Compressor Plant Construction*	March 22, 2012
Design Complete	December 2014
Set two Emergency Diesel Generators and Complete Site Energization*	May 29, 2015
Complete Construction	January 2017
A=Actual date construction started which followed approval of CD-3B	
* Contract Milestones-January 2009 Contract	



## 01-D-16D, High-Level Waste Facility, Hanford, WA

### 1. Significant Changes

The estimated cost and schedule dates included with this Construction Project Data Sheet are based on the Revised Baseline, implemented by the contractor in December 2008. As a result of the Revised Baseline, individual facility (sub-project) Total Project Cost values and schedule dates have changed; however, the approved Total Project Cost of \$12,263,000,000 and completion date of November 2019 for the Waste Treatment and Immobilization Plant Project has not changed.

The revised Total Project Cost for the High-Level Waste Facility is \$3,240,000,000. Facility milestone dates have been changed to be consistent with the revised contract, signed on January 16, 2009. The Total Project Cost value decreased for the High-Level Waste Facility as a result of reduced out-year allocation of support costs and a reduction in Management Reserve to be consistent with the contract modification. Most of the schedule change resulted from elimination of the early Low-Activity Waste Facility commissioning strategy, as the High-Level Waste Facility will now commission after the Low-Activity Waste Facility.

A Federal Project Director with certification level III has been assigned to the Waste Treatment and Immobilization Plant Project. A Federal Sub-Project Director was recently hired.

### 2. Design, Construction, and D&D Schedule

*(fiscal quarter or date)*

	CD-0	CD-1 (Design Start)	Design/PED Complete	CD-2	CD-3 (Construction Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2007	4Q FY1995	4Q FY1996	4Q FY2007	3Q FY2003	3Q FY2002	3Q FY2008	N/A	N/A
FY 2008	4Q FY1995	4Q FY1996	4Q FY2010	3Q FY2003	3Q FY2002	2Q FY2017	N/A	N/A
FY 2009	4Q FY1995	4Q FY1996	2Q FY2013	3Q FY2003	3Q FY2003	1Q FY2020	N/A	N/A
FY 2010	4Q FY1995	4Q FY1996	1Q FY2016	3Q FY2003	3Q FY2003	1Q FY2020	N/A	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete – Completion of D&D work

Notes:

1. The FY 2009 Budget Request date for Design Complete is based on the June 2007 Execution Revision schedule.
2. The FY 2008 Budget Request Construction Start date of 3Q FY 2002 represents the start of physical construction of the facility. The FY 2009 Budget Request 'CD-3 (Construction Start)' date represents the Critical Decision - 3c date approval, which authorized full construction. Note that CD-3a and CD-3b were approved prior to allow for pre-construction activities.
3. The FY 2008 Budget Request date for 'CD-4' of 2Q FY 2017 represents the completion of physical construction of the facility. In the FY 2009 budget request the 'CD-4' completion date represents the completion of construction, start-up, commissioning and the transfer of the WTP Project to the operations contractor.
4. The FY 2010 Budget Request 'Design Complete' and 'CD-4' dates are from the revised January 2009 contract.

The Mission Need (Critical Decision-0) for the Waste Treatment and Immobilization Plant Project was approved in September 1995, followed by Critical Decision -1 in September 1996, and Critical Decision -2 in August 1998. The Waste Treatment and Immobilization Plant Project was initiated as a privatization contract in 1998, and then was re-bid to a conventional cost reimbursable type contract in December 2000. In May 2002, Critical Decision -3b - Preliminary Construction - was approved, which authorized basemat concrete and concrete walls to grade, and allowed the first concrete placement for the High-Level Waste Facility in July 2002. In April 2003, a revised Performance Baseline (Critical Decision -2) and Full Construction Authorization (Critical Decision -3c) were formally approved for the Waste Treatment and Immobilization Plant Project.

### 3. Baseline and Validation Status

(Fiscal Quarter)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2007	0	1,512,664	1,512,664	0	0	0	1,512,664
FY 2008	0	3,308,000	3,308,000	0	0	0	3,308,000
FY 2009	0	3,308,000	3,308,000	0	0	0	3,308,000
FY 2010	0	3,240,000	3,240,000	0	0	0	3,240,000

Note: FY 2007 budget submittal values above did not include the estimated facility costs prior to FY 2006. These prior year costs (FY 2001 - FY 2005, included in Line Item 01-D-416) were added to the FY 2008 budget submittal values to provide the total estimated cost for the facility.

A revised Performance Baseline for the overall Waste Treatment Plant project was validated and approved on December 22, 2006, with a Total Project Cost of \$12,263,000,000. The estimated High-Level Waste Facility portion of the current Total Project Cost is \$3,240,000,000.

### 4. Project Description, Justification, and Scope

The High-Level Waste Facility will process the most radioactive and dangerous tank waste, making its design the most complex. The six-story facility covers an area two football fields wide by one football field long, with a total building volume of 8.6 million cubic feet. Overall construction will include 9,600 tons of structural steel, 88,000 cubic yards of concrete, 571 tons of heating and ventilation ductwork, 31 miles of piping, and 302 miles of electrical cable.

The High-Level Waste Facility will receive the high-level waste fraction from the Pretreatment Facility. This facility contains two melters for vitrifying the high-level waste fraction into glass. The two melters have a design capacity (name plate) and treatment capacity (at 70 percent of plant availability) of 6.0 metric tons and 4.2 metric tons, respectively, of glass per day. The vitrified waste is poured into stainless steel canisters that are 2 feet in diameter by 14.5 feet tall, and weigh more than 4 tons each. The canisters will be temporarily stored at the Hanford.



## **FY 2008 Accomplishments:**

### **Design Activities:**

- Released and issued for construction the drawings for the 0-foot elevation (first story) slabs and 0- to 14-foot elevation (second story) walls from seismic non-conformance holds, followed by the 14- to 37-foot elevation (third story) walls.
- Completed structural summary report.
- Released from revised ground motion holds, two facility collection tanks for the Radioactive Liquid Waste Disposal System.
- Issued electrical cable tray layout drawings for the 58- and 72- foot elevations (fourth and fifth stories) of the facility.
- Issued the 58-foot elevation (fourth story) main structural steel drawings.
- Issued equipment location drawings for the 72- and 91-foot elevations (fifth story and roof) of the facility.

### **Procurement Activities:**

- Delivery of major electrical equipment included: (1) melter startup heater power supplies, (2) melter #1 and #2 discharge lid heater power supplies, (3) 13.8 kilovolt, 1,200-ampere switchgear units, and (4) 480 volt load centers. Other equipment included the High-Level Waste Canister Export Handling System cask-lidding machine, with associated equipment, and facility fan coil units.
- Significant material deliveries included: (1) melter pour tunnel #1 equipment rails, (2) priority electrical concrete embeds, (3) miscellaneous structural steel parts, thus releasing the third story floor structure for installation, and (4) other priority concrete embed plates and shapes.
- Stock steel, pipe, and hanger supports were received to support near-term construction needs.

### **Construction Activities:**

- Completed forming, rebar and embed installation, and placement of concrete for sixteen 0-foot to 14-foot elevations (first to second story) walls and nine 14-foot elevation (second story) slabs, for a total of 3,750 cubic yards of concrete placed.
- Setting of the Silver Mordenite Crane.
- Receipt, placement, and the start of canister transfer cart rail installation in the drum transfer tunnel.
- Initial erection of structural steel for the 14-foot elevation (second story) of the facility.

## **Planned FY 2009 Activities:**

### **Design Activities:**

- Release the remaining concrete embeds for fabrication to support construction of the 14-foot to 37-foot elevation (second to third story) walls of the facility.
- Issue High-Level Waste Facility Waste Qualification Report.
- Resolve facility black cell piping impacts.

### **Procurement Activities:**

- Continue fabrication/delivery of concrete embeds, supporting near-term construction needs, as well as the delivery of key materials and equipment, including:
  - Melter Offgas Treatment Process System high-efficiency mist eliminators.
  - 14- to 37-foot elevation (second to third story) concrete embeds and pipe connection assemblies.

- Continue fabrication, testing, and delivery of shield doors, including receipt of the melter cave #1 and #2 melter handling C2/C3 shield doors.
- Contract award of the vertical shield door recovery assembly.

**Construction Activities:**

- Continue civil build out, installation of piping, hangers, heating, ventilation, and air-conditioning duct, and other commodities, with the following significant achievements:
  - Install canister transfer cart maintenance crane steel/rails.
  - Set melter #2 pour tunnel canister transfer cart maintenance room crane and shield door.
  - Complete forming, rebar, and placement of concrete for 30 walls and 16 slabs on the 0- to 14-foot elevations (first to second stories) for a total of 5,480 cubic yards of concrete placed.

**Planned FY 2010 Activities:**

**Design Activities:**

- Complete Autosampling System design by subcontractor.

**Procurement Activities:**

- Maintain backlog of materials supporting construction, with the following significant achievements:
  - Receive melter cave #1 crane maintenance shield door.
  - Receive two melter feed vessel agitators.

**Construction Activities:**

- Continue civil build out, installation of piping, hangers, heating, ventilation, and air-conditioning duct, and other commodities, with the following significant achievements:
  - Erect structural steel and decking slabs.
  - Complete prerequisite civil/structural construction to release the installation of pipe hangers at the 0-foot elevation.
- Complete forming, rebar, and placement of concrete for 25 walls and 11 slabs on the 0- to 37-foot elevations (first to third stories) for a total of 4,720 cubic yards of concrete placed.

The following table provides the status for each phase by the end of each fiscal year: accomplished for FY 2008, planned for FY 2009, and proposed for FY 2010.

Phase	FY 2008	FY 2009	FY 2010
Design	71%	80%	86%
Procurement	47%	53%	66%
Construction	21%	26%	33%
Commissioning	2%	2%	3%
Overall	41%	48%	56%

Note: The percentages of completion for FY 2008 and FY 2009 have been adjusted to reflect a replan of the baseline, which may have resulted in lower percentages of completions than previously reported.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, and all appropriate project management requirements have been met.

## 5. Financial Schedule

(dollars in thousands)

Appropriations	Obligations	Costs
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### Total Estimated Cost (TEC)

Construction			
FY 2005 <sup>a</sup>	821,536	821,536	704,700
FY 2006	102,964	102,964	121,991
FY 2007 <sup>b</sup>	177,000	154,300	115,124
FY 2008 <sup>c</sup>	175,389	198,089	176,302
FY 2009	125,000	125,000	195,883
FY 2010	160,000	160,000	239,584
FY 2011	240,000	240,000	229,682
FY 2012	220,000	220,000	212,904
FY 2013	170,000	170,000	173,085
FY 2014	140,000	140,000	154,609
FY 2015	170,000	170,000	176,394
FY 2016	220,000	220,000	211,494
FY 2017	190,000	190,000	186,598
FY 2018	160,000	160,000	170,090
FY 2019	168,111	168,111	133,460
FY 2020	0	0	38,100
<b>Total, Construction</b>	<b>3,240,000</b>	<b>3,240,000</b>	<b>3,240,000</b>

- The prior year appropriations and obligation have been updated to reflect a more current estimate of the anticipated utilization of the non-facility specific carryover funding remaining in the WTP line item 01-D-416. The FY 2005 line is based on facility costs prior the split of the WTP into the five facilities.
- 10 percent of the FY 2007 Appropriation has been held back as a result of not achieving Secretarial certification of the contractor's Earned Value Management System by September 30, 2007. The certification was received in FY 2008, at which time the \$69,000,000 was obligated to the project. High-Level Waste's portion of the hold-back is \$22,700,000.
- FY 2008 Enacted Appropriations reflect a reduction of \$1,611,000 due to the FY 2008 Government-wide Rescission of 0.91 percent.

The following table provides a breakdown of current and planned spending by design, procurement, construction, and commissioning for the next few fiscal years (in thousand of dollars):

Phase	FY 2008	FY 2009	FY 2010
Design	37,954	60,259	45,993
Procurement	102,825	49,764	91,156
Construction	35,523	82,066	94,790
Commissioning	0	3,794	7,645
<b>Total</b>	<b>176,302</b>	<b>195,883</b>	<b>239,584</b>

## 6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline <sup>5</sup>
Total Estimated Cost (TEC)			
Design (PED)			
Total, PED	N/A	N/A	N/A
Construction			
Site Preparation	n/a	n/a	n/a
Engineering/Design	671,562	524,200	n/a
Equipment/Procurement <sup>1</sup>	686,037	650,800	n/a
Facility Construction <sup>2</sup>	937,015	1,027,900	1,650,000
Commissioning <sup>3</sup>	248,386	259,500	n/a
Technical Support/Transition	53,000	42,000	n/a
Contingency/Fee <sup>4</sup>	644,000	803,600	n/a
Total, Construction	3,240,000	3,308,000	1,650,000
Total, TEC	3,240,000	3,308,000	1,650,000
Contingency, TEC	[644,000]	[803,600]	n/a
Other Project Cost (OPC)			
Contingency, OPC	N/A	N/A	N/A
Total, TPC	3,240,000	3,308,000	1,650,000
Total, Contingency	[644,000]	[803,600]	n/a

### Notes:

1. Equipment/Procurement dollars represent of costs of plant equipment, plant material, and Acquisition Services.
2. Facility Construction dollars represent construction costs through system turnover.
3. Commissioning dollars represent the cost of Start-up, Cold Commissioning, and Hot Commissioning.
4. Contingency/Fee represents the contractor's Management Reserve, Fee, and DOE Project Contingency.
5. The value listed in the "Original Validated Baseline - Facility Construction" is a total number for all the values that would normally appear in this column. A breakout for the March 2003 Baseline is not available, as until FY 2006 the facilities were not separated but totaled for the whole project, and the current breakout methodology was implemented in FY 2008.

## 7. Schedule of Project Costs

For schedule of project costs, see Section 5, "Financial Schedule."

## 8. Related Operations and Maintenance Funding Requirements

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

## **9. Required D&D Information**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

## **10. Acquisition Approach**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet. The following facility milestone dates are based on the December 2008 Revised Baseline and revised contract signed in January 2009.

### High-Level Waste Facility Milestones

Milestone Title	Milestones - January 2009
Construction	July 10, 2002 A
Complete Design	November 30, 2015
Complete Construction	September 30, 2016
Start Cold Commissioning*	June 30, 2018
Complete Hot Commissioning*	July 30, 2019
A=Actual date construction started which followed approval of CD-3B  * Contract Milestones-January 2009 Contract	

## 01-D-16E, Pretreatment Facility, Hanford, WA

### 1. Significant Changes

The estimated cost and schedule dates included with this Construction Project Data Sheet are based on the Revised Baseline implemented by the contractor in December 2008. As a result of the Revised Baseline, individual facility (subproject) Total Project Cost values and schedule dates have changed; however, the approved Total Project Cost of \$12,263,000,000 and completion date of November 2019 for the Waste Treatment and Immobilization Plant Project has not changed.

The revised Total Project Cost for the Pretreatment Facility is \$4,939,000,000. Facility milestone dates have been changed to be consistent with the revised contract, signed on January 16, 2009. The Total Project Cost value decreased for the Pretreatment Facility as a result of reduced out-year allocation of support costs and a reduction in Management Reserve to be consistent with the contract modification. Most of the schedule change resulted from elimination of the early Low-Activity Waste Facility commissioning strategy, as the Low-Activity Waste Facility will now commission after the Pretreatment Facility and before the High-Level Waste Facility.

A Federal Sub-Project Director with a current level III certification has been assigned to the Pretreatment Facility, per the DOE Project Management Career Development Program.

### 2. Design, Construction, and D&D Schedule

*(fiscal quarter or date)*

	CD-0	CD-1 (Design Start)	Design/PED Complete	CD-2	CD-3 (Construction Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2007	4Q FY1995	4Q FY1996	4Q FY2007	3Q FY2003	3Q FY2002	3Q FY2008	N/A	N/A
FY 2008	4Q FY1995	4Q FY1996	3Q FY2013	3Q FY2003	3Q FY2002	2Q FY2017	N/A	N/A
FY 2009	4Q FY1995	4Q FY1996	1Q FY2013	3Q FY2003	3Q FY2003	1Q FY2020	N/A	N/A
FY 2010	4Q FY1995	4Q FY1996	4Q FY2015	3Q FY2003	3Q FY2003	1Q FY2020	N/A	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete – Completion of D&D work

Notes:

- 1) The FY 2009 Budget Request date for Design Complete was based on the June 2007 Execution Revision schedule.
- 2) The FY 2008 Budget Request Construction Start date of 3Q FY 2002 represented the start of physical construction of the facility. The FY 2009 Critical Decision - 3 (Construction Start) date represents the Critical Decision - 3c date approval, which authorized full construction. Note that Critical Decision - 3a and Critical Decision - 3b were approved prior to allow for pre-construction activities.
- 3) The FY 2008 Budget Request date for Critical Decision - 4 (Construction Complete) of 2Q FY 2017 represented the completion of physical construction of the facility. In the FY 2009 budget request the Critical Decision - 4 completion date of 1Q FY 2020 represents the completion of construction, start-up, commissioning and the transfer of the facility to the operations contractor.

4) The FY 2010 Budget Request Design Complete and Critical Decision - 4 dates are from the revised January 2009 contract, and the Critical Decision - 4 date now represents approval to begin hot commissioning of the Pretreatment Facility.

The Mission Need (Critical Decision-0) for the Waste Treatment and Immobilization Plant Project was approved in September 1995, followed by Critical Decision -1 in September 2006, and Critical Decision -2 in August 1998. The Waste Treatment and Immobilization Plant Project was initiated as a privatization contract in 1998, and then was re-bid to a conventional cost reimbursable type contract in December 2000. In May 2002, Critical Decision -3b - Preliminary Construction - was approved, which authorized basemat concrete and concrete walls to grade, and allowed the first concrete placement for the Pretreatment Facility in November 2002. In April 2003, a revised Performance Baseline (Critical Decision -2) and Full Construction Authorization (Critical Decision -3c) were formally approved for the Waste Treatment and Immobilization Plant Project.

### 3. Baseline and Validation Status

(Fiscal Quarter)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2007	0	2,343,745	2,343,745	0	0	0	2,343,745
FY 2008	0	5,394,000	5,394,000	0	0	0	5,394,000
FY 2009	0	5,394,000	5,394,000	0	0	0	5,394,000
FY 2010	0	4,939,000	4,939,000	0	0	0	4,939,000

Note: FY 2007 budget submittal values above did not include the facility costs prior to FY 2006. These prior year costs (FY 2001 - FY 2005, included in line item 01-D-416) were added to the FY 2008 budget submittal values to provide the total estimated cost for the facility.

A revised Performance Baseline for the overall Waste Treatment Plant project was validated and approved on December 22, 2006, with a Total Project Cost of \$12,263,000,000. The estimated Pretreatment Facility portion of the Total Project Cost is \$4,939,000,000.

### 4. Project Description, Justification, and Scope

The largest of all Waste Treatment and Immobilization Plant facilities, the Pretreatment Facility, is a twelve-story building that covers an area of 490,000 square feet-the approximate area of two football fields. It is constructed of 112,000 cubic yards of concrete and 16,400 tons of structural steel, and contains 527,000 feet (100 miles) of piping.

The Pretreatment Facility will separate radioactive tank waste into high-activity waste and low-activity waste fractions and transfer the segregated waste to the High-Level Waste Facility and the Low-Activity Waste Facility for vitrification. The facility has the design capacity (name plate) and treatment capacity (at 70 percent plant availability) to process 3,740 metric tons and 2,260 metric tons, respectively, of low-activity waste sodium per year, and a design capacity (name plate) and treatment capacity (at 70 percent plant availability) to process 1,225 metric tons and 860 metric tons, respectively, of high-activity as-delivered solids per year. The main pretreatment processes include filtration to separate the high curie solids from the low-activity liquids, evaporation to remove excess water, and an ion exchange system to remove cesium from the tank waste. The processing of the waste will be accomplished in black cells (isolated from entry) and a hot cell (remotely accessible) which are located in concrete structures in the center of the building. A hardened control room building and an annex building will be located adjacent to the Pretreatment Facility.



## **FY 2008 Accomplishments:**

The project completed a thorough Engineering, Procurement, and Construction review to confirm the readiness to restart construction after a two-year curtailment period. The review was confirmed, and construction commenced with steelwork erection on the south side of the facility on December 13, 2007.

Construction through FY 2008 focused on the completion of civil activities with concrete placement of reinforced concrete black cell walls and floor slabs. Erection of structural steel up to the 56-foot elevation progressed, which allowed slab placements at the 28- and 56-foot elevations (second and third stories) to be completed.

Research & Technology confirmatory testing activities progressed successfully in support of the ongoing design activities. Successful closure of External Flowsheet Review Team actions concluded with the issuance of the preliminary test report for the mixing program. The final report for the pulse jet mixer multiple overblow test program was issued, bringing this External Flowsheet Review Team test program to closure. Delivery and installation of the Pretreatment Engineering Platform was completed. Initial readiness testing on the test program was progressed, with the objective to confirm process system design and process operations.

Engineering Design activities progressed in the Civil and Structural groups, with the release of concrete and steel issued for construction drawings to support the construction activities and further increase the construction backlog. Mechanical Systems focused on completing the committed system designs to enable piping and instrument diagrams to be frozen and fabrication drawing production rates to increase.

### **Design/Process Engineering & Technology Activities:**

- Completed the building structural analysis report to the revised seismic criteria. This analysis confirmed the design integrity of the building structure already constructed.
- Released structural steel design for the main building frame up to the 98-foot elevation (fifth story). This completed release of approximately 12,200 tons of the 16,900 tons of steelwork in the facility.
- Received, constructed, and initiated shakedown testing of the Pretreatment Engineering Platform in support of the process operations test program.
- Approved the Interface Control Document for waste feed criteria from the tank farms.

### **Procurement Activities:**

- Delivered three vessel support ring beams for the black cell process vessels. This completed the delivery of all the black cell vessel supports.
- Completed factory acceptance testing of the filter cave handling crane.
- Completed fabrication and delivery of the filter cave maintenance shield door. High focus and progress occurred on the restart activities for the remaining black cell vessels and evaporator systems in the vendor facility.

### **Construction Activities:**

- Resumed full construction after a two-year curtailment period.
- Completed erection of the building structural steel up to the 28-foot elevation (second story).
- Progressed and substantially completed steel erection up to the 56-foot elevation (third story), increasing the total quantity of steel erected in the facility to 4,000 tons out of a total of 16,900 tons.

- Placed four floor slabs at the 28-foot elevation (second story), completing the entire second story level, and providing complete access around the building at the 28-foot elevation.
- Completed the first black cell reinforced concrete wall placement and two additional wall placements for the 56-foot to 77-foot elevations (third to fourth story).
- Placed approximately 1,300 cubic yards of concrete since the resumption of construction activities.
- Installed into position three vessel support ring beams in the black cells and commenced liner plate installation. All vessel supports for the black cell vessels were installed into position in the cells.
- Installed Treated Low-Activity Waste Evaporation Process vessel number 2 onto its support. This was the first process vessel to be installed since restart of construction. The vessel is six feet in diameter, nine feet high, and weighs approximately two tons.

### **Planned FY 2009 Activities:**

Research & Technology will focus on bringing to final closure the confirmatory testing activities on the remaining External Flowsheet Review Team test programs, process operations, and pulse jet mixer testing. Engineering Design will focus on the completion of the final committed system design, which will freeze all Pretreatment Facility piping and instrument diagrams. This will lead to the shift in focus from Mechanical Systems activities to an increase in Plant Design activities for piping fabrication drawing production.

Construction forces will continue to focus on civil activities, primarily concrete placements, to the upper elevation walls and floor slabs. Limited pipe installation activities will commence in the in-cell and out-cell areas of the facility. Subcontractor installation activities will increase with completion of coatings and fire protection systems.

### **Design/Process Engineering & Technology Activities:**

- Civil and Structural design will issue the final section of reinforced concrete walls from the 56-foot to 77-foot elevations (third to fourth stories). This will bring the total quantity of concrete issued for construction to over 100,000 cubic yards out of a total of 114,000 cubic yards. They will also release the building roof steel for fabrication and construction. This releases an additional 3,400 tons of steel, taking the total release of steelwork to approximately 93 percent of the building total.
- Piping design releases issued for construction will increase from the current 350,000 linear feet to 400,000 linear feet. All piping work associated with the four low-activity waste receipt vessels will be released, giving construction approximately 54,000 linear feet of piping work to install in a focused area.
- Testing on the process operations undemonstrated leaching process will complete, bringing to closure testing on the Pretreatment Engineering Platform equipment with issuance of the final closure report.

### **Procurement Activities:**

- Equipment procurement will focus on recommencing the vendor design and fabrication activities on the remaining process vessels located at Harris Thermal and Northwest Copper. These vessels are associated with the ultrafiltration, high-level waste lag storage and feed blending, and plant wash and disposal processes. In addition a vessel for the caustic scrubber process will be delivered to the facility.

- Vendor design activities will recommence on the Areva subcontract evaporator orders.
- Approximately 2,500 tons of third to fourth story steel and 18,000 linear feet of engineered pipe sections will be fabricated and delivered.

**Construction Activities:**

- Complete erection of 2,000 tons of structural steel from the 56-foot elevation to the 77-foot elevation (third to fourth story). Main focus will be at the west end of the facility, where main steel and pipe rack support erection will complete in the north-west corner of the building. This will allow the next elevation of concrete floors at the 77-foot elevation (fourth story) to commence.
- Complete concrete placements of the 4-foot thick hot cell roof. Place several 2-foot and 3-foot thick walls to the black cells from the 56-foot to 77-foot elevations (third to fourth stories), and the 56-foot elevation (third story) 12-inch thick outside floors. Concrete walls will be placed on the west end of the facility and three quarters of the way down the north side - working west to east. This will substantially complete wall placements on the north series of black cells up to the 77-foot elevation (fourth story). In total, the concrete placed will increase by 6,900 cubic yards to approximately 87,000 cubic yards, with approximately 30 placements taking place during the year.
- Liner plate installation in the black cells will complete, resulting in approximately 100,000 square feet out of a total of 120,000 square feet of liner plate in the building.
- Installation of two 12-foot square, 30-ton process shield doors will take place in the Mechanical Handling area of the facility. The doors are the drum lid shield door and the cask lid door.

**Planned FY 2010 Activities:**

**Design Activities:**

- Plant Design will release an additional 50,000 linear feet of engineered pipe sections for fabrication. This will take the total released for construction to 450,000 linear feet out of a total of 540,000 linear feet.
- Civil design will issue for construction the 12-inch floor slabs at the 77-foot elevation (fourth story).
- Civil design will issue for construction the fifth lift walls for the 77-foot to 98-foot elevations (fourth to fifth stories), in the north-west corner of the building.
- Total concrete released for construction by the end of the year will be 110,600 cubic yards, out of the total of 114,000 cubic yards in the facility.

**Procurement Activities:**

- Three demister vessels will be delivered, which are part of the high-integrity filtration system, and are located in the radioactive air filtration room.
- Material management will have delivered a total of 340,000 linear feet of engineered pipe sections.
- Steel work deliveries will total 10,500 tons of structural steel.

**Construction Activities:**

- Set into position one of four ultrafiltration vessels.
- Concrete placements through the year will total approximately 3,000 cubic yards, with completion of walls and slabs to the upper elevation of the facility.

- Structural steel erection will continue for the 56-foot to 77-foot elevations (third to fourth stories) in an east-west direction, with an additional 1,900 tons of steelwork being erected throughout the year.
- Pipe section installation will progress, with a total of 16,800 additional liner feet of pipe being installed in the building, taking the total to 60,000 linear feet installed.

The following table provides the status for each phase by the end of each fiscal year: accomplished for FY 2008, planned for FY 2009, and proposed for FY 2010.

Phase	FY 2008	FY 2009	FY 2010
Design	60%	66%	75%
Procurement	31%	36%	50%
Construction	25%	29%	35%
Commissioning	2%	2%	2%
Overall	38%	46%	54%

Note: The percentages of completion for FY 2008 and FY 2009 have been adjusted to reflect a replan of the baseline, which may have resulted in lower percentages of completions than previously reported.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, and all appropriate project management requirements have been met.

## 5. Financial Schedule

(dollars in thousands)

Appropriations	Obligations	Costs
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Total Estimated Cost (TEC)

### Construction

FY 2005 <sup>a</sup>	1,174,323	1,170,267	1,136,272
FY 2006 <sup>b</sup>	147,515	151,571	154,288
FY 2007	211,000	170,400	130,570
FY 2008 <sup>c</sup>	250,698	291,298	239,496
FY 2009	265,000	265,000	340,414
FY 2010	325,000	325,000	353,124
FY 2011	380,000	380,000	378,172
FY 2012	335,000	335,000	317,702
FY 2013	355,000	355,000	383,736
FY 2014	360,000	360,000	339,472
FY 2015	315,000	315,000	313,965
FY 2016	200,000	200,000	189,883
FY 2017	260,000	260,000	218,697
FY 2018	225,000	225,000	230,172
FY 2019	135,464	135,464	163,037
FY 2020	0	0	50,000
Total, Construction	4,939,000	4,939,000	4,939,000

- a) The FY 2005 line is based on facility costs prior the split of the WTP into the five facilities.  
 b) The WTP Project received an extra obligation of \$4,056,000 in FY 2006 to recover a holdback in FY 2005.  
 c) 10 percent of the FY 2007 Appropriation has been held back as a result of not achieving Secretarial certification of the contractor's Earned Value Management System by September 30, 2007. The certification was received in FY 2008, at which time the \$69,000,000 was obligated to the project. Pretreatment's portion of the hold-back is \$40,600,000.

The following table provides a breakdown of current and planned spending by design, procurement, construction, and commissioning for the next few fiscal years (in thousand of dollars):

Phase	FY 2008	FY 2009	FY 2010
Design	94,152	145,015	82,781
Procurement	99,599	95,492	137,802
Construction	45,495	92,332	120,524
Commissioning	250	7,575	12,017
<b>Total</b>	<b>239,496</b>	<b>340,414</b>	<b>353,124</b>

## 6. Details of Project Cost Estimate

(dollars in thousands)

Current Total Estimate	Previous Total Estimate	Original Validated Baseline <sup>5</sup>
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Total Estimated Cost (TEC)

Design (PED)

Total, PED

N/A N/A N/A

Construction

Site Preparation

Engineering/Design

Equipment/Procurement<sup>1</sup>

Facility Construction<sup>2</sup>

Commissioning<sup>3</sup>

Technical Support/Transition

Contingency/Fee<sup>4</sup>

Total, Construction

n/a	n/a	n/a
1,070,440	910,200	n/a
1,066,188	1,154,300	n/a
1,537,407	1,643,500	1,920,000
365,965	317,300	n/a
58,500	42,000	n/a
840,500	1,326,700	n/a
4,939,000	5,394,000	1,920,000

Total, TEC

Contingency, TEC

4,939,000	5,394,000	1,920,000
[840,500]	[1,326,700]	n/a

Other Project Cost (OPC)

Contingency, OPC

N/A N/A N/A

Total, TPC

Total, Contingency

4,939,000	5,394,000	1,920,000
[840,500]	[1,326,700]	n/a

Notes:

1. Equipment/Procurement dollars represent of costs of plant equipment, plant material, and Acquisition Services.
2. Facility Construction dollars represent construction costs through system turnover.
3. Commissioning dollars represent the cost of Start-up, Cold Commissioning, and Hot Commissioning.
4. Contingency/Fee represents the contractor's Management Reserve, Fee, and DOE Project Contingency.

5. The value listed in the "Original Validated Baseline - Facility Construction" is a total number for all the values that would normally appear in this column. A breakout for the March 2003 Baseline is not available, as until FY 2006 the facilities were not separated but totaled for the whole project, and the current breakout methodology was implemented in FY 2008.

### **7. Schedule of Project Costs**

For schedule of project costs, see Section 5, "Financial Schedule."

### **8. Related Operations and Maintenance Funding Requirements**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

### **9. Required D&D Information**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

### **10. Acquisition Approach**

See the discussion in the 01-D-416, Waste Treatment and Immobilization Plant project level data sheet.

The following facility milestone dates are based on the December 2008 Revised Baseline and revised contract signed in January 2009.

### Pretreatment Facility Milestones

Milestone Title	Milestones - January 2009
Start Construction	November 21, 2002 A
Complete Design	July 2015
Complete Construction	March 2016
Start Cold Commissioning*	September 30, 2017
Complete Hot Commissioning*	February 28, 2019
A=Actual date construction started which followed approval of CD-3B	
* Contract Milestones-January 2009 Contract	





## Savannah River

### Funding by Site

(dollars in thousands)

	FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010
Savannah River National Laboratory	58,600	58,500	0	61,480
Savannah River Operations Office	12,386	14,800	0	18,300
Savannah River Site	1,067,728	1,153,843	1,615,400	1,130,169
Total, Savannah River	1,138,714	1,227,143	1,615,400	1,209,949

### Site Overview

The Savannah River Site is a Department of Energy (DOE) industrial complex dedicated to the reduction of risks through safe stabilization, treatment, and disposition of legacy nuclear materials, spent nuclear fuel, waste, and waste units and facilities. Activities include a National Nuclear Security Administration program that supports the DOE national security and non-proliferation programs.

### Site Description

The Savannah River Site is 310 square miles in size with 1,000 facilities concentrated within only 10 percent of the total land area. As cleanup activities are completed, it is anticipated that future nuclear operations will typically be located within the site's central interior. The land surrounding such locations provides a protective buffer for such activities. Other locations on site (i.e. less distant and near to the site perimeter to promote fuel conservation and enhance transportation access/egress) may be considered for other types of missions/operations. Selected excess EM facilities and inactive waste units are being deactivated, decommissioned, and remediated, as warranted. Facility decommissioning alternatives include demolition and in-situ disposal.

### Site Cleanup Strategy/Scope of Cleanup

The scope, end state, cost, and schedule for each project is clearly defined and managed consistent with Departmental guidance for project management. The EM completion strategy provides a comprehensive risk-based approach to the EM cleanup project by disposition of radioactive liquid waste through vitrification of the high activity component at the Defense Waste Processing Facility and disposal of the low-activity component through Saltstone; use of existing Savannah River Site facilities to receive, store, and disposition aluminum-clad spent nuclear fuel; disposition excess plutonium using Savannah River Site facilities; disposition legacy transuranic waste to the Waste Isolation Pilot Plant; decommissioning of all EM facilities that are not required for continuing missions; remediation of waste units, as warranted; and use existing Savannah River Site waste treatment, storage, and disposal capabilities to efficiently and safely complete the EM cleanup project and support other Savannah River Site tenants. The scope of cleanup completed at the Savannah River Site includes 360 inactive waste

units that have been completed out of a total of 515 waste units; and 248 excess facilities that have been decommissioned out of a total of 973 excess facilities.

The Savannah River Site cleanup strategy has three primary objectives: (1) Eliminate or minimize nuclear materials, spent nuclear fuel, and waste through safe stabilization, treatment, and/or disposition; (2) reduce the costs of continuing operations and surveillance and maintenance; and (3) decommission all EM-owned facilities, except those identified for transfer to another Program Secretarial Office, and remediate groundwater and contaminated soils consistent with the Area Completion Strategy, and the Groundwater Management Strategy and Implementation Plan.

### **Site Completion (End-State)**

Based on the approved baseline, the EM lifecycle planning estimate range is 2038 to 2040. It is anticipated that execution of the American Recovery and Reinvestment Act activities will accelerate the end state date. Inactive waste units will be remediated by employing an area-by-area completion strategy and any contaminated groundwater will be remediated, undergoing remediation, or monitored to ensure protection of human health and the environment. Units at which residual materials are left in place will be under institutional controls, comprised of access restrictions, inspections, maintenance, and monitoring. Concurrently with the area completions, all EM facilities will be decommissioned.

### **Regulatory Framework**

The Savannah River Site works closely with oversight groups, environmental regulators, and stakeholders in accomplishing its work. The collaborative relationships with these external parties and the cooperative nature of these relationships contribute to many cleanup accomplishments.

Savannah River and its contractors will continue to work proactively with the South Carolina Department of Health and Environmental Control, the Environmental Protection Agency-Region 4, the Nuclear Regulatory Commission, the Defense Nuclear Facilities Safety Board, oversight groups, and stakeholders to facilitate the accomplishment of the environmental cleanup and risk reduction objectives at Savannah River Site. There are several key agreements that facilitate the cleanup of the Site. Subsequent to State-initiated enforcement actions, several key settlement agreements were entered into with the State of South Carolina. These enforceable agreements required Savannah River Site to submit closure plans and groundwater corrective action plans in accordance with the Resource Conservation and Recovery Act for several major land disposal units that operated after the effective date of the Resource Conservation and Recovery Act. The Environmental Protection Agency authorized the State of South Carolina to administer the Resource Conservation and Recovery Act. The State of South Carolina requires Savannah River Site to conduct these corrective actions through a Resource Conservation and Recovery Act Permit and that other Savannah River Site waste units be investigated and remediated, if warranted.

The State of South Carolina has formally indicated that compliance with the requirements of the Federal Facility Agreement constitutes compliance with the requirements of the Resource Conservation and Recovery Act Permit requirements for the waste units. Under the Federal Facility Agreement, remedial decisions are reached for the waste units and the State of South Carolina subsequently modifies the permit consistent with the remedial action decision. In this manner, the state maintains enforcement authority but stands ready to implement the decisions reached under the Federal Facility Agreement. In this fashion, the Federal Facility Agreement and Resource Conservation and Recovery Act work in

tandem, enabling the Federal Facility Agreement remedy to be administered and enforced as a condition of the Resource Conservation and Recovery Act Permit at any time and in the event the terms of the Federal Facility Agreement become exhausted. Significant fines/penalties (including possible Resource Conservation and Recovery Act criminal penalties) are possible for non-compliance.

The Federal Facility Agreement for the Savannah River Site - In August 1993, DOE - Savannah River Operations Office, Environmental Protection Agency, and the South Carolina Department of Health and Environmental Control, referred to as “the parties,” executed the Federal Facility Agreement and began execution of cleanup in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act. The Federal Facility Agreement governs environmental remediation and the closure of selected radioactive liquid waste tanks. The major purpose of the Federal Facility Agreement is to ensure that environmental releases, and potential releases of contaminants are investigated and appropriate action is taken to protect human health and the environment. This agreement is legally enforceable (with fines and penalties possible for noncompliance) and is required under Federal Regulation because the Savannah River Site is listed on the Environmental Protection Agency National Priorities List. In accordance with Comprehensive Environmental Response, Compensation, and Liability Act and the Federal Facility Agreement, Records of Decision are reached that document the remedial decision and become stand alone enforceable documents, requiring remedial action(s) and post closure care and maintenance, as warranted.

The Savannah River Site Area Completion Strategy addresses known or potential contaminant releases to the environment from operable units, site evaluation areas, and remnants of decommissioned facilities. The Strategy is to combine the investigations, assessments, and cleanup actions for several waste units which saves time, reduces documentation, lowers costs, and facilitates the EM completion of entire industrial areas, each contributing to Site footprint reduction. In the Federal Facility Agreement, milestones are established to measure and maintain the pace of cleanup.

Public Law 107-107, Section 3155, Disposition of Surplus Defense Plutonium at the Savannah River Site, Aiken, SC requires a disposition pathway out of the State of South Carolina for all Plutonium transferred to the Savannah River Site.

National Defense Authorization Act for Fiscal Year 2001 (Public Law 106-398) as modified by subsection (b) of Section 3115, Continuation of Processing; Treatment, and Disposition of Legacy Nuclear Materials, of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136) requires H-Canyon/HB-Line be maintained in a high state of readiness:

The Savannah River Site Treatment Plan The Site Treatment Plan is a document that requires radioactive mixed waste to be treated to hazardous waste standards within an agreed-upon schedule. Radioactive liquid waste is an example of radioactive mixed waste. The Site Treatment Plan is enforceable by a consent order signed by the Department of Health and Environmental Control and Savannah River. The Site Treatment Plan lays out the approaches and schedule milestones for treating and managing radioactive mixed wastes that are stored or generated at Savannah River Site. These treatment approaches and milestones are determined to ensure Savannah River Site compliance with Resource Conservation Recovery Act land disposal restriction requirements. The Site Treatment Plan is required by the Federal Facility Compliance Act and is updated annually. This annual update includes an inventory of all mixed waste, status of all treatment residuals, implementation schedule, and projections of new mixed waste streams at Savannah River Site or those to be received from organizations external to Savannah River Site.

Saltstone Disposal Facility Industrial Solid Waste Landfill Permit: Saltstone Disposal Facility is operated as a Class 3 Industrial Solid Waste Landfill (Permit #025500-1603). The State of South Carolina permitted Saltstone Disposal Facility under its authority pursuant to Subpart D of the Resource Conservation and Recovery Act and Chapter 61, Article 107 (Solid Waste Management) of the South Carolina Health and Environmental Control Regulations, Subpart 16, Industrial Solid Waste Landfills. This permit contains milestone commitments related to salt waste treatment and disposition.

Section 3116 of the Ronald W. Reagan National Defense Authorization Act The Federal Facility Agreement defines the enforceable commitments for completion of closure of non-compliant tanks at Savannah River Site. Originally, residual materials remaining in the tanks at closure required evaluation in accordance with the waste incidental to reprocessing methodology in DOE Order 435.1. In October 2004, Congress passed the Ronald W. Reagan National Defense Authorization Act of FY 2005 (Public Law 108-375). Section 3116 of the National Defense Authorization Act allows the Secretary of Energy, in consultation with the Nuclear Regulatory Commission, to determine when waste from reprocessing of spent nuclear fuel is appropriate for onsite disposition as other than high-level waste when certain criteria are met. In addition to the Nuclear Regulatory Commission consultation, the Savannah River Site must obtain South Carolina Department of Health and Environmental Control approval on closure documentation required by the Industrial Waste Water Permit issued by the South Carolina Department of Health and Environmental Control prior to initiating tank closure activities.

Nuclear Cooperation Agreements – Savannah River Site has received and expects to receive additional Foreign Research Reactor Spent Nuclear Fuel through FY 2019 that has restrictions regarding the use and/or recycling of the fuel. Generally these restrictions do not allow for the recycled fuel to be used for the production of, or use in nuclear weapons. These restrictions are often referred to as “Foreign Obligations”. These obligations originate from "agreements for cooperation" which are negotiated by the State Department with foreign countries that are recipients of US-originated research reactor fuel or for which such fuel passes through their boundaries. Certain of these agreements specify that the obligated material or substitute material must be placed under International Atomic Energy Agency safeguards. These agreements are not expected to affect the disposition of the Foreign Research Reactor spent nuclear fuel.

### **Critical Project Uncertainties and Assumptions**

Program-specific uncertainties that could have significant impacts to individual projects and may impact the overall cleanup scope, schedule, and costs have been identified:

- Delays in off-site disposal would require increase storage capacity for high-level waste and spent nuclear fuel;
- Controlling sources of soil/groundwater contamination through sustained area-by-area completion is critical to aquifer/stream protection and risk reduction and will support passive and natural groundwater remedies that are critical to reducing the cost of long term stewardship;
- Uncertainties within the radioactive liquid waste disposition program (i.e., the waste determination process under section 3116 of the FY 2005 National Defense Authorization Act) could delay tank closures;
- Uncertainties associated with the disposition path for the Savannah River Site heavy water could delay final closure of L-Area and increase disposition costs;

- Nuclear nonproliferation concerns are leading to continual increases in the amount, type, and schedule of Foreign Research Reactor fuel returns. These changes result in considerable uncertainty in the support required for the receipt, storage, and maintenance of the safety basis for the spent fuel storage area.
- Uncertainties in the disposition strategy for excess plutonium stored at sites by EM;
- Uncertainty in sludge inventory and characteristics of tank waste that could adversely affect disposition costs and schedules;
- Resource Conservation and Recovery Act Permit commitments and Federal Facility Agreement milestones will be met contingent upon successful negotiation with the Environmental Protection Agency Region 4 and South Carolina Department of Health and Environmental Control. Negotiations will be required to reflect delaying Area Completions, re-sequencing associated Integrator Operable Unit activities, and delaying groundwater activities. Successful negotiations will be documented in the FY 2009 Federal Facility Agreement, Appendix E Update.
- A delay in the start of Salt Waste Processing Facility beyond FY 2013 could delay site completion and compliance with regulatory commitment dates for facility start-up and tank closures.
- DOE will continue to consolidate nuclear materials at the Savannah River Site.
- H-Area nuclear material processing facilities are scheduled to operate through September 30, 2019 to process the currently planned nuclear materials; however, restricting current plutonium loading limits ( $897\text{g/m}^3$ ), would either cause the Canyon to operate beyond September 30, 2019 or alternative disposal paths in glass high level waste canisters would have to be identified.
- Preparations for shipment of Spent Fuel from L-Area to H-Canyon for disposition must be complete in FY 2010 in order to begin disposition of Spent Fuel in early FY 2011.
- Infrastructure upgrades will be needed to maintain reliable H-Canyon/HB-Line operations to 2019.
- Future use of the Savannah River Site remains non-residential.
- DOE will successfully re-negotiate the Salt Waste Processing Facility operational start date specified under the Saltstone Disposal Facility Landfill permit to be consistent with the approved Critical Decision-3.

## **Interdependencies**

Execution of the EM cleanup project at Savannah River Site involves numerous interfaces with other organizations, both-on and off-site. Since EM is the major Savannah River Site program, it provides landlord services to other organizations, primarily the National Nuclear Security Administration. Major interfaces are described below for both on and offsite entities. The EM role as landlord will end with the completion of work scope by the end of FY 2038, at which time landlord and interface responsibilities will transition to the National Nuclear Security Administration.

### National Nuclear Security Administration – Nuclear Nonproliferation – Plutonium Disposition – Nuclear Fuel Supply

Savannah River Site has been selected as the location for the construction and operation of facilities to dispose of approximately 34 metric tons of surplus weapons-usable plutonium.

Three new facilities will be required to accomplish this plutonium disposition mission. One facility is the Pit Disassembly and Conversion Facility (National Nuclear Security Administration). The nuclear weapons are disassembled at the Pantex Plant in Texas. Plutonium pits from inside nuclear weapons that are no longer needed for defense will be sent to the Savannah River Site's Pit Disassembly and Conversion Facility, which will disassemble the plutonium component of a nuclear weapon and convert the resulting plutonium metal to a declassified oxide form suitable for the second facility, the Mixed

Oxide Fuel Fabrication Facility (in the FY 2008 Consolidated Appropriations Act, Congress transferred responsibility for this project to the Office of Nuclear Energy). The Mixed Oxide Fuel Fabrication Facility will blend depleted uranium dioxide and plutonium dioxide, form the mixture into pellets, and load the pellets into fuel rods for use in commercial nuclear power plants.

The Mixed Oxide Fuel Fabrication Facility will be owned by DOE but designed, built, licensed, and operated by a private consortium (Shaw AREVA MOX Services). The facility will be licensed by the Nuclear Regulatory Commission and operated so that the facility will be available for inspection by the International Atomic Energy Agency. The third facility is the Waste Solidification Building (National Nuclear Security Administration) that will treat the waste streams from both the Pit Disassembly and Conversion Facility and the Mixed Oxide Fuel Fabrication Facility.

EM assumes that the National Nuclear Security Administration will decommission these new facilities and be responsible for remediation, if warranted, of any soil and groundwater contamination and any new waste generated.

#### National Nuclear Security Administration – Nuclear Nonproliferation Program – Enriched Uranium Blend-Down

The United States has declared a total of 174.3 metric tons of highly enriched uranium surplus to future weapons needs. One path for making this material unsuitable for nuclear weapons is through a dilution process, which makes this material suitable for productive use in commercial nuclear reactors. Through September 2008, Savannah River Site has processed and blended over 17 metric tons of highly enriched uranium fuel and other material to low enriched uranium for shipment to the Tennessee Valley Authority vendor for processing and fabrication into commercial reactor fuel assemblies. The H-Canyon facility (via the Enriched Uranium Disposition Project) will be used to additionally blend down up to 21 metric tons of enriched uranium for transfer to the Tennessee Valley Authority through FY 2019. Of the 21 metric tons of enriched uranium, an initial amount of 5.6 metric tons has been identified for dissolution through the Canyon by September 30, 2010. Processing, blend down to Low Enriched Uranium and delivery to Tennessee Valley Authority will be complete, for this initial amount, in FY 2011. The material will be added to the Interagency Agreement by a Modification to be signed by the Secretary of Energy.

#### Savannah River National Laboratory

The Savannah River National Laboratory is a DOE multi-program applied science laboratory. The Savannah River National Laboratory provides the expertise and the technology to help all DOE sites address the challenge of cleaning up the environmental legacy from the nation's nuclear weapons program and support the energy initiatives of DOE. Savannah River National Laboratory also supports national, homeland security, and energy security objectives. To support all of these missions, Savannah River National Laboratory conducts broad-based, multidisciplinary scientific research and applied engineering, directed toward applications for new and improved techniques, materials, systems, and capabilities. The Savannah River National Laboratory receives no direct funding from EM or other DOE programs. The laboratory is indirectly funded by EM for specific work assignments in support of program missions at the Savannah River Site. A significant amount of funding is also received from the National Nuclear Security Administration – Savannah River, the Office of Science, other Federal agencies, and via various inter-entity work orders.

### United States Forest Service – Savannah River Forest Station

The Savannah River Forest Station implements a comprehensive program designed to sustain the health, productivity, and diversity of Savannah River Site natural resources that will meet regulatory requirements, protect site personnel and facilities, and address site-related natural resource issues that affect off-site stakeholders. Key elements include wild land fire protection, secondary road maintenance, site boundary management, soil and erosion control, forest products management, natural resource research, as well as wildlife and habitat management. The United States Forest Service also provides direct support to a number of site environmental cleanup projects, including maintaining cover systems placed on closed land disposal waste units and operating a groundwater corrective action/irrigation system required under the Resource Conservation and Recovery Act Permit. The United States Forest Service – Savannah River is an independent unit of the United States Forest Service.

### Transuranic Waste Disposal

Transuranic waste resulting from nuclear material stabilization activities has been stored at Savannah River Site for years. Transuranic waste poses a significant risk due to waste characterization uncertainties and the potential for build-up of hazardous gases that could lead to an environmental release of contamination. Transuranic waste is being characterized and processed for shipment to the Waste Isolation Pilot Plant. Shipments of transuranic waste drums began in FY 2001. The Waste Isolation Pilot Plant provides both personnel at Savannah River Site who characterizes material for shipment, and certain equipment required for transuranic waste processing. Elimination of the transuranic waste inventory at Savannah River Site depends on the continued operation and acceptance of transuranic waste at the Waste Isolation Pilot Plant.

### Hazardous and Mixed Waste Disposal

Hazardous waste is defined by the Environmental Protection Agency and requires management in accordance with specific regulatory mandates. Mixed low-level waste is a low-level radioactive waste, which also contains hazardous constituents, and is managed in accordance with DOE Order 435.1, Radioactive Waste Management, and hazardous waste regulations. The solid waste program receives, stores, and arranges offsite treatment or disposal for hazardous/mixed waste generated at the Savannah River Site. Examples of hazardous/mixed waste include materials such as lead, solvents, paints, and pesticides. N-Area contains some of the interim hazardous waste storage facilities for the site, and involves three primary operations: receipt of waste from Savannah River Site generators, interim storage, and shipment of the waste for treatment and disposal. Continued operation and cleanup of the Savannah River Site depends on the ability to ship hazardous waste to offsite vendors. The Nevada Test Site is currently available for disposal of treated mixed waste, providing applicable regulatory requirements and the waste acceptance criteria are met. However, the Nevada Test Site mixed waste cell will close December 2010 leaving Savannah River Site with no facility capable of receiving greater than Class A mixed waste.

### Low-Level Waste Disposal

Low-level waste is radioactive waste that is not classified as high level waste, transuranic waste, spent nuclear fuel or byproduct material and does not contain any hazardous waste. Typically, low-level waste at Savannah River Site is radioactively contaminated materials such as job-control waste, small and large equipment, plastic sheeting, gloves, soil, and suspect contaminated materials used within radioactive material management areas that cannot be proven to be free of radioactive contamination. Some low-level wastes generated at Savannah River Site are disposed of at other DOE locations (e.g.,

Nevada Test Site) or commercial sites. Cleanup of the Savannah River Site depends on continued shipment of these materials to other sites for disposal.

#### Naval Reactor Waste

Classified waste, such as reactor components, is routinely received from Naval Reactors. These components are disposed of in E Area.

#### Nuclear Material Consolidation and Surveillance

The Savannah River Site has one of largest protection category I facilities in the DOE complex. This unique facility facilitates the consolidation of excess special nuclear material from around the complex in one place at a significant savings to the DOE complex. In addition, the Savannah River Site performs surveillance and monitoring operations on this material to assure continued safe storage.

#### Tennessee Valley Authority

As previously mentioned, over 21 metric tons of excess highly enriched uranium at Savannah River Site has been dispositioned by both dilution and shipment (over 17 metric tons) to the Tennessee Valley Authority vendors, Areva, and by direct shipment (approximately 4.7 metric tons) to Nuclear Fuel Services. Areva also provides natural uranium for blending. To deinventory H, L, and K Areas, Savannah River Site depends on the Tennessee Valley Authority to provide and accept these materials. Modifications to the Interagency Agreement between the Department of Energy and the Tennessee Valley Authority will continue to be used as the mechanism for establishing the transfer of Low Enriched Uranium to the Tennessee Valley Authority.

#### Idaho National Laboratory

Deinventory of H Canyon is dependent upon the transfer of excess neptunium-237 to the Idaho National Laboratory for use in producing plutonium-238 (shipments are nearly complete). Additionally, spent nuclear fuel (containing enriched uranium) will be exchanged between Savannah River Site and Idaho National Laboratory. The aluminum-based spent nuclear fuel (at Savannah River Site plus any received from Idaho National Laboratory) will be stored in L-Basin awaiting shipment to H-Canyon for processing and blend-down to low enriched uranium. The non-aluminum based spent nuclear fuel at Savannah River Site is planned to be shipped to the Idaho National Laboratory to be consolidated for packaging with the non-aluminum based spent nuclear fuel already there.

#### Enriched Uranium Receipts from National Nuclear Security Administration Sites (Y-12 Oak Ridge, Los Alamos, Lawrence Livermore and others)

K-Area will accept enriched uranium materials for lag storage and subsequent shipment to the H-Canyon and HB-Line for processing and blend-down to low enriched uranium in accordance with the Enriched Uranium Disposition Project (as previously discussed).

#### Oak Ridge Toxic Substances Control Act Incinerator

Savannah River Site sends waste to the Oak Ridge Toxic Substances Control Act Incinerator for thermal treatment. Although primarily available for treatment of radioactive polychlorinated biphenyl waste, the incinerator is also permitted for mixed low-level waste. The last Savannah River Site shipment to the Toxic Substances Control Act Incinerator will occur in FY 2009.

#### Plutonium Production Reactor Agreement

The Savannah River Site is party to an agreement with Russia to ensure that Savannah River Site Reactors are not used to produce plutonium. Russian representatives visit the Savannah River Site



generally once each year to inspect various seals at various reactor areas to ensure the seals are still intact. The Agreement is administered through the State Department.

#### International Atomic Energy Agency

The Department of Energy has placed approximately two metric tons of surplus plutonium under control of the International Atomic Energy Agency. The International Atomic Energy Agency inspects the surplus plutonium generally once per month either via an on-site inspection or remotely and also performs an annual inspection on-site. The surplus plutonium is awaiting disposition (either as feed for Mixed Oxide Fuel Fabrication Facility [under construction], dissolution in the H-Canyon, or vitrification via the Plutonium Vitrification Facility [pending construction]).

#### **Contract Synopsis**

Savannah River Site's current strategy is to operate under two main contracts. One contract is the management and an operation of the Site and the other is the tank liquid waste system project. The new management and operating contract is with Savannah River Nuclear Solutions, LLC, which completed transition in August 2008. The new Liquid Waste System contract was awarded to Savannah River Remediation, LLC in December 2008, and contract award was sustained in March 2009. Liquid Waste contract transition began on March 30, 2009.

In addition, the Salt Waste Processing Facility is a major capital line item project supporting site cleanup that is not managed by either the managing and operating contract or the liquid waste contract. The Department of Energy contracted the design, construction and one year of operations under a cost plus incentive fee structure with Parsons Infrastructure and Technology.

#### **Cleanup Benefits**

Savannah River Site is implementing a cleanup strategy utilizing a project management approach. Currently, 100 percent of the Savannah River Site's nuclear materials that were identified in the Defense Nuclear Facilities Safety Boards' Recommendation 94-1/2000-1 have been stabilized (54 milestones representing 143,518 items).

Specific program benefits realized from the EM cleanup project are significant. The Area Completion Project is reducing the site's contamination footprint and is reaching consensus with regulators for cleanup decisions and future site use. In addition, the non-compliant radioactive liquid waste tanks are the highest environmental and human health risks in the State of South Carolina according to the South Carolina Department of Health and Environmental Control. Most of the tanks with closure activities in FY 2009 have documented leaks. All leaks from the non-compliant tanks (tanks that do not meet the Resource Conservation and Recovery Act standard for full secondary containment) have been to the annulus only with the exception of one tank. Tank 16 leaked and overflowed the secondary containment in the annulus and resulted in about one hundred gallons spilled into the environment. This tank has been completely emptied but not closed and the annulus contains leaked high-level waste that is now solid. The leaks in these non-compliant tanks are managed in several ways and most are not active because material in the tanks is currently in solid form, or levels in the tanks have been reduced below the leak sites. Removal of radioactive liquid waste will be completed, and upon completion, the facilities that supported these projects must be deactivated and decommissioned. In addition, the physical locations of the facilities must be closed under the Comprehensive Environmental Response,

Compensation and Liability Act, or other governing permits and laws. The Federal Facility Agreement commitment is to close all non-compliant tanks by FY 2022.

H Canyon and HB Line will remain as the only operational chemical separation facilities after FY 2006. Savannah River Site has consolidated spent nuclear fuel from three storage basins to a single storage basin; all Savannah River Site 94-1/2001 commitments have been met; and all Mk-16/Mk-22 fuel has been dissolved and dispositioned. Additional materials are being dispositioned from across the DOE complex. Legacy transuranic waste is being shipped to the Waste Isolation Pilot Plant nearly three decades ahead of the original baseline.

Direct maintenance and repair at the Savannah River Site is estimated to be \$92,119,000.

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Defense Environmental Cleanup			
Savannah River Site			
2035 Accelerations			
SR-0100 / Savannah River Community and Regulatory Support	4,954	14,800	18,300
SR-0101 / Savannah River Community and Regulatory Support	7,432	0	0
SR-0011C / NM Stabilization and Disposition	324,012	0	0
SR-0040C / Nuclear Facility D&D - 2035	4,382	12,052	0
SR-0012 / SNF Stabilization and Disposition	28,760	24,108	38,768
SR-0030 / Soil and Water Remediation	90,207	71,967	0
SR-0013 / Solid Waste Stabilization and Disposition	83,759	62,599	0
Subtotal, 2035 Accelerations	543,506	185,526	57,068
Nuclear Material Stabilization and Disposition			
SR-0011C / NM Stabilization and Disposition	0	339,843	391,625
Tank Farm Activities			
SR-0014C / Radioactive Liquid Tank Waste Stabilization and Disposition-2035	595,208	701,774	761,256
Total, Savannah River Site	1,138,714	1,227,143	1,209,949

### Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
Savannah River					
Geographic Sites Eliminated (number of sites)	0	0	0	1	0%
Depleted and Other Uranium packaged for disposition (Metric Tons)	9,974	12,110	12,110	23,182	52.2%
Enriched Uranium packaged for disposition (Number of Containers)	3,004	3,004	3,184	3,184	100.0%
High-Level Waste packaged for final disposition	2,599	2,785	2,971	6,300	47.2%



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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inventoried, deactivated and placed in long-term surveillance.

Additional scope in this PBS is the operation of K-Area as a storage and surveillance facility for stabilized special nuclear materials. The receipt, storage, and disposition of materials at the Savannah River Site allows for de-inventory and shutdown of other DOE complex sites, providing substantial risk reduction and significant mortgage reduction savings to the Department. These Savannah River Site facilities will be operated in compliance with applicable laws, regulations, and DOE Orders. Legacy special nuclear material is protected from theft and sabotage, including upgrade of protective capabilities, as appropriate. The special nuclear material will be managed until final disposition facilities are available.

The K Reactor process area will be maintained in a safe and environmentally sound shutdown condition. The K-Area will continue to serve as a material storage facility for unirradiated highly enriched uranium, tritiated heavy water, and plutonium. The K-Area Material Storage Facility will also continue to serve as an International Atomic Energy Agency control protocol facility for plutonium oxide.

The K-Area Interim Surveillance capability to perform destructive and non-destructive surveillance in accordance with DOE Standard-3013 is being installed in K-Area. The DOE STD-3013 surveillance and repackaging capability will be operated for management of legacy inventories within the K-Area Material Storage Facility. Plutonium that meets the criteria for disposition via the DOE mixed-oxide fuel program may be transferred for disposition by FY 2019.

DOE plans to ship surplus non-pit weapons-grade plutonium to the Savannah River Site from the Hanford Site, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory. Additionally, DOE is planning to ship the Fast Flux Test Facility unirradiated fuel from Hanford to the Savannah River Site. All of this material will be received and stored at K-Area Material Storage.

EM is proceeding with the projects in K-Area to disposition a majority of the plutonium that cannot go into the mixed-oxide fuel fabrication process. After the special nuclear materials are dispositioned by 2020, the K Area will be deactivated, placing the facilities in a minimum surveillance and maintenance condition until the facilities are transferred to PBS SR-0040C, Nuclear Facility Decontamination and Decommissioning. In FY 2006, Congress appropriated \$10,000,000 to conduct and prepare and evaluate alternatives and conceptually design a plutonium vitrification project. In FY 2007, EM spent an additional \$10,000,000 from available funds to complete the conceptual design. In FY 2008, \$991,000 was appropriated to begin design activities. DOE evaluated the plutonium disposition mission from a holistic approach in FY 2008, and as part of this evaluation, reviewed alternatives to this project, including elimination of the vitrification capability, while ensuring a disposition path out of South Carolina is maintained for this material. In FY 2009, DOE's request supported further conceptual design and technology studies, rather than Project Engineering and Design to continue with the plutonium preparation activities in the project to prepare the material for processing in the Mixed Oxide Fuel Fabrication Facility or the H Canyon.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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In FY 2010, the following activities are planned:

- In FY 2009, activities transferred to the Nuclear Material Stabilization and Disposition account established by Congress.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Enriched Uranium packaged for disposition (Number of Containers)	3,004	3,004	3,184	3,184	100.0%
Depleted and Other Uranium packaged for disposition (Metric Tons)	9,974	12,110	12,110	23,182	52.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Continue disposition of depleted uranium oxide. (FY 2008/September 2009)</li> <li>▪ Complete Conceptual Design Plutonium Preparation Project (June 2009)</li> <li>▪ Complete Superkukla processing pending DOE GFSI release of material for processing. (June 2009)</li> <li>▪ Continued operations of the K Area Material Storage Facility. (September 2009)</li> <li>▪ Continued surveillance capability of 3013 cans in compliance with DOE-STD-3013. (September 2009)</li> </ul>					

**SR-0012 / SNF Stabilization and Disposition** **28,760**      **24,108**      **38,768**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This PBS covers the scope and funding for the legacy spent nuclear fuel originating from Atomic Energy Commission and DOE activities, and non-legacy spent nuclear fuel, originating in both Foreign and Domestic Research Reactors which is being transferred to the Savannah River Site for safe, secure storage pending disposition. All spent fuel activities at Savannah River are conducted in a single area and consolidated for storage in a single basin.

The end of the Cold War and the end of materials production at the Savannah River Site left a large inventory of (Savannah River Site-produced) irradiated spent nuclear fuel and other materials in underwater storage in three spent nuclear fuel storage basins, the K and L production reactor disassembly basins and the Receiving Basin for Off-site Fuels. The condition of some of these legacy fuels was noted in the Defense Nuclear Facility Safety Board Recommendations 94-1 and 2000-1 concerning the need to ensure safe storage of the spent nuclear fuel and the need to stabilize the degraded spent fuel. The scope of this PBS includes programmatic and physical support efforts related to safe storage and preparation for final disposition of Savannah River Site legacy spent nuclear fuel inventories.

The end-state will be accomplished when all remaining Savannah River Site inventories of legacy spent



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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low-level, hazardous, and sanitary waste, as well as pollution prevention, waste minimization, waste certification, and other waste management support functions. In addition, this project covers surveillance and maintenance for the Consolidated Incinerator Facility and general “landlord” functions required to maintain Resource Conservation and Recovery Act permit requirements. Procurement and installation of capital equipment/general plant projects supporting landlord facilities and operations are also covered by this project.

Legacy inventories of low-level waste were eliminated in FY 2005. Mixed low-level waste, and hazardous waste were eliminated in FY 2008. Drummed transuranic legacy waste was eliminated in FY 2009. In addition, boxed/bulk transuranic legacy waste will be eliminated by FY 2013. Alternative disposal options for PUREX (i.e., Plutonium Uranium Extraction) waste have been developed and treatment has been completed thereby allowing the Consolidated Incinerator Facility to close. It is anticipated that some level of general “landlord” functions and procurement and installation of capital equipment/general plant projects will continue until the project end date of FY 2031.

The end-state for this project will be the shipment of all legacy transuranic waste to the Waste Isolation Pilot Plant; the treatment and disposition of Plutonium Uranium Extraction waste; and the elimination of all legacy inventories.

In FY 2010, the following activities are planned:

- No planned accomplishments in FY 2010; the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - CH	5,691	5,851	5,956	15,590	38.0%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	68	0%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	100,620	105,064	111,674	137,579	81.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Completed shipments of 3,000 Low Activity Transuranic Waste Drums to the Waste Isolation Pilot Plant. (FY 2008)</li> <li>▪ Continued disposal of newly generated low-level waste within one year from generation date per DOE Order 435.1. (FY 2008)</li> <li>▪ Begin Resource Conservation and Recovery Act closure for Transuranic Pads 7-13. (March 2009)</li> <li>▪ Complete disposal of legacy drummed transuranic waste at the Waste Isolation Pilot Plant (September 2009)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**SR-0030 / Soil and Water Remediation** **90,207** **71,967** **0**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The Soil and Water Remediation PBS scope includes the remediation of Savannah River Site contaminated soils and waste sites to reduce risk and to protect groundwater aquifers and surface waters from the spread of contamination by addressing the sources of contamination using an Area Completion Approach. In conjunction with source control, existing contamination in vadose zones, groundwater and surface water/sediments are to be cleaned up, reducing risk to site workers, the public, and the environment, and ensuring that groundwater aquifers and surface waters are protected. A key component of the Savannah River Site approach is to ensure that contamination is not allowed to spread uncontrolled into adjoining groundwater aquifers and near-by surface waters, further extending the amount of time and resources required for cleanup. For the 516 waste sites at the Savannah River Site, 336 were completed in 2007. For the remaining 180, particular attention is paid to waste sites with principal threat source materials that serve as continuing sources of environmental contamination and those with mobile contaminants that already have or could migrate to groundwater, surface water, or off of the Savannah River Site. Remediation is planned on a prioritized risk-based approach, and is conducted using fundamental project management principles, risk-based cleanup levels consistent with future land use, and the Savannah River Site missions.

The cleanup approach is to remove or immobilize substantial sources of contaminants and remediate contaminated groundwater using passive and natural remedies. This supports the cleanup objectives of constructing final remedies for soil and groundwater by 2031. Waste sites and groundwater will be managed such that all enforceable milestones, reflecting DOE and regulator consensus on the pace and objectives of Savannah River Site cleanup program, are met. The Federal Facility Agreement for the Savannah River Site reflects cleanup prioritization as negotiated with the two primary regulatory oversight agencies, the United States Environmental Protection Agency-Region 4 and the South Carolina Department of Health and Environmental Control. All projects will use the streamlined regulatory Core Team basis process developed by DOE, the Environmental Protection Agency, and South Carolina to shorten schedules, maximize innovation, and reduce costs to achieve accelerated risk reduction. This project includes the Old Radioactive Waste Burial Ground and the Dynamic Underground Stripping project.

In FY 2010, the following activities are planned:

- No planned accomplishments in FY 2010; the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Remediation Complete (Number of Release Sites)	361	372	372	515	72.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Initiated Upper Three Runs IOU Phase II Field Start (FY 2008)
- Started Remedial Actions for L-Area Southern Groundwater OU (FY 2008)
- Issued ROD for C-Area Burning/Rubble Pit and Old C-Area Burning/Rubble (FY 2008)
- Initiated Fourmile Branch IOU Third Phase II Field Start (FY 2008)
- Submitted FFA Appendix E (Outyear Milestones) for FY 2009 (November 2008)
- Issue the Record of Decision for M Area Operable Unit (Includes 19 sub-units with 19 associated MSs) (March 2009)
- Start C-Area Burning/Rubble Pit and Old C-Area Burning/Rubble Pit Remedial Action. (June 2009)
- Complete Periodic Monitoring and Submit the Steel Creek Integrator Operable Unit Periodic Report #3 (August 2009)
- Initiate the Savannah River Floodplain Swamp Integrator Operable Unit Second Phase II Field Start (September 2009)
- Submit ROD for P-Area Operable Unit (Includes 9 sub-units with 9 associated milestones) (September 2009)
- Start Remedial Action for M-Area Operable Unit (Includes 19 Sub-units with 19 associated milestones) (September 2009)
- Submit FFA Appendix E (Outyear Milestones) for FY 2010 (November 2009)
- Issue Record of Decision for P-Area Operable Unit (Includes 9 sub-units with 9 associated milestones) (June 2010)

**SR-0040C / Nuclear Facility D&D - 2035**

**4,382**

**12,052**

**0**

This PBS can be found within the Defense Environmental Cleanup appropriation.

After forty years of producing nuclear materials for defense and non-defense uses, the Savannah River Site shifted its strategic direction and resources from nuclear materials production to cleanup. An integral part of the cleanup mission is decommissioning of facilities constructed in support of nuclear materials production. At the start of FY 2003, there were 1,013 major facilities to be decommissioned, or to be transitioned to a non-EM organization.

The vision for the Savannah River Site is that operations will be concentrated toward the center of the site to form a central core area with continuing non-EM missions. It is envisioned that this central core area will be surrounded by a buffer area, which will provide a safety and security zone between the central core area and the public.

There are two possible decommissioning end-state alternatives for the Savannah River Site facilities: demolition or in-situ disposal. For each facility, the end-state is determined by considering: physical condition at the time of decommissioning; structural factors affecting difficulty of removal or

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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effectiveness of containment; proximity to public access areas, or surface or groundwater sources; client and stakeholder expectations; the extent of contamination and/or hazardous material and the degree to which they may pose a threat to the environment or the public.

Preliminary end-states have been identified for all the major facilities. All excess EM facilities within the buffer area will be demolished. A graded approach to the decommissioning process assures the appropriate stakeholder, Environmental Protection Agency, and the South Carolina Department of Health and Environmental Control involvement in decommissioning end-state decisions. EM continues to incorporate opportunities to further accelerate risk reduction.

In FY 2010, the following activity is planned:

- No planned accomplishments in FY 2010; the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**SR-0100 / Savannah River Community and Regulatory Support**

**4,954                      14,800                      18,300**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The purpose and scope of this project is to provide support that enables the Savannah River Site to perform its missions and cleanup objectives. Support activities include archaeological research, geological surveys, ecological research, natural resource management, forestry management, project management, Historically Black Colleges and Universities, and the DOE Summer Diversity Intern Program. Other activities include support and development of a long-term observation network to monitor water level, flow paths, and water quality. This project also provides independent environmental monitoring and emergency management activities by the States of South Carolina and Georgia under either an Agreement in Principle or a grant. Independent State monitoring and emergency management activities include verification of Savannah River Site reporting results and support of public awareness for offsite risks from Savannah River Site operations to stakeholders. The project scope also includes support for the South Carolina Department of Health and Environmental Control, for oversight and implementation of the Federal Facility Agreement. The South Carolina Department of Health and Environmental Control reviews primary and secondary documents listed in the Federal Facility Agreement and coordinates public participation processes prescribed by Comprehensive Environmental Response, Compensation, and Liability Act/Resource Conservation and Recovery Act. Their reviews support the cleanup objectives of constructing final remedies for soil and groundwater. This project scope also includes the operation and maintenance of a public reading room for Savannah River documents to support communication and stakeholder involvement, and Payments-

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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In-Lieu-Of-Taxes for three South Carolina counties (Aiken, Allendale, and Barnwell). Support is provided to the Citizens Advisory Board to include facilitators, technical advisors, meeting rooms, and other expenses.

In FY 2010, the following activities are planned:

- Conduct forest management activities to sustain the Savannah River Sites natural resources.
- Conduct cultural resource management regulatory requirements, through technical reviews of the National Environmental Policy Act and Comprehensive Environmental Response, Compensation and Liabilities Act documents for National Historic Preservation Act negotiations.
- Provide technical expertise in the conduct of geological surveys and natural resource management.
- Execute grant programs with Historically Black Colleges and Universities focusing on scientific research related to environmental issues.
- Continue grants for independent oversight to South Carolina Department of Health Environmental Control for implementation of the Federal Facility Agreement and Agreement in Principle and Site Treatment Plan.
- Continue Payments-in-Lieu-of-Taxes to Aiken, Allendale, and Barnwell counties.
- Provide independent environmental monitoring and emergency management activities.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Conducted atmospheric, water, terrestrial, and biological monitoring and provided independent oversight of the sampling activities. (FY 2008)</li> <li>▪ Maintained Savannah River Site secondary roads/bridges and perform site boundary maintenance. (FY 2008)</li> <li>▪ Managed a comprehensive fire management program that successfully protects the Savannah River Site from both on-site and off-site wildland fires. (FY 2008)</li> <li>▪ Successfully managed Savannah River Site lands and natural resources in full compliance with Federal and state regulatory requirements. (FY 2008)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**SR-0101 / Savannah River Community and Regulatory Support**

**7,432                      0                      0**

This PBS can be found within the Defense Environmental Cleanup appropriation. This project provides independent environmental monitoring and emergency management activities by the States of South Carolina and Georgia under either an Agreement in Principle or a grant. Independent State monitoring and emergency management activities include verification of Savannah River Site reporting results and support of public awareness for offsite risks from Savannah River Site operations to stakeholders. The project scope also includes support for the South Carolina Department of Health and Environmental Control, for oversight and implementation of the Federal Facility Agreement. The South Carolina Department of Health and Environmental Control reviews primary and secondary documents listed in the Federal Facility Agreement and coordinates public participation processes prescribed by Comprehensive Environmental Response, Compensation, and Liability Act/Resource Conservation and Recovery Act. Their reviews support the cleanup objectives of constructing final remedies for soil and groundwater. This project scope also includes the operation and maintenance of a public reading room for Savannah River documents to support communication and stakeholder involvement, and Payments-In-Lieu-Of-Taxes for three South Carolina counties (Aiken, Allendale, and Barnwell). Support is provided to the Citizens Advisory Board to include facilitators, technical advisors, meeting rooms, and other expenses.

In FY 2010, the following activities are planned:

- No activities planned. Scope transferred to PBS SR-0100/Savannah River Community and Regulatory Support.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Continued emergency planning and preparedness for the State of South Carolina from simulated or actual release of hazardous substances. (FY 2008)</li> <li>▪ Continued grants to regulatory agencies under the Federal Facility Agreement and Agreement-in-Principle (including emergency management activities). (FY 2008)</li> </ul>					

**SR-0011C / NM Stabilization and Disposition**

**0                      339,843                      391,625**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The H Area facilities will continue to stabilize and disposition enriched uranium materials (EM and the National Nuclear Security Administration) and the existing and projected inventories of aluminum-clad spent nuclear fuel through FY 2019. The remaining materials to be stabilized/dispositioned in H Area include: highly-enriched uranium solutions; miscellaneous fuels; plutonium residues; enriched uranium

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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residues; aluminum-clad spent nuclear fuel, and other legacy materials identified by DOE. These facilities will be deactivated by the end of FY 2023. Funding for the Highly Enriched Uranium Blend Down program, which was previously funded by the National Nuclear Security Administration, will be included in this PBS. These facilities also have the capability to disposition approximately 2 to 4 metric tons of certain plutonium materials (compatible with Canyon processes and not suitable for the Mixed Oxide Fuel Fabrication Facility) through the liquid waste system.

This PBS scope also includes the Receiving Basin for Off-Site Fuels facility which has been de-inventoried, deactivated and placed in long-term surveillance.

Additional scope in this PBS is the operation of K-Area as a storage and surveillance facility for stabilized special nuclear materials. The receipt, storage, and disposition of materials at the Savannah River Site allows for de-inventory and shutdown of other DOE complex sites, providing substantial risk reduction and significant mortgage reduction savings to the Department. These Savannah River Site facilities will be operated in compliance with applicable laws, regulations, and DOE Orders. Legacy special nuclear material is protected from theft and sabotage, including upgrade of protective capabilities, as appropriate. The special nuclear material will be managed until final disposition facilities are available.

The K Reactor process area will be maintained in a safe and environmentally sound shutdown condition. The K-Area will continue to serve as a material storage facility for unirradiated highly enriched uranium, tritiated heavy water, and plutonium. The K-Area Material Storage Facility will also continue to serve as an International Atomic Energy Agency control protocol facility for plutonium oxide.

The K-Area Interim Surveillance capability to perform destructive and non-destructive surveillance in accordance with DOE Standard-3013 is being installed in K-Area. The DOE STD-3013 surveillance and repackaging capability will be operated for management of legacy inventories within the K-Area Material Storage Facility. Plutonium that meets the criteria for disposition via the DOE mixed-oxide fuel program may be transferred for disposition by FY 2019.

DOE plans to ship surplus non-pit weapons-grade plutonium to the Savannah River Site from the Hanford Site, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory. Additionally, DOE is planning to ship the Fast Flux Test Facility unirradiated fuel from Hanford to the Savannah River Site. All of this material will be received and stored at K-Area Material Storage.

EM is proceeding with the projects in K-Area to disposition a majority of the plutonium that cannot go into the mixed-oxide fuel fabrication process. After the special nuclear materials are dispositioned by 2020, the K Area will be deactivated, placing the facilities in a minimum surveillance and maintenance condition until the facilities are transferred to PBS SR-0040C, Nuclear Facility Decontamination and Decommissioning. In FY 2006, Congress appropriated \$10,000,000 to conduct and prepare and evaluate alternatives and conceptually design a plutonium vitrification project. In FY 2007, EM spent an additional \$10,000,000 from available funds to complete the conceptual design. In FY 2008,

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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\$991,000 was appropriated to begin design activities. DOE evaluated the plutonium disposition mission from a holistic approach in FY 2008, and as part of this evaluation, reviewed alternatives to this project, including elimination of the vitrification capability, while ensuring a disposition path out of South Carolina is maintained for this material. In FY 2009, DOE's request supported further conceptual design and technology studies, rather than Project Engineering and Design to continue with the plutonium preparation activities in the project to prepare the material for processing in the Mixed Oxide Fuel Fabrication Facility or the H Canyon.

In FY 2010, the following activities are planned:

- Continue to receive weapons grade surplus non-pit plutonium from the Los Alamos National Laboratory, and Lawrence Livermore National Laboratory.
- Complete Plutonium Preparation Project conceptual design, obtain Acquisition Executive Critical Decision 1B approval and make significant progress in project design.
- Perform surveillance of materials in storage in accordance with DOE-STD-3013 and the surveillance and monitoring plan.
- Support alternative disposition studies for non-moxable plutonium stored in the K-Area.
- Continue surveillance and maintenance of the F Area Materials Storage Facility as well as for the Receiving Basin for Off-Site Fuels Facility.
- Continue processing nuclear materials, as well as purchase of cold chemicals and other materials for operations of H Canyon and HB Line.
- Continue surveillance and maintenance of F-Canyon Complex and FB Line.
- Complete design and initiate construction of the K Area Vault.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Enriched Uranium packaged for disposition (Number of Containers)	3,004	3,004	3,184	3,184	100.0%
Depleted and Other Uranium packaged for disposition (Metric Tons)	9,974	12,110	12,110	23,182	52.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Continue disposition of depleted uranium oxide. (FY 2008/September 2009)</li> <li>▪ Complete Conceptual Design PuP Project (June 2009)</li> <li>▪ Complete Superkukla processing pending DOE GFSI release of material for processing. (June 2009)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Continued operations of the K Area Material Storage Facility. (September 2009)
- Continued surveillance capability of 3013 cans in compliance with DOE-STD-3013. (September 2009)

**SR-0014C / Radioactive Liquid Tank Waste  
Stabilization and Disposition-2035**

**595,208      701,774      761,256**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This PBS supports the mission of the tank waste program at the Savannah River Site, to safely and efficiently treat, stabilize, and dispose of approximately 37 million gallons of legacy radioactive waste currently stored in 49 underground storage tanks.

The Savannah River Site plans to: reduce the volume of tank waste by evaporation to ensure that storage tank space is available to receive additional legacy waste from ongoing nuclear material stabilization and waste processing activities; pre-treat the radioactive waste as sludge and salt waste; vitrify sludge and high curie/high actinide high-level waste at the Defense Waste Processing Facility into canisters and then store the canisters; treat and dispose of the low-level tank waste as saltstone grout; treat and discharge evaporator overheads through the Effluent Treatment Project; empty and permanently close in place using grout all waste tanks and support systems; and ensure that risks to the environment and human health and safety from tank waste operations are eliminated or reduced to acceptable levels.

To comply with state and federal regulatory agreements, all storage tanks must be empty by 2028. The Department started operating the Defense Waste Processing Facility in 1996 to vitrify high-level waste in a stable form and store it for eventual disposal in a geologic repository. The ability to safely process the salt component of the waste stored in underground storage tanks at Savannah River is a crucial prerequisite for completing high-level waste disposal. In order to relieve tank space shortages and assure that vitrification in the Defense Waste Processing Facility of the high-activity fraction of liquid waste will continue uninterrupted, the Actinide Removal Process and Modular Caustic Side Extraction Unit started up in the third quarter of FY 2008. This provides an interim processing capability to remove and treat salt waste from the tank farms to create additional tank space before the start up of the Salt Waste Processing Facility. It also provides Savannah River the opportunity to develop operating experience on a production-scale actinide and cesium removal processes which will be used to optimize the start up and initial operations of the Salt Waste Processing Facility. This project also includes the design, construction, and operation of the Salt Waste Processing Facility to safely separate the high-activity fraction from the low-activity fraction of the salt waste stored in underground tanks at Savannah River. Processing salt waste through the Salt Waste Processing Facility is planned to begin in FY 2013 to maintain adequate tank space required to support Defense Waste Processing Facility operations, expedite processing of liquid waste consistent with the current strategy, and ensure that the site meets its Federal Facilities Agreement commitments for tank waste disposition.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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For the Salt Waste Processing Facility, a total of \$72,199,000 for construction was appropriated in FY 2008 and \$155,524,000 was appropriated in FY 2009 to continue construction (05-D-405). Limited early construction activities to include mobilization, site preparation and utilities, base mat excavation, mud mat installation, and early procurement of large pressure vessels, contactors, and the Administration Building was also approved.

In FY 2010, the following activities are planned:

- Operate interim salt processing facilities and support salt batch preparation.
- Support H Canyon receipts of newly generated waste.
- Perform transfers and operate equipment to facilitate bulk waste removal and tank closure activities for tanks 4 and 8 Bulk Waste Removal to meet FY 2010 regulatory commitments.
- Prepare sludge batches and waste transfers in support of the Tank Farm.
- Continue operation of Defense Waste Processing Facility and complete 186 canisters of glass waste.
- Process 700,000 gallons of decontaminated salt solution from the interim salt processing campaign into grout.
- Initiate design and procurements of treatment process for Tank 48.
- Continue construction of the Salt Waste Processing Facility which includes the installation of large process vessels, concrete decks and concrete walls in the Central Processing Area.
- Complete installation of Caustic Side Solvent Extraction Modules.
- Resume design of enhanced chemical cleaning technology for F Tank Farm.
- Perform operations in support of Defense Waste Processing Facility sludge batch preparation, and resume activities associated with sludge mass reduction through aluminum dissolution.
- Continue Saltstone production.
- Complete Vault Cell (#2), continue work on Vault Cell (#3) and initiate work on Vault Cell (#5).



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Liquid Waste in Inventory eliminated (Thousands of Gallons)	1,174	1,874	2,574	33,100	8.0%
Liquid Waste Tanks closed (Number of Tanks)	2	2	2	51	4.0%
High-Level Waste packaged for final disposition (Number of Containers)	2,599	2,785	2,971	6,300	47.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"><li>▪ ARP/MCU was available for integrated runs with feed available for full operations. (FY 2008)</li><li>▪ Operated Actinide Removal Facility. (FY 2008)</li><li>▪ Continued design and construction of the Salt Waste Processing Facility. (FY 2008)</li><li>▪ Produce 186 canisters of vitrified high-level waste. (FY 2008)</li><li>▪ Complete Bulk Waste Removal Operations for Tank 4 (March 2009)</li><li>▪ Complete Mechanical Cleaning of Tanks 18 and 19 (March 2009)</li><li>▪ Complete Phase I Bulk Waste Removal Operations for Tank 12 (March 2009)</li><li>▪ Complete Processing Low Organic Salt Waste Processing (September 2009)</li><li>▪ Submit F Tank Farm Draft Waste Determination Basis Document to NRC (September 2009)</li></ul>					

**Total, Savannah River**

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**1,138,714      1,227,143      1,209,949**

## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### Defense Environmental Cleanup

#### Savannah River Site

#### 2035 Accelerations

##### SR-0012 / SNF Stabilization and Disposition

- Increase is attributable to the continuation of minimum safe L-Area Operations and receipt of foreign and domestic fuel; increased preparation activities in support of the Idaho National Laboratory Fuel Swap.
 14,660

##### SR-0013 / Solid Waste Stabilization and Disposition

- Decrease is associated with the projected completion of the drummed transuranic waste and Plutonium Uranium Extraction waste disposition programs in FY 2009 and reflects the scope of work that was included in the American Recovery and Reinvestment Act appropriation.
 -62,599

##### SR-0030 / Soil and Water Remediation

- Decrease reflects the scope of work that was included in the American Recovery and Reinvestment Act appropriation.
 -71,967

##### SR-0040C / Nuclear Facility D&D - 2035

- Decrease reflects the scope of work that was included in the American Recovery and Reinvestment Act appropriation.
 -12,052

##### SR-0100 / Savannah River Community and Regulatory Support

- Increase is primarily due to increased DOE grant requirements and normal escalation.
 3,500

#### Nuclear Material Stabilization and Disposition

##### SR-0011C / NM Stabilization and Disposition

- Increase is associated with the initiation of the Plutonium Preparation Project; increased investment in needed facility maintenance and infrastructure that will enable H-Area facilities to maintain operations through 2019; also for additional support for alternative disposition studies for non-Moxable plutonium stored in K-Area.
 51,782

#### Tank Farm Activities

##### SR-0014C / Radioactive Liquid Tank Waste Stabilization and Disposition-2035

The increase is associated with the following internal PBS changes:

- An increase for Salt Waste Processing Facility construction (Total Estimated Cost/Other Project Cost) partially offset by a decrease in sludge processing improvements; decrease in tank closure operations and decrease for saltstone cells.
 59,482

### Total, Savannah River

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**-17,194**

**Salt Waste Processing Facility, Savannah River Site, Aiken, South Carolina  
(Construction 05-D-405) - (SR-0014C)**

**1. Significant Changes**

In an Energy Systems Acquisition Advisory Board briefing on December 8, 2008, the Deputy Secretary of Energy approved Critical Decision 3 with a total project cost of \$1,339,548,586 for the Salt Waste Processing Facility. This project data sheet is an update of the fiscal year 2009 project data sheet and incorporates the fiscal year 2008 reprogramming of \$15,000,000 from the project's construction to design.

This data sheet update reflects the Critical Decision 3 approval as well as the increase of the total project cost from \$899,337,000 to \$1,339,548,586. The increase to the project's total project cost is a result of three primary groups of activities. The first group is the evolution of design maturity from 35 percent to greater than 90 percent and includes items such as: increases associated with National Quality Assurance Standard -1 performance requirements and upgrades; increases in the quantity of materials; and increases in overall labor requirements. The second group of activities driving increased project costs is associated with market conditions and includes: a general increase in the cost of labor as a result of industry competition; higher material costs based on realized costs of vendor bids; and industry-wide issues including a reduced number of available vendors. The final area contributing to the project's increased cost was associated with increases in contingency based on the revised risk plan. Among the risks identified in the revised risk plan were: new cyber security implementation uncertainties; increasing the cost contingency baseline risk confidence level from an 80 percent to an 95 percent level; the addition of new risks for (1) a potential Decontaminated Salt Solution Coalescer and (2) possible other changes as a result of information from longer-term Modular Caustic Side Solvent Extraction Unit/Actinide Removal Process operations or Savannah River Site Waste Characterization. Among the project reviews were: a 90 percent Design Review conducted by Department of Energy staff; a Design Review conducted by an External Independent Review Team; and a Structural Review performed by the Defense Nuclear Facility Safety Board. Cost reviews were conducted by external independent review teams as well as the Department of Energy's Office of Cost Analysis. The result of the independent reviews increased the total project cost from \$1,157,000,000 to \$1,239,548,586. As a result of input received from all cost reviews, the Energy Systems Acquisition Advisory Board added two new project risks and increased project confidence from 80 percent to 95 percent, which raised the total project cost an additional \$100,000,000 from \$1,239,548,586 to \$1,339,548,586.

**2. Design, Construction, and D&D Schedule**

*(fiscal quarter or date)*

	CD-0	CD-1 (Design Start)	Design/PED Complete	CD-2	CD-3 (Construction Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2005	06/25/2001	4Q FY2004	4Q FY2005	4Q FY2005	4Q FY2005	4Q FY2008	N/A	N/A
FY 2006	06/25/2001	4Q FY2004	3Q FY2006	3Q FY2006	3Q FY2006	4Q FY2009	N/A	N/A
FY 2007	06/25/2001	4Q FY2004	1Q FY2008	3Q FY2007	3Q FY2007	1Q FY2011	N/A	N/A
FY 2008	06/25/2001	4Q FY2004	1Q FY2008	3Q FY2007	3Q FY2007	1Q FY2011	N/A	N/A
FY 2007 Notification	06/25/2001	4Q FY2004	4Q FY2008	4Q FY2007	4Q FY2008	1Q FY2014	N/A	N/A

(fiscal quarter or date)

	CD-0	CD-1 (Design Start)	Design/PED Complete	CD-2	CD-3 (Constructi on Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2009	06/25/2001	4Q FY2004	4Q FY2008	4Q FY2007	4Q FY2008	1Q FY2014	N/A	N/A
FY 2008								
Reprogra mming	06/25/2001	4Q FY2004	4Q FY2008	4Q FY2007	1Q FY2009	1Q FY2014	N/A	N/A
FY 2010	06/25/2001	4Q FY2004	4Q FY2008	4Q FY2007	1Q FY2009	1Q FY2016	N/A	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete – Completion of D&D work

	(Fiscal Quarter or Date)						
	Performance Baseline Validation	CD-2/3A	CD-3B	CD-3			
FY 2005	N/A	N/A	N/A	N/A			
FY 2006	N/A	N/A	N/A	N/A			
FY 2007	N/A	N/A	N/A	N/A			
FY 2008	N/A	N/A	N/A	N/A			
FY 2007 Notification	4Q2007	4Q2007	2Q2008	N/A			
FY 2009	4Q2007	4Q2007	3Q2008	N/A			
FY 2008 Reprogramming	4Q2007	4Q2007	4Q2008	N/A			
FY 2010	4Q2007	4Q2007	4Q2008	1Q2009			

CD-2/3A - Site Preparation, Early Construction and Long Lead Procurement

CD-3B - Early Construction and Long Lead Procurement

### 3. Baseline and Validation Status

(Fiscal Quarter)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2005	TBD	TBD	TBD or N/A	TBD	N/A	TBD or N/A	TBD or N/A
FY 2006	78,917	252,014	330,931	107,207	0	107,207	438,138
FY 2007	228,600	331,000	559,600	120,400	0	120,400	680,000
FY 2008	228,705	497,199	725,904	173,433	0	173,433	899,337
FY 2007 Notification	228,797	497,199	725,996	173,341	0	173,341	899,337
FY 2009	228,705	497,199	725,904	173,433	0	173,433	899,337
FY 2008 Reprogram ming	243,705	482,199	725,904	173,433	0	173,433	899,337
FY 2010	243,705	895,151	1,138,856	200,692	0	200,692	1,339,548

#### **4. Project Description, Justification, and Scope**

This project scope includes construction of a facility to treat large quantities of waste from reprocessing and other liquids generated by nuclear materials production operations at the Savannah River Site. Approximately 37,000,000 gallons of this waste is being stored on an interim basis in 49 underground waste storage tanks. Of the 37,000,000 gallons, approximately 3,000,000 gallons are sludge waste and approximately 34,000,000 gallons are salt waste, consisting of 16,500,000 gallons of solid saltcake and 17,500,000 gallons of salt supernate. Waste volumes are subject to change because the supernate is evaporated to reduce its volume, sludge is being removed for processing and vitrification, and new waste is being transferred to the radioactive liquid waste tanks. In addition, water required for salt cake removal from the tanks and processing is presently expected to result in approximately 84 million gallons of salt and supernate solution to be processed. Continued, long-term storage of this liquid waste in underground tanks poses an environmental risk.

To comply with state and federal regulatory agreements, all non-compliant storage waste tanks must be empty by 2028. The Department built the Defense Waste Processing Facility to vitrify radioactive liquid waste into a stable form and store it for eventual disposal in a geologic repository. The ability to safely process the salt component of the radioactive liquid waste stored in underground storage tanks at the Savannah River Site is a crucial prerequisite for completing radioactive liquid waste disposal. Without a suitable method for salt management, the Department would not be able to place the radioactive liquid waste in a configuration acceptable for safe disposal.

This project scope includes design, construction, and cold commissioning of the Salt Waste Processing Facility, to safely separate the high-activity fraction from the low-activity fraction of the radioactive liquid salt waste stored in underground tanks at the Savannah River Site. The Department has selected Caustic-Side Solvent Extraction as the preferred technology for separation of radioactive cesium from the salt wastes. Salt Waste Processing Facility processing also includes a separation step to remove strontium, uranium, plutonium and neptunium from the waste by sorption onto granular monosodium titanate followed by filtration.

The Salt Waste Processing Facility presently has a waste processing nameplate capacity of a nominal 7.3 million gallons per year. The Salt Waste Processing Facility will consist of all buildings, equipment, and services required to provide a fully functioning facility for processing salt waste. The Salt Waste Processing Facility will contain necessary process areas, service areas, chemical storage areas, and administrative areas. The process building will contain shielded processing cells and chemical processing equipment. In-cell tanks and components will be of a closed-cell design for ease of maintenance, replacement, and later decommissioning. The operating area will contain chemical feed pumps and tanks, hot and cold laboratories for testing samples, electrical and mechanical equipment areas, truck unloading area, and maintenance and decontamination areas. The chemical storage area will be located near the process building and will contain chemical storage tanks. Service and administrative spaces will be sized as required to accommodate the process facility.

A formal technical and programmatic risk assessment has been performed. The risk assessment concluded that the technical and programmatic risks are manageable.

The Savannah River Site Federal Facilities Agreement and Site Treatment Plan require production of (on average) 200 high-level waste canisters per year at the Defense Waste Processing Facility. In order

to minimize total canister production and avoid future shutdowns or slowdowns of the Defense Waste Processing Facility, a coupled feed (both sludge and salt) must be established and maintained. At this time, the Salt Waste Processing Facility is on the critical path for establishing the coupled feed.

In response to Defense Nuclear Facility Safety Board concerns on radiological materials, the Department of Energy Savannah River Operations Office directed development of an Enhanced Preliminary Design that implemented a Performance Category 3 confinement approach on November 23, 2005.

In May 2007, development of a bottoms-up cost estimate was completed to support the Critical Decision 2 package, and further adjusted based on comments received from an External Independent Review, which resulted in a project cost estimate of \$899,337,000. The primary drivers for this \$220 million increase over the rough order of magnitude estimate were increased technical requirements resulting from the implementation of National Quality Assurance Standard 1 in lieu of International Standards Organization Standard 9001, resolution of structural/geotechnical issues, and additional Performance Category 3 requirements not identified during the initial rough order of magnitude estimate process. In addition, changes in how the project interpreted guidance on classification of Operating Funds as either Other Project Costs or Operating Costs accounted for approximately \$53 million of the \$220 million increase.

Early in the execution of Critical Decision 2/3A activities, design issues surrounding inability to secure sufficient critical design resources began to impact completion of design activities. This situation was further exacerbated by the volatility of the market, which began affecting the Critical Decision 3A procurements. Mitigation strategies were developed to deal with these issues. The revised Critical Decision 3 baseline was developed using the 90 percent design drawings, which required additional material and associated labor to install, and incorporating the cost of realized risk of material cost increases and design delays. As a result of the new baseline and additional funding required to adequately address risks, the total project cost for the Salt Waste Processing Facility is \$1,339,548,586, an increase of \$440,211,586 over the Critical Decision 2 baseline estimate.

<b>Critical Decision 2 to Critical Decision 3 Changes in Costs (\$M)</b>	
Critical Decision 2 Approved Baseline (based on 25% - 35% design)	\$ 899
<b>Baseline Cost Increase Contributors</b>	
<b>Contingency</b> (new risks, increasing risk impacts as identified by the External Independent Review team, and Department of Energy Complex/Waste Treatment Plant Lessons Learned)	\$ 187
<b>Engineered Equipment</b> (high escalation realized through vendor bids, industry-wide issues including loss of vendor pool, increased cost to address design evolution including National Quality Assurance Standard 1 performance requirements and upgrades. Approximately \$18 million of these costs were associated with increased materials due to design evolution)	\$ 75
<b>Construction</b> (increased installation labor to address design evolution, increased cost of staff due to industry competition, increased foreman ratio)	\$ 66
<b>Construction Support</b> (Increased labor to address design evolution quantity increase & support needs, project duration increase, additional staff to address Early	\$ 65

Construction and Department of Energy Complex/Waste Treatment Plant Lessons Learned)	
<b>Engineering and Design</b> (extension of project schedule, design evolution beyond plan, realized risk of design resource shortage)	\$ 28
<b>Commissioning and Support</b> (increased project duration/delay costs)	\$ 14
<b>DOE Support</b> (increased duration/delay costs)	\$ 5
<b>Changes to Critical Decision 2 Approved Baseline</b>	\$ 440
<b>Total Project Cost</b>	\$1,339

Cost and schedule for Critical Decision 3 were established at a 95 percent confidence level. The 95 percent confidence completion date is October 2015, which includes 126 weeks of schedule contingency. The 95 percent confidence cost is \$1,339 million.

Critical Decision - 0: Approve Mission Need - June 2001

Critical Decision - 1: Approve Preliminary Baseline Range - August 2004

Independent Review of Contractors Earned Value Management System - June 2005 (with a follow-up review in January 2008)

Critical Decision - 2/3a: Approve Performance Baseline/ Start of Construction (Long Lead Procurement/Site Preparation/Limited Construction) - September 2007

Critical Decision - 3b: Start of Construction (Long Lead Procurement/Limited Construction) - September 2008

Critical Decision - 3: Approve Start of Construction - December 2008

Critical Decision - 4: Approve Start of Operations - October 2015

The project is being conducted in accordance with the project management requirements in DOE Order 413.3A and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

## 5. Financial Schedule

(dollars in thousands)

Appropriations	Obligations	Costs
----------------	-------------	-------

### Total Estimated Cost (TEC)

#### PED

FY 2003	4,842	4,842	0
FY 2004	51,198	51,198	11,539
FY 2005	23,469	23,469	30,204
FY 2006	34,990	34,990	48,195
FY 2007	104,296	104,296	75,600
FY 2008	24,910	24,910	57,863
FY 2009	0	0	20,304
<b>Total, PED</b>	<b>243,705</b>	<b>243,705</b>	<b>243,705</b>

#### Construction

FY 2005	5,792	5,792	0
FY 2006	495	495	0
FY 2007	0	0	1,907
FY 2008	72,199	72,199	63,640
FY 2009	155,524	155,524	168,463
FY 2010	234,118	234,118	234,118
FY 2011	256,951	256,951	256,951
FY 2012	170,071	170,071	170,071
FY 2013	1	1	1
<b>Total, Construction</b>	<b>895,151</b>	<b>895,151</b>	<b>895,151</b>

#### TEC

FY 2003	4,842	4,842	0
FY 2004	51,198	51,198	11,539
FY 2005	29,261	29,261	30,204
FY 2006	35,485	35,485	48,195
FY 2007	104,296	104,296	77,507
FY 2008	97,109	97,109	121,503
FY 2009	155,524	155,524	188,767
FY 2010	234,118	234,118	234,118
FY 2011	256,951	256,951	256,951
FY 2012	170,071	170,071	170,071
FY 2013	1	1	1
<b>Total, TEC</b>	<b>1,138,856</b>	<b>1,138,856</b>	<b>1,138,856</b>

### Other Project Cost (OPC)

#### OPC except D&D

FY 2007	9,048	9,048	9,048
FY 2008	9,715	9,715	7,715
FY 2009	13,133	13,133	15,133
FY 2010	25,202	25,202	25,202
FY 2011	30,605	30,605	30,605
FY 2012	32,579	32,579	32,579
FY 2013	57,963	57,963	57,963
FY 2014	0	0	0
FY 2006	22,447	22,447	22,447
<b>Total, OPC except D&amp;D</b>	<b>200,692</b>	<b>200,692</b>	<b>200,692</b>



(dollars in thousands)

	Appropriations	Obligations	Costs
OPC			
FY 2007	9,048	9,048	9,048
FY 2008	9,715	9,715	7,715
FY 2009	13,133	13,133	15,133
FY 2010	25,202	25,202	25,202
FY 2011	30,605	30,605	30,605
FY 2012	32,579	32,579	32,579
FY 2013	57,963	57,963	57,963
FY 2014	0	0	0
FY 2006	22,447	22,447	22,447
Total, OPC	200,692	200,692	200,692

## Total Project Cost (TPC)

FY 2003	4,842	4,842	0
FY 2004	51,198	51,198	11,539
FY 2005	29,261	29,261	30,204
FY 2006	57,932	57,932	70,642
FY 2007	113,344	113,344	86,555
FY 2008	106,824	106,824	129,218
FY 2009	168,657	168,657	203,900
FY 2010	259,320	259,320	259,320
FY 2011	287,556	287,556	287,556
FY 2012	202,650	202,650	202,650
FY 2013	57,964	57,964	57,964
FY 2014	0	0	0
Total, TPC	1,339,548	1,339,548	1,339,548

FY 2008: Includes a Congressional Reprogramming of \$15,000,000 from the construction project (05-D-405) to Project Engineering and Design (03-D-414)

## 6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	234,085	206,705	206,705
Contingency	9,620	37,000	37,000
Total, PED	243,705	243,705	243,705
Construction			
Site Preparation	27,263	27,263	27,263
Equipment	141,000	89,508	89,508
Other Construction	492,128	316,428	316,428
Contingency	234,760	49,000	49,000
Total, Construction	895,151	482,199	482,199
Total, TEC	1,138,856	725,904	725,904
Contingency, TEC	244,380	86,000	86,000

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	0	0	0
Conceptual Design	14,133	14,445	14,445
Start-Up	117,724	96,940	96,940
Contingency	30,450	22,000	22,000
Other OPC	38,385	40,048	40,048
Total, OPC except D&D	200,692	173,433	173,433
D&D			
D&D	0	0	0
Contingency	0	0	0
Total, OPC	200,692	173,433	173,433
Contingency, OPC	30,450	22,000	22,000
Total, TPC	1,339,548	899,337	899,337
Total, Contingency	274,830	108,000	108,000

## 7. Schedule of Project Costs

For schedule of project costs, see Section 5, "Financial Schedule."

## 8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1Q FY2016
Expected Useful Life (number of years)	17
Expected Future Start of D&D	N/A

### (Related Funding requirements)

(Dollars in Thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	63,443	61,686	1,083,957	960,425
Maintenance	10,785	10,686	184,273	184,975
Total, Operations & Maintenance	74,228	72,372	1,268,230	1,145,400

Start of Operation or Beneficial Occupancy (fiscal quarter or date): The operational start date above is based on data used to support the \$1,339.5 million total project cost estimate and associated performance measurement baseline (early finish) completion date. Should the projected schedule contingency of 126 weeks be fully realized, then the start of operation milestone would move out to the first quarter of fiscal year 2016.

## 9. Required D&D Information

Area	Square Feet
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This project is new construction which does not replace an existing facility. As part of the Office of Environmental Managements cleanup efforts, sites have established unique projects to perform Decontamination and Decommissioning. An estimated 2,200,000 square feet of buildings will have been removed from the Savannah River Sites inventory from fiscal year 2003 through fiscal year 2006. The square footage of this project will be offset against the Savannah River Site Decontamination and Decommissioning program's banked excess.

## 10. Acquisition Approach

The project acquisition strategy included the use of two separate contractors to perform conceptual design, which reduced project risk. Both contractors identified and managed technical and program risks through completion of conceptual design. Following completion of conceptual design, the Department selected one of the two contractors to perform preliminary and final design, construction, commissioning, and one year of operations. Design services were obtained through a competed contract with an Engineering, Procurement, and Construction contractor. The negotiated contract is a Cost-Plus-Incentive Fee arrangement, which also includes construction and commissioning services. Management and Operating contactor staff will be involved in areas concerning high level waste system interfaces, feed, and product specifications, etc.



**Plutonium Preparation Project, Savannah River Site, Aiken, South Carolina  
(Project Engineering and Design 08-D-414 (SR-0011C))**

**1. Significant Changes**

- The most recent DOE Order 413.3A approved Critical Decision is Approval of Revised Preferred Alternative Critical Decision 1A that was approved on June 27, 2008 with a preliminary cost range of \$340,000,000 to \$540,000,000 and a preliminary schedule range of 2013-2014.
- The scope of line item 04-D-414, 3013 Container Surveillance and Storage Capability, Project Engineering and Design, Savannah River Site, Aiken, South Carolina (SR-0011B) has been included in this project and is no longer a separate line item.
- FY 2010 Project Engineering and Design has been reduced from \$47,645,000 to \$6,315,000, and Other Project Cost will remain at \$9,000,000.
- The FY 2010 funding proposed is based on receipt of the approval of the Revised Preferred Alternative Critical Decision 1A which requires additional conceptual design. Also, the Plutonium Preparation Project project will be suspended for six months in FY 2009 to allow for additional alternative studies to optimize the Plutonium Disposition program and consider consolidating with the National Nuclear Security Administration Pit Disposition Project.
- Critical Decision 1B will address project completion.
- A Federal Project Director with certification level II has been assigned to this project.
- This Project Data Sheet is an update of the FY 2009 Congressional Budget Project Engineering and Design Project Data Sheet which has been consolidated into the Construction Project Data Sheet.

**2. Design, Construction, and D&D Schedule**

*(fiscal quarter or date)*

	CD-0	CD-1 (Design Start)	Design/PED Complete	CD-2	CD-3 (Construction Start)	CD-4 (Project Complete)	D&D Start	D&D Complete
FY 2008 Budget Request	09/06/2005	1Q FY2008	TBD	TBD	TBD	TBD	N/A	N/A
FY 2009 Budget Request	09/06/2005	3Q FY2008	TBD	TBD	TBD	TBD	TBD	TBD
FY 2010 Budget Request	09/06/2005	1Q FY2010	TBD	TBD	TBD	TBD	TBD	TBD

CD-0 – Approve Mission Need  
 CD-1 – Approve Alternative Selection and Cost Range  
 CD-2 – Approve Performance Baseline  
 CD-3 – Approve Start of Construction  
 CD-4 – Approve Start of Operations or Project Closeout  
 D&D Start – Start of Demolition & Decontamination (D&D) work  
 D&D Complete – Completion of D&D work

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Schedules are to be determined - preliminary Critical Decision 4 schedule range was FY 2005-2012 before the Revised Preferred Alternative Critical Decision 1A was approved in June 2008.

	<i>CD-1A (Approval of Preferred Technology Alternative)</i>	<i>Revised CD-1A (Approval of Revised Preferred Alternative)</i>	<i>CD-1B (Approve Preliminary Baseline Range)</i>	<i>CD-2A/3A (Start of Construction, D&amp;R and Long Lead Items)</i>
FY 2008 Budget Request	08/17/2006			
FY 2009 Budget Request	08/17/2006		2Q FY 2008	4Q FY 2009
FY 2010 Budget Request		06/27/2008	1Q FY 2010	TBD

### 3. Baseline and Validation Status

(Fiscal Quarter)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY08 Budget Request	88,000	342,000	430,000	70,000	0	70,000	500,000
FY09 Budget Request	88,000	TBD	TBD or N/A	TBD	0	TBD or N/A	TBD or N/A
FY10 Budget Request	TBD	TBD	TBD or N/A	TBD	TBD	TBD or N/A	TBD or N/A

The Total Project Cost is estimated to be in the range of \$340,000,000 to \$540,000,000 (Includes \$40M sunk cost from 3013 Container Surveillance and Storage Capability Line Item project 04-D-414 PED / 04-D-423 Construction and \$991K from 08-D-414). Previous budget requests were preliminary estimates only. No construction funds, excluding approved long lead procurement and Dismantle and removal, will be used until the project performance baseline has been validated and Critical Decision 3 has been approved.

### 4. Project Description, Justification, and Scope

This project data sheet summarizes the Office of Environmental Management (EM) requirements for architect-engineering services, preliminary design, and final design for the Plutonium Preparation Project at the Savannah River Site. The design effort will be sufficient to assure project feasibility, define the scope, provide detailed estimates of construction cost based on the approved design and working drawings and specifications, and provide construction schedules including procurements. Federal Law 107-107 requires a disposition pathway out of South Carolina for all plutonium transferred to the Savannah River Site. EM has approximately 13 metric tons of plutonium in approximately 21 metric tons bulk materials without any defined disposition path. The mission of the Plutonium Preparation Project is to provide a pathway for the DOE surplus non-pit plutonium materials consolidated at the Savannah River Site to meet proliferation resistance standards for interim storage on site. By establishing a plutonium disposition capability at the Savannah River Site, the DOE would ensure a defined disposition path for these materials.

The project consists of K-Area Complex modifications required to provide new plutonium preparation and packaging capabilities not currently existing, provide increased throughput capability to existing

**Defense Environmental Cleanup/08-D-414/ Plutonium Preparation Project, Savannah River Site, Aiken, South Carolina (Project Engineering and Design 08-D-414 (SR-0011C))**

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facility features and infrastructure upgrades as required to support the Program schedule. No modifications to the H-Tank Farm, Defense Waste Processing Facility, or Solid Waste Management Facility are required to support the proposed project.

- Conduct DOE-STD-3013 surveillance
- Open, re-stabilize, and repackage nuclear material containers per DOE-STD-3013
- Provide storage vaults for at least 1900 containers
- Declad un-irradiated Fast Flux Test Facility fuel
- Oxidize plutonium metal
- Perform flow sheet development of material going to H-Canyon and HB-Line
- Perform production level characterization of material going to H-Canyon, HB-Line, or Mixed Oxide Fuel Fabrication Facility

Planned operational improvements not part of the Plutonium Preparation Project consist of: 1) a dissolver to be used for processing routine H-Canyon Plutonium and for the Fast Flux Test Facility material and 2) a Bi-Cell Vessel to provide plutonium solution storage surge capacity to minimize processing delays with liquid transfers to the Tank Farm. No physical modifications are required for the H-Tank Farm, Defense Waste Processing Facility and Solid Waste Management Facility.

The 13 metric tons of material for the Plutonium Disposition Program consists of Plutonium from several DOE complex sites; intact Fast Flux Test Facility mixed oxide assemblies from Hanford and 3013 oxide and metal containers from the Savannah River Site, Hanford, Rocky Flats Environmental Technology Site, Lawrence Livermore National Laboratory and Los Alamos National Laboratory. This material is currently in inventory or will be received and stored in the Savannah River Site K-Area Complex.

The project is in the advanced stages of conceptual design and the Total Estimated Cost (Design and Construction) business decision estimate range is under development. The budget authority requested for FY 2010 is completion of conceptual design, initiation of preliminary design, and preparation of design and procurement package for advancement of applied technology development. Budget requested is a rough order magnitude estimate based on scaling estimates of similar projects. The Total Estimated Cost will be refined during conceptual design and revised accordingly.

Preliminary design includes:

- Update Team Execution Plan
- Perform Process Hazards Review and Revise Preliminary Hazards Analysis
- Project Site Selection
- Update Risk Management Plan
- Complete Technical Requirements and Prepare Technical Input Documents
- Issue Preliminary Safety Analysis Report
- Finalize Geotechnical Investigation
- Initiate development of Design Source Documents

The project is being conducted in accordance with the project management requirements in DOE Order 413.3A and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met. Accordingly, baselines for Total Estimated Cost/Total Project Cost will be established at the completion of preliminary design (Critical Decision-2) and after the associated external independent review.

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The project is being conducted in accordance with the project management requirements in DOE Order 413.3A and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

## 5. Financial Schedule

(dollars in thousands)			
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2008	1,000	0	0
FY 2009	0	1,000	1,000
FY 2010	6,315	7,315	7,315
FY 2011	TBD	TBD	TBD
FY 2012	TBD	TBD	TBD
Total, PED	7,315	8,315	8,315
Construction			
FY 2009	0	0	0
FY 2010	0	0	0
FY 2011	TBD	TBD	TBD
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
TEC			
FY 2008	1,000	0	0
FY 2009	0	0	0
FY 2010	6,315	7,315	7,315
FY 2011	TBD	TBD	TBD
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
Total, TEC	7,315	7,315	7,315
Other Project Cost (OPC)			
OPC except D&D			
FY 2007	14,987	14,987	14,987
FY 2008	5,278	5,278	5,278
FY 2009	6,900	6,900	6,900
FY 2010	9,000	9,000	9,000
FY 2011	TBD	TBD	TBD
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
Total, OPC except D&D	36,165	36,165	36,165
D&D			
FY 2014	TBD	TBD	TBD

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(dollars in thousands)

	Appropriations	Obligations	Costs
OPC			
FY 2007	14,987	14,987	14,987
FY 2008	5,278	5,278	5,278
FY 2009	6,900	6,900	6,900
FY 2010	9,000	9,000	9,000
FY 2011	TBD	TBD	TBD
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
Total, OPC	36,165	36,165	36,165
Total Project Cost (TPC)			
FY 2007	14,987	14,987	14,987
FY 2008	6,278	5,278	5,278
FY 2009	6,900	6,900	6,900
FY 2010	15,315	16,315	16,315
FY 2011	TBD	TBD	TBD
FY 2012	TBD	TBD	TBD
FY 2013	TBD	TBD	TBD
FY 2014	TBD	TBD	TBD
Total, TPC	43,480	43,480	43,480

## 6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	TBD	88,000	N/A
Contingency	TBD	0	N/A
Total, PED	0	88,000	0
Construction			
Site Preparation	TBD	0	N/A
Equipment	TBD	0	N/A
Other Construction	TBD	342,000	N/A
Contingency	TBD	0	N/A
Total, Construction	0	342,000	0
Total, TEC	0	430,000	0
Contingency, TEC	0	0	0
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	35,342	20,000	N/A

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(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Conceptual Design	TBD	50,000	N/A
Start-Up	TBD	0	N/A
Contingency	TBD	0	N/A
Total, OPC except D&D	TBD	70,000	0
D&D			
D&D	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, OPC	TBD	70,000	0
Contingency, OPC	0	0	0
Total, TPC	TBD	500,000	0
Total, Contingency	0	0	0

### 7. Schedule of Project Costs

For schedule of project costs, see Section 5, "Financial Schedule."

### 8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter to date)	TBD
Expected Useful Life (number of years)	12
Expected Future Start of D&D of this capital asset (fiscal quarter)	TBD

#### (Related Funding requirements)

(Dollars in Thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	TBD	TBD	TBD	TBD
Maintenance	TBD	TBD	TBD	TBD

### 9. Required D&D Information

Area	Square Feet
Area of new construction	50,000
Area of existing facility(s)	50,000
Area of additional D&D space to meet the "one-for one" requirement	N/A

## **10. Acquisition Approach**

Design, construction, and procurement may be accomplished by the Management and Operating contractor. Specific scopes of work within this project may be accomplished by fixed-price contracts awarded on the basis of competitive bidding. The project will be conducted in accordance with the project management requirements in DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets. Funds for construction activities, excluding approved long lead procurements and dismantle and removal, will not be obligated until a project baseline (cost and schedule) has been established by the Office of Environmental Management and validated by the Office of Engineering and Construction Management, in accordance with DOE Order 413.3.



## Closure Sites

### Funding by Site and Location

(dollars in thousands)

	FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010
Closure Sites				
Ashtabula	292	0	0	0
Closure Sites Administration	11,726	13,209	0	8,225
Fernald	0	2,100	0	0
Miamisburg	30,032	30,574	19,700	33,243
Total, Closure Sites	42,050	45,883	19,700	41,468

The Site remaining in the Closure Activities (Defense) is Mound in Miamisburg, Ohio.

These sites have or will have completed physical completion by the end of FY 2009. Closure Activities, after physical completion, include final contract fee payments for project physical completion, and work scope to cover any potential “gap” between EM acceptance of the contractor’s declaration of physical completion and the date EM transfers site custodianship to the Office of Legacy Management or other entity. The post-closure administration and litigation liability activities are also included in this budget and managed by the Consolidated Business Center.

### Mound

#### Site Overview

In June 2002, DOE, the Ohio Environmental Protection Agency and the United States Environmental Protection Agency signed a letter of intent formalizing an agreement with DOE to accelerate the Miamisburg Closure Project cleanup. The primary goal addressed in the agreement signed by DOE and the regulators was to accelerate cleanup activities such that the site could achieve closure by 2006. On December 5, 2002, DOE awarded a cost plus incentive fee Miamisburg Closure Project contract. The Miamisburg Closure Project contractor declared physical completion on July 31, 2006, and DOE accepted completion of that scope in March 2007. Subsequently, Congress directed additional remediation of Operable Unit 1 at this site. This scope is contained within a separate remediation task order awarded under the Department’s Indefinite Deliverable/Indefinite Quantity contract in 2006.

#### Site Description

The Miamisburg Mound plant was built in the late 1940s to support research and development, testing, and production activities for DOE’s defense nuclear weapons complex and energy research programs. The plant’s mission involved production of components, which contained plutonium-238, polonium-210, tritium, and large quantities of high explosives. This mission continued until 1994, when these activities were transferred to other DOE facilities.

The Miamisburg Closure Project site is located in Miamisburg, Ohio, 10 miles southwest of Dayton and 31 miles north of Cincinnati.

### **Site Cleanup Strategy/Scope of Cleanup**

Solid waste stabilization and disposition activities included the collection, storage, and disposition of waste, primarily waste generated from contaminated soil cleanup and waste from the decontamination and demolition of site buildings. Soil and building contamination was dominated by residual spread of thorium and plutonium. However, other radionuclides such as radium, actinium and cesium were found in lesser amounts. Solid waste stabilization and disposition activities at the Miamisburg Closure Project involved the management of low-level waste, low-level mixed waste, transuranic waste, hazardous waste, and solid waste streams. This includes interim waste storage, shipment of waste to federal and commercial disposal facilities, and, in some cases, minor treatments. Transuranic waste was shipped to the Savannah River Site pursuant to an agreement between the DOE and the State of South Carolina. All legacy transuranic waste was dispositioned by the end of FY 2003. The site contractor declared physical completion in July 2006. Final site remediation is projected in September 2009, including the Operable Unit 1.

### **Site Completion (End State)**

The site contractor declared physical completion of the Miamisburg Closure Project in July 2006, and DOE completed their physical acceptance review and declared physical acceptance in March 2007. The Office of Legacy Management assumed operational control responsibility for the site in October 2006 pending formal transfer and full operational responsibility in FY 2010.

- Operable Unit 1 (Historic Landfill) met the requirements under Comprehensive Environmental Response, Compensation, and Liability Act and had been accepted by the United States Environmental Protection Agency and Ohio Environmental Protection Agency. However, in FY 2006 Congress directed DOE to develop a mutually acceptable remedy with the Miamisburg Mound Community Improvement Corporation for Operable Unit 1 with an appropriation not to exceed \$30,000,000. A prioritized exhumation was the agreed upon remedy. Subsequently, a competitive procurement took place in FY 2006 and the EM Consolidated Business Center awarded an Indefinite Delivery/Indefinite Quantity contract in October 2006. During FY 2007, an additional \$4,500,000 was provided from available project funds to support additional remediation of high priority Operable Unit 1 areas. The available funds were expended and the site was returned to a protective state in FY 2008.
- Potential Release Site 441 (rail load out area) was scheduled for completion in FY 2006, but was delayed to allow support for rail shipment of material exhumed from Operable Unit 1. This scope is included in the Indefinite Delivery/Indefinite Quantity contract for the Operable Unit 1 exhumation and is planned to be completed in FY 2009.
- Potential Release Site 7 supported the removal of an off-site sanitary waste line. This is a part of the resolution of a Federal Facility Agreement dispute with the State of Ohio. This scope is included in the Indefinite Delivery/Indefinite Quantity contract for the Operable Unit 1 exhumation and was completed in FY 2009.

- DOE will complete the Record of Decision for Parcel 6/7/8 and amend the existing Record of Decision for Operable Unit 1 before declaring EM completion.

**Regulatory Framework**

In 1993 DOE/United States Environmental Protection Agency and the Ohio Environmental Protection Agency signed the Federal Facility Agreement.

**Critical Site Uncertainties and Assumptions**

As a result of Congressional action in FY 2006, additional environmental cleanup activities associated with Operable Unit 1 are in process and will continue into FY 2009.

**Interdependencies**

Wastes generated through remediation of Operable Unit 1 require commercial off-site disposal.

**Contract Synopsis**

The DOE cost plus incentive fee closure contract with CH2M Hill Mound, Inc. achieved contract physical completion in July 2006, and DOE accepted completion of that scope in March 2007. The contract provided significant incentive to the contractor to complete closure early while maintaining high safety standards, reducing risk, saving the taxpayer money through various means (mortgage reduction, process efficiencies, implementation of new technologies, etc.), and remaining in compliance with all regulatory and enforceable milestones.

The new Indefinite Delivery/Indefinite Quantity contract with Accelerated Remediation Company for the Operable Unit 1 and Potential Release Site 441 was awarded in October 2006, and was planned to be completed in April 2008. Potential Release Site 7 scope was added to the Accelerated Remediation Company contract revising the expected physical completion date to March 2009.

**Cleanup Benefits**

Closure and turnover of 24 buildings and 306 acres to the Miamisburg Mound Community Improvement Corporation were expected to be completed by the end of FY 2008. However, the Miamisburg Mound Community Improvement Corporation indicated they would not accept any portion of the Operable Unit 1 site which includes a Comprehensive Environmental Response, Compensation, and Liability Act no-dig restriction. As a result, the DOE will retain ownership of a portion of the Operable Unit 1 area. Total operational management of the long-term stewardship mission at Miamisburg Closure Project will be transferred to DOE’s Office of Legacy Management in FY 2010.

**Funding Schedule by Activity**

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Defense Environmental Cleanup  
Closure Sites

OH-AB-0030 / Soil and Water Remediation-Ashtabula	292	0	0
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Closure Sites

**FY 2010 Congressional Budget**

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
CBC-0100-RF / CBC Post Closure Administration - Rocky Flats	4,026	9,302	6,375
CBC-0100-FN / CBC Post Closure Administration - Fernald	7,700	2,019	1,850
CBC-0100-MD / CBC Post Closure Administration - Mound	0	1,888	0
OH-FN-0030 / Soil and Water Remediation-Fernald	0	2,100	0
OH-MB-0030 / Soil and Water Remediation-Miamisburg	5,108	4,224	5,097
OH-MB-0100 / Miamisburg Post-Closure Administration	24,924	26,350	28,146
Subtotal, Closure Sites	42,050	45,883	41,468
Total, Defense Environmental Cleanup	42,050	45,883	41,468
Non-Defense Environmental Cleanup			
Small Sites			
Subtotal, Small Sites	0	0	0
Total, Non-Defense Environmental Cleanup	0	0	0
Total, Closure Sites	42,050	45,883	41,468

### Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
Closure Sites					
Geographic Sites Eliminated (number of sites)	6	6	6	6	100.0%
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	100.0%
Industrial Facility Completions (Number of Facilities)	441	441	441	441	100.0%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	616,927	616,927	616,927	616,927	100.0%
Material Access Areas eliminated (Number of Material Access Areas)	7	7	7	7	100.0%
Nuclear Facility Completions (Number of Facilities)	15	15	15	15	100.0%
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	1,895	1,895	1,895	1,895	100.0%
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	103,901	103,901	103,901	103,901	100.0%
Radioactive Facility Completions (Number of Facilities)	136	136	136	136	100.0%
Remediation Complete (Number of Release Sites)	549	549	549	549	100.0%
Transuranic Waste shipped for disposal (Cubic meters) - CH	15,036	15,036	15,036	15,036	100.0%



## Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**OH-AB-0030 / Soil and Water Remediation-Ashtabula** **292**                      **0**                      **0**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The Ashtabula Soil and Water Remediation Project consist of remediation of 32 contaminated facilities, disposition of equipment, and remediation of affected land areas and groundwater. Facility decommissioning will be by remediation and disposal of debris in licensed, off-site disposal facilities or facility demolition to free-release levels. Contaminated soil will be shipped to a low-level waste disposal site for burial. Groundwater remediation will be accomplished through source removal to on-site release limits followed by natural attenuation.

As of September 2006, 25 facilities were demolished, resulting in the disposition of nearly 600,000 m<sup>3</sup> of radioactive remediation-generated waste.

Completion will allow the Ohio Department of Health to release the site for unrestricted use and facilitate license termination for the owner, RMI Titanium Company.

The physical completion of the project was completed in November 2006. Final project closeout was completed in early 2007. On March 1, 2008, responsibility for custodianship of the Ashtabula records transferred from Environmental Management to the Office of Legacy Management. In FY 2010, the Office of Legacy Management LM will assume programmatic responsibility (i.e., target funding) for continuing records management responsibilities at the Ashtabula Site.

The actual life cycle cost for this project was \$147,054,000 which represents incurred costs from fiscal year 1997 through fiscal year 2006.

In FY 2010, the following activities are planned:

- No activity. Regulatory closure was complete in January 2007.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	3,707	3,707	3,707	3,707	100.0%
Radioactive Facility Completions (Number of Facilities)	28	28	28	28	100.0%
Industrial Facility Completions (Number of Facilities)	7	7	7	7	100.0%
Remediation Complete (Number of Release Sites)	3	3	3	3	100.0%

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**CBC-0100-FN / CBC Post Closure Administration - Fernald**

**7,700                      2,019                      1,850**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This Post-Closure Administration PBS scope includes the Fernald Closure Project regulatory support, Human Resource Management, Budget and Financial support, and administration of Freedom of Information and Privacy Act programs at the Fernald closure site. In addition, the funding provides support of ongoing litigation and payment of settlements, management and administration of DOE prime contracts for assigned sites/projects, and close out of former DOE prime contracts. This funding also covers the payment of estimated workers' compensation payments. All costs for these activities prior to site closure are included in the individual site project PBS.

In FY 2010, the following activities are planned:

- Fund the end of the Fernald Project's legal requirements, court orders and settlements.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Complete ROD for final disposition of waste currently held at WCS facility in Texas (October 2009)</li> </ul>					

**CBC-0100-MD / CBC Post Closure Administration - Mound**

**0                              1,888                              0**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This Post-Closure Administration PBS provides funding for the Mound Closure Project regulatory support, Human Resource Management, Budget and Financial support, and administration of Freedom of Information and Privacy Act programs at the closure site. In addition, the funding provides support of ongoing litigation and payment of settlements, management and administration of DOE prime contracts for assigned sites/projects, and close out of former DOE prime contracts. This funding also covers the payment of estimated workers' compensation payments.

In FY 2010, the following activities are planned:

- Fund the end of the Mound Project's legal requirements and court orders, contract closeout, litigation support, FOIA/Privacy Act compliance, and contractor workman's compensation claims.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**CBC-0100-RF / CBC Post Closure Administration -  
Rocky Flats**

**4,026                      9,302                      6,375**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The scope of this PBS is to provide site litigation support related to the continuing class actions and other civil litigation activities of former site contractors. This support does not include closure contract litigation support costs incurred by the Rocky Flats site closure contractor, which is covered under PBS RF-0030.

The Rocky Flats Closure Project achieved site closure in FY 2006. However, ongoing litigation support will continue until all litigation involving the Department of Energy or former Rocky Flats contractors is resolved. The EM Consolidated Business Center has assumed responsibility for the litigation associated with the Rocky Flats Site.

In FY 2010, the following activities are planned:

- Fund the end of the Rocky Flats Closure Project’s legal requirements and court orders.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**OH-FN-0030 / Soil and Water Remediation-Fernald**

**0                              2,100                              0**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The Soil and Water Remediation Project includes the characterization, remediation, and certification of all environmental media (soil, below-grade debris, and water). This scope of work includes excavation, hauling, and final disposition of all contaminated soils and below-grade debris that exceed the “final remedial levels” for cleanup at Fernald. The contaminated soils, below-grade debris, and debris generated from decontamination and dismantlement activities will be placed in the On-Site Disposal Facility for final disposal. Soil and debris that exceed the On-Site Disposal Facility waste acceptance criteria will be transferred for disposition off-site. In addition, natural resource restoration activities are performed to return the site to its natural state following remediation.

The Advanced Waste Water Treatment Facility was reduced to a condensed facility referred to as the Converted Advanced Waste Water Treatment Facility which will continue to process site waste water. The Converted Advanced Waste Water Treatment Facility was transferred to Legacy Management as

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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well as other operations associated with long-term stewardship activities in FY 2007. Formal transfer of long-term stewardship activities to Legacy Management occurred beginning in FY 2008.

This project scope includes confinement and extraction of uranium from the Great Miami Aquifer, a sole source aquifer under the Fernald site, as well as management of storm water, operations of sewage treatment facilities, and groundwater monitoring. The completion of the scope in this project represents a significant portion of the critical activities required to close the Fernald site.

The end-state of this project is the final cleanup of environmental media at the Fernald site, including soil and below grade debris excavation, hauling, and disposal into the On-Site Disposal Facility. All work scope is completed, with exception of permanent disposal of Silos 1 and 2 wastes, which are in commercial interim storage pending final disposal. A permanent disposal license was issued to the commercial site and the construction of a permanent disposal facility is underway. It is anticipated that permanent disposal will be initiated in the fall of 2009 and completed by December 2009. Upon EM acceptance of the contractor's physical completion declaration (action completed January 22, 2007), the Office of Legacy Management assumed operational responsibility for the Fernald Closure Project. The Office of Legacy Management assumed responsibility for ongoing operation of the aquifer long-term response action and all other monitoring maintenance and surveillance at the Fernald Closure Project at the time of transfer. Therefore, the Office of Legacy Management is responsible for regulatory completion of Operable Unit 5 (environmental media, including groundwater, surface water and soil not included in Operable Units 1-4). Current projections indicate Operable Unit 5 will not be complete until the year 2025.

Educational outreach and maintenance of an on-site information facility are being employed as a form of community-based institutional controls.

As of October 2006, Fernald had completed 100 percent of the contractually required remediation work.

In FY 2010, the following activities are planned:

- Continued storage and disposal of Fernald silo waste at Waste Control Specialists, LLC in Texas.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Remediation Complete (Number of Release Sites)	2	2	2	2	100.0%

**OH-MB-0030 / Soil and Water Remediation-Miamisburg**

**5,108                      4,224                      5,097**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This project remediates contaminants that were released into the environment during operation of the

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Mound Plant from 1940 through 1994. As a result of these past activities, the soil and groundwater are contaminated with radioactive and hazardous chemicals. The U.S. Environmental Protection Agency placed the site on the National Priority List in 1989 because of volatile organic compound contamination present in the site's groundwater and the site's proximity to a sole-source aquifer.

The end-state for this project is the completion of remediation of all contaminated soil areas (Potential Release Sites); achievement of operating properly and successfully determinations on all Comprehensive Environmental Response, Compensation and Liability Act remedies other than institutional controls; completion of all Comprehensive Environmental Response, Compensation documentation required to achieve EM Completion and DOE site closure, including U. S. Environmental Protection Agency approval to transfer all properties that comprise the 306 acres originally owned by DOE; and transfer of all properties to the Miamisburg Mound Community Improvement Corporation that have been declared excess to DOE's needs in FY 2007. Responsibility for long-term stewardship and post-closure pension and post-retirement benefits will transfer to the Office of Legacy Management.

As of September 30, 2006, 100 percent of the original lifecycle estimates of Potential Release Sites (178 of 178) have been completed. Parcels 6, 7, 8, and 9 have not been transferred to the Miamisburg Mound Community Improvement Corporation pending completion of remediation of the railroad out area, finalization of Record of Decision and amendment of Operable Unit 1 Record of Decision.

The site contractor declared physical completion of the Miamisburg Closure Project in July 2006, and DOE completed their physical acceptance review and declared physical acceptance in March 2007. The Office of Legacy Management will assume full operational responsibility for the site in FY 2011.

In FY 2010, the following activities are planned:

- Provide additional support for Operable Unit 1 groundwater monitoring and remediation.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	100.0%
Remediation Complete (Number of Release Sites)	178	178	178	178	100.0%

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**OH-MB-0100 / Miamisburg Post-Closure Administration**

**24,924                      26,350                      28,146**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This PBS supports Post-Closure Contract liabilities such as pension, retiree medical and life insurance. This scope is defined under Financial Accounting Standard 87 (Employers' Accounting for Pension), Financial Accounting Standard 106 (Employers' Accounting for Post-Retirement Benefits Other Than Pension), and estimated workers' compensation. Post-closure liabilities began in FY 2007 with the completion of the Miamisburg Closure Project contract.

In FY 2010, the following activities are planned:

- Fund the Miamisburg Administration Post-Closure's legal requirements and court orders.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**Total, Closure Sites** **42,050                      45,883                      41,468**

**Explanation of Funding Changes**

FY 2010 vs. FY 2009 (\$000)
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**Defense Environmental Cleanup**

**Closure Sites**

**Closure Sites Administration**

**CBC-0100-FN / CBC Post Closure Administration - Fernald**

- Decrease is due to a decrease in legal requirements, court orders and post-closure administrative costs. -169

**CBC-0100-MD / CBC Post Closure Administration - Mound**

- Decrease is due to a reduction in planned contract closeout costs, resolution of open litigation and workers' compensation claims associated with the Mound closure contract. -1,888

**CBC-0100-RF / CBC Post Closure Administration - Rocky Flats**

- Decrease is due to a decrease in site litigation requirements, court orders and post-closure administrative costs. -2,927

FY 2010 vs. FY 2009 (\$000)
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**Fernald**

**OH-FN-0030 / Soil and Water Remediation-Fernald**

- Decrease reflects project completion. The Fernald Silo wastes were permanently disposed at Waste Control Specialists, LLC in Texas, which resulted in elimination of storage requirements. -2,100

**Miamisburg**

**OH-MB-0030 / Soil and Water Remediation-Miamisburg**

- Increase due to additional support for Operable Unit 1 groundwater monitoring and remediation and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. 873

**OH-MB-0100 / Miamisburg Post-Closure Administration**

- Increase is attributable to increase in projected retiree medical benefits and associated costs based upon current benefits increases. 1,796

**Total, Closure Sites** 

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 **-4,415**





## NNSA Sites

### Funding by Site and Location

(dollars in thousands)

	FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010
NNSA Sites				
California Site Support	367	0	0	238
Nevada	85,368	75,674	44,325	65,674
NNSA Service Center/Separations Processing Research Unit (SPRU)	28,831	19,443	31,775	17,938
Lawrence Livermore National Laboratory	8,601	0	0	910
Los Alamos National Laboratory	175,158	224,639	211,775	189,000
Pantex	25,027	0	0	0
Sandia National Laboratories	0	3,000	0	2,864
<b>Total, NNSA Sites</b>	<b>323,352</b>	<b>322,756</b>	<b>287,875</b>	<b>276,624</b>

## NNSA Sites

The Department's Office of Environmental Management is responsible for the safe and efficient cleanup of the environmental legacy at the following National Nuclear Security Administration Sites: Lawrence Livermore National Laboratory-Livermore Site 300, Los Alamos National Laboratory, Nevada Test Site, Pantex Plant, Sandia National Laboratories, and the Separations Process Research Unit. The Kansas City Plant and Lawrence Livermore National Laboratory- Main Site were completed in FY 2006 and transitioned to the National Nuclear Security Administration's Long-Term Stewardship program beginning in FY 2007.

The Pantex Plant was completed in FY 2008 and transitioned into long-term stewardship and is being managed and funded by the National Nuclear Security Administration beginning in FY 2009. Also in FY 2009, the environmental monitoring and maintenance of the majority of corrective measures implemented in previous years at Lawrence Livermore National Laboratory Site 300 is the responsibility of the National Nuclear Security Administration with the exception of one area Operable Unit 9 Building 812 at Lawrence Livermore National Laboratory Site 300, which extends the completion of Lawrence Livermore National Laboratory Site 300 to FY 2014.

### Lawrence Livermore National Laboratory

#### Site Overview

Lawrence Livermore National Laboratory is a National Nuclear Security Administration multi-disciplinary research and development center focusing on weapons development and stewardship and homeland security. The Environmental Management program included the completion of disposition of legacy waste in FY 2005, transfer of the Newly Generated Waste Program to the National Nuclear Security Administration in FY 2006, and the Lawrence Livermore National Laboratory Main Site remedial activity build-outs in FY 2006. The Lawrence Livermore National Laboratory Main Site

transitioned to the National Nuclear Security Administration's Long-Term Stewardship program in FY 2007.

The only Environmental Management program remaining at Lawrence Livermore National Laboratory is the Site 300 environmental restoration project originally scheduled for completion in FY 2008, with transition to long-term stewardship in FY 2009 with the exception of those associated with Operable Unit 5 Building 850 Removal Action that is to be completed in FY 2009 with carryover funds, then transferred to NNSA. Operable Unit 9 Building 812 Firing Table will remain the responsibility of EM until remediation of this area is complete, currently scheduled for FY 2014.

### **Site Description**

Lawrence Livermore National Laboratory Site 300 is an 8,000-acre site located about 15 miles east of Livermore, California with limited development, primarily used for explosive hydrodynamic testing and analysis of weapons components. The surrounding area is sparsely populated rural agricultural land. There is soil and groundwater contamination on-site and limited groundwater contamination off-site.

### **Site Cleanup Strategy/Scope of Cleanup**

The cleanup strategy is a risk-based and regulatory compliant approach that focuses first on those contaminant plumes and sources that are the greatest contributors to risk. The overall goal is to ensure that risks to the public and workers are controlled, followed by work to clean up soil and groundwater using a risk-based methodology. Having established the risk-based prioritization for the work, a number of substantive changes to work practices that facilitate work execution were implemented.

### **Site Completion (End State)**

At completion, all required groundwater and/or soil vapor extraction and treatment facilities will have been constructed and fully operational. Groundwater monitoring and risk and hazard management will continue. Legacy waste will have been disposed of offsite and the Newly Generated Waste program will be transferred to National Nuclear Security Administration. Starting in FY 2008, the National Nuclear Security Administration became responsible for Long -Term Stewardship for the Lawrence Livermore National Laboratory Main Site. The EM program includes completion of the Lawrence Livermore National Laboratory Main Site remedial activity build-out in FY 2006 and transition to long-term stewardship in FY 2008 and completion of the Lawrence Livermore National Laboratory Site 300 remedial activity build out at Operable Units 1 through 8, scheduled for FY 2009, and transition to Long-Term Stewardship by the end of FY 2009. The last remaining cleanup area is Operable Unit 9, the Building 812 Firing Table, currently scheduled for completion in FY2014.

### **Near-Term Projects:**

Site 300 Completion - Soil and groundwater contamination has been characterized and cleanup levels for these contaminants codified in a Record of Decision signed in FY 2008 for Operable Units 1 through 8. The treatment systems, monitoring network, and soil removal actions at Operable Units 1 through 8 are scheduled to be completed by the end of FY 2009. Recent results of a characterization study at the Operable Unit 9 Building 812 Firing Table, as discussed in the project's Risk Management Plan since 2004, indicated that contamination levels exceed cleanup standards in this area and the regulators have

directed cleanup action be taken. A Remedial Investigation/Feasibility Study is currently under review by the regulatory agencies to define alternatives for the remediation needed in this area.

### **Regulatory Framework**

The Environmental Restoration activities at Lawrence Livermore National Laboratory Site 300 are governed by a site-specific Comprehensive Environmental Response, Compensation and Liability Act, Federal Facility Agreement, signed in 1992. A Record of Decision was signed in 2008 establishing ground water cleanup standards for the site as the Federal drinking water Maximum Contaminant Level unless California State Maximum Contaminant Levels are more stringent. As part of the Comprehensive Environmental Response, Compensation, and Liability Act process, DOE will prepare a technical and economic feasibility analysis after groundwater contaminant concentrations have been reduced to Maximum Contaminant Levels to determine the feasibility of continuing remediation.

### **Critical Site Uncertainties and Assumptions**

At Site 300, the major uncertainty is the remediation of the depleted uranium contaminated soil at the Operable Unit 9 Building 812 Firing Table. The challenges of the project include the excavation of soil from very steep terrain, large volumes of soil to be remediated and potential impacts to endangered species habitat and surface water drainage ways in the area during excavation and remediation.

### **Contract Synopsis**

The Management and Operating contract with the University of California for operation of Lawrence Livermore National Laboratory expired on September 30, 2007. DOE/National Nuclear Security Administration selected Lawrence Livermore National Security, LLC as the new Management and Operations contractor in a base-plus-incentive-fee contract that began on October 1, 2007. The cleanup work at Site 300 comprises elements of the new contract's performance measures.

### **Cleanup Benefits**

Cleanup of the Lawrence Livermore National Laboratory site has led to the final disposition of legacy waste inventories and the construction of groundwater treatment facilities at the Lawrence Livermore National Laboratory Main Site.

All 22 of the required groundwater and soil vapor extraction and treatment facilities at Lawrence Livermore National Laboratory Site 300 have been constructed and are operational. The soil removal action at the Building 850 Firing Table will be completed during FY2009, and the Operable Unit 9 Building 812 Firing Table remediation is currently scheduled for completion in FY2014.

## Los Alamos National Laboratory

### Site Overview

Since its inception in 1943 as part of the Manhattan Project, the primary mission of the Los Alamos National Laboratory has been nuclear weapons research and development. In achieving this mission, the Laboratory released hazardous and radioactive materials to the environment through outfalls, stack releases, and material disposal areas. Mixed low-level waste and transuranic waste have been staged in preparation for off-site disposition. Since 1989, the Environmental Management program at Los Alamos National Laboratory has been comprised of activities to address the characterization and cleanup of environmental media (i.e., soil and groundwater), the disposition of legacy waste, and the decontamination and decommissioning of nuclear facilities that are in the path of environmental sites in need of characterization and remediation.

### Site Description

Los Alamos National Laboratory is located in north-central New Mexico, in Los Alamos County, approximately 60 miles north-northeast of Albuquerque and 25 miles northwest of Santa Fe. The site is approximately 40 square miles and is situated on the Pajarito Plateau, which consists of a series of finger-like mesas separated by deep east-west-oriented canyons cut by streams. The surrounding land is largely undeveloped and large tracts of land North, West, and South of Los Alamos National Laboratory are held by other Federal agencies. In addition, there are four Native American Pueblos that border Los Alamos National Laboratory. There are four distinct geographical areas associated with the cleanup of Los Alamos National Laboratory:

Town Site - This area includes solid waste management units associated with the Manhattan Project and early Cold War era Los Alamos National Laboratory operations and support. These sites are found on property currently owned by private citizens and local governments.

Technical Area-21 - This work scope includes evaluation and implementation of corrective measures for material disposal areas A, B, T, U and V, the former process waste lines, and a broad category of environmental sites referred to as the Delta Prime Site Aggregate. This area served the process facilities in Delta Prime West and Delta Prime East including the Tritium Systems Test Assembly decontamination and decommissioning facility. Aggregates are areas defined in the enforceable State Compliance Order on Consent and are a geographic area sized between a large watershed and a very small Solid Waste Management Unit.

Technical Area-54 - Former and active waste disposal areas for the Los Alamos National Laboratory are located at Technical Area-54, and the scope of work includes decontamination and decommissioning and the cleanup of several major material disposal areas (G, H, and L).

Watersheds - Sites scheduled for investigations and cleanup that are not covered within the three areas discussed above are included within watershed aggregates areas. There are eight watersheds across the Laboratory that collectively drains all run-offs from the Los Alamos National Laboratory to the Rio Grande. There are more than 650 sites within these eight Watersheds still requiring investigations and remediation.

## Site Cleanup Strategy/Scope of Cleanup

Los Alamos National Laboratory has developed a comprehensive and detailed plan for cleanup of Environmental Management legacy waste sites at Los Alamos. This plan integrates the retrieval and disposition of legacy transuranic waste, decommissioning and decontamination of excess facilities at Technical Areas 21 and 54, and final remedy and site completion at approximately 860 remaining Solid Waste Management Units. The Los Alamos National Laboratory conducts assessments and corrective actions at contaminated sites to reduce unacceptable human health and ecological risks, and to reduce the inventory of legacy transuranic waste. The environmental restoration strategy is risk-based and complies with regulatory requirements to provide for future land use scenarios. The transuranic waste disposition strategy is to characterize, package, and ship waste to the Waste Isolation Pilot Plant. The strategy for decontamination and decommissioning and demolition of process-contaminated facilities at TA-21 and waste management facilities at TA-54 allows for characterization and cleanup of Solid Waste Management Units which are collocated in the footprint of the structures.

## Site Completion (End State)

The end state for Environmental Management work is: (1) protection and monitoring of the regional aquifer which is the drinking water source for Los Alamos County; (2) cleanup of sites at Los Alamos National Laboratory and surrounding areas to levels appropriate for the intended land use; (3) decontamination, decommissioning, and removal of process contaminated facilities at TA-21 and waste management facilities at TA-54; (4) disposal of all legacy transuranic waste and mixed low-level waste from Los Alamos National Laboratory; and (5) installation of all long-term surveillance and monitoring systems. The lifecycle planning estimate for end date for cleanup is 2015.

### Near-Term Projects:

Material Disposal Area B is an inactive subsurface disposal site, located in Technical Area (TA)-21 on Los Alamos National Laboratory. From 1944 until it closed in 1948, Material Disposal Area B received contaminated materials from the earliest Laboratory operations and may contain both hazardous chemicals and radioactive waste. Subsequently, the “townsite” expanded so that private businesses are now located less than 100 yards from the material disposal area. Known in the 1940s as the “contaminated dump,” material disposal area B was the first common disposal area for radioactive waste generated at the Laboratory. The waste disposal units at material disposal area B consist of shallow pits and/or trenches. Material disposal area B is currently scheduled to be completely excavated (all contents removed) by December 31, 2010. When material disposal area B restoration is completed approximately 6 acres of mesa-top lands may be available for transfer to the Los Alamos County pursuant to Public Law 105-119. Startup activities (readiness) for the cleanup at material disposal area B are currently ongoing.

Material Disposal Area H – This is an inactive 0.3-acre site used historically (1960 to 1986) for the disposal of classified solid-form waste. It consists of nine 60-foot deep shafts. The largest component of the inventory, 57 percent, is metal, both radioactive and non-radioactive (24 percent depleted uranium and 33 percent other metals). The Los Alamos National Laboratory has submitted an assessment of potential alternatives for cleanup. The New Mexico Environment Department is currently evaluating these alternatives and has the responsibility for selecting and defending a final remedy.

Cañon de Valle/260 Outfall - The Cañon de Valle/260 outfall includes the characterization and remediation at 140 Solid Waste Management Units/Areas of Concern located within Technical Areas-14, -15, and -16. These Solid Waste Management Units/Areas of Concern are expected to remain as industrial sites under DOE control for the foreseeable future. Notification of final remedy for the 260 outfall surface system was given by New Mexico Environment Department in October 2006. The surface corrective measures study and the groundwater corrective measures evaluation have been completed. New Mexico Environment Department required a supplemental investigation work plan to support the groundwater corrective measures, the supplemental plan was submitted in June 2008, in their approval with modifications New Mexico Environment Department required two wells to be abandoned, a well to be drilled and another deepened; in addition New Mexico Environment Department required an aquifer test work plan by February 2010. Groundwater well drilling is ongoing in FY 2009. The corrective measures implementation for the surface systems will start last quarter FY 2009 and continue through 2010.

Mixed Low-Level Waste - Approximately 2,125 containers of mixed low-level waste debris is scheduled to be shipped offsite from Los Alamos National Laboratory in FY 2009. Mixed low-level waste sludge's will be shipped offsite late in FY 2009 as cost under-runs are realized and continue into FY2010. Five legacy (1 EM and 4 RTBF) canisters contaminated with tritium have been put into storage-for-decay and will be sent for treatment and disposal in the future once their tritium component has decayed to levels within the commercial treatment vendor's waste acceptance criteria limits (5-50 years) or when additional options become available. Los Alamos National Laboratory is continuing to work on the tactical approach for disposition of this waste. Other mixed low-level waste including shock-sensitive items were disposed of in FY 2005.

Technical Area-21 - This project will characterize and remediate, if necessary, all Solid Waste Management Units within DP Site Aggregate at Technical Area-21, including characterization and construction of final remedies (engineered caps are assumed) at two material disposal areas (material disposal area A and T) and cleanup of three material disposal areas (material disposal area B, U, and V). The Consent Order completion milestone for the Los Alamos/Pueblo Watershed, which includes TA-21, is FY 2012.

#### Longer-Term Projects:

Corrective Actions - This project includes all investigations and subsequent remediation of Solid Waste Management Units intermixed with active Los Alamos National Laboratory operations. The investigation and cleanup activities for these Solid Waste Management Units (approximately 550) will be coordinated with managers for active mission projects to ensure no disruption of operations. This project includes Solid Waste Management Units in eight watersheds and 20 aggregate areas. The Consent Order requires completion of corrective actions at Sandia Watershed Aggregate Areas by January 2011; Mortandad Aggregate Areas by November 2012; Water Canyon/Canon de Valle, Pajarito, and Ancho/Chaquehui/Frijoles Aggregate Areas to be completed by September 2015.

Watershed Integration - The watershed integration work includes investigation and cleanup of the Canyons (sediments and alluvial groundwater), the investigation and remediation of contaminant plumes found in the intermediate and groundwater aquifers, interim monitoring and reporting of groundwater monitoring data as part of the Facility-Wide Groundwater Monitoring Project. Watershed integration also executes the storm water management project to assess contaminant transport driven by storm events and takes remedial action to maintain compliance with requirements driven by the Individual

Permit issued by the U. S. Environmental Protection Agency. The integration of these work components is intended to facilitate efficiencies in the collection, management, and reporting of environmental data, and the utilization of combined data to support site decisions, not only for ground and surface water, but for other projects, such as corrective measures at material disposal areas. Work conducted for the canyons and site-wide monitoring aggregates are driven by the Consent Order, whereas the Facilities Compliance Agreement and Administrative Order requirements (pending issuance of an individual permit) are separate from the Consent Order. Routine groundwater monitoring conducted in 2005 led to the identification of chromium contamination in regional groundwater at monitoring well R-28 located in Mortandad Canyon. Chromium concentrations at that well are approximately 400 µg/L (ppb) exceeding the New Mexico Environment Department and Environmental Protection Agency standards of 50 µg/L and 100 µg/L, respectively.

The Laboratory has prepared and is implementing an “Interim Measures Work Plan” pursuant to a requirement from the New Mexico Environment Department. Objectives of the Interim Measure Work Plan are to determine the primary source(s) of chromium contamination and the nature of operations associated with releases, characterize the present-day spatial distribution of chromium and related constituents, collect data to evaluate the geochemical and physical/hydrologic processes that govern chromium transport, and collect and evaluate data to help guide subsequent investigations and remedy selection. The initial phase of fieldwork was completed in FY 2007, with the installation of an additional intermediate well, five core-holes, five alluvial wells and analysis of water and soil samples. A report showing results and detailing recommended corrective actions was issued to the New Mexico Environment Department in early November 2006. The New Mexico Environment Department approval of the initial work came with a requirement for three additional wells, which were completed by November 2007. The current phase of this work involves the installation of 5 new characterization wells located in Sandia and Mortandad Canyons to determine the up- and down-gradient contaminant distributions of the chromium which will lead to the defining of an effective and appropriate remedy. These well are nearing completion and the sampling data collected will support major Investigation Report due to the New Mexico Environment Department in August, 2009.

Technical Area-54 Closure - This area includes evaluation and implementation of corrective measures for material disposal areas G, H, and L. The corrective measures are presumed to be the installation and monitoring of engineered covers and installation and operation of a soil vacuum extraction system at material disposal area L. This area also includes the demolition of the waste staging and characterization buildings at Areas L and G to facilitate the installation of the final covers. This work includes the closure of former and active radioactive waste disposal areas for Los Alamos National Laboratory.

Transuranic Waste - Transuranic waste stored in drums, standard waste boxes, and over-sized containers at the Los Alamos National Laboratory must be characterized, certified, and shipped in accordance with the Carlsbad Field Office procedures. Some of the waste requires repackaging to remove prohibited items or for size reduction of large items such as glove-boxes. DOE-Los Alamos Site Office and DOE-Carlsbad Field Office signed a memorandum of agreement in April 2005 specifying that the Carlsbad Field Office’s Central Characterization Project will characterize, certify, and ship Los Alamos National Laboratory transuranic waste to the Waste Isolation Pilot Plant.

Pit 9 Transuranic Waste - The Pit 9 transuranic waste retrieval project scope is to retrieve the transuranic waste stored in Pit 9 and place it in an inspectable storage configuration.

Trenches A–D - Trenches A-D contain 363 casks containing two 30-gallon drums each. This project will include the retrieval of the casks from the trenches and placement of the waste in inspectable storage configuration.

Remote Handled Transuranic Waste - The remote handled retrieval project scope is to retrieve and ship the transuranic waste from 16 Canisters and hot cells, perform site characterization to determine final disposition path, and place in an inspectable storage configuration (if required). This project also includes site stabilization and removal of any contaminated soils resulting from any breached containers.

## **Regulatory Framework**

The primary regulatory driver for the Environmental Management Projects at Los Alamos National Laboratory is the March 1, 2005, Compliance Order on Consent. The Consent Order, signed by the New Mexico Environment Department, Los Alamos National Laboratory and DOE, provides the primary requirements for the Los Alamos National Laboratory Environmental Restoration Project, and establishes an enforceable schedule and milestones for corrective actions.

Other drivers include the 1995 Federal Facilities Compliance Agreement, Public Law 105–119, 10 Code of Federal Regulations, Part 830, Nuclear Safety Management, a hazardous waste facility permit for storage and treatment, Federal Facility Compliance Order, the Atomic Energy Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act, the Clean Air Act, and the Individual Permit issued by the U. S. Environmental Protection Agency in February 2009 for storm water management at Los Alamos National Laboratory.

## **Critical Site Uncertainties and Assumptions**

The New Mexico Environment Department will select remedies for the material disposal areas that have similar cost and schedule magnitude as those presumptive remedies that have been built into the (baseline) plan. Some of the material disposal areas are on or near land transfer parcels, and their proximity to the town site increases the risk that the presumptive remedy will not be selected. New Mexico Environment Department could select more costly remedies, potentially increasing cost and schedule for completion of some of these material disposal areas.

Monitored natural attenuation for groundwater will be accepted as the remedy rather than active remediation processes that can be more expensive and longer in duration. Regulators will approve cleanup levels for individual sites that correspond to the intended land use, thereby leaving in place some contaminants that do not pose unacceptable health and environmental risks.

The condition of the waste stored below-grade will be no worse than that experienced in the previous transuranic waste inspectable storage retrieval project. Adverse conditions could have negative impacts on the cost and schedule.

## **Interdependencies**

For disposition of legacy waste, Los Alamos National Laboratory is dependent on Government Furnished Services and Items and support from the Carlsbad Field Office in the area of characterization, packaging, and transportation of transuranic waste to the Waste Isolation Pilot Plant.



## **Contract Synopsis**

A new contract was awarded in December 2005 to Los Alamos National Security, LLC, which assumed responsibility on June 1, 2006. This contract is a management and operating cost-reimbursable contract with performance-based provisions. Individual tasks are executed through management and operating issued procurements. Acquisition planning and execution for the Los Alamos National Laboratory Environmental Management Program is conducted by the management and operating contractor. The management and operating contractor awards subcontracts to provide significant flexibility to achieve cleanup in the most cost-effective manner.

## **Cleanup Benefits**

The Environmental Management Projects at Los Alamos National Laboratory support the DOE's mission by addressing legacy waste, legacy waste sites, and groundwater protection consistent with the Consent Order. Regulatory closure of Los Alamos National Laboratory legacy waste sites and completion of the Los Alamos National Laboratory Environmental Restoration Projects support the DOE goal of cleanup at Los Alamos National Laboratory. Cleanup at Los Alamos reduces the DOE foot print, allows for the transfer to lands to the County and other property owners, reduces risk to the citizens of Los Alamos County, surrounding Pueblo lands, and protects groundwater and surface waters of the State.

## **Nevada Test Site**

### **Site Overview**

The Nevada Test Site was the primary location for conducting nuclear tests and was established to conduct tests of both nuclear and conventional explosives in connection with the research and development of nuclear weapons. Field testing was primarily conducted at the Nevada Test Site; however, some storage and transportation experiments were conducted on the Nevada Test and Training Range, formerly known as the Nellis Air Force Range. Atmospheric nuclear weapons tests were initiated in 1951. Portions of the Nevada Test Site and the Nevada Test and Training Range, including the Tonopah Test Range, were used for chemical explosion tests of plutonium- and uranium-bearing materials. Nuclear tests conducted at the Nevada Test Site after July 1962 were underground.

### **Site Description**

The Nevada Test Site is located approximately 65 miles northwest of Las Vegas, Nevada and occupies approximately 1,375 square miles. The Nevada Test Site is surrounded by approximately 4,500 square miles of federally owned and Department of Defense-controlled land. The Nevada Test Site is surrounded by the Nevada Test and Training Range on the north, east, and west, and land managed by the U.S. Department of the Interior, Bureau of Land Management on the south and southwest. The Nevada Test and Training Range, which includes Tonopah Test Range, is used for military training. The Bureau of Land Management lands are used for grazing, mining, and recreation. The Nevada Test Site is in a remote and arid region with approximately 75 percent of its perimeter surrounded by Federal installations with strictly controlled access, and 25 percent adjacent to public lands that are open to public entry.

## **Site Cleanup Strategy/Scope of Cleanup**

The EM program at the Nevada Test Site (including the Nevada Test and Training Range) consists of two primary projects: environmental restoration and waste management. The environmental restoration project scope is to assess and perform appropriate corrective actions at 879 former underground test locations, 113 surface or near-surface soil contamination locations, and more than 1,000 other industrial-type sites. The waste management project supports the completion of cleanup at DOE sites across the United States by maintaining the capability to dispose of low-level waste and mixed low-level waste. The Nevada Test Site is designated as a regional disposal site for low-level waste and a secondary disposal site for mixed low-level waste generated as the result of cleanup activities across the DOE complex.

The environmental restoration project scope addresses surface and shallow subsurface radiological soil contamination on the Nevada Test Site and Nevada Test and Training Range. Contamination at these sites is the result of historic nuclear detonations, safety experiments, storage- and transportation-related tests, nuclear reactor development and experiments, nuclear rocket engine tests, and hydronuclear experiments. The industrial-type site restorations address facility decontamination and decommissioning, various historical infrastructure remediation efforts (e.g., septic systems, mud pits, storage tanks, disposal sites, etc.), and conventional weapons cleanup including unexploded ordnance. The underground test area remediation involves geologic and hydrologic characterization, contaminated groundwater transport modeling, contaminant boundary definition and establishment of a monitoring system to protect against the inadvertent use of contaminated groundwater.

### **Site Completion (End State)**

The long-term end state vision for the Nevada Test Site is to restore the environment to a level that will allow the continuation of the national security mission. This vision includes the removal of the contamination that poses an unacceptable risk to workers conducting planned site operations in support of the Nevada Site Office mission and characterizing and stabilizing the remainder of contamination to ensure effluent levels do not spread to the surrounding environment and pose an unacceptable risk to human health and the environment. The lifecycle planning estimate range for the end date of cleanup is 2027 to 2038.

The end state for the Nevada Site Office subsurface contamination for the underground test area sub-project will be achieved with the completion of a modeled contaminant boundary, a negotiated compliance boundary, and monitoring well network(s).

The end state for surface and shallow subsurface radiological contamination associated with the soils sub-project, the Nevada Site Office envisions that sites on the Nevada Test and Training Range will have engineered controls developed (e.g., fences and postings) and use restrictions established to prevent inadvertent contact with remaining contamination (primarily for protection of U.S. military personnel). Remaining close-in-place sites on the Nevada Test Site will be inspected and monitored as necessary.

The end state for the Nevada Site Office industrial sites sub-project envisions applicable corrective actions completed for over 1,000 sites. Most sites will be available for unrestricted surface use, while others will be stabilized for restricted use appropriate to the risk posed by residual contamination. For those sites where contamination remains in place, appropriate long-term remedial actions will be in

place including monitoring, cap inspections, and use restrictions as applicable. The industrial sites sub-project is expected to be completed in FY 2016.

The end state for the Nevada Site Office waste management operations is closure of all filled disposal cells with a final approved closure cap and transition of any remaining disposal operations to the Nevada Test Site landlord, if the capability is needed for on-site operations.

## **Regulatory Framework**

Nevada Site Office work at the Nevada Test Site and Nevada Test and Training Range follows all applicable federal level regulations including the Resource Conservation and Recovery Act, Clean Air Act, Clean Water Act, Atomic Energy Act, DOE Orders, and applicable Nevada specific laws, codes and acts relating to these regulations. Below are some specific regulatory instruments associated with agreements and consent orders between National Nuclear Security Administration Nevada Site Office and the State of Nevada.

For the environmental restoration project, the primary regulatory process for addressing contaminants on the Nevada Test Site and surrounding areas (Nevada Test and Training Range) is the Federal Facility Agreement and Consent Order (1996).

For the waste management project, the primary regulatory process is the Federal Facility Compliance Act. The Federal Facility Compliance Act of 1992 required the Secretary of Energy to develop and submit Site Treatment Plans for the development of treatment capacity and technologies for treating mixed wastes.

## **Critical Site Uncertainties and Assumptions**

The major assumptions are:

- Changes to the current Nevada Site Office regulatory framework, including consent agreements, state and federal regulations, and/or DOE orders will not impact the implementation of the Nevada Site Office EM baselines.
- There will not be a change in plans from limited to complete remediation (i.e., from “close in place” to “clean close”) of contaminated soils areas on the Nevada Test Site or the Nevada Test and Training Range.
- Subsurface contamination in and around the underground nuclear test cavities will not be removed, and post-closure monitoring will be conducted as agreed upon in the site completion reports for the subsurface.
- After subsurface completion, the final long-term hydrologic monitoring program will be defined in the site completion reports for the subsurface.
- Current land-use designations and subsurface intrusion restrictions will continue into the foreseeable future.

## **Interdependencies**

- The Nevada Site Office is dependent on concurrence from the U.S. Air Force on negotiated cleanup levels and plans to develop engineered controls and establish use restrictions.
- Nevada Site Office is dependent on the State of Nevada and other regulators for approval of investigation, characterization, closure, and long-term stewardship plans as stipulated in the Federal Facility Agreement and Consent Order.
- Nevada Site Office is dependent on the State of Nevada for acceptance of mixed low-level waste for disposal at the Nevada Test Site.

## **Contract Synopsis**

There are two primary contractors working on EM activities at Nevada Site Office. The Management and Operating Contractor for the Nevada Test Site is contracted to perform environmental restoration field remediation activities and the waste management scope on the Nevada Test Site (including Nevada Test and Training Range). The Environmental Characterization and Remediation Services Contractor is contracted to perform site investigation and characterization activities on the Nevada Test Site (including Nevada Test and Training Range).

## **Cleanup Benefits**

The near- and long-term benefits for Nevada Site Office environmental restoration efforts include the overall reduction to potential human health and environmental risks, and restoration of the environment to a level that will allow the effective continuation of the national security mission conducted by the Nevada Site Office.

The near-term and long-term benefit for maintaining sufficient low-level and mixed low-level radioactive waste disposal capabilities is to support accelerated cleanup across the DOE complex. Disposing of radioactive waste from storage locations across the DOE complex in engineered disposal facilities at the Nevada Test Site will substantially reduce health and environmental risks at other DOE sites.

## **Pantex**

### **Site Overview**

Pantex has a continuing mission to support nuclear weapons activities for the Nation's stockpile. The primary missions of the Pantex Plant are to: 1) evaluate, retrofit, and repair nuclear weapons in support of life extension programs and certification of weapon safety and reliability programs; 2) dismantle nuclear weapons surplus to the stockpile; 3) sanitize components from dismantled weapons; 4) develop, test, and fabricate chemical and explosive components; and 5) provide interim storage and surveillance of the plutonium components.

Historical waste management practices at the Pantex Plant have resulted in contamination of soils and the upper Perched Aquifer. High explosives, metals, and solvents exist in soils located at the Pantex Plant. The Perched Aquifer contaminant plume has migrated past the Plant boundaries and onto

adjacent landowners' properties to the southeast that EM recently purchased to achieve remedial action objectives required by the Record of Decision with Environmental Protection Agency, Region 6. The lower Ogallala Aquifer is the primary water supply for Pantex, the area landowners, and the region. Immediately north of the Pantex property boundary is a well field in the Ogallala Aquifer that supplies a portion of the water supply to the city of Amarillo. Contamination in the Perched Aquifer has the potential to leach deeper if appropriate corrective measures are not implemented to mitigate the risk.

### **Site Description**

The Pantex Plant is located in the Texas Panhandle, approximately 17 miles northeast of Amarillo, Texas. Pantex was deactivated in 1945 and sold to Texas Technical University as excess government property. In 1951 the Atomic Energy Commission reclaimed approximately 10,000 acres for the manufacturing of high explosives for the nuclear weapons program. During the mid-1960s, the plant was expanded to assume weapons maintenance and modifications. The Pantex Plant is composed of more than 600 buildings and several functional areas to carry out the nuclear mission.

### **Site Cleanup Strategy/Scope of Cleanup**

To eliminate or reduce risk at the Pantex Plant, the site strategy for the environmental restoration project includes the following four strategic initiatives:

- Accelerate Soils Project Closure & Removal
- Accelerate Cleanup of Perched Aquifer
- Continued Monitoring of Ogallala Aquifer
- Accelerate Facility Cleanup and Footprint Reduction.

### **Site Completion (End State)**

Near Term Projects:

Environmental Restoration Project - The completion of the Environmental Restoration Project will leave an active industrial site with 15 of 252 potential release sites remaining in operation by FY 2008. There will be some environmental hazards from active Pantex industrial operations remaining after completion. These hazards are known and will be managed in accordance with: 1) Permit for Industrial Solid Waste Management (HW-50284), 2) Compliance Plan No. 50284, which will be modified to recognize the final remedy in FY 2009, and 3) the Federal Facilities Agreement Record of Decision signed in December 2007 and September 2008, respectively. Identification of perchlorate as a contaminant of potential concern in 2007 required new corrective measures (including in-situ bioremediation) and monitoring wells, which has moved construction completion into FY 2009. Land use is expected to remain constant, with continued cooperation with Texas Tech University through a Service Agreement and leasing of Texas Tech University land for security and safety reasons.

Decontamination and Decommissioning Project - Decontamination and decommissioning activities removed the facilities currently in the EM scope at the Pantex Plant by the end of FY 2006 with waste and debris removal completed in FY 2009. Some of these decontaminated and decommissioned

facilities may have been a source term and/or co-located with other contaminated sites. These areas have been incorporated into the long-term stewardship mission beginning in FY 2009.

#### Longer Term Projects:

The environmental monitoring and maintenance of the corrective measures implemented in previous years became the responsibility of the National Nuclear Security Administration in FY 2009. These Long-Term Stewardship/Long-Term Surveillance and Maintenance activities will continue to meet Resource Conservation and Recovery Act and Comprehensive Environmental Response, Compensation, and Liability Act regulatory requirements.

#### **Regulatory Framework**

The environmental work is identified and conducted under the requirements of regulatory framework and agreements with DOE, Environmental Protection Agency, and the Texas Commission on Environmental Quality. The Compliance Plan, dated October 21, 2003, issued in conjunction with the Permit for Industrial Solid Waste Management includes the Resource Conservation and Recovery Act corrective actions and monitoring for the Pantex Plant. In addition, the Pantex Plant Interagency Agreement was developed to comply with Comprehensive Environmental Response, Compensation, and Liability Act requirements. The Interagency Agreement is a legally binding agreement among the DOE, Environmental Protection Agency, and the Texas Commission on Environmental Quality to accomplish the cleanup of hazardous substances contamination at and from the Pantex Plant, pursuant to Comprehensive Environmental Response, Compensation, and Liability Act, the National Oil and Hazardous Substances Pollution Contingency Plan, and Executive Order 12580, as amended by Executive Order 13016. Also, the Environmental Protection Agency has listed the Pantex Plant on the National Priority List as a Superfund Site. There are no regulatory drivers associated with the decontamination and decommissioning activities at the Pantex Plant.

#### **Critical Site Uncertainties and Assumptions**

The project includes the following assumptions:

- Remedies implemented as interim corrective measures and Comprehensive Environmental Response, Compensation, and Liability Act non-time critical removal actions will fulfill the final remedial action objectives agreed to through the Record of Decision and will require no further work to achieve construction complete status.
- Decontamination and decommissioning of Building 12-24 will be required for the closure of Solid Waste Management Unit 122b and the Southeast Waste Management Area release sites. Completion is dependent on shipment of waste materials.
- Active sites are not included in the Pantex scope.

#### **Contract Synopsis**

The Pantex Plant is operated by Babcock and Wilcox Technical Services Pantex, LLC under a cost-plus-award-fee Management and Operating contract. The Pantex Site Office has developed annual incentives for baseline acceleration and critical milestone accomplishment for the project. Similar contractual activities will be used for long term stewardship.

## **Cleanup Benefits**

Near Term Benefits: Enhanced onsite worker safety through source reduction efforts and site remediation. Protection of the Ogallala aquifer from cross contamination through the perched aquifer by implementing interim corrective measures such as a pump and treatment system, soil vapor extraction, in-situ bioremediation, and Playa 1 dewatering. Stakeholder and regulatory confidence will be maintained through “core” team meetings with the DOE, Texas Commission on Environmental Quality, and the Environmental Protection Agency. Document approvals have been and will continue to be accelerated through the use of the “core” team and weekly interaction with regulatory agencies. Risks associated with implementing interim corrective measures will be minimized through close interaction with regulators.

Long Term Benefits: Significant cost avoidances will be achieved by carrying out interim corrective measures that have been identified in the Corrective Measures Study. Actual cost avoidance will be calculated once the project is complete in FY 2009. Offsite and onsite concerns regarding perched aquifer contamination have been mitigated with the early implementation of interim corrective measures and acquisition of the affected off site properties.

## **Sandia National Laboratories-New Mexico**

### **Site Overview**

The Sandia National Laboratories-New Mexico site is located in Albuquerque, New Mexico. The Sandia National Laboratories Environmental Restoration Project scope includes the remediation of inactive waste disposal and release sites at Albuquerque and other off-site locations. These sites have known or suspected releases of hazardous, radioactive, or mixed waste.

### **Site Description**

The Sandia National Laboratories-New Mexico site is a multi-program national laboratory with research and development programs in a broad range of scientific and technical fields. It is located in Bernalillo County, New Mexico, 6.5 miles east of downtown Albuquerque. Sandia National Laboratories consists of five technical areas and several remote areas covering 2,820 acres in the eastern half of the 118 square miles of Kirtland Air Force Base. The base is situated on two broad mesas bisected by the Tijeras Arroyo and is bound by the Manzano Mountains to the east and the Rio Grande river to the west.

### **Site Cleanup Strategy/Scope of Cleanup**

Environmental restoration at Sandia National Laboratories was initiated to assess and remediate contaminated areas following federal, state and local statutes. For soils, the project objective is to achieve an acceptable level of risk that is consistent with either an industrial or recreational end-use. Some of the areas being cleaned up passed residential risk standards without additional remediation. For groundwater, an acceptable residential risk scenario with monitored natural attenuation is being pursued. Two hundred sixty eight (268) soil sites and three groundwater areas of concern were subject to investigation and potential corrective action. Three of these soil sites will remain as “deferred active mission sites” and require future remediation (future liability). DOE corporate performance measures (site counts) are complete at 99 percent (263 of 265) of the sites. Remaining remediation fieldwork of the soil areas involves installing a cover and rock bio-barrier at the Mixed Waste Landfill. (Additional

fieldwork in the form of groundwater sampling may be required for Technical Area-V groundwater; the need for this fieldwork is presently under negotiation with the regulatory authority.) Major regulatory administrative closure activities that remain include obtaining the Chemical Waste Landfill closure and post-closure care permit, two Class III permit modifications, and the final remedies for the three other groundwater areas of concern. These activities will require multiple and at times complex interactions with regulatory authorities and the public.

### **Site Completion (End State)**

The actual risk level of the site and the expected future land use will be used to determine the end-state for all soil areas being cleaned up. Those sites that pass residential risk criteria will be approved by the regulatory authority as corrective action complete without controls and will not be subject to institutional or engineered controls. Sites that do not pass residential risk criteria will be approved by the regulatory authority as corrective action complete with controls and will be subject to long-term stewardship according to the designated land-use and regulatory agreements. Long-term stewardship includes all activities necessary to ensure continued protection of human health and the environment after remediation, disposal, or stabilization of a site or part of a site. The end-state will be reached when: 1) all solid waste management units and areas of concern are remediated or remediation systems are constructed and operational, and all waste disposed of; and 2) the site is placed under institutional controls with long-term monitoring in accordance with State and Federal requirements. By the end of FY 2007 the Sandia National Laboratories Environmental Restoration Project mission completed all necessary corrective actions at 263 of 265 environmental restoration release sites. The completion schedule was extended through FY 2009 due to regulatory delays on the Mixed Waste Landfill rock bio-barrier and soil cover fieldwork, obtaining three final remedies for groundwater, comment resolution on the Chemical Waste Landfill, and completing the remaining regulatory administrative closure activities. The remaining fieldwork activities, Mixed Waste Landfill cover and potential additional groundwater sampling, and the regulatory closeout of the project is scheduled for FY 2009.

### **Regulatory Framework**

The regulatory driver for completing this work is the April 2004 New Mexico Environment Department Compliance Order on Consent. As of September 2008, 232 of 265 sites have been approved by the State for No Further Action through the entire regulatory process. The remaining 33 sites are in various stages of completion; thirty-one of the 33 are waiting for final State regulatory approval and one site (i.e., Mixed Waste Landfill) requires field remediation.

### **Critical Site Uncertainties and Assumptions**

There are two critical project uncertainties based primarily on the New Mexico Environment Department's regulatory approval not being in place. First, the work schedule is jeopardized and the risk of added cleanup scope exists due to the regulatory uncertainty. Second, the requirement for additional public review of closure documents could delay completion. Regulatory uncertainty on three groundwater areas will exist until the final remedy that aligns with the exit strategy is received.

The Mixed Waste Landfill received a Final Order (remedy) from the New Mexico Environment Department Secretary that required additional scope beyond the soil cover and bio-barrier. The additional scope included a fate and transport model and formal public review of the Soil-Gas Work Plan and post-remediation closure documents. As of September 2008, the regulator has not approved



the Corrective Measure Implementation Plan and issued a final Notice of Disapproval in October 2008; however, the regulator has indicated a willingness to approve the Corrective Measure Implementation Plan after the response is received on the final Notice of Disapproval. These interactions and requests have extended the corrective measure study process and jeopardized the project closure schedule of FY 2009.

### **Interdependencies**

The National Nuclear Security Administration assumed long-term stewardship responsibilities in FY 2007 for the completed 263 soil sites.

### **Contract Synopsis**

The current management and operating contract between DOE and Sandia National Laboratories will exist for the remainder of the Environmental Management Project. Sandia National Laboratories will also keep several sub-contracts active beyond FY 2009 to assist with the completion of administrative regulatory closure requirements.

### **Cleanup Benefits**

At the end of FY 2008, 263 of 265 DOE Corporate Performance Measures were completed, whereby a risk-based closure approach based on the expected land-use was implemented. The environmental risk to human health and the environment has been greatly reduced at Sandia since many of the 263 soil sites passed residential risk standards and sites that passed industrial risk standards but required institutional controls were transferred to the long-term stewardship program. The footprint of contamination was reduced through the excavation of three major landfills, one of which had impacted groundwater.

Millions of dollars in off-site waste disposal costs were avoided with the use of an on-site Corrective Action Management Unit (an engineered landfill unit that contains wastes excavated from the landfill that impacted groundwater) that is now under the long-term stewardship program. The remaining two soil cleanup sites, the Chemical Waste Landfill and the Mixed Waste Landfill, pass industrial risk standards and the three groundwater areas are expected to be managed under a Monitored Natural Attenuation strategy under the long-term stewardship program.

## **Separations Process Research Unit**

### **Site Overview**

The Separations Process Research Unit is an inactive pilot plant used to research and develop the chemical process to separate plutonium from radioactive material. The Separations Process Research Unit operated from 1950 to 1953. Operation of the Separations Process Research Unit contaminated the nuclear facilities and impacted approximately thirty acres of land where waste containers were managed. Groundwater immediately adjacent to the nuclear facilities and in a limited area where containers were once stored, is also contaminated with radioactivity.

## **Site Description**

The Separations Process Research Unit is located within the currently operating 170-acre Schenectady Naval Reactors' Knolls Atomic Power Laboratory near Schenectady, New York. The Mohawk River forms the northern boundary of this site. Industrial and residential areas also bound the site.

## **Site Cleanup Strategy/Scope of Cleanup**

The proposed cleanup strategy for the project is to remove the nuclear facilities and remediate the land areas. This approach is consistent with DOE Environmental Management's strategic objectives to eliminate legacy facilities, stabilize and consolidate transuranic waste at the Waste Isolation Pilot Plant, meet site Resource Conservation and Recovery Act Permit investigation and cleanup requirements, eliminate surveillance and maintenance costs of the nuclear facilities, and allow DOE Environmental Management (EM) to close out an agreement with Naval Reactors for the disposition of the Separations Process Research Unit facilities. Upon completion of the Separations Process Research Unit project, the land will be transferred back to Naval Reactors for their continuing mission use.

From FY 2003 to FY 2006, the Separations Process Research Unit Project obtained public input for the disposition of the nuclear facilities and completed the characterization of the land areas. During FY 2007, DOE formally selected preferred alternatives for site cleanup. Implementation of the preferred alternatives for the facilities, and the land commenced in FY 2007.

## **Site Completion (End State)**

The site the Separations Process Research Unit is located on, the Knolls Atomic Power Laboratory, is a continuing mission site. The Knolls Atomic Power Laboratory will continue research and development of Naval nuclear reactors for the foreseeable future. Taking into account Naval Reactors' continuing use of this site, and the fact that work with radioactive materials continues, the appropriate DOE Environmental Management end state for this site is to remove the contaminated excess facilities and restore land areas for continued industrial use. The end date for the cleanup work is 2014.

## **Regulatory Framework**

The Separations Process Research Unit project scope includes decommissioning and removal of facilities and cleanup activities using DOE's non-time critical removal action authority under the Comprehensive Environmental Response, Compensation, and Liability Act. In addition, the Separations Process Research Unit Project has received a Resource Conservation and Recovery Act corrective action-only permit from New York State for investigation and cleanup of residual chemicals in several solid waste management units contained within the Separations Process Research Unit Project areas. This permit contains a compliance schedule for cleanup of areas contaminated with hazardous chemicals. The use of DOE's authority under the Comprehensive Environmental Response, Compensation, and Liability Act allows for a streamlined process, and has been acceptable to the public and the regulator.

## **Critical Site Uncertainties and Assumptions**

Several uncertainties have been identified for the Separations Process Research Unit. Most risks were identified as having both low probabilities and low cost and schedule impacts. Project risks currently being managed by the DOE Separations Process Research Unit Field Office and its contractors include the potential for unanticipated amounts of contaminated soil being encountered in the Separations Process Research Unit land areas, and the potential for larger than anticipated labor needs for the removal of nuclear facilities.

## **Interdependencies**

The major interdependency related to the Separations Process Research Unit is the ongoing relationship with Naval Reactors and Knolls Atomic Power Laboratory. The Separations Process Research Unit is located on the Knolls Atomic Power Laboratory site and Separations Process Research Unit characterization and remediation activities are closely coordinated with the local Naval Reactors Office and Knolls Atomic Power Laboratory in order to minimize impact on ongoing Knolls Atomic Power Laboratory operations. The relationship between DOE-Environmental Management and Naval Reactors is formally documented in a Memorandum of Agreement.

Other interdependencies are associated with waste disposition and will include the Waste Isolation Pilot Plant, as well as other waste disposal sites selected by the Separations Process Unit contractors. The project will work with these sites to ensure the expeditious transportation of waste and compliance with site waste acceptance criteria.

## **Contract Synopsis**

All contracts awarded since FY 2006 are administered by EM's Consolidated Business Center. A small business contractor was used to accelerate removal of small structures and improve small business involvement with the Separations Process Research Unit Project.

The Separations Process Research Unit Project is making use of an existing EM Indefinite Delivery/Indefinite Quantity contract in support of this effort. Both the land environmental restoration and building decontamination and decommissioning contract have been awarded. Field work began for both contracts during FY 2009.

## **Cleanup Benefits**

The benefits of completing the Separations Process Research Unit Project are removal of a legacy Cold War project site, consolidation of transuranic waste at the Waste Isolation Pilot Plant, elimination of surveillance and maintenance costs of inactive nuclear facilities, and reutilization of land areas formerly occupied by the Separations Process Research Unit Project by the Naval Reactors program.

## Funding Schedule by Activity

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Defense Environmental Cleanup			
NNSA Sites			
VL-FOO-0100-D / LLNL Community and Regulatory Support (Defense)	277	0	0
VL-FOO-0013B-D / Solid Waste Stabilization and Disposition Support - Lawrence Livermore National Laboratory (Defense)	90	0	238
VL-NV-0100 / Nevada Community and Regulatory Support	2,545	4,169	2,556
VL-NV-0030 / Soil and Water Remediation-Nevada Test Site	56,056	58,657	58,794
VL-NV-0013 / Solid Waste Stabilization and Disposition-Nevada Test Site	5,000	0	0
VL-NV-0080 / Operate Waste Disposal Facility-Nevada	21,767	12,848	4,324
VL-FAO-0101 / Miscellaneous Programs and Agreements in Principle	1,497	1,443	2,938
VL-SPRU-0040 / Nuclear Facility D&D-Separations Process Research Unit	27,334	18,000	15,000
VL-LLNL-0031 / Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300	8,601	0	910
VL-LANL-0013 / Solid Waste Stabilization and Disposition-LANL Legacy	41,823	100,790	95,727
VL-LANL-0030 / Soil and Water Remediation-LANL	131,447	116,269	92,373
VL-LANL-0040-D / Nuclear Facility D&D-LANL (Defense)	0	5,675	900
VL-PX-0030 / Soil and Water Remediation-Pantex	25,027	0	0
VL-SN-0030 / Soil and Water Remediation-Sandia	0	3,000	2,864
Subtotal, NNSA Sites	321,464	320,851	276,624
Total, Defense Environmental Cleanup	321,464	320,851	276,624
Non-Defense Environmental Cleanup			
Small Sites			
VL-LANL-0040-N / Nuclear Facility D&D-LANL (Non-Defense)	1,888	1,905	0
Subtotal, Small Sites	1,888	1,905	0
Total, Non-Defense Environmental Cleanup	1,888	1,905	0
Total, NNSA Sites	323,352	322,756	276,624

## Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
NNSA Sites					
Geographic Sites Eliminated (number of sites)	6	7	7	12	58.3%
Industrial Facility Completions (Number of Facilities)	4	4	4	4	100.0%
Low-Level and Mixed Low-Level Waste	12,624	13,653	15,332	16,660	92.0%

disposed (Cubic meters)					
Nuclear Facility Completions (Number of Facilities)	0	0	0	4	0%
Radioactive Facility Completions (Number of Facilities)	1	1	1	86	1.2%
Remediation Complete (Number of Release Sites)	3,379	3,459	3,499	5,118	68.4%
Transuranic Waste shipped for disposal (Cubic meters) - CH	2,669	4,369	5,155	11,950	43.1%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	17	17	95	17.9%

### Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**VL-FOO-0013B-D / Solid Waste Stabilization and Disposition Support - Lawrence Livermore National Laboratory (Defense)**

**90                      0                      238**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The legacy waste and environmental restoration projects at the Lawrence Livermore National Laboratory were planned for EM completion and transfer to National Nuclear Security Administration by the end of FY 2008 and no FY 2009 funding from EM was requested. However, the cleanup activities at Site 300 will not be fully completed until FY 2014. Activities performed in this project will continue to provide funding for:

- Grants to the State of California Regional Water Quality Control Board and the California Department of Toxic Substances Control to provide oversight of the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation, and Liability Act programs at the Lawrence Livermore National Laboratory Site 300. This funding is mandated by the Federal Facility Agreement signed by DOE, Environmental Protection Agency, and the State of California.

- Verification and closeout activities for the completed EM Scope at Site 300

- Support for site investigations, hydrogeologic studies, regulatory review, and stakeholder liaisons are also managed within this project through wide applicability of these restoration activities. This project will end when all environmental restoration activities are completed at Site 300.

In FY 2010, the following activities are planned.

- Maintain regulatory interactions in support of Building 812 Firing Table cleanup.



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Site 300 associated with 37 distinct groundwater plumes contaminated with volatile organic compounds, high explosives, nitrate, perchlorate, tritium, and/or depleted uranium. Build-out of the required remediation network system will address risk reduction associated with groundwater contamination and will complete the project.

Operable Units 1 through 8 of this project have been completed and transferred to the National Nuclear Security Administration in FY 2009. The Operable Unit 9 Building 812 Firing Table will remain the responsibility of EM until FY 2014 when soil remediation in the area is expected to be complete.

In FY 2010, the following activities are planned.

- Finalize soil washing Treatability Study Work Plan.
- Perform bench-scale Treatability Study and, if successful, begin a full-scale study at the site.
- Finalize Building 812 Firing Table Remedial Investigation/Feasibility Study.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Remediation Complete (Number of Release Sites)	74	74	74	74	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Completed the Building 850 PCB-contaminated soil Engineering Evaluation/Cost Analysis (FY 2008)</li> <li>▪ Constructed the Pit 7 Complex Drainage Diversion System. (FY 2008)</li> <li>▪ Completed the Pit 7 Complex Final Interim Remedial Design Document. (FY 2008)</li> <li>▪ Completed the Site-Wide Final Record of Decision. (FY 2008)</li> <li>▪ Constructed, installed, and operated the GW extraction and treatment system in the Pit 7 Complex. (FY 2008)</li> <li>▪ Complete Building 850 PCB-contaminated soil Action Memo (September 2009)</li> <li>▪ Removed contaminated surface soil and sand pile at Building 850. (September 2009)</li> <li>▪ Finalize Building 812 Firing Table Treatability Study (September 2010)</li> <li>▪ Complete Soil Washing Treatability Study (September 2010)</li> </ul>					

**VL-LANL-0013 / Solid Waste Stabilization and Disposition-LANL Legacy**

**41,823                      100,790                      95,727**

This PBS can be found within the Defense Environmental Cleanup appropriation.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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The Solid Waste Stabilization and Disposition Project (PBS-VL-LANL-0013), also known as the Legacy Waste Disposition Project, is comprised of the treatment, storage, and disposal of legacy transuranic and mixed low-level waste generated between 1970 and 1999 at the Los Alamos National Laboratory. The end-state of this project is the safe disposal of legacy waste from Los Alamos National Laboratory.

This project scope is integrated with the Soil and Water Remediation Project (PBS-VL-LANL-0030) which includes compliance activities associated with the New Mexico Environment Department 2005 Compliance Order on Consent. The other driver requiring disposition of this waste is the Site Treatment Plan developed under the authority of the 1995 Federal Facility Compliance Agreement between the National Nuclear Security Administration and the Environmental Protection Agency. The Solid Waste Stabilization and Disposition Project includes disposition of legacy and generated, mixed, low-level waste and is scheduled to be completed by FY 2015. Transuranic Waste Operations continue under Carlsbad Field Office's Central Characterization Project and the Los Alamos National Laboratory for contact- and remote-handled transuranic waste retrieval and disposition.

In FY 2010, the following activities are planned:

- Continue characterization and certification of transuranic waste for shipment to the Waste Isolation Pilot Plant.
- Increase transuranic drum remediation capacity to support three shipments a week to the Waste Isolation Pilot Plant.
- Start up processing/remediation lines for cemented waste and concrete monoliths.
- Install fire protection system on the Waste Characterization, Reduction, and Repacking glovebox.
- Install and start-up the Nuclear Filter Technology Drum Venting System.
- Build, install and start-up box remediation and repackaging capability.
- Install and start-up Central Characterization Project provided box characterization line.
- Install and start-up Central Characterization Project MOVER (mobile glove-box).
- Conduct field characterization of 33 shafts to support final disposition.
- Implement the revised Area G BIO upgrade.
- Continue pre-screen operations for transuranic waste containers requiring remediation.





(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Disposal Areas. The remaining scope of the project includes characterization, monitoring, and protection of the surface and groundwater at the Laboratory and approximately 860 Potential Release Sites left to be investigated, remediated or closed by evaluation and assessment of human health and ecological risks. Included in the scope for the 860 sites remaining to be addressed are: 1) characterization and final remedy of eight priority material disposal areas which are to follow the Resource Conservation and Recovery Act corrective measures study and implementation process. One of the material disposal areas, at Technical Area-54, is the former and active radioactive waste disposal area for the Laboratory; 2) protection and monitoring of groundwater resources to ensure protection of drinking water supplies; 3) remediation of Technical Area-21, including 3 material disposal areas and over 100 Solid Waste Management Units.

In FY 2010, the following activities are planned:

- Complete Resource Conservation and Recovery Act Facility Investigation Work Plans for Two- Mile Canyon Aggregate Area, Lower Pajarito Canyon Aggregate Area, Starmer/Upper Pajarito Aggregate Area, and Upper Water Canyon Aggregate Area.
- Complete characterization activities and submit Investigation Reports for S-Site Aggregate Area, Upper Sandia Aggregate Area, Upper Canada del Buey, Three Mile Aggregate Area, Solid Waste Management Units at Technical Area 49 inside the Nuclear Environmental Site Boundary associated with Material Disposal Area AB, and Solid Waste Management Units at Technical Area 49 outside the Nuclear Environmental Site Boundary.
- Complete required groundwater monitoring of 8 watersheds.
- Complete required periodic monitoring of groundwater and vadose zone and submit reports to New Mexico Environment Department for 22 ground water regimes in the 8 water sheds at Los Alamos National Laboratory.
- Install four regional aquifer monitoring wells.
- Continue remediation of General's Tanks at Material Disposal Area A in Technical Area-21.
- Conduct Resource Conservation and Recovery Act Corrective Measures Evaluations for Material Disposal Areas A and T at Technical Area-21.
- Complete field work at S-site Aggregate Area, Upper Cañada del Buey, Three Mile Aggregate Area, Upper Sandia Aggregate area, Delta Prime Site Aggregate, , Material Disposal Area AB, and Potrillo/Fence Canyon Aggregate Areas.
- Complete required storm water sampling of 405 sites for compliance with the Individual Permit issued by EPA February 2009.
- Complete installation of monitor well networks required by the regulator (New Mexico Environment

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Department) to support remedy selection and Corrective Measures Implementation at Material Disposal Areas and other sites.

- Conduct Water/Valle Canyons surface & alluvial groundwater investigation and submit watershed investigation report to New Mexico Environment Department.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	5,426	5,426	5,426	5,426	100.0%
Remediation Complete (Number of Release Sites)	1,417	1,467	1,497	2,129	70.0%
<b>Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)</b>					
<ul style="list-style-type: none"> <li>▪ Completed the initial cleanup phase of the DP Site Aggregate Area (FY 2008)</li> <li>▪ Completed nine alluvial, one intermediate, and four regional groundwater monitoring wells (FY 2008)</li> <li>▪ Submitted 142 major deliverables in support of the Order on Consent with the New Mexico Environment Department (FY 2008)</li> <li>▪ Complete nine regional and five intermediate groundwater monitoring wells (May 2009)</li> <li>▪ Complete North Ancho Aggregate Area field work and cleanup (FY 209)</li> <li>▪ Complete and submit report for soil vapor extraction pilot study at MDA g (October 2009)</li> <li>▪ Complete Upper Mortandad Aggregate Area field work and cleanup (October 2009)</li> <li>▪ Complete phase 2 investigation and report for Middle Los Alamos Canyon Aggregate Area (January 2010)</li> <li>▪ Complete investigation and report for Upper Sandia Canyon Aggregate Area (May 2010)</li> <li>▪ Complete phase 2 investigation and report for Pueblo Canyon Aggregate Area (June 2010)</li> </ul>					

**VL-LANL-0040-D / Nuclear Facility D&D-LANL  
(Defense)**

**0            5,675            900**

This PBS can be found within the Defense Environmental Cleanup appropriation.

There are several facilities excess to the DOE mission at the Los Alamos National Laboratory, including structures at Technical Area-21 and Technical Area-54. Left standing, these facilities impede or prevent

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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characterization and cleanup of the Solid Waste Management Units co-located in the footprint of the buildings. Decommissioning and decontamination of these facilities is crucial to completion of the EM mission at the Los Alamos National Laboratory and necessary to maintain compliance with the New Mexico Environment Department Consent Order and the Order’s enforceable milestone schedule. Several of the former plutonium processing facilities at Technical Area-21 have leaking process waste lines beneath and adjacent to several of the buildings. The Consent Order requires investigation and potential cleanup of these sites where structures limit access. In Delta Prime East, buildings attached to the Tritium System Test Assembly Facility through shared utilities systems also have known or suspected leaking process waste lines that are also subject to the requirements for corrective actions in accordance with the Consent Order. At Technical Area-54, there are over 100 structures and active facilities that must be removed prior to the closure and capping of Material Disposal Area L and Material Disposal Area G required for completion of the Pajarito Watershed in accordance with the Consent Order.

In FY 2010, the following activities are planned:

- Complete procurement to award subcontracts for decontamination and demolition of Technical Area-21 Delta Prime West and Material Disposal Area L facilities.
- Start decontamination and demolition activities at Technical Area-21 Delta Prime West and Technical Area-54 Material Disposal Area L.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Radioactive Facility Completions (Number of Facilities)	0	0	0	84	0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Start D&amp;D Field Work at DP West (FY 2008)</li> <li>▪ Complete D&amp;D of DP West (May 2009)</li> </ul>					

**VL-LANL-0040-N / Nuclear Facility D&D-LANL (Non-Defense)**

**1,888                      1,905                      0**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

The Tritium System Test Assembly Facility was transferred into the EM Program in FY 2003 for continued surveillance and maintenance, limited deactivation, and eventual demolition. This transfer is documented in a Memorandum of Agreement that was signed by EM, National Nuclear Security Administration, and the Office of Science on March 19, 2002. Prior to transfer, the facility was placed in a safe shutdown mode.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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The shutdown mode is documented in an end point transition report. Several glove boxes, molecular sieves, and other equipment which contained small amounts of radioactive tritium residue were left in place as approved and documented in the safety authorization basis; since transfer of the facility to EM, much of this equipment has been removed. As a result, the facility emissions stack system which had been operating until 2007, has now been shutdown; temporary ventilation will continue to operate until removal of the facility. Until the ultimate disposition of the facility is achieved, which is demolition and disposal of resulting waste, the facility will remain in a shutdown mode, and surveillance and maintenance activities will be performed. These activities include facility walk-through, maintaining the safety authorization basis, stack monitoring, and security.

Currently, contaminated equipment including glove boxes, tanks, the isotope separation system, and molecular sieves, has been removed from the Tritium System Test Facility. As a result, the material balance account was eliminated in July 2006. The facility is being maintained as a radiological facility. Facility characterization activities have been completed. All combustible materials have been removed and safe shutdown of the fire protection system is complete. These removal and shutdown actions have reduced maintenance costs.

In FY 2010, no activities are planned:

- No planned accomplishments in FY 2010; the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Radioactive Facility Completions (Number of Facilities)	0	0	0	1	0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"><li>▪ Completed corrective maintenance and utility deactivation of Tritium Systems Test Assembly (TSTA) facility (FY 2008)</li><li>▪ Completed preparation for removal of the Isotope Separation System glovebox and vessel in TSTA facility (FY 2008)</li><li>▪ Remove and dispose of Isotope Separation System glovebox and vessel in TSTA facility (September 2009)</li><li>▪ Complete asbestos abatement and contaminated equipment removal as funding allows (September 2009)</li><li>▪ Remove contaminated equipment as funding allows (September 2010)</li></ul>					

**VL-NV-0013 / Solid Waste Stabilization and Disposition-  
Nevada Test Site**

**5,000                      0                      0**

This PBS can be found within the Defense Environmental Cleanup appropriation.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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The Solid Waste Stabilization and Disposition PBS scope includes on-site transuranic and mixed transuranic waste and material, including storage, treatment (as needed), and disposal/disposition. Activities include characterization, certification, and shipment of approximately 1,650 drums of waste to the Waste Isolation Pilot Plant for disposal; resizing and disposition of 58 oversized boxes of mixed transuranic waste; disposition of 248 drums of classified material and two experimental spheres; and safe and compliant storage of all of the above until disposition (total life-cycle quantity of 788 cubic meters). The Waste Examination Facility, Transuranic Pad Storage Building, and the classified material storage area are maintained with appropriate authorization bases and will be transferred or decommissioned upon completion of the scope.

As of the end of FY 2009 all transuranic and mixed transuranic waste covered under this PBS will be dispositioned.

In FY 2010, no activities are planned.

- Project complete.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - CH	449	1,207	1,207	1,207	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
▪ Final Transuranic Waste Disposition (December 2008)					

**VL-NV-0030 / Soil and Water Remediation-Nevada Test Site**

**56,056                      58,657                      58,794**

This PBS can be found within the Defense Environmental Cleanup appropriation.

Historic atmospheric and underground nuclear tests on the Nevada Test Site and the U.S. Air Force's Nevada Test and Training Range including the Tonopah Test Range, resulted in contaminated support facilities, soils, and groundwater. The environmental restoration project scope addresses surface and shallow subsurface radiological soil contamination sites on the Nevada Test Site and Nevada Test and Training Range. Contamination at these soils sites is the result of historic nuclear detonations, safety experiments, storage/transportation related tests, nuclear reactor development and experimentation, nuclear rocket engine tests, and hydronuclear experiments. Restoration of the industrial-type sites addresses facility decontamination and decommissioning, various historical infrastructure remediation efforts (e.g., septic systems, mud pits, storage tanks, disposal sites, etc.), and conventional weapons cleanup including unexploded ordinance. The underground test area activities involve geologic and hydrologic characterization, contaminated groundwater transport modeling, contaminant boundary definition and establishment of a monitoring system, to protect against the inadvertent use of contaminated groundwater.

The overall objective of this project is to provide for appropriate risk-based remediation of surface and

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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subsurface contamination of all of these sites. The cleanup is complex due to the number of sites, nature/extent of contamination, and site size/location. The surface contamination includes over 1,000 industrial-type sites and approximately 100 soil contamination sites on the Nevada Test Site and Nevada Test and Training Range. The subsurface contamination includes approximately 900 groundwater contamination sites on the Nevada Test Site. The industrial-type release sites mainly support facilities and structures that were left after conducting aboveground and underground nuclear tests, surface nuclear engine and reactor experiments, and weapons delivery systems. The industrial release sites cleanup goal is to eliminate access to contamination by removal and clean closure or closure in place and establishing appropriate use restrictions. For the radiologically contaminated soil sites on the Nevada Test Site, contamination will be isolated, contained, and/or removed at areas where soil contamination is the highest (i.e., localized areas of elevated radioactivity).

The characterization and remediation activities consist of completing engineering design and review as necessary; preparing a real estate/operations permit, health and safety plan, work packages/job hazard analysis, field management plan, biological opinion, National Environmental Policy Act checklist, and radiation work permits, as necessary; procuring materials, equipment, and subcontracts as required; excavating (for clean closure) to an approved action level/volume; conducting waste characterization and cleanup verification sampling/analysis, backfill and area grading; conducting posting or de-posting and demarcation surveys, utility clearance, installation of monuments, land surveys, and use-restrictions; performing bioassay analysis and evaluation as necessary; characterization, storage, transport, and disposal of waste in accordance with applicable regulations and requirements; demobilizing equipment; performing site inspections to include moisture and settlement monitoring, sample analysis evaluation, and photo documentation as required by the State; preparing a profile for radiological remediation derived waste to demonstrate compliance with the Nevada Test Site waste disposal acceptance criteria when applicable; and conducting a work package closeout and lessons learned.

Currently, activities at approximately 1,000 industrial-type sites have been completed, and activities at approximately 1,000 other sites are in progress.

In FY 2010, the following activities are planned:

- Complete monitoring network design and reporting and complete Phase II contaminant boundary model documentation and peer review for the Frenchman Flat groundwater Corrective Action Unit.
- Prepare drill pads/roads for 5 wells, drill 3 wells, and continue Phase II studies for Western and Central Pahute Mesa groundwater Corrective Action Units.
- Complete Phase I Contaminant Boundary Flow Model reviews and Phase I Transport Model Analysis and Evaluation for the Yucca Flat groundwater Corrective Action Unit.
- Complete Phase I contaminant source term, flow model, and transport model analysis and evaluation, and begin Phase I contaminant source term, flow model, and transport model reporting for the Rainier Mesa/Shoshone Mountain groundwater Corrective Action Unit.





(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Acceptance of mixed low-level waste for disposal will only be available through November 2010, or when a mixed low-level waste disposal capacity (20,000 cubic meters from December 2005) is reached, in accordance with State of Nevada regulatory authorization. In FY 2009, discussions were held with the State of Nevada regulatory authority to initiate the planning for a new mixed low-level waste disposal cell which could be operational at the end of FY 2011. Nevada maintains the capability to dispose low-level waste and mixed low-level waste (as allowed under permit conditions as administered by the State of Nevada), and disposal of classified matter from approved generators throughout the DOE complex. Individual disposal low-level waste cells will be operationally closed as they reach capacity. The total Nevada Test Site low-level waste, mixed low-level waste, and classified matter life-cycle volume from complex-wide generators is projected to be over 1.275 million cubic meters. Activities include Performance Assessment/Composite Analysis maintenance in support of the Disposal Authorization Statement, safety authorization document maintenance, the Nevada Test Site waste acceptance program maintenance, required environmental monitoring/closure planning, and update/maintenance of the Nevada Test Site Resource Conservation and Recovery Act Part B Permit. Storage of mixed low-level waste is managed according to the Resource Conservation and Recovery Act, Federal Facility Compliance Act Consent Order and Mutual Consent Agreement to reduce potential risks to human health and the environment. Mixed low-level waste management includes identifying treatment options for on-site generated wastes, selecting preferred and alternative treatment methods, verifying that the waste meets acceptance criteria required by treatment and disposal sites, and shipping and tracking waste through disposal.

In FY 2010, the following activities are planned:

- Continue supporting cleanup and mission activities of approximately 25 off-site generators from across the DOE complex by disposing an estimated 30,000 cubic meters of low-level and 8,000 cubic meters of mixed low-level waste at the Nevada Test Site.
- Continue audits and waste certification reviews in support of generator programs to ensure compliance with the Nevada Test Site Waste Acceptance Criteria.
- Continue developing and maintaining plans, permits, safety basis, and technical and regulatory support for activities such as the Nevada Test Site Resource Conservation and Recovery Act Part B Permit, Mutual Consent Agreement, Site Treatment Plan, and Consent Orders.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Dispose Low-Level Waste and Mixed Low-Level Waste (FY 2008/September 2009)</li> <li>▪ Dispose Low-Level Waste in support of the DOE Complex; conduct audits; maintain technical/safety documentation (September 2010)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**VL-NV-0100 / Nevada Community and Regulatory Support**

**2,545                      4,169                      2,556**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This project provides for various agreements and grants with the state, universities, and other entities. Funding supports regulator oversight of the Nevada Test Site including surveillance and monitoring activities, research in support of project activities, and stakeholder involvement efforts.

This PBS provides support for Agreements in Principle with three state agencies including the Nevada Division of Emergency Management, the Nevada Division of Environmental Protection, and the Nevada Department of Human Resources. This PBS also includes funding for the annual Federal Facilities Agreement and Consent Order fee and a grant with the University of Nevada, Las Vegas.

In FY 2010, the following activities are planned:

- Provide support for State of Nevada regulatory oversight of the Nevada Test Site, for Community Advisory Board activities, and for the agreements and grants with organizations in the State of Nevada.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Provide Regulator and Stakeholder Funding (FY 2008/September 2009/September 2010)</li> </ul>					

**VL-FAO-0101 / Miscellaneous Programs and Agreements in Principle**

**1,497                      1,443                      2,938**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The New Mexico Agreement in Principle reflects the understanding and the commitments between the parties regarding DOE’s provision to New Mexico of additional technical and financial support for State activities in environmental oversight, and monitoring to provide independent verification of DOE’s compliance with applicable federal, state and local laws, including rules, regulations, and standards at the (1) Los Alamos National Laboratory; and (2) Sandia National Laboratories/New Mexico (collectively referred to as “the facilities”). Post-FY 2006, most Sandia Environmental Remediation activities have been completed so EM Agreement in Principle support to Sandia will decrease. The Waste Isolation Pilot Plant has a separate Agreement in Principle and as such is no longer a part of the agreement funded by this PBS.

Agreement in Principle activities are intended to ensure that the activities at DOE facilities are protective of

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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the public health and environment. Such assurance is accomplished through a vigorous program of independent monitoring and oversight by the State of New Mexico. The parties to this Agreement understand that the oversight activities authorized by this Agreement are intended to supplement activities conducted under applicable environmental laws and regulations, but are not intended to support specific State regulatory, permitting, and legally required environmental oversight activities such as issuance of regulatory permits, the review of DOE regulatory submissions when such review is intended to serve as the primary basis for State action under regulatory programs, required regulatory inspections, required monitoring, issuance of regulatory notices of violation and other citations. The Agreement is also not intended to support the activities of the Citizen Advisory Boards. The Agreement is intended to support non-regulatory activities of the State of New Mexico in working with the DOE to evaluate the adequacy of DOE activities related to environmental monitoring and to support periodic State monitoring of discharges, emissions, or biological parameters as necessary to verify the effectiveness of the DOE programs. The Agreement recognizes the continued need for the State of New Mexico to have access to DOE facilities and to exchange relevant technical information with the DOE to support the State's environmental monitoring efforts. Specific scope includes the review and assessment of: waste management, discharges, and emissions; cleanup, spills, and facility decommissioning; environmental monitoring at DOE facilities to verify whether pathways of contaminant migration from sources related to activities at the facilities are being adequately monitored and reported to the public; public information and outreach; and reports and information systems development.

The Texas Agreement in Principle was initiated in 1990, in partnership with the Texas Governor's Office in an effort to protect human health and safety, and the environment around the Pantex Plant. The Texas Agreement in Principle concluded in FY 2008.

In Fiscal Years 2007-08 Agreement in Principle independent environmental oversight and monitoring was done on both Pantex cleanup and New Mexico cleanup and waste management. Beginning in FY 2009 Agreement in Principle work will be limited to Los Alamos independent environmental oversight and monitoring.

In FY 2010, the following activities are planned:

- Support the New Mexico Agreement in Principle.
- Support the Natural Resource Damage Assessment at Los Alamos National Laboratory.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Texas fulfill Agreements-in-Principle. (FY 2008)</li> <li>▪ New Mexico fulfills Agreement-in-Principle (September 2009)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Support New Mexico Agreement-in-Principle (September 2010)

**VL-SPRU-0040 / Nuclear Facility D&D-Separations  
Process Research Unit**

**27,334                      18,000                      15,000**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The Separation Process Research Unit is an inactive Atomic Energy Commission facility located at the Knolls Atomic Power Laboratory in Niskayuna, New York. The Separation Process Research Unit was a chemical processing pilot plant used to research the process of separating plutonium from irradiated fuel. The operation of the nuclear facilities contaminated the facilities, auxiliary structures, surrounding land, and ground water in the immediate vicinity of the facilities, as well as waste storage areas at other locations at the Knolls Atomic Power Laboratory site. The project objectives are to remove the inactive nuclear facilities and disposition the chemical and radioactive contamination in land areas and return the areas back the Knolls Atomic Power Laboratory for continued mission use by the Naval Reactors Program.

In FY 2010, the following activities are planned:

- Continue surveillance and maintenance of buildings G2 and H2 to ensure protection of human health and the environment during demolition.
- Continue demolition of Buildings G2 and H2 (nuclear facilities).
- Complete lower level soil removal project, including final site restoration and preparation of documents to support a No Further Action Determination from New York State.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	50	0%
Nuclear Facility Completions (Number of Facilities)	0	0	0	4	0%
Remediation Complete (Number of Release Sites)	0	4	4	6	67.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"><li>Initiate work on the nuclear facilities and environmental restoration of the land areas. (FY 2008)</li><li>Secure the remediation areas and maintain them in a minimum safe and secure configuration. (FY 2008)</li></ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Conduct surveillance and maintenance to allow the facilities (September 2009)
- Clean-up 4 RCRA Solid Waste Management Units in the Lower Level Rail Bed (September 2010)
- Tank waste and other process residuals will be consolidated and packaged for shipment. (September 2010)

**VL-PX-0030 / Soil and Water Remediation-Pantex** **25,027** **0** **0**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The Pantex Plant, located in the Texas Panhandle, approximately 17 miles northeast of Amarillo, has a long-term mission to extend the life of nuclear weapons in the stockpile. Past operations have contaminated soils and portions of the upper or perched groundwater with high explosives, metals, and solvents. In 1989, the U.S. Environmental Protection Agency conducted a Resource Conservation and Recovery Act Facility Assessment of the Pantex Plant that identified 252 potential release sites, and resulted in an Environmental Protection Agency Order stipulating response measures for these release sites. Corrective Measures to be taken include continued operation of the pump and treatment systems and, the deployment of in-situ technologies (e.g., bioremediation) to mitigate perched groundwater contamination; removal or containment of source term contamination in surface and subsurface soils using hot spot removal, engineered barriers, and soil vapor extraction.

As of the end of FY 2008, the Texas Commission on Environmental Quality approved closure of 237 release sites, with an additional 15 active release sites remaining in operation after project completion in FY 2009.

In FY 2010, no activities are planned:

- Project complete.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Remediation Complete (Number of Release Sites)	237	237	237	237	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Complete Corrective Measures Construction. Physical Construction Complete. (FY 2008)</li> </ul>					

**VL-SN-0030 / Soil and Water Remediation-Sandia** **0** **3,000** **2,864**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The Sandia National Laboratories Environmental Restoration project mission is to complete all necessary corrective actions at 265 release soil sites and three groundwater areas of concern. In most cases,

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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corrective action at a release site is considered complete when the release site has received final regulatory approval for No Further Action/Corrective Action Complete from the responsible regulatory authority. Exceptions to this are the three groundwater areas, which are expected to receive regulatory approval of Corrective Measures Implementation Plans for monitored natural attenuation. All of the field work was scheduled to have been completed in FY 2006; however, the schedule will be extended beyond FY 2009 due to regulatory delays related to the remediation of the Mixed Waste Landfill, obtaining final remedies for the three groundwater areas, and completing remaining regulatory and administrative closure activities. Despite these set-backs, long-term stewardship of 263 of 265 release sites became the responsibility of National Nuclear Security Administration in FY 2008.

DOE considers remediation to be complete at 263 of 265 sites; the remaining two soil sites are the Mixed Waste Landfill and Chemical Waste Landfill. The Mixed Waste Landfill long term monitoring and maintenance plan and the installation of three flute holes at the Mixed Waste Landfill are scheduled to be completed in FY 2010. Final regulatory closure and transition of the Mixed Waste Landfill to long term stewardship is expected in FY 2011. Transition of the Chemical Waste Landfill to long term stewardship (National Nuclear Security Administration) is expected by FY 2012. The Sandia National Laboratory Environmental Restoration project has completed all soil remediation except for the Mixed Waste Landfill cover and has submitted two of three corrective measures evaluation groundwater reports.

Planned groundwater activities for FY 2010 include the start of eight quarterly samples at Technical Area V and the development of a corrective measures implementation report at the Burn site. The New Mexico Environment Department has issued a Notice of Disapproval on the corrective measures evaluation report for Technical Area V Groundwater and a Notice of Disapproval on the investigation report (an auxiliary report to the corrective measures evaluation report) on the Tijeras Arroyo Groundwater. All groundwater areas are expected to transition to long term stewardship beginning FY 2014.

In FY 2010, the following activities are planned.

- Final Closure Report for Chemical Waste Landfill RCRA Remediation to New Mexico Environment Department.
- Mixed Waste Landfill Corrective Measures Implementation No Further Action Report to New Mexico Environment Department.
- Remaining 3 quarters of required 8 quarters of characterization sampling at 4 new Mixed Waste Landfill Groundwater wells.
- Progress towards completion of the Corrective Measures Evaluation process for final remedies on the three groundwater sites (Tijeras Arroyo, Technical Area V and Burn Site) will be continued.
- A revised Long Term Monitoring and Maintenance Plan for the Mixed Waste Landfill will be

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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drafted.

- Work towards finalizing the modifications to the Sandia Hazardous Waste Facility permit for thirty-one Solid Waste Management Units by participating in a comment resolution process.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Radioactive Facility Completions (Number of Facilities)	1	1	1	1	100.0%
Remediation Complete (Number of Release Sites)	263	264	264	265	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Submit Burn Site Groundwater CME Work Plan to NMED (FY 2008)</li> <li>▪ Submit Final CMI (RCRA) Report to the New Mexico Environment Department for Chemical Waste Landfill (March 2010)</li> <li>▪ Submit Corrective Measure Implementation (CMI) Report for the Mixed Waste Landfill (MWL) to NMED. (March 2010)</li> <li>▪ Complete characterization on 4 new Mixed Waste Landfill Groundwater Wells (May 2010)</li> </ul>					

<b>Total, NNSA Sites</b>	<b>323,352</b>	<b>322,756</b>	<b>276,624</b>
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### Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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#### Defense Environmental Cleanup

##### NNSA Sites

##### California Site Support

##### VL-FOO-0013B-D / Solid Waste Stabilization and Disposition Support - Lawrence Livermore National Laboratory (Defense)

- Increase to support cleanup activities at the Lawrence Livermore National Laboratory Site 300 Building 812 Firing Table.

238

**Lawrence Livermore National Laboratory**

**VL-LLNL-0031 / Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300**

- Increase allows the completion of the remedial investigation and feasibility study for cleanup of the Building 812 Firing Table at Lawrence Livermore National Laboratory - Site 300. 910

**Los Alamos National Laboratory**

**VL-LANL-0013 / Solid Waste Stabilization and Disposition-LANL Legacy**

- The decrease a reduction in the number of mixed low-level waste sludge shipments to commercial treatment and the repackaging of containers to remove prohibited items before shipment of transuranic waste to the Waste Isolation Pilot Plant for disposal and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. -5,063

**VL-LANL-0030 / Soil and Water Remediation-LANL**

- The decrease is due to the completion of the installation of monitoring well networks, required storm water sampling of 405 sites, completion of groundwater monitoring of eight watersheds and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. -23,896

**VL-LANL-0040-D / Nuclear Facility D&D-LANL (Defense)**

- The decrease is due to the completion of decontamination and decommissioning of activities at Technical Area-21 Delta Prime West and Technical Area-54 and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. -4,775

**Nevada**

**VL-NV-0030 / Soil and Water Remediation-Nevada Test Site**

- No significant change. 137

**VL-NV-0080 / Operate Waste Disposal Facility-Nevada**

- The decrease reflects a reduction in the share of disposal costs direct-funded by EM. The balance of funds for base disposal operations will be obtained through transfer of funding from other DOE mission programs generating waste and potential other sources. -8,524

**VL-NV-0100 / Nevada Community and Regulatory Support**

- Decrease reflects a one time reimbursement of funds in FY 2009. Those funds were used as a source for a reprogramming for higher priority cleanup work. -1,613

**NNSA Service Center/Separations Processing Research Unit (SPRU)**

**VL-FAO-0101 / Miscellaneous Programs and Agreements in Principle**

- Increase reflects funding provided for the Natural resource Damages Assessment at Los Alamos National Laboratory in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act. 1,495

**VL-SPRU-0040 / Nuclear Facility D&D-Separations Process Research Unit**



FY 2010 vs. FY 2009 (\$000)
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- Decrease reflects the acceleration of the North Field land Remediation and completion of some demolition of nuclear facility Buildings G2 and H2 to facilitate return of land to Naval Reactors for future use and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation.
-3,000

**Sandia National Laboratories**

**VL-SN-0030 / Soil and Water Remediation-Sandia**

- No significant change.
-136

**Non-Defense Environmental Cleanup**

**Small Sites**

**VL-LANL-0040-N / Nuclear Facility D&D-LANL (Non-Defense)**

- Decrease reflects the scope of work that was included in the American Recovery and Reinvestment Act appropriation.
-1,905

<b>Total, NNSA Sites</b>	<b>-46,132</b>
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## West Valley Demonstration Project

### Funding by Site

(dollars in thousands)				
	FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010
West Valley Demonstration Project	64,900	65,500	73,875	58,074
Total, West Valley Demonstration Project	64,900	65,500	73,875	58,074

### Site Overview

The West Valley Demonstration Project is being executed at the site of the only commercial nuclear fuel reprocessing facility to have operated in the United States. The West Valley Demonstration Project is located on the site of the Western New York Nuclear Service Center, of which title is held by the New York State Energy Research and Development Authority. The principal mission of DOE is to satisfy the mandates established by the West Valley Demonstration Project Act of 1980 (Public Law 96-368):

- Solidify, in a form suitable for transportation and disposal, the high-level waste;
- Develop containers suitable for permanent disposal of the solidified high-level waste;
- Transport, in accordance with applicable law, the solidified waste to an appropriate disposal site;
- Dispose of low-level waste and transuranic waste produced by high-level waste solidification activities;
- Decontaminate and decommission tanks and facilities used for solidification of high-level waste, as well as any material and hardware used in connection with the Project, in accordance with Nuclear Regulatory Commission requirements.

### Site Description

The West Valley Demonstration Project is located approximately 40 miles south of Buffalo, New York. DOE has operational responsibility for approximately 165 acres located near the center of the larger 3,345 acre Western New York Nuclear Service Center, which is owned by the State of New York.

### Site Cleanup Strategy/Scope of Cleanup

DOE has completed the first two mandates of the West Valley Demonstration Project Act – solidification of the liquid high-level waste and development of containers suitable for permanent disposal of the high-level waste. There are currently 275 high-level waste canisters that have been produced that are in safe storage within the former spent fuel reprocessing plant. The remaining work to be completed by DOE includes: (1) shipment of the high-level waste canisters for off-site disposal;

(2) disposal of Project-generated low-level waste and transuranic waste; and (3) facility decontamination and decommissioning. Additionally, in accordance with the DOE and New York State Energy Research and Development Authority spent fuel agreement, DOE shipped 125 spent fuel assemblies to the Idaho National Environmental and Engineering Laboratory in July 2003.

The technical, schedule and cost considerations associated with decommissioning of the West Valley Demonstration Project are being considered during development of the Decommissioning and/or Long Term Management Environmental Impact Statement. A Record of Decision determining the actions needed for final decommissioning is planned for issuance in December 2009. As such, DOE will focus its near-term efforts on waste disposition, process building decontamination and removal of non-essential facilities that can proceed in the near-term while the Decommissioning Environmental Impact Statement is developed.

### **Site Completion (End State)**

Until DOE completes its evaluation and analysis of various closure alternatives in the Decommissioning Environmental Impact Statement and issues a Decommissioning Record of Decision, DOE plans to proceed toward Interim End State completion in FY 2012. The West Valley Demonstration Project Interim End State is defined as:

- Shipment of all low-level waste and transuranic waste generated by DOE as a result of the high-level waste solidification project;
- Deactivation, demolition, and removal of all DOE-managed facilities (foundations remain), with the exception of: 1) former spent nuclear fuel reprocessing facility (Main Plant Process Building) and any other support facilities required for the interim storage of the high-level waste canisters; 2) the Remote-Handled Waste Processing Facility; and 3) the Vitrification Facility.
- Removal of major components and decontamination of the process building;
- Configuring utilities and infrastructure to achieve cost effective long-term storage and maintenance of the process building and other facilities including the tank farm, until off-site transport of the high-level waste canisters can be facilitated;
- Initiate activities to support construction of a Dry Storage Facility for the High Level Waste canisters and removal of the High Level Waste canisters from the Main Plant Process Building.

Following publication of the Decommissioning Environmental Impact Statement Record of Decision currently planned in December 2009, DOE will proceed with the actions necessary to achieve the Record of Decision. The Record of Decision will address the following actions:

- Decommissioning of the tank farm;
- Remediation of lagoons, sludge ponds and water treatment systems;
- Removal and disposal of facility foundations and contaminated soil;

- Decommissioning and removal of the Remote-Handled Waste Processing Facility;
- Installation of erosion controls and environmental monitoring requirements;
- Multi-Agency Radiation Survey and Site Investigation Manual survey and sampling;
- Implementation of other actions as required by the Decommissioning Environmental Impact Statement and Record of Decision;
- Construction of High-level Waste Canister Load-out Facility and a Dry Storage Facility;
- Moving high-level waste canisters from the Main Plant Processing Facility to the Dry Storage Facility;
- Final decommissioning of the Process Building and the Vitrification Facility, consistent with Decommissioning Environmental Impact Statement Record of Decision;
- Demolition and removal of any other interim storage support facilities.
- Demolition and removal of the Dry Storage Facility and support facilities;
- Demolition and removal of any other interim storage support facilities;
- Transition of the site back to the State of New York.

### **Regulatory Framework**

The West Valley Demonstration Project Act (Public Law 96-368) was signed by President Carter in October 1980. The Act required the Secretary of Energy to carry out a high-level radioactive waste management project at the Western New York Nuclear Services Center.

A Cooperative Agreement between DOE and New York State Energy Research and Development Authority was signed in October 1980 with the New York State Energy Research and Development Authority and amended in September 1981. This agreement was entered into for implementation of the West Valley Demonstration Project Act of 1980. It allows DOE use and control of the 165-acre West Valley Demonstration Project premises and facilities for the purposes and duration of the Project. In addition, this agreement set forth specific definitions, roles and responsibilities applicable to the Project, and use of facilities and Project completion.

A Memorandum of Understanding between DOE and Nuclear Regulatory Commission was published in the Federal Register in September 1981. This memorandum identifies roles, responsibilities, terms and conditions agreed to by the DOE and Nuclear Regulatory Commission regarding Nuclear Regulatory Commission review and consultation during the course of the Project.

An agreement between the New York State Energy Research and Development Authority and DOE regarding U.S. DOE Spent Nuclear Fuel located at the Western New York Nuclear Service Center was signed in July 1986. This agreement relates to shipment of spent nuclear fuel from the Project site to Idaho.

A Stipulation of Compromise Settlement agreement was reached in May 1987. This agreement represents the legal compromise reached between the Coalition on West Valley Nuclear Waste and Radioactive Waste Campaign and the DOE regarding development of a comprehensive Environmental Impact Statement for the Project and for on- and off-site disposal of low-level waste.

A Supplemental Agreement to the Cooperative Agreement was signed in February 1991. This supplemental agreement sets forth special provisions for the preparation of a joint Environmental Impact Statement between the DOE and New York State for facility decommissioning.

A Resource Conservation and Recovery Act 3008(h) Administrative Order on Consent was expanded and signed in March 1992. This four-party agreement is between the United States Environmental Protection Agency, the New York State Department of Environmental Conservation, DOE and New York State Energy Research and Development Authority. Among the requirements of this agreement, DOE is to complete Resource Conservation and Recovery Act facility investigations and perform corrective measures for Resource Conservation and Recovery Act-regulated solid waste management units on the Project premises.

The Federal and State Facility Compliance Agreement and Addendum was signed in 1993. This agreement defines requirements for preparing and submitting a site treatment plan for mixed low-level waste (radioactive waste mixed with hazardous chemicals) to the New York State Department of Environmental Conservation, including options and schedules for treatment of identified waste.

The Cooperative Agreement between the Seneca Nation of Indians and Ohio/West Valley Demonstration Project was signed in June 1996. This agreement establishes a framework for inter-governmental relationships between the Seneca Nation of Indians and the DOE with respect to Project activities.

### **Critical Site Uncertainties and Assumptions**

The following assumptions support the planning basis for achieving Interim End State completion:

- The Project will be able to disposition higher activity low-level waste off-site, without obstruction, consistent with the 2005 Waste Management Record of Decision.
- Supplemental analyses and amendments to the Record of Decision, as necessary, will allow for off-site disposition of other Project waste (e.g., transuranic waste).
- A disposition pathway for the Project's transuranic waste will be determined by the end of FY 2010. The Projects transuranic waste has been integrated into the Departments ongoing Greater Than Class C LLW disposal EIS. This waste stream will then be integrated into the complex-wide shipping schedule to support off-site disposition beginning in FY 2010.

- New York State Energy Research and Development Authority will continue as a joint lead agency in the Environmental Impact Statement process.

The largest uncertainty for defining remaining project scope is the outcome of the Environmental Impact Statement and the Record of Decision.

**Interdependencies**

Completing the West Valley Demonstration Project Act requires off-site disposal of low-level waste, mixed low-level waste, transuranic waste, and high-level waste. Thus, the project is dependent on other sites for these disposal services. Disposal of the transuranic waste is currently dependent on completion of the Greater Than Class C LLW disposal EIS and resulting record(s) of decision.

**Contract Synopsis**

The new contract for completion of the Interim End State at West Valley Demonstration Project was awarded to West Valley Environmental Services in June 2007 and will continue through June 2011.

**Cleanup Benefits**

West Valley Demonstration Project plans to achieve Interim End State completion. At that point, all of the work that can be accomplished within current regulatory authorities will have been completed including off-site disposition of low-level waste and transuranic waste, decontamination and demolition of facilities and infrastructure no longer needed to support safe site operations, and decontamination of the former spent nuclear fuel reprocessing facility. The site will then implement the Decommissioning Environmental Impact Statement Record of Decision issued in 2009.

**Funding Schedule by Activity**

(dollars in thousands)

	FY 2008	FY 2009	FY 2010
Non-Defense Environmental Cleanup			
West Valley Demonstration Project			
OH-WV-0013 / Solid Waste Stabilization and Disposition-			
West Valley	13,955	33,239	12,639
OH-WV-0040 / Nuclear Facility D&D-West Valley	50,945	32,261	45,435
Subtotal, West Valley Demonstration Project	64,900	65,500	58,074

## Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
West Valley Demonstration Project					
Geographic Sites Eliminated (number of sites)	0	0	0	1	0%
High-Level Waste packaged for final disposition (Number of Containers)	275	275	275	275	100.0%
Industrial Facility Completions (Number of Facilities)	13	22	23	29	79.3%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	26,931	26,931	27,563	27,786	99.2%
Nuclear Facility Completions (Number of Facilities)	3	3	4	14	28.6%
Radioactive Facility Completions (Number of Facilities)	4	4	4	13	30.8%
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	1,142	0%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	555	0%

### Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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#### **OH-WV-0013 / Solid Waste Stabilization and Disposition-West Valley**

**13,955      33,239      12,639**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

The solid waste stabilization and disposition project at the West Valley Demonstration Project involves the waste management activities required to disposition the low-level and transuranic waste produced as a result of high level waste solidification activities. When this project is completed, all demonstration project-generated, low-level waste and transuranic wastes will have been shipped off-site for disposal, reducing worker and environmental risk at the site. In order to prepare for waste disposition efforts associated with transuranic and other high activity waste, a Remote-Handled Waste Facility has been constructed, which provides the capability to safely characterize, size reduce, package and prepare high activity and transuranic waste for off-site shipment and disposal. As of September 30, 2008, more than 34,695 m<sup>3</sup> of legacy and remediation low-level waste had been shipped off-site for disposal. Remote-Handled Waste Facility processing operations have been initiated for high activity and transuranic waste in preparation for off-site shipment and disposal. An Independent Project Review was performed in October 2007.

In FY 2010, the following activities are planned:





(dollars in thousands)

FY 2008	FY 2009	FY 2010
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decontamination and decommissioning efforts, this program also includes those activities required to safely manage and maintain the site in compliance with federal and state statutes, as well as DOE orders and requirements.

The high-level waste canisters produced as a result of solidifying liquid high-level waste are stored in a cell in the former spent fuel reprocessing facility. Once decontamination and decommissioning is completed to the extent possible, they will be safely moved and configured in a new onsite Storage Facility until they can be transported to a federal repository for disposal. Once the canisters are dispositioned, any final decommissioning of West Valley Demonstration Project facilities will be performed and the site returned to the State of New York.

In FY 2010, the following activities are planned:

- Engineering/licensing of High-Level Waste canister relocation to a new on-site storage facility.
- Install North Plateau Groundwater Plume mitigation system.
- Decontamination of unneeded rooms, cells or ancillary facilities in preparation for demolition.
- Issue the Final Environmental Impact Statement for the Decommissioning and/or Long-Term Stewardship of the West Valley Demonstration Project, scheduled to be completed in December 2009. The Environmental Impact Statement and Record of Decision will be used to support the final disposition of the high-level waste tanks, the Main Plant Process Building, the 2 disposal areas, the groundwater plume, the Vitrification Facility, the Remote-Handled Waste Facility and other ancillary facilities.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Nuclear Facility Completions (Number of Facilities)	3	3	4	14	29.0%
Radioactive Facility Completions (Number of Facilities)	4	4	4	13	31.0%
Industrial Facility Completions (Number of Facilities)	13	22	23	29	79.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"><li>▪ Complete preparation of the environmental impact statement for decommission and long-term stewardship. (December 2009)</li><li>▪ Continue dismantlement/removal of 2 facilities and structures no longer necessary to support safe site operations. (September 2009)</li><li>▪ Complete dismantlement/removal of 10 facilities and structures no longer</li></ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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necessary to support safe site operations. (June 2010)

**Total, West Valley Demonstration Project**

**64,900**

**65,500**

**58,074**

## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### Non-Defense Environmental Cleanup

#### West Valley Demonstration Project

##### OH-WV-0013 / Solid Waste Stabilization and Disposition-West Valley

- The decrease in funding reflects an increase of higher-priority decontamination and decommissioning work scope; while continuing processing and disposal of newly generated waste; processing of high activity low-level and transuranic waste through the remote-handled waste facility; and packaging and storage of contact-handled and remote-handled transuranic waste; and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation.

-20,600

##### OH-WV-0040 / Nuclear Facility D&D-West Valley

- Increase supports additional decontamination and decommissioning work scope in support of the West Valley Demonstration Project Interim End State and reflects a scope of work that is included in the American Recovery and Reinvestment Act appropriation. The relocation of High-Level waste canisters to a new on site storage facility. Continue High-Level Waste tank vault drying. Installation of groundwater plume mitigation system. Issuing final Environmental Impact Statement for the Decommissioning and/or Long Term Stewardship of the West Valley Demonstration Project.

13,174

#### Total, West Valley Demonstration Project

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**-7,426**

## All Other Sites

### Funding by Site and Location

(dollars in thousands)

	FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010
All Other Sites				
Completed Sites/Program Support	1,189	1,100	0	1,200
Brookhaven National Laboratory	15,438	8,433	42,355	12,614
California Site Support	158	187	0	262
Argonne National Laboratory	433	29,479	98,500	0
Energy Technology Engineering Center	12,882	15,000	54,175	13,000
Inhalation Toxicology Laboratory	423	0	0	0
Moab	23,734	40,699	108,350	30,671
Tuba City	0	5,000	0	0
SLAC National Accelerator Laboratory	7,846	4,883	7,925	4,600
Total, All Other Sites	62,103	104,781	311,305	62,347

The Environmental Management program scope includes cleanup, closure, and post-closure environmental activities at a number of geographic sites across the nation. Most of the sites described in this section of the budget are aligned organizationally with other Department of Energy programs, particularly the Office of Science, and may have continuing missions after EM completes cleanup. Some sites, however, belong to EM and are in the final stages of cleanup and closure or have actually transitioned to post-closure. The sites included in this section are Argonne National Laboratory, Brookhaven National Laboratory, Energy Technology Engineering Center, Inhalation Toxicology Laboratory, Lawrence Berkeley National Laboratory, Moab, and the Stanford Linear Accelerator Center. Below is an overview of the geographic sites that are included in this section of the budget. Sites included in the Non-Defense Post Closure Administration and Program Support are: Energy Technology and Engineering Center, General Electric – Vallecitos, Inhalation Toxicology Laboratory in New Mexico, EM work at Stanford Linear Accelerator Center in California, Argonne National Laboratory in Illinois, Brookhaven National Laboratory in New York, and former Uranium Mill Tailings Remediation Act contractors.

### Argonne National Laboratory

#### Site Overview

Argonne National Laboratory is a DOE Office of Science research and development laboratory with a broad program of research in basic energy and related sciences (such as physical, chemical, material, computer, biomedical and environmental) including operation of several large scientific user facilities. The Laboratory is located about 27 miles southwest of downtown Chicago.

Contamination of soil and groundwater occurred as a result of accidental spills, past materials management practices, and former waste disposal practices. Contaminants of concern for soil and groundwater include volatile organic compounds, semi-volatile organic compounds, metals,

polychlorinated biphenyl compounds, and a variety of radioisotopes. A number of buildings and research reactors were contaminated with low levels of radioactive materials as a result of normal past operations. Resource Conservation and Recovery Act Corrective Actions were completed in September 2003 with minor ongoing long-term stewardship activities. Twelve (12) of thirteen (13) nuclear cleanups are complete. Field work began in FY 2007 on the final nuclear facility decontamination and decommissioning project within the site.

### **Site Description**

The Argonne National Laboratory cleanup involves two key projects: (1) Long Term Stewardship for Soil and Water Remediation (PBS CH-ANLE-0030); and (2) Nuclear Facility decontamination and decommissioning (PBS CH-ANLE-0040). Post-cleanup residual contamination still remains in several areas of the Argonne National Laboratory site, which require continued monitoring and/or remediation system operation. Decontamination and decommissioning activity was completed at the Zero Power 6 Reactor in early FY 2007 and continues at Building 301.

The Illinois Environmental Protection Agency has formally issued all “No Further Actions” as appropriate and has signed the Land Use Control Memorandum of Agreement requiring Argonne to maintain the remedial actions and groundwater monitoring. The remediation systems are operational and the groundwater monitoring activities have been integrated into the site monitoring and surveillance program conducted by the Office of Science. Transfer of groundwater monitoring and surveillance responsibilities to the Office of Science will occur in FY 2012.

### **Site Cleanup Strategy/Scope of Cleanup**

Corrective actions to address contaminated soils and groundwater were conducted under the site Resource Conservation and Recovery Act permit. All corrective actions were completed at the end of FY 2003, with the exception of ongoing activities such as operation and maintenance of remedial actions and groundwater extraction systems, routine groundwater monitoring, and periodic inspection of engineered barriers. Site cleanup focus is now completion of the remaining decontamination and decommissioning project. At the end of FY 2008, twelve nuclear facilities were decontaminated and decommissioned, and one facility (Building 301) remained for completion.

### **Site Completion (End State)**

Current EM site cleanup work will be complete in FY 2009, along with required regulatory actions. One facility is still undergoing decontamination and demolition in FY 2009- Building 301 Hot Cells. Wastes from the Building 301 project are low-level radioactive wastes or solid wastes. There are also approximately 100 drums of Argonne legacy remote-handled transuranic wastes in the current scope of the remote-handled transuranic waste project, to be disposed at the Waste Isolation Pilot Plant, in Carlsbad, New Mexico, prior to geographic site completion of current EM scope at the Argonne National Laboratory site. Approximately one-third of these drums were disposed at the Waste Isolation Pilot Plant during FY 2008 and the balance is scheduled for disposal in FY 2009. The End State for current EM scope includes decontamination (as necessary) and demolition of Building 301. The land occupied by Building 301 will be available for unrestricted research and development reuse. Zero Power Reactor 6, which was cleaned up for beneficial reuse, was completed in FY 2007. Building 301 decontamination and demolition began in FY 2007 and is planned to be complete in FY 2009.

Site completion for current EM scope does not include the nine additional contaminated excess facilities (including the former Intense Pulsed Neutron Source complex) that are proposed to transfer from the Office of Science to EM, or additional remote and contact-handled transuranic wastes from the site that will need to be disposed at the Waste Isolation Pilot Plant.

### **Regulatory Framework**

Corrective actions to address contaminated soils and groundwater were conducted under the Argonne site Resource Conservation and Recovery Act permit with the Illinois Environmental Protection Agency.

### **Critical Site Uncertainties and Assumptions**

Site completion by FY 2009 involves shipment for disposal of remote-handled transuranic waste, which appears to be achievable. There are no critical site uncertainties associated with the Building 301 project.

### **Interdependencies**

The Argonne Site Office and Argonne National Laboratory work with various State of Illinois agencies such as Illinois Environmental Protection Agency, Illinois Emergency Management Agency, and the State Historic Preservation Agency to execute remaining EM scope. The Department of Housing and Urban Development has made a determination regarding demolition of Building 301. Wastes are typically disposed to local landfills as solid sanitary wastes or to off-site commercial low-level waste disposal sites or the Nevada Test Site for radioactive wastes. Final disposal of the remote-handled transuranic waste will require that the Waste Isolation Pilot Plant facility continue to accept remote-handled transuranic waste, and will require that the shipping corridor remain available from Argonne National Laboratory to the Waste Isolation Pilot Plant. In order to execute remote-handled transuranic waste shipments, coordination with various State agencies will be required.

### **Contract Synopsis**

The current major contract in place for Argonne National Laboratory is a Management and Operating contract. A performance-based management contract was awarded on July 31, 2006 to a new entity, UChicago Argonne LLC, and transition was completed by October 1, 2006.

### **Cleanup Benefits**

The last project under current EM scope will reduce risk, cut surveillance and maintenance costs, and return valuable space to Argonne National Laboratory for research and development purposes. Cleanup of additional proposed excess contaminated facilities, and disposal of the additional remote and contact-handled transuranic waste, will reduce the nuclear footprint at Argonne National Laboratory, decrease potential future risk, and demolish aging contaminated buildings that have no foreseeable future use.

## Brookhaven National Laboratory

### Site Overview

The Brookhaven National Laboratory is a U.S. Department of Energy (DOE) owned multi-disciplinary scientific research center located in the center of Suffolk County on Long Island, about 60 miles east of New York City. The Atomic Energy Commission established Brookhaven National Laboratory on the site of the U.S. Army's former Camp Upton in 1947. The Atomic Energy Commission's objective was to build a regional laboratory that could provide researchers with powerful tools too costly for their home institutions to build and maintain.

The Brookhaven Environmental Management Completion Project addresses the cleanup of the Brookhaven National Laboratory Superfund site as well as the decontamination and decommissioning of two former research reactors: the High Flux Beam Reactor and Brookhaven Graphite Research Reactor. Cleanup criteria are established under a 1992 Interagency Agreement among DOE, the U.S. Environmental Protection Agency and the New York State Department of Environmental Conservation. The Brookhaven Environmental Management Completion Project is to be considered complete when all required groundwater treatment plants are built and operating, cleanup of soils and the Peconic River are complete, decontamination and decommissioning of the Brookhaven Graphite Research Reactor and the High Flux Beam Reactor are complete, all cleanup, decontamination and decommissioning and legacy wastes are disposed of off-site, and an effective Long Term Environmental Operations, Safety and Security program was underway.

Brookhaven Science Associates has operated Brookhaven National Laboratory for DOE since 1997 and also performs the cleanup work for the DOE Office of Environmental Management (EM).

### Site Description

Groundwater cleanup is Brookhaven National Laboratory's highest priority because Long Island's sole source aquifer provides the only source of drinking water for local residents. Off-site groundwater is contaminated with volatile organic compounds above State standards and onsite groundwater is contaminated above the drinking water standard with volatile organic compounds and radionuclides tritium and strontium-90. Some soils at Brookhaven National Laboratory are contaminated with radionuclides (primarily cesium-137 and strontium-90) and chemicals (primarily mercury) due to historical practices and spills. Three landfills have been capped and 55 waste disposal pits have been excavated and disposed of off-site. Historical discharges from Brookhaven National Laboratory's Sewage Treatment Plant have resulted in elevated levels of metals, primarily mercury, and radionuclides such as cesium-137 in the Peconic River sediments both on- and just off-site. Cleanup requirements are outlined in Records of Decision for the various areas.

Brookhaven Graphite Research Reactor: The Brookhaven Graphite Research Reactor was the first reactor built solely to provide neutrons for research and was operated from August 1950 to June 1968. This reactor is of concern because releases to the environment have occurred and have caused soil and groundwater contamination with cesium-137 and strontium-90. It is listed as an Area of Concern in the Interagency Agreement. Numerous interim actions have been performed to address high priority



environmental releases. A Record of Decision was signed by the United States Environmental Protection Agency in March 2005 that adopts the interim actions as final and requires removal and off-site disposal of the pile and bioshield.

High Flux Beam Reactor: The High Flux Beam Reactor, constructed for basic experimental research in physics, chemistry and biology, was permanently shut down in 1999. Extensive stabilization activities were conducted during FY 2000 and FY 2001, including the removal of experimental equipment, installation of a stainless steel liner for the spent fuel pool and the installation of leak prevention alarms and double-walled piping to mitigate potential releases to the environment. The reactor fuel was sent to the DOE Savannah River Site in 1996-97. Decision-making with the regulatory agencies and the community is nearly completed, and will culminate with a signed Record of Decision during the summer of 2009.

### **Site Cleanup Strategy/Scope of Cleanup**

Brookhaven National Laboratory's highest cleanup priorities involved the cleanup of environmental releases to groundwater, soils, and the Peconic River. These activities make up the CH-BRNL-0030/ Soil and Water Remediation project. High priority activities at the Brookhaven Graphite Research Reactor related to addressing environmental releases were completed in FY 2005. Removal of the reactor internals, graphite moderator (pile), and radiation biological shield (bioshield) are planned for completion in FY 2010. These high priority activities include the removal and off-site disposal of the graphite pile and reactor bioshield and the installation of an engineered cap around the building and groundwater monitoring wells. Decontamination and decommissioning of the High Flux Beam Reactor is considered to be the lowest risk and is scheduled to be completed last. The scope for the High Flux Beam Reactor Project consists of removal and disposal of Control Rod Blades and Beam Plugs and the soil remediation of the Waste Loading Area along with the regulatory achievement of a Record of Decision.

### **Site Completion (End State)**

Completion of the Brookhaven National Laboratory Soil and Water activities in FY 2005 was followed by continuing Long Term Environmental Operations, Safety and Security. These activities will continue while the Brookhaven Graphite Research Reactor and High Flux Beam Reactor decontamination and decommissioning is completed. The lifecycle planning estimate range for end date for cleanup is 2018 to 2020. Upon completion of the above currently identified scope within each of the project's Record of Decisions, the Long-Term Environmental Operations, Safety and Security program will be transferred to the DOE Office of Science, which is the Brookhaven National Laboratory site landlord.

### **Regulatory Framework**

Brookhaven National Laboratory was added to New York State's list of Inactive Hazardous Waste sites in 1980 and to the federal National Priorities List in 1989. A tri-party Federal Facilities Compliance Agreement, also known as the Interagency Agreement, was subsequently negotiated among the DOE, the U. S. Environmental Protection Agency - Region II, and the New York State Department of Environmental Conservation. The Interagency Agreement integrates the requirements of Comprehensive Environmental Response, Compensation, and Liability Act, the corrective action requirements of the Resource Conservation and Recovery Act, DOE cleanup authorities under the Atomic Energy Act, and any corresponding New York State regulations.

The Interagency Agreement became effective in 1992 and provides the overall framework for conducting the Brookhaven environmental restoration program using Comprehensive Environmental Response, Compensation, and Liability Act processes. Furthermore, the Interagency Agreement defines authorities between the three parties and includes procedures for resolving disputes, assessing stipulated penalties by Environmental Protection Agency, reviewing documents, reporting and notifications, extending schedules, complying with State and Federal regulations and requirements, and reimbursing the costs of oversight performed by the New York State Department of Environmental Conservation. While not a formal Interagency Agreement partner, the Suffolk County Department of Health Services is also actively involved with the Brookhaven National Laboratory cleanup. Its activities include reviewing proposed work plans, overseeing field work to ensure that it is performed properly and splitting Brookhaven National Laboratory samples for analysis.

### **Critical Site Uncertainties and Assumptions**

Up to calendar year 2008 the most significant project uncertainty for the High Flux Beam Reactor involves the resolution of the end state with the regulatory agencies and the public. The current assumption involves removing accessible source terms and shrinking the footprint of the facility to reduce long-term surveillance, maintenance and security requirements and to defer removal of the reactor vessel for 40 to 75 years. This will allow the high source terms to radiologically decay, reducing the risk of radiation exposures to workers during removal and packaging. Deferral of the vessel removal will also greatly simplify the dismantlement, segmentation and packaging of the vessel and will reduce the need for specialized shipping casks and containers to transport the highly radioactive components, reducing the generation of secondary waste streams. DOE continues using the Core Team process with the regulatory agencies to facilitate this decision, and a Record of Decision addressing the end state of the High Flux Beam Reactor is scheduled to be signed in the summer of 2009.

### **Interdependencies**

The most significant dependency with external agencies involves the resolution of the High Flux Beam Reactor end-state with the U. S. Environmental Protection Agency and the New York State Department of Environmental Conservation, as well as the public. Waste transportation and disposal constitute the most significant inter-site dependencies. Radioactive waste from decontamination and decommissioning will be disposed of at Nevada Test Site and Energy Solutions in Clive, Utah, (formerly Envirocare of Utah). Brookhaven Science Associates has applied value engineering to radioactive waste management on this project and is planning to use both Federal and commercial disposal facilities to provide the most efficient, cost effective disposal. For example, Brookhaven Science Associates has received certification to dispose of the graphite blocks at the Nevada Test Site, while radioactive debris from the bioshield will be disposed of at Energy Solutions.

### **Contract Synopsis**

DOE's cost-plus-performance-fee contract with Brookhaven Science Associates, as the managing and operating contractor, to perform the DOE science mission at Brookhaven National Laboratory ended on January 4, 2008, but was extended for two years through January 4, 2010. EM-funded cleanup activities involving the completion of the Brookhaven National Laboratory Soil and Water activities, high priority removals at the Brookhaven Graphite Research Reactor and the High Flux Beam Reactor, and surveillance and maintenance activities at both Reactors are included in this contract.

## **Cleanup Benefits**

Environmental restoration and nuclear facility decommissioning at Brookhaven National Laboratory addresses historical releases by mitigating risks to human health and the environment. Radiological and chemical contamination has been removed, reduced or placed under an active remediation system that is designed to isolate and remediate the contamination. The overall benefit is a workplace and environment where immediate threats of exposure to contamination have been mitigated.

Soil contamination has been either removed or placed in a safe and stable condition. Groundwater contamination is being addressed by a suite of remediation technologies designed to isolate and remediate the contamination and reduce overall risks. All soil, groundwater and Peconic River response actions are constructed and in various phases of operation and monitoring. This post-construction phase (Long-Term Environmental Operations, Safety and Security) will continue until such time as cleanup goals as specified in the Records of Decision are achieved.

Sources of releases have been removed and contamination from inactive nuclear facilities has been addressed in a variety of facility stabilization, decontamination and decommissioning activities. Final decommissioning is underway.

At the Brookhaven Graphite Research Reactor, removal of the reactor, which includes the reactor internals, the graphite moderator (pile), and the radiation biological shield (bioshield), is the high priority activity that will ultimately remove over 99 percent of the total radiological inventory. This is a significant reduction in source term and overall risk at Brookhaven Graphite Research Reactor. Historical releases to the environment have already been addressed and the facility is in a phase of post-construction groundwater monitoring.

The High Flux Beam Reactor is in a safe and stable condition. Environmental releases have been addressed and the facility has undergone extensive stabilization and decontamination. The remaining work is designed to further reduce the radiological inventory. However, because of the high radiation levels associated with final decommissioning, consideration of radioactive decay to safer levels has been evaluated as part of the Comprehensive Environmental Response, Compensation, and Liability Act response action selection process. The overall benefit is similar to Brookhaven Graphite Research Reactor in that the remaining radiological inventory will be addressed.

Overall, cleanup at Brookhaven National Laboratory, as executed under Comprehensive Environmental Response, Compensation, and Liability Act and the Brookhaven interagency agreement, is designed to take near-term action to reduce the immediate threats to human health and the environment from historical releases of contamination. Long-term actions are a key part of the cleanup strategy with the overall goal of delisting from the National Priorities List.

## **Energy Technology Engineering Center**

### **Site Overview**

The Santa Susana Field Laboratory, owned by the Boeing Company and NASA, is located atop a range of hills between the populous Simi and San Fernando Valleys, north of Los Angeles. The 90 acre Energy Technology Engineering Center, which was DOE's laboratory for nuclear research (non-defense) at the Santa Susana Field Laboratory (2,850 acres), is a collection of facilities within Area IV.

### **Site Description**

The Energy Technology Engineering Center is surplus to DOE's current mission and is operated by EM solely to complete site cleanup and closure. As such, the current use of the site involves diminishing use of facilities through deactivation, decommissioning, and dismantlement. As a result of past operations, radioactive and chemical contamination exists in several structures (including the Radioactive Materials Handling Facility) and soil, surface and groundwater.

DOE is the regulator for radiological contamination under the Atomic Energy Act. The site is not a Comprehensive Environmental Response, Compensation, and Liability Act of 1980 site nor is it on the National Priorities List. Chemical contamination is being handled under the Resource Conservation and Recovery Act.

### **Site Cleanup Strategy/Scope of Cleanup**

Two radiological facilities (comprising 11 buildings) and two sodium facilities (comprising four buildings) remain. The two radiological facilities remaining at Energy Technology Engineering Center are the Radioactive Materials Handling Facility complex (which has a Resource Conservation and Recovery Act permit) and Building 4024 (part of the space nuclear program). There are two sodium facilities: 1) Sodium Pump Test Facility; and 2) the Hazardous Waste Management Facility. The Sodium Pump Test Facility is where research and development related to sodium cooled reactors was performed. The sodium has been removed from the facility and is not radiologically contaminated. The Hazardous Waste Management Facility is a Resource Conservation and Recovery Act permitted facility. Regulatory authorization for demolition has been suspended at the request of the State, the California Congressional delegation, and the community. In addition, there is an ongoing Resource Conservation and Recovery Act Corrective Action for chemical contamination investigation in soil and groundwater.

DOE is responsible for ten areas of soil contamination that require investigation and potential remediation at Energy Technology Engineering Center. Corrective actions are currently based on a residential land-use assumption. The land use assumption is for analysis only. It is anticipated that three to six of the ten units will be excavated to meet projected media cleanup standards.

Three small plumes are contaminated primarily with low levels of trichloroethylene and are included in the site wide Resource Conservation and Recovery Act Corrective Action Program. The Corrective Action program for DOE activities is a small part of the activity for the entire Santa Susana Field Laboratory. The state, which is the regulatory authority, will not allow DOE to proceed independently

from the rest of the site. The long-term response actions for the DOE groundwater contamination were transferred to Boeing as part of the 1998 Closure Contract.

### **Site Completion (End State)**

Due to an existing Consent Order and a recent court order to complete an Environmental Impact Statement, the lifecycle planning estimate range is 2018 to 2025. A new acquisition strategy is being developed, as is a strategy for completion of the project scope.

Following is a list of remaining activities that are currently projected to achieve EM completion:

- Preparation of the Environmental Impact Statement and Record of Decision.
- Decontamination and demolition of two remaining radiologically contaminated facilities. One of the facilities also has a Resource Conservation and Recovery Act Part A permit.
- Resource Conservation and Recovery Act Corrective Action. Currently, the site is in the investigation phase, which leaves the Corrective Measures Study phase and the Corrective Measures Implementation phase remaining. Additionally, the state will conduct an environmental review for all of the Santa Susana Field Laboratory after the Corrective Measures Study has been completed. Cleanup level is within the Comprehensive Environmental Response, Compensation, and Liability Act risk range.
- Demolition of two sodium facilities (not radiologically contaminated). One of the facilities also requires closure pursuant a Resource Conservation and Recovery Act Closure Plan.
- Offsite disposal of all radioactive waste and decommissioned waste.

### **Regulatory Framework**

Regulation of the Energy Technology Engineering Center Closure project is segmented by different regulatory authorities. Prior decontamination and demolition activities of the radiologically contaminated facilities at the Energy Technology Engineering Center site were conducted under Atomic Energy Act authority. An Engineering Evaluation and Cost Analysis was prepared for each of the two remaining radiological facilities to allow for removal of the facilities consistent with the 1995 Joint Policy Memorandum between DOE and the Environmental Protection Agency. However, demolition of the facilities has been delayed pending the outcome of the court-ordered Environmental Impact Statement. Historically, DOE obtained the Department of Public Health concurrence before former radioactively contaminated facilities are released. The Environmental Protection Agency initiated an assessment to determine if Energy Technology Engineering Center and the remaining areas of the Santa Susana Field Laboratory should be included on the National Priorities List. The Environmental Protection Agency notified the State in December 2007 that the Santa Susana Field Laboratory scored high enough on the Hazards Ranking Assessment to qualify for listing on the National Priorities List, primarily due to trichloroethylene contamination in non-DOE responsible administrative areas. The State twice requested deferrals in the National Priorities List listing while it negotiated with the potentially responsible parties at Santa Susana Field Laboratory and concluded in January 2009 to not concur with listing of the site.

The Resource Conservation and Recovery Act chemical cleanup is regulated by the California Department of Toxic Substances Control and is being performed consistent with a signed Consent Order issued by the California Department of Toxic Substances Control in August 2007. The Closure Plan for the Hazardous Waste Management Facility was approved December 2006, but the implementation of the plan has been postponed at the request of the State. Likewise, the California Department of Toxic Substances Control approval of the Closure Plan for the Radioactive Material Handling Facility has been placed on hold. DOE is presently renegotiating a revised Resource Conservation and Recovery Act Consent Order and associated schedule for the decontamination and decommissioning work which has been deferred. The existing schedule for groundwater and soil cleanup has not been deferred and DOE is continuing work to satisfy those requirements in order to avoid stipulated penalties and fines.

State law enacted in January 2008, requires evaluation of cleanup actions consistent with an agricultural scenario. The agricultural scenario is more restrictive than previously performed cleanup actions at the Energy Technology Engineering Center.

### **Critical Site Uncertainties and Assumptions**

The Natural Resources Defense Council, the City of Los Angeles and the Committee to Bridge the Gap sued the Department regarding its adherence to Comprehensive Environmental Response, Compensation, and Liability Act of 1980, National Environmental Policy Act, and the Endangered Species Act. The court rendered its decision regarding the National Environmental Policy Act, ordering DOE to prepare an Environmental Impact Statement, but has withheld any decision on the Comprehensive Environmental Response, Compensation, and Liability Act or the Endangered Species Act. Until the Environmental Impact Statement is completed (including public review and comment) and a Record of Decision is issued, the full work scope for remediation this site remains uncertain.

Risks to EM completion at Energy Technology Engineering Center include potential delays in State environmental reviews and final acceptance by the regulators of DOE's approach to soil and groundwater characterization and containment. All of the Santa Susana Field Laboratory is undergoing the Resource Conservation and Recovery Act Corrective Action. The state has mandated that the entire site be done as one project for the corrective action. Consequently, the DOE portion is connected inextricably to progress on the balance of the site (all 2,850 acres). This is especially important for resolution of groundwater contamination. Characterization will not be completed for three years so there is a possibility that issues with respect to the corrective action for the rest of the site could still surface.

The FY 2008 DOE Appropriation language required DOE and the Environmental Protection Agency to enter into an Interagency Agreement for the joint implementation of a radiological characterization survey of the Santa Susana Field Laboratory Area IV. Following additional Congressional input, DOE provided funds to the Environmental Protection Agency to perform an offsite radiological background study via an Interagency Agreement in July 2008. The Environmental Protection Agency has also provided a scoping document for the radiological characterization survey of the Santa Susana Field Laboratory Area IV to the California Congressional delegation for consideration. The Environmental Protection Agency survey is a direct input to the Environmental Impact Statement. This survey will be funded by the 2009 American Reinvestment and Recovery Act appropriation.

## **Contract Synopsis**

The current cleanup contract (through September 30, 2008) is held by Boeing. It is a cost plus fixed fee/incentive fee contract. The scope is comprehensive in that it includes all of the radioactive contamination (remediated under DOE's Atomic Energy Act authority) and chemical contamination, conducted under the state of California's Resource Conservation and Recovery Act authority. Under the terms of the contract, the site owner will assume responsibility for long-term groundwater surveillance and maintenance after the corrective action has been completed. In addition, the site owner agreed to take ownership of three uncontaminated buildings. DOE is preparing an acquisition strategy for implementing site cleanup. DOE issued a short-term extension to the Boeing contract (through April 2009), while negotiating a longer-term extension for services through September 2011.

## **Cleanup Benefits**

The cleanup is protective of human health and the environment using a residential land use scenario. Activities in FY 2009 and FY 2010 will primarily include the preparation of the Environmental Impact Statement, continuation the Resource Conservation and Recovery Act investigation activities that are necessary to identify and define risks, to enable their reduction through appropriate remediation technologies in the outyears, and completion of radiological characterization survey.

## **Inhalation Toxicology Laboratory**

### **Site Overview**

The Inhalation Toxicology Laboratory is a research facility operated by the non-profit Lovelace Respiratory Research Institute. It is located in Albuquerque, New Mexico on U.S. Department of Defense, Kirtland Air Force Base property. It was built by the Atomic Energy Commission in 1960 to conduct research on the health effects of inhaling radioactive and other energy-related pollutants. From 1960 to 1996, the Inhalation Toxicology Laboratory was operated under a traditional Management and Operating contract. In 1996, the facility was privatized and continues to operate as a private facility, conducting research for DOE and other entities on a reimbursable basis. The last DOE-funded research activities ceased in FY 2008. The Environmental Management program will continue groundwater monitoring and reporting associated with the Resource Conservation and Recovery Act remedy at the site through FY 2010. Target funding is located in PBS CBC-ND-0100, CBC- Non Defense Post Closure Administration and Program Support to continue work until this transfer is final. In FY 2011 (October 1, 2010), programmatic responsibility (i.e., target funding) will transfer to the Office of Legacy Management (LM) for continued performance of groundwater monitoring and continued maintenance of all government-owned records.

As a result of operations conducted for DOE, groundwater and soil areas were contaminated, laboratories and buildings were contaminated and legacy waste has accumulated. All EM physical work scope (laboratory surface decontamination) was completed in FY 2008. However, there is one remaining item of legacy waste; a single box of transuranic material that is currently being prepared for transfer to the Sandia National Laboratories. Sandia National Laboratories will repackage this material, and the material will eventually be disposed of at the Waste Isolation Pilot Plant.

### **Site Description**

The Inhalation Toxicology Laboratory is located in Albuquerque, New Mexico on Kirtland Air Force Base. It has approximately 240,000 square feet of building space on 144 acres of land. The land was withdrawn from the Bureau of Land Management by the U.S. Air Force and permitted to DOE. DOE, in turn, leased the land and facilities to the Lovelace Respiratory Research Institute.

### **Site Cleanup Strategy/Scope of Cleanup**

Remedial activities for contaminated soil and groundwater at the site were completed in 1997. Currently, the environmental management mission at the Inhalation Toxicology Laboratory is comprised of two projects: (a) groundwater monitoring and reporting and (b) waste collection and disposal of surface decontamination from the laboratory facilities.

### **Site Completion (End State)**

Groundwater monitoring and reporting is ongoing and will continue until state regulatory standards are met or an alternative abatement standard is granted by the State of New Mexico. Legacy waste from about 30 laboratories and other contaminated areas is being collected and disposed. Once the legacy waste is collected and disposed and the laboratories and other contaminated areas are decontaminated, the EM mission at Inhalation Toxicology Laboratory will be complete. EM completion at Inhalation Toxicology Laboratory was in FY 2008. The last remaining EM projects were completed in FY 2008 and include the Radioactive Source Collection and Disposal cleanup of the Beta Gamma Wing, and final disposition of legacy waste materials from the Castle Area and Miscellaneous Laboratory Areas.

Long-term stewardship objectives include continued groundwater monitoring and reporting under Monitored Natural Attenuation until either state standards are met or alternative abatement standards are granted by the state. The State of New Mexico Environment Department is considering closing the groundwater monitoring requirements for eleven of the twelve monitoring wells associated with the former Sewage Lagoons at the Inhalation Toxicology Laboratory. Once the New Mexico Environmental Department issues the revised permit for the Sewage Lagoon wells, the DOE will plug and abandon all unnecessary monitoring wells. Institutional controls to preserve industrial land use at previously cleaned soil remediation sites will be required until approximately 2030, when residual radioactivity will decay sufficiently to allow for unrestricted land use.

### **Regulatory Framework**

The Inhalation Toxicology Laboratory cleanup is being conducted under DOE Orders, the Resource Conservation and Recovery Act, and State of New Mexico Groundwater Standards. The Sewage Lagoon Site is regulated under a State Discharge Permit. Hazardous waste is managed by the State of New Mexico pursuant to the Resource Conservation and Recovery Act, and radioactive waste is managed under DOE Orders and Nevada Test Site Waste Acceptance Criteria. There are no compliance milestones, other than those related to groundwater monitoring and reporting contained in the Discharge Permit and New Mexico State regulations.



## **Critical Site Uncertainties and Assumptions**

The Office of Environmental Management assumed that no additional transuranic waste would be generated during the remainder of the Inhalation Toxicology Laboratory cleanup and that there would not be waste items identified with no acceptable disposal pathway. The discoveries of additional transuranic waste or items with no known disposal path are considered to be a relatively low programmatic risk.

## **Interdependencies**

Low-level waste is packaged and shipped by the Inhalation Toxicology Laboratory to the Nevada Test Site or to a commercial disposal facility. The relatively small volume of transuranic waste resulting from Inhalation Toxicology Laboratory operations thus far has been transported to Sandia National Laboratories for ultimate disposition at the Waste Isolation Pilot Plant.

## **Contract Synopsis**

The Inhalation Toxicology Laboratory has been managed under a Cooperative Agreement with DOE since 1996. The Cooperative Agreement expired at the end of FY 2006; however, the National Nuclear Security Administration renewed the agreement through FY 2008. The National Nuclear Security Administration issued another renewal agreement, beginning in FY 2009, to cover continued DOE funded activities through such time title to the property transfers from the National Nuclear Security Administration to the Lovelace Respiratory Research Institute. The Cooperative Agreement is the mechanism currently used for funding the EM Project as well as other DOE projects and initiatives. It is administered by the National Nuclear Security Administration Service Center located at the Kirkland Air Force Base.

## **Cleanup Benefits**

Completion of the Inhalation Toxicology Laboratory EM Project in FY 2008 represents the elimination of radiological and hazardous chemical waste risk due to DOE activities in the Inhalation Toxicology Laboratory areas, thus enabling the Inhalation Toxicology Laboratory to use these areas for non-DOE funded activities such as research for the private sector or various non-DOE Federal Agencies.

## **Moab**

### **Site Overview**

The project mission is to remediate uranium mill tailings from the former Atlas Minerals Corporation (Atlas) uranium-ore processing and mill site, contaminated vicinity properties, and contaminated groundwater. DOE became responsible for this mission upon the enactment of the Floyd D. Spence National Defense Authorization Act of 2001.

## **Site Description**

The DOE Moab project site is approximately 3 miles northwest of the city of Moab, Utah on the west bank of the Colorado River. The site encompasses approximately 435 acres, 130 acres of which is covered by a 2 million cubic yard uranium mill tailings pile.

## **Site Cleanup Strategy/Scope of Cleanup**

DOE's Record of Decision (issued on September 14, 2005) made the decision to relocate the mill tailings pile away from the Colorado River to a DOE-constructed disposal facility near Crescent Junction, Utah via rail transportation. DOE will assess the extent of radiological contamination at the mill site and vicinity properties, characterize the proposed disposal site and construct a disposal cell, excavate and remove the tailings pile to the disposal cell, and remediate local ground water. The remainder of the mill site will be verified to meet radiological standards and then restored to an acceptable condition. Demobilization from the site will complete the on-site activities, except in the case of active ground water restoration. DOE also will investigate unidentified vicinity properties to assess the presence of contamination levels.

## **Site Completion (End State)**

The end state for the Moab Site Project will be achieved after contaminated soil, tailings, vicinity properties, and surface and groundwater are remediated. DOE may place some restrictions on reutilization of the site, depending on how proposed land uses could impact the selected groundwater remedy. The site will then be transferred to the Office of Legacy Management for monitoring and required stewardship. The end state is projected to be 2028.

## **Regulatory Framework**

In October 2000, the Floyd D. Spence National Defense Authorization Act of FY 2001 assigned DOE responsibility to establish a remedial action program and stabilize, dispose of, and control uranium mill tailings and other contaminated material at the Moab uranium-ore processing site and associated vicinity properties. Remediation must be performed in accordance with Title I of the Uranium Mill Tailings Radiation Control Act and the cleanup standards established under 40 CFR 192. The Nuclear Regulatory Commission must concur on the remediation plan.

## **Critical Site Uncertainties and Assumptions**

- Potential rail upgrades and rail transport will be accomplished within expected project cost and schedule.
- Vicinity property characterization will minimize the number of sites requiring remediation.

## **Interdependencies**

Past surveys by the Environmental Protection Agency indicate contaminated vicinity properties may exist and consequently will have to be remediated to Environmental Protection Agency standards. Contaminated materials will be excavated and transported to the disposal cell location.

## **Contract Synopsis**

A remedial action contract and a new technical assistance contract were awarded on June 20, 2007.

## **Cleanup Benefits**

Continued maintenance and surveillance of the groundwater and mill tailings pile area will ensure no further contamination of surrounding areas. Initiating the removal of the approximately 12 million cubic yards of uranium tailings away from the Colorado River will begin to significantly reduce danger to human health and the environment.

## **SLAC National Accelerator Laboratory**

### **Site Overview**

The objectives of EM's SLAC National Accelerator Laboratory Remediation Project are to conduct necessary response actions to a California Regional Water Quality Control Board Site (Water Board) Cleanup Requirement Order (issued May 2005), implement necessary long-term groundwater remediation remedies, excavate and dispose of contaminated soils, and transfer responsibility for long-term operation and maintenance of necessary groundwater treatment systems to the Office of Science at the end of FY 2012. Meeting these objectives will allow DOE-EM to meet ongoing obligations as defined in the DOE lease with Stanford University (April 26, 1962), perform EM's mission of legacy contamination cleanup, comply with a Water Board Order, and achieve EM completion for the SLAC National Accelerator Laboratory Remediation Project.

The project divides the work scope between the SLAC National Accelerator Laboratory Management and Operation contractor, and an Indefinite Delivery/Indefinite Quantity contractor, with DOE-EM Oakland Projects Office coordinating their work. Identified sites will be characterized to the extent necessary to justify no further action or to guide a removal action. The groundwater release sites will be studied, modeled and a long-term corrective action plan will be prepared. At project completion, Remedial Action Implementation Reports will be approved and groundwater treatment systems will be transferred from DOE-EM to the DOE SLAC National Accelerator Laboratory Site Office for long-term operation and ultimate regulatory closure.

Historically, EM's mission at SLAC National Accelerator Laboratory has been the remediation of contamination resulting largely from the two-mile long linear accelerator, a leaky underground solvent tank, and many oil-cooled transformers. By 2005, this was reduced to 54 remaining release sites. The 2005 Cleanup Requirements Order forced a reassessment that concluded there are 39 sites with known or suspected contamination that require immediate responses, plus numerous other sites that must be evaluated (presumed no-action) or monitored (currently inaccessible, with stable contamination). EM and the Office of Science divided responsibility for the sites, assigning 50 to EM.

## Site Description

The SLAC National Accelerator Laboratory is located in an unincorporated area of southeast San Mateo County, California, about 2 miles west of the Stanford University campus. Constructed on land owned by Stanford University, SLAC National Accelerator Laboratory is a photon and particle/particle astrophysics research facility operated by Stanford University under contract with the U.S. Department of Energy. The SLAC National Accelerator Laboratory facility occupies 426 acres of Stanford University property leased to DOE (then the Atomic Energy Commission) for 50 years in 1962.

As a result of SLAC National Accelerator Laboratory's mission as a high-energy physics research facility, certain chemicals have been used or produced as wastes over its 40+ year history. These chemicals include volatile organic compounds, polychlorinated biphenyls, lead and other hazardous metals. Additionally, radionuclides, notably tritium, have also been generated as a result of SLAC National Accelerator Laboratory experiments. Some of these chemicals have been released to the environment, including site soil, groundwater, sediment, and storm water.

In May 2005, the local Water Board issued a Site Cleanup Requirements Order that set the scope for this phase of EM remediation work at the SLAC National Accelerator Laboratory. The release sites at issue are grouped into four operable units: Groundwater/Volatile Organic Compound, Tritium, Research Yard/ IR-6 Channel, and West Campus/ IR-8 Channel. Some of the release sites cannot be currently accessed without interfering with the SLAC National Accelerator Laboratory's research operations, and the Office of Science/SLAC National Accelerator Laboratory Site Office has accepted responsibility for them as deferred actions.

## Site Cleanup Strategy/Scope of Cleanup

The project includes completing removal actions and construction of remedial measures by the end of FY 2012 and transition of these facilities to the Office of Science for the implementation of long-term stewardship. This objective will be achieved by:

- Excavating contaminated soils.
- Characterization of potentially contaminated sites to evaluate the need for additional removal actions.
- Using a Core Team of Project Leads from each of the involved organizations to identify and resolve potential technical issues early, before they cause project delays.
- Operating and maintaining two groundwater treatment systems and installing one or two additional groundwater treatment systems to be operated long-term by the Office of Science.
- Following the Comprehensive Environmental Response, Compensation, and Liability Act process (including public reviews), leading to issuance of a Remedial Investigation Report, Risk Assessment, Feasibility Study, Remedial Action Plan, Remedial Design Report, Remedial Action Plan Implementation Final Report and an Operational and Maintenance Plan for two of the Operable Units and a Remedial Investigation and Risk Assessment for a third. The Office of Science will be responsible for completing the Comprehensive Environmental Response, Compensation, and Liability Act process for the other Operable Units.

- Satisfactorily achieving EM responsible regulatory enforceable deadlines.
- Obtaining regulatory closure for the EM responsible sites.
- SLAC National Accelerator Laboratory Site Office and Office of Science accepting responsibility for all sites that are currently inaccessible due to site research operations, and all contamination after EM completes this project.

The primary chemicals of concern detected in soils at the SLAC National Accelerator Laboratory are polychlorinated biphenyls, lead, volatile organic compounds, and petroleum hydrocarbons. Remediation activities are planned for the Lower Salvage Yard, the Clean Landfill, the Bone Yard, and several other smaller sites.

A network of wells has been installed at the SLAC National Accelerator Laboratory to investigate past operational areas. As a result of groundwater investigation and monitoring performed since the 1980s, four areas of SLAC National Accelerator Laboratory have been identified where volatile organic compounds are present in groundwater. Additionally, results of storm water and sediment sampling and testing indicate that polychlorinated biphenyls and lead have entered SLAC National Accelerator Laboratory's storm water drainage system.

### **Site Completion (End State)**

Once site completion is achieved responsibility for all operation and maintenance of remedial systems will be transferred from EM to the Office of Science. It is anticipated that SLAC National Accelerator Laboratory will continue to operate as an Office of Science DOE-sponsored laboratory indefinitely, with the Office of Science managing and completing all long-term remedial actions. EM will complete all required short-term response activities (e.g., soil excavation), all required long-term response measures (e.g., groundwater treatment systems) including construction and startup of remedial systems, dispose of all remediation-derived waste, complete regulatory and business closure activities, and enter into an agreement with the Office of Science defining EM completion, the end state, and transferring the long-term response action responsibility.

Multiple minor contamination sites were quantified in February 2006. These sites became regulatory requirements in the Water Board Site Cleanup Requirements Order issued on May 18, 2005. EM presently has accepted responsibility for 39 action sites and related regulatory documents (this includes closure of clean sites), and are evaluating additional sites to determine if cleanup actions are required.

### **Regulatory Framework**

The California Regional Water Quality Control Board, Bay Area Region, is the lead regulatory agency for all media including soil, groundwater, sediment, and storm water portions of the SLAC National Accelerator Laboratory Environmental Restoration Program. The U.S. Environmental Protection Agency has regulatory authority regarding soil remedial actions involving polychlorinated biphenyls but they do not desire to play a role as long as the Toxic Substances Control Act unrestricted use standards are applied. DOE is also executing its Comprehensive Environmental Response, Compensation, and Liability Act authority provided under Executive Order 12580 to conduct removal actions. The SLAC National Accelerator Laboratory is now under a Water Board Site Cleanup Requirements Order, issued on May 18, 2005. This Order requires the investigation and remediation of impacted soil and

groundwater resulting from the historical spills and leaks that have occurred during the operation of the SLAC National Accelerator Laboratory. Per the Order, a Remedial Investigation/ Feasibility Study Work Plan was prepared and approved that details cleanup and regulatory work scope. Additionally, data packages are being prepared to facilitate preliminary agreements on whether cleanup actions are necessary for many of the sites.

### **Critical Site Uncertainties and Assumptions**

The groundwater will be considered not drinkable (i.e., industrial or irrigation-only). A 2001 evaluation documented that natural groundwater at the SLAC National Accelerator Laboratory does not qualify as potable drinking water due to naturally poor water quality and low well yields. SLAC National Accelerator Laboratory, in conjunction with the landowner, Stanford University, has proposed that the California Regional Water Quality Control Board exempt groundwater at SLAC National Laboratory from all potential uses except freshwater replenishment, agricultural supply, irrigation supply and industrial process supply.

### **Interdependencies**

Transition to the Office of Science - the intent is to transfer responsibility for environmental management of SLAC National Accelerator Laboratory to the Office of Science. It is expected that EM completion will achieve protection of groundwater and residential land use standards for accessible areas. DOE's lease with Stanford requires "leaving the premises in safe, clean and neat condition".

### **Contract Synopsis**

The SLAC National Accelerator Laboratory is a national research facility operated by Stanford University under contract with DOE. The term of Stanford University's lease with DOE (then the Atomic Energy Commission) began in 1962 and extends to 2012. The Management and Operating contract is being extended (negotiations are in progress) beyond its basic September 30, 2009, expiration. An Environmental Restoration Indefinite Delivery/Indefinite Quantity contractor was hired at the end of FY 2007 to perform most of the Environmental Cleanup activities. Both the Indefinite Delivery/Indefinite Quantity and Managing and Operating contractors prepared lifecycle Performance Measurement Baselines during early FY 2008. EM's Project Management Oversight Office subsequently utilized an Independent Project Review to validate the baseline as a component of Critical Decision-2. The Critical Decision 2/3 package was then submitted and the associated Environmental Management Acquisition Advisory Board was held resulting in a recommendation for approval.

### **Cleanup Benefits**

SLAC National Accelerator Laboratory's location on the densely populated San Francisco peninsula with Stanford University as the SLAC National Accelerator Laboratory property owner produces significant visibility and public awareness of EM's cleanup performance. In addition, the land on which SLAC National Accelerator Laboratory is built is zoned residential, and property values in the area are among the highest in the nation. Therefore, there is substantial benefit in mitigating the existing environmental legacy risks at this site.

## Tuba City

Tuba City, Arizona is a completed Uranium Mill Tailing Removal Action site originally completed in 1990. The FY 2009 Omnibus Appropriation Act provided \$5,000,000 for the purposes of carrying out remedial actions under the Uranium Mill Tailings Radiation Control Act of 1978 at real property in the vicinity of and immediately adjacent to the north-northwest section of the Tuba City processing site and on the north side of Highway 160. The proposed project includes limited further radiological characterization of the site, development of a remedial action plan (likely to include excavation of contaminated soil and debris and transport to an approved disposal facility), site remediation and restoration, independent verification of cleanup, and closeout documentation.

### Consolidated Business Center

The Consolidated Business Center also assumed responsibility for these activities at EM non-defense sites in 2006. These activities, primarily contract closeout, litigation and litigation support, had been previously performed by the former Oakland Operations Office, the former Albuquerque Operations Office, or other DOE offices on an “as available” basis. The EM non-defense facility closure project offices are not staffed to manage these activities, which are generally intermittent in nature and can be more consistently and effectively managed from a central location. The Consolidated Business Center is currently supporting active non-defense litigation at one former Uranium Mill Tailing Remediation Act site, as well as supporting the determination and extent of Department cleanup responsibility at the former General Electric Vallecitos site, and beginning in FY 2009, site post-completion support at the Inhalation Toxicology Laboratory in New Mexico.

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Defense Environmental Cleanup			
Subtotal, Defense Environmental Cleanup	0	0	0
Non-Defense Environmental Cleanup			
Small Sites			
CBC-ND-0100 / CBC - Non-Defense Post Closure Administration and Program Support	1,189	1,100	1,200
BRNL-0100 / Brookhaven Community and Regulatory Support	150	0	150
BRNL-0030 / Soil and Water Remediation-Brookhaven National Laboratory	6,784	7,015	7,942
BRNL-0040 / Nuclear Facility D&D-Brookhaven Graphite Research Reactor	996	868	4,305
BRNL-0041 / Nuclear Facility D&D-High Flux Beam Reactor	7,508	550	217
CBC-CA-0100-N / Oakland Community and Regulatory Support (Non-Defense)	99	115	262
CBC-CA-0013B-N / Solid Waste Stabilization and Disposition-California Sites-2012 (Non-Defense)	59	72	0
CH-ANLE-0030 / Soil and Water Remediation-Argonne National Laboratory-East	433	500	0
CH-ANLE-0040 / Nuclear Facility D&D-Argonne National Laboratory-East	0	28,979	0

All Other Sites

FY 2010 Congressional Budget

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
CBC-EETEC-0040 / Nuclear Facility D&D-Energy Technology Engineering Center	12,882	15,000	13,000
CBC-ITL-0030 / Soil and Water Remediation-Inhalation Toxicology Laboratory	423	0	0
CBC-MOAB-0031 / Soil and Water Remediation-Moab	23,734	40,699	30,671
CBC-TUBA-0031 / Soil and Water Remediation-Tuba City	0	5,000	0
CBC-SLAC-0030 / Soil and Water Remediation-Stanford Linear Accelerator Center	7,846	4,883	4,600
Subtotal, Small Sites	62,103	104,781	62,347
Total, Non-Defense Environmental Cleanup	62,103	104,781	62,347
Total, All Other Sites	62,103	104,781	62,347

### Performance Measure Summary

	Complete through FY 2008	Complete through FY 2009	Complete through FY 2010	Life-Cycle	FY 2010 % Complete
All Other Sites					
Geographic Sites Eliminated (number of sites)	42	44	45	50	90.0%
Industrial Facility Completions (Number of Facilities)	25	25	25	26	96.2%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	4,883	4,884	4,884	4,884	100.0%
Nuclear Facility Completions (Number of Facilities)	0	0	1	1	100.0%
Radioactive Facility Completions (Number of Facilities)	83	92	93	95	97.9%
Remediation Complete (Number of Release Sites)	782	802	817	846	96.6%
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	1	1	1	1	100.0%

### Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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#### **CH-ANLE-0030 / Soil and Water Remediation-Argonne National Laboratory-East**

**433                      500                      0**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

Contamination of groundwater, sediment, and soils has occurred at Argonne National Laboratory-East



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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as a result of past laboratory operations and spills. Contaminants of concern include volatile organic compounds, petroleum hydrocarbons, metals, polychlorinated biphenyl compounds, and a variety of radioisotopes. This PBS involves investigation and remedial activities to reduce risk to human health and the environment at the release sites and thus comply with corrective action requirements of the Resource Conservation and Recovery Act Part B permit issued by the Illinois Environmental Protection Agency. The remaining Resource Conservation and Recovery Act solid waste management units/release sites were completed in FY 2003. Regulator acceptance was received and, therefore, EM completion was achieved in FY 2003 by formal acceptance of “No Further Actions” and by signature in August 2003 of the Land Use Control Memorandum of Agreement by the Illinois Environmental Protection Agency. However, residual contamination still remains in several areas of the Argonne National Laboratory.

East site requires continued monitoring and/or remediation system operation. The EM end-state for this project includes completion/installation of all Resource Conservation and Recovery Act solid waste management units/release site remedies. The Illinois Environmental Protection Agency has formally issued all “No Further Actions” as appropriate and has signed the Land Use Control Memorandum of Agreement. The remediation systems are operational, and maintenance activities have been integrated into the site monitoring and surveillance program conducted by the site landlord (Office of Science).

In FY 2010, the following activities are planned:

- No activities planned.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Remediation Complete (Number of Release Sites)	443	443	443	443	100.0%

**CH-ANLE-0040 / Nuclear Facility D&D-Argonne National Laboratory-East**

**0            28,979            0**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

Historic operations at Argonne National Laboratory focused on research reactor construction and operation, including nuclear support facilities such as glove boxes and hot cells. All the reactors are shut down as are most support facilities. Surplus contaminated facilities need to be decontaminated and in one case demolished, to reduce risk and support the overall Argonne National Laboratory mission of continuing science research and development work.

In FY 2010, the following activities are planned:

- No FY 2010 planned activities; the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Nuclear Facility Completions (Number of Facilities)	0	0	0	0	100.0%
Radioactive Facility Completions (Number of Facilities)	69	78	78	78	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ ASO Notified That All Cells Ready For Demolition (October 2008)</li> </ul>					

**BRNL-0030 / Soil and Water Remediation-  
Brookhaven National Laboratory**

**6,784                      7,015                      7,942**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

This PBS scope includes actions taken on environmental media and some building structures that became contaminated with radioactive and chemical substances at Brookhaven National Laboratory. Historical practices, discharges, and past spills have resulted in groundwater, sediment, and soil contamination at the Laboratory, which is located in Suffolk County, New York. As a result, on- and off-site groundwater is contaminated with volatile organic compounds, in addition to onsite radionuclides. Historical discharges from the Laboratorys Sewage Treatment Plant have resulted in elevated levels of mercury, in on- and off-site Peconic River sediments. Some on-site soils are contaminated with radionuclides and chemicals, primarily mercury. Cleanup is conducted as a response action in accordance with the Comprehensive Environmental Response, Compensation and Liability Act and under an Interagency Agreement which serves as the Federal Facility Agreement among the DOE, the United States Environmental Protection Agency and New York State. DOE has committed to plan and implement an effective monitoring and treatment system operating program at the Laboratory.

The end-state of this PBS is operation of sixteen groundwater treatment systems, completion of all required non-reactor facility decontamination and decommissioning, and soil and Peconic River cleanup (completed by September 30, 2005). Continuing activities such as groundwater monitoring and treatment system operations and maintenance will be underway. Groundwater cleanup is Brookhaven’s highest priority because it is located above Long Islands sole source aquifer. Cleanup consists of treating groundwater both on- and off site, continued monitoring, source term removal, and natural attenuation. The end state for this project was successfully achieved. All soil cleanups, tank removals, landfill caps and remediation of the Peconic River have been completed and all related wastes have been disposed of off-site. All sixteen groundwater treatment systems are either built and operating, or have completed their mission and have been shut down and/or decommissioned.

In FY 2010, the following activities are planned:

- Operation, maintenance of groundwater treatment plants located on and off site.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Monitor existing on site landfills.
- Accumulate data from hundreds of monitoring wells (on and off site), and provide results on all activities to the regulatory and public community.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Radioactive Facility Completions (Number of Facilities)	3	3	3	3	100.0%
Remediation Complete (Number of Release Sites)	75	75	75	75	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ FY08 Long-term soil and groundwater operations and environmental stewardship completion. (FY 2008)</li> <li>▪ Complete all contractor project closeout and transition activities and achieve site completion. (September 2009)</li> <li>▪ FY09 Long-term soil and groundwater operations and environmental stewardship completion. (September 2009)</li> <li>▪ FY10 Long-term soil and groundwater operations and environmental stewardship completion. (September 2010)</li> </ul>					

**BRNL-0040 / Nuclear Facility D&D-Brookhaven  
Graphite Research Reactor**

**996                      868                      4,305**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

This PBS scope includes characterization, stabilization, decontamination and decommissioning of the Brookhaven Graphite Research Reactor, which is located at Brookhaven National Laboratory in Suffolk County, New York. It was the worlds first research reactor constructed solely for the peaceful use of atomic energy and operated from 1950-1968. During initial deactivation between 1968 and 1972, reactor fuel was removed and shipped to DOE’s Savannah River Site in Aiken, South Carolina. Fuel canal water was pumped to the Brookhaven Waste Concentration Facility for storage and processing. These actions removed more than 95% of the radioactive material from the facility. However, the graphite reactor core is radioactive and the fuel canal and cooling air ducts were contaminated with fission products. The decommissioning of Brookhaven Graphite Research Reactor is conducted as a response action under the Comprehensive Environmental Response, Compensation and Liability Act. It is identified as Area of Concern 9 under an Interagency Agreement, which serves as the Federal Facility Agreement among the DOE, the United States Environmental Protection Agency and New York State. A Feasibility Study was prepared to evaluate viable decommissioning alternatives.

A Proposed Remedial Action Plan, which presented the preferred alternative, was prepared and

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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underwent public review. Collectively, the two documents provide the regulatory and technical basis for the removal and permanent disposal of the reactor’s graphite moderator and its biological radiation shield, the fuel canal (external), and reasonably accessible soils. A Record of Decision documenting public comment responses and the selected alternative was concurred on by New York State and approved by the United States Environmental Protection Agency in March 2005. Even after decommissioning activities are complete, a very small amount of residual radioactive contamination will remain in soils and some structures that lie in inaccessible areas beneath the massive concrete pedestals, footings and foundation. This requires DOE to maintain the facility in a protected state until the radioactivity naturally decays to low levels. As such, surveillance and maintenance of the remaining structures will be transferred to the Brookhaven National Laboratory landlord (DOE Office of Science) at project completion. Completed decommissioning work includes demolition and disposal of pile fans and sump, above-grade canal house, water treatment houses, instrument house, above-grade ducts, below-grade duct filters/coolers/liners (partial), below-grade piping to/from the canal, below-grade portions of the canal external to building 701, and selected hot pockets of contaminated soil.

Currently, the following actions have also been completed: pile sealed; building 701 isolated from Building 703; temporary cap put in place until final decommissioning is complete; completed facility characterization, development of Documented Safety Analysis and Technical Safety Requirement documents for a needed upgrade to the facility Authorization Basis documents.

Remaining work includes removal of the pile and bioshield and installation of an engineered cap.

In FY 2010, the following activities are planned:

- Monitoring facilities environment set for long term storage as well as addressing maintenance activities.
- Complete removal and disposal of the reactor’s bioshield.
- Install water impenetrable cap.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Nuclear Facility Completions (Number of Facilities)	0	0	1	1	100.0%
Radioactive Facility Completions (Number of Facilities)	7	7	8	8	100.0%
Remediation Complete (Number of Release Sites)	1	1	1	1	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ CD-2 Approval. (FY 2008)</li> <li>▪ CD-3 Approval. (FY 2008)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- DOE ORR Complete. (January 2009)
- BGRR Physical Project Complete. (July 2009)
- Continue packaging/shipping/disposal of waste generated by the demolition of the reactor bioshield. (August 2009)
- Install groundwater monitoring wells. (September 2009)
- Regulatory Approval of BGRR D&D Project Closeout Report (January 2010)
- Complete BGRR Surveillance and Maintenance & all EM Transition to SC efforts (January 2010)
- CD-4 Approval (April 2010)
- Project End (September 2010)

**BRNL-0041 / Nuclear Facility D&D-High Flux Beam Reactor**

**7,508**

**550**

**217**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

This PBS scope includes characterization, decontamination and decommissioning of the High Flux Beam Reactor at Brookhaven National Laboratory in Suffolk County, New York. The scope also includes the remediation of a two-acre plot of contaminated soil alongside a railroad spur. The High Flux Beam Reactor is a nuclear reactor used for peaceful scientific research. It was a heavy water moderated and cooled research reactor that operated at a power range between 30 to 60 thermal megawatts to produce neutrons from highly enriched uranium. In 1997, a tritium plume originating from a leak in the reactor's spent fuel storage pool was identified and reactor operations were halted. In 1999, the High Flux Beam Reactor was permanently shut down. The High Flux Beam Reactor complex has been deactivated and stabilized. Fuel has been removed, equipment used to support research and experimentation has been removed, and the primary system, including the fuel pool, has been drained. Ancillary buildings have been demolished. Excess control rod blades and other legacy waste have been disposed.

In FY 2010, the following activities are planned:

- Monitoring facilities environment set for long term storage as well as addressing maintenance activities.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Remediation Complete (Number of Release Sites)	1	1	1	1	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ CD-1 Approval (FY 2008)</li> <li>▪ CD-2 Approval. (FY 2008)</li> <li>▪ Waste Loading Area (WLA) Remediation Complete (November 2008)</li> </ul>					

**BRNL-0100 / Brookhaven Community and Regulatory Support**

**150                      0                      150**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

Brookhaven National Laboratory is listed on the National Priorities List. This PBS scope includes assistance to New York State for carrying out its oversight responsibilities in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act and the Federal Facility Agreement, also known as the Brookhaven Interagency Agreement among the DOE, the United States Environmental Protection Agency, and the New York State Department of Environmental Conservation. This project will continue until the Comprehensive Environmental Response, Compensation, and Liability Act cleanup activities as identified in the Brookhaven National Laboratory Performance Management Plan (August 2002) and site Records of Decision, are completed.

In FY 2010, the following activities are planned:

- Continued support by the New York Department of Environmental Conservation through a grant providing cleanup oversight at the Brookhaven National Laboratory.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ The New York State Department of Environmental Conservation will continue oversight of the Brookhaven Graphite Research Reactor decontamination and decommissioning and progress in groundwater cleanup with continued operation of the groundwater treatment systems. (FY 2008/September 2009/September 2010)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**CBC-CA-0013B-N / Solid Waste Stabilization and Disposition-California Sites-2012 (Non-Defense)** **59** **72** **0**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

The scope of work within this PBS includes management of similar activities for waste management and environmental restoration at multiple Non-Defense sites in California. Services for site investigations, hydrogeologic studies, regulatory review, and stakeholder liaisons are also included within this project. This project will end when the underlying projects/sites supported by the waste management and environmental restoration activities achieve their end-states, and there is no longer a need for a separate project to achieve multi-project/site savings and efficiencies.

In FY 2010, the following activities are planned:

- No activities planned.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	83	83	83	83	100.0%

**CBC-CA-0100-N / Oakland Community and Regulatory Support (Non-Defense)** **99** **115** **262**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

This project provides funding for grants to State of California regulatory agencies for their oversight of environmental remediation at DOE sites, whether Comprehensive Environmental Response, Compensation, and Liability Act or Resource Conservation and Recovery Act driven. It currently funds Water Quality Control Board oversight of Stanford Linear Accelerator Center, and Energy Technology Engineering Center.

In FY 2010, the following activities are planned:

- The Water Quality Control Board oversight of Stanford Linear Accelerator Center and Energy Technology Engineering Center.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Grants are paid annually to the State of California regulatory agencies (as specified in the Federal Facility Agreement) for participation and oversight of the cleanup programs. (FY 2008)</li> <li>▪ Grants are paid annually to the State of California regulatory agencies (September 2009)</li> <li>▪ Regulators' annual cost reimbursement (September 2009)</li> </ul>					

**CBC-ND-0100 / CBC - Non-Defense Post Closure  
Administration and Program Support**

**1,189                      1,100                      1,200**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

Post-Closure Administration PBS provides funding support for post-closure contract liabilities such as ongoing site litigation support, contract closeouts, and worker's compensation for non-defense sites (i.e., Laboratory for Energy-Related Health Research, General Atomics, Title II Uranium Mill Tailing Remediation Act site, etc.). Program management support includes funding for development of defense waste determinations, acquisition strategies, independent cost estimates, and other program management support costs for EM projects within the Non-Defense appropriation (including General Electric Vallecitos, General Atomics, Title II Uranium Mill Tailing Remediation Act, Brookhaven National Laboratory, Argonne National Laboratory, the SLAC National Accelerator Laboratory, and Moab).

In FY 2010, the following activities are planned:

- Contract closeout, litigation support, Freedom of Information/Privacy Act compliance, and contractor workman's compensation claims for Non Defense contracts in closeout (Laboratory for Energy-Related Health Research, General Atomics, Title II Uranium Mill Tailing Remediation Act site, Inhalation Toxicology Laboratory, etc).

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ ITL site: Physical Completion (FY 2008)</li> <li>▪ ITL site: Transfer to LM. (October 2008)</li> </ul>					



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**CBC-E TEC-0040 / Nuclear Facility D&D-Energy  
Technology Engineering Center**

**12,882      15,000      13,000**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

The Energy Technology Engineering Center historically was involved in testing reactor components and developing emerging energy technologies. During this testing and development mission, the site and facilities became contaminated. The purpose of this PBS scope is to: 1) clean up contaminated release sites; 2) decontaminate and decommission radioactively and chemically contaminated facilities for eventual release to the Boeing Company (the site owner); 3) perform Resource Conservation and Recovery Act cleanup involving the remediation of both contaminated groundwater and soil; and 4) remove radioactive and hazardous waste from the site applying (when possible) waste minimization principles such as recycling. Currently, all decontamination and decommissioning is complete except for the Sodium Pump Test Facility, Building 4024, Hazardous Waste Management Facility, and the Radioactive Materials Handling Facility complex. Soil and groundwater characterization is being performed. On May 2, 2007, the U.S. District Court for the Northern District of California directed the DOE to complete an EIS and record of Decision for Area IV of SSFL, and “permanently enjoined the DOE from transferring ownership or possession, or otherwise relinquishing control over any portion of Area IV until the DOE completed the EIS and issued a Record of Decision.” In addition, the Court Order required the DOE to consider the following: 1) the effects of possible contamination by other non-radiological toxic or otherwise hazardous materials; 2) address multiple exposures, i.e., chemical and radiological, as well as exposure to multiple radio nuclides; 3) the suitability of the site for future residential use; and, 4) possible radiological contamination of groundwater. DOE will continue physical demolition and removals upon completion of the EIS.

The end-state is to complete cleanup for both radiological contamination and chemical contamination. The site will then be turned over to the Boeing Company, which owns the land.

In FY 2010, the following activities are planned:

- Continue Resource Conservation and Recovery Act facility investigation program for soils and groundwater including sampling, analysis, and report preparations.
- Continue preparation of required supporting information for completion of a court ordered Environmental Impact Statement.
- Finalization of congressionally mandated radiological background study (performed by the Environmental Protection Agency).
- Provide support to the Environmental Protection Agency for preparation of congressionally mandated Area IV radiological characterization study.



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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decontaminated, and released for other research purposes.

Legacy low-level radioactive waste and hazardous waste within the laboratories and facilities are being identified and disposed. During FY 2006, disposal and surface decontamination activities were completed for the Analytical Chemistry Building and groundwater monitoring and reporting activities were completed.

Remaining activities to be completed include chemical waste collection and disposal, beta gamma wing cleanup; decontamination and decommissioning of crematory; collection and shipment of remaining low-level waste; and collection and disposition of remaining mixed waste. The EM Project was completed in FY 2009.

In FY 2010, the following activities are planned:

- Project completion in FY 2009, no activities planned.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	359	360	360	360	100.0%
Remediation Complete (Number of Release Sites)	9	9	9	9	100.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
▪ Groundwater monitoring and reporting. (FY 2008)					

**CBC-MOAB-0031 / Soil and Water Remediation-Moab**

**23,734                      40,699                      30,671**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

The project scope is to remediate contaminated mill tailings, mill debris, contaminated ground water, and contaminated vicinity properties at the former Atlas Minerals Corporation uranium ore-processing site. DOE became responsible for this mission upon enactment of the Floyd D. Spence National Defense Authorization Act of 2001. The project site is approximately 3 miles northwest of the city of Moab, Utah, on the west bank of the Colorado River. The site encompasses 435 acres, of which approximately 130 acres is covered by 12 million cubic yard uranium mill tailings pile.

A Record of Decision issued in September 2005 required relocation of the mill tailings away from the Colorado River to a DOE-constructed disposal facility near Crescent Junction, Utah, primarily via rail transportation. DOE will assess the extent of radiological contamination at the mill site and vicinity properties, characterize the proposed disposal site and construct a disposal cell, excavate and remove the tailings pile to the disposal cell, and remediate shallow ground water. The remainder of the mill site will

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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be verified to meet radiological standards and then restored to an acceptable condition to protect human health and the environment. Demobilization from the site will complete the on-site activities, except in the case of active ground water restoration. The site will then be transferred to the Office of Legacy Management for monitoring and required stewardship.

The site is of particular public interest due to its unique setting on the banks of the Colorado River. The tailings pile is leaching contaminants into the river through the ground water, potentially impacting critical habitat for endangered native fish species. Local citizens are concerned about the environmental effects posed by the pile, and downstream water users are concerned about contaminants entering the river. Public interest is also heightened by the sites proximity to a Nature Conservancy wetlands preserve directly across the river and its shared boundary with Arches National Park.

The following activities which started in FY 2008 include completing engineering designs and starting construction of the tailings handling infrastructure: inter-modal container staging area, dedicated haul road, rail loading facility at Moab, and rail load-off facility at the Crescent Junction; upgrading the Cane Creek Branch rail line between Moab and Crescent Junction; and continuing vicinity property assessments and remedial actions. These will be completed in FY 2009.

In FY 2010, the following activities are planned:

- Moab and Crescent Junction operations and maintenance.
- Continue monitoring and analysis of contaminated groundwater.
- Continue Nuclear Regulatory Commission oversight.
- Continue placing tailings into the disposal cell and constructing the cell cover.
- Continue tailings excavation and transport from millsite to the disposal cell.
- Complete rail upgrades and perform surveillance and maintenance of the materials handling system and infrastructure.
- Continue remediating vicinity properties surrounding the tailings pile.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Start Cane Creek Rail Road upgrade. (FY 2008)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Complete Moab site materials handling infrastructure (February 2009)
- EVMS certification review (March 2009)
- Complete Cane Creek Branch Line rail upgrades (March 2009)
- Complete Moab rail infrastructure (March 2009)
- Complete Cane Creek Branch Line road crossing upgrades (May 2009)
- Complete Crescent Junction - Rail Spur. (August 2009)
- Recover 30 million gallons of contaminated ground water (September 2009)
- Start Mill Tailings Haul (September 2009)

**CBC-SLAC-0030 / Soil and Water Remediation-  
Stanford Linear Accelerator Center**

**7,846                      4,883                      4,600**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

Activities in this PBS involve the cleanup of legacy contamination resulting from the physics research mission and operations over the past several decades at the SLAC National Accelerator Laboratory. On May 18, 2005, the California Regional Water Quality Control Board San Francisco Bay Region adopted Order R2-2005-0022 requiring the investigation and remediation of the SLAC National Accelerator Laboratory site. The EM mission includes the identification of chemical contaminants in soil and groundwater, and developing and implementing remedies to address these environmental concerns using Comprehensive Environmental Response, Compensation, and Liability Act technical guidance in accordance with the Order. The principal contaminants of concern include polychlorinated biphenyls, lead, and volatile organic compounds in soils and groundwater.

Preliminary Site Assessments have identified 54 release sites requiring further action; either further risk evaluation or remediation. The strategy to accelerate the completion of the project includes tasks which are being worked in parallel rather than in series, whenever possible. Installing and testing treatment systems as presumptive remedies is occurring at the same time as the remedial investigation/feasibility study reports are completed and processed. Soils contaminated with polychlorinated biphenyls are being characterized to determine the extent of the contamination and the work will be carried out through various removal actions. These actions will lower the overall risk at the site and accelerate project completion.

In FY 2010, the following activities are planned:

- Operate installed groundwater treatment systems and maintain compliance with Board Order.
- Perform soil remediation at the IR-6 secondary drainage channel as well as develop required

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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regulatory documentation.

- Perform planned soil removal actions and develop required regulatory documentation.
- A portion of the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Remediation Complete (Number of Release Sites)	17	37	52	71	73.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Complete Lower Salvage Yard Removal Action (September 2009)</li> </ul>					

**CBC-TUBA-0031 / Soil and Water Remediation-Tuba City**

**0            5,000            0**

This PBS can be found within the Non-Defense Environmental Cleanup appropriation.

This project scope presents the basis for a schedule for the United States Department of Energy, Office of Environmental Management to remediate property located near the Tuba City, Arizona, disposal site that may contain residual radioactive material. The Tuba City disposal site is a former Uranium Mill Tailings Remedial Action project site.

In FY 2010, the following activities are planned:

- No activities planned.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**Total, All Other Sites**

**62,103            104,781            62,347**

## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### Non-Defense Environmental Cleanup

#### Small Sites

##### Argonne National Laboratory

##### CH-ANLE-0030 / Soil and Water Remediation-Argonne National Laboratory-East

- Decrease in funding due to completion of remediation. -500

##### CH-ANLE-0040 / Nuclear Facility D&D-Argonne National Laboratory-East

- Decrease reflects no additional funding by the Office of Science and the Office of the Administrator, National Nuclear Security Administration and a scope of work that is included in the American Recovery and Reinvestment Act appropriation. -28,979

##### Brookhaven National Laboratory

##### BRNL-0030 / Soil and Water Remediation-Brookhaven National Laboratory

- Increase reflects remediation of contaminated soil at Building 96 Source Area and remediation of contaminated groundwater at the Sr-90 Plume. 927

##### BRNL-0040 / Nuclear Facility D&D-Brookhaven Graphite Research Reactor

- Increase reflects additional work on the removal and disposal of the reactor's bioshield. 3,437

##### BRNL-0041 / Nuclear Facility D&D-High Flux Beam Reactor

- Decrease reflects scope of work that is included in the American Recovery and Reinvestment Act appropriation. -333

##### BRNL-0100 / Brookhaven Community and Regulatory Support

- No significant change. 150

##### California Site Support

##### CBC-CA-0013B-N / Solid Waste Stabilization and Disposition-California Sites-2012 (Non-Defense)

- No significant change. -72

##### CBC-CA-0100-N / Oakland Community and Regulatory Support (Non-Defense)

- No significant change. 147

##### Completed Sites/Program Support

##### CBC-ND-0100 / CBC - Non-Defense Post Closure Administration and Program Support

- No significant change. 100

##### Energy Technology Engineering Center

FY 2010 vs. FY 2009 (\$000)
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**CBC-ETEC-0040 / Nuclear Facility D&D-Energy Technology Engineering Center**

- Decrease reflects scope of work that is included in the American Recovery and Reinvestment Act appropriation. -2,000

**Moab**

**CBC-MOAB-0031 / Soil and Water Remediation-Moab**

- Decrease reflects scope of work that is included in the American Recovery and Reinvestment Act appropriation. -10,028

**SLAC National Accelerator Laboratory**

**CBC-SLAC-0030 / Soil and Water Remediation-Stanford Linear Accelerator Center**

- Decrease reflects scope of work that is included in the American Recovery and Reinvestment Act appropriation. -283

**Tuba City**

**CBC-TUBA-0031 / Soil and Water Remediation-Tuba City**

- Completed congressionally mandated activity from FY 2009. -5,000

<b>Total, All Other Sites</b>	<b>-42,434</b>
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## Headquarters Operations

### Funding by Site

(dollars in thousands)

	FY 2008	FY 2009 Original Appropriation	FY 2009 Additional Appropriation	FY 2010
Congressionally Directed Projects	17,195	22,665	0	0
Headquarters	52,662	43,930	68,950	34,000
Total, Headquarters Operations	69,857	66,595	68,950	34,000

### Description

The Headquarters Operations program includes policy, management and technical support activities to provide management and direction for various crosscutting EM and DOE initiatives. Through this program, EM establishes and implements national and departmental policies, provides focused technical expertise to resolve barriers to site cleanup, and conducts analyses and integrates activities across the DOE complex. The activities provide the policy basis and foundation for sites to complete their mission. The activities also identify opportunities that may result in cost savings. Also included is the Uranium/Thorium Reimbursement program that provides reimbursements to licensees (subject to a site-specific limit) for the cost of environmental cleanup of uranium and thorium processing contamination attributable to materials sold to the Government.

### Benefits

As the EM cleanup progresses, the risk and hazard to human health and the environment is greatly reduced. In addition, as cleanup is completed and sites are closed, the financial resources needed to maintain site infrastructure will no longer be required. The integration, policy management, crosscutting and other activities funded by this account ensures that EM's primary cleanup mission and other DOE objectives proceed in a consistent, responsible and efficient manner.

### Mercury Export Ban Act of 2008

The Mercury Export Ban Act of 2008 (the Act) bans the export of elemental mercury, prohibits federal agencies from either selling or distributing mercury, and instructs the Department of Energy (DOE) to provide permanent storage for domestic inventories of mercury. The Act directs DOE to designate a facility for the long-term management and storage of elemental mercury generated within the U.S. by January 1, 2010; the facility needs to be operational by January 1, 2013. Additionally, DOE's mercury storage operations will be subject to the requirements of the Solid Waste Disposal Act, the Resource Conservation and Recovery Act (RCRA), and the National Environmental Policy Act (NEPA). The Act also instructs DOE and the Environmental Protection Agency (EPA) to prepare reports on issues related to the storage of domestic mercury and the status of global supplies.

DOE plans to begin an Environmental Impact Statement (EIS) in April of 2009. The total cost of the EIS is estimated at \$5M, of which \$3.3M will be funded in FY 2009, with the balance of the funding (\$1.7M) to be funded in FY 2010. The EIS will identify facilities under consideration for the long-term

storage of elemental mercury. No later than October 1, 2009, DOE is required to make guidance outlining procedures and standards available to potential users of the long-term mercury management facility. By October 1, 2012, DOE shall disclose fee amounts that will be collected at the time of mercury delivery to the management and storage facility. As soon as the designated facility is operational, DOE is required to transmit a report to Congress each year on costs incurred; this action will be completed no later than 60 days after the end of each Federal fiscal year. Finally, DOE is required to transmit to Congress a Mercury Recycling Study by July 1, 2014.

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Defense Environmental Cleanup			
Program Support			
Headquarters			
HQ-MS-0100 / Policy, Management, and Technical Support	32,844	33,930	34,000
Congressionally Directed Projects			
Headquarters			
HQ-CDP-0100 / Congressionally Directed Projects	17,195	17,908	0
Total, Defense Environmental Cleanup	50,039	51,838	34,000
Non-Defense Environmental Cleanup			
Congressionally Directed Projects			
Headquarters			
HQ-CDP-0100-N / Non-Defense Congressionally Directed Projects	0	4,757	0
Uranium Enrichment Decontamination and Decommissioning Fund			
U/Th Reimbursements			
Headquarters			
HQ-UR-0100 / Reimbursements to Uranium/Thorium Licensees	19,818	10,000	0
Total, Headquarters Operations	69,857	66,595	34,000

## Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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### **HQ-MS-0100 / Policy, Management, and Technical Support**

**32,844                      33,930                      34,000**

This PBS can be found within the Defense Environmental Cleanup appropriation.

This PBS scope includes management and direction for various crosscutting EM and DOE initiatives, establishment and implementation of national and departmental policies, various intergovernmental activities, and analyses and integration activities across the DOE complex. Also, the scope of this PBS includes government-furnished services and items necessary to accelerate site cleanup and risk reduction efforts, assure pathways to disposition waste and materials, conduct transportation, packaging, and emergency preparedness activities, complete necessary policy analyses, support legal claims, support closure assistance activities, and effectively communicate with the public and stakeholders regarding the EM program's activities. It includes the National Environmental Policy Act analysis on Greater-Than-Class C radioactive waste disposal, as required by Section 631 of the Energy Policy Act of 2005.

In FY 2010, the following activities are planned:

- Continue support of Tribal, State, and local government participation through the State and Tribal Government Working Group, local officials exchange seminars, government-to-government interactions with the Native American Tribes and grants with the National Governors Association.
- Provide expertise in the areas of safety, health and security, emergency management, package certification, quality assurance, nuclear criticality safety, and risk management.
- Instill safety awareness by utilizing the National Safety Council to conduct surveys which will indicate whether and how EM's commitment to safety is working.
- Issue the Environmental Impact Statement for Disposal of Greater-Than-Class C Radioactive Waste, the Record of Decision, and the required Report to Congress on Greater-Than-Class C Disposal Alternatives per the Energy Policy Act of 2005.
- Support various Secretarial and Departmental initiatives, including the Defense Contracts Audit Agency audits, Government Industry Data Exchange Program and Consolidated Accounting Investment System.
- Provide support to various advisory groups such as the Nuclear Regulatory Commission, National Academy of Sciences and Low-Level Radioactive Waste Forum, to obtain technical assistance and expertise that indirectly supports EM mission objectives.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Administer the EM and DOE-wide transportation and packaging responsibilities and the Transportation Emergency Preparedness Program.
- Provide rapid response from technical experts or “External/Internal” review teams to address emerging, imminent technical issues impeding site cleanup and closure.
- Provide technical solution projects designed to reduce near-term technical risks and technical assistance to include site troubleshooting, consulting, scientific or technical problem solving.
- Complete Mercury Export Ban Environmental Impact Statement.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Issue Draft Environmental Impact Statement for Disposal of Greater-Than-Class C Radioactive Waste (FY 2008)</li> <li>▪ Administer the EM and DOE-wide transportation and packaging responsibilities and Transportation Emergency Preparedness Program. (FY 2008)</li> <li>▪ Complete four to 10 technical solutions projects or technical assistance projects. (FY 2008)</li> <li>▪ Enhance Tribal, State, and local government participation in EM through the continuation of State and Tribal Government Working Group, local officials exchange seminars, government-to government interactions with the Native American Tribes and grants wit (FY 2008)</li> <li>▪ Instill safety awareness by utilizing the National Safety Council to conduct surveys, which will indicate whether and how EM's commitment to safety is working. (FY 2008)</li> <li>▪ Provide expertise in the areas of safety, health and security; as well as in emergency management, package certification, quality assurance, analytical services, and risk management. (FY 2008)</li> <li>▪ Provide support to various advisory groups to obtain technical assistance/expertise that indirectly support the EM mission objectives. (FY 2008)</li> <li>▪ Support various Secretarial and Departmental initiatives, including the Defense Contracts Audit Agency audits, Government Industry Data Exchange Program, and Consolidated Accounting Investment System. (FY 2008)</li> <li>▪ Issue Final Environmental Impact Statement for Disposal of Greater-Than-Class C Radioactive Waste and the required Report to Congress on Greater-Than-Class C Disposal Alternatives per the Energy Policy Act of 2005. (September 2009)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**HQ-CDP-0100 / Congressionally Directed Projects** **17,195** **17,908** **0**

This PBS can be found within the Defense Environmental Cleanup appropriation.

The FY 2009 Omnibus Appropriation included six congressionally directed projects within the Office of Environmental Management.

▪ Characteristics and Clean-up of U.S. Nuclear Legacy (MS)	0	3,806	0
▪ Miamisburg Mound, OU-1 (OH)	0	4,757	0
▪ Testing of Polymeric Hydrogels for Radiation Decontamination (HI)	0	1,618	0
▪ The International Alternative Clean-up Technology Agreement (PA)	0	2,854	0
▪ Water Resources Data, Modeling, and Visualization Center (NV)	0	1,067	0
▪ WIPP Records Archive (NM)	0	3,806	0
<b>Total, Congressionally Direct Projects</b>	<b>0</b>	<b>17,908</b>	<b>0</b>

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**HQ-CDP-0100-N / Non-Defense Congressionally Directed Projects** **0** **4,757** **0**

This PBS can be found within the Non-Defense Environmental Cleanup Projects.

The FY 2009 Omnibus Appropriation included three congressionally directed projects within the Office of Environmental Management.

▪ Bioinformatics and Computational Biology Initiative (KY)	0	951	0
▪ Southwest Experimental Fast Oxide Reactor Decommissioning (AR)	0	1,903	0
▪ Western Environmental Technology Office (MT)	0	1,903	0
<b>Total, Congressionally Direct Projects</b>	<b>0</b>	<b>4,757</b>	<b>0</b>

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**HQ-UR-0100 / Reimbursements to Uranium/Thorium**

**Licensees** **19,818**      **10,000**      **0**

This PBS can be found within the Uranium Enrichment Decontamination and Decommissioning Fund appropriation.

Pursuant to Title X of the Energy Policy Act of 1992 and 10 CFR Part 765, this PBS scope includes reimbursements to fourteen active uranium and thorium processing site licensees for that portion of their environmental cleanup costs attributable to nuclear materials sold to the Government.

The maximum reimbursement to the individual uranium licensees is limited to \$6.25 per dry short ton of Federal-related byproduct material; and total reimbursement to all thirteen uranium licensees and one thorium licensee is limited to \$350 million and \$365 million respectively. Congress has increased the original reimbursement ceiling three times since enactment in 1992. These monetary ceilings are adjusted annually for inflation. DOE is implementing the reimbursement program using Federal staff to review and process claims. The Defense Contract Audit Agency assists DOE with auditing of claims. Reimbursements have been completed for two sites (ARCO-Bluewater mill site and the Moab mill site) with no further Title X liability. In addition, the Tennessee Valley Authority has completed remedial action at its Edgemont mill site and the Petrotomics Company has completed remedial action at its Shirley Basin mill site. Six of the remaining ten licensees project they will complete remedial action no later than FY 2010. The total estimated maximum future liability for the program, including claims in excess of the uranium dry short ton limit, is approximately \$306,000,000. This is based on the completed review and approval of licensees' Plans for Subsequent Remedial Action (required per a provision in the Act). The cost estimate in each approved Plan for Subsequent Remedial Action is the maximum amount in constant dollars that a licensee may claim for reimbursement.

As of September 2008, DOE has reimbursed the thirteen uranium licensees \$257,940,000 and the thorium licensee \$315,456,000 for an aggregate reimbursement amount of \$573,396,000.

In FY 2010, the following activities are planned:

- No planned accomplishments in FY 2010; the scope of work typically covered in this PBS is planned to be executed with American Recovery and Reinvestment Act funding.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)

- Annually reimburse uranium and thorium licensees for a portion (the Federal-related byproduct material at each site) of their costs of cleanup in accordance with Title X of the Energy Policy Act of 1992 and 10 Code of Federal Regulations Part 765 (FY 2008)

**Total, Headquarters Operations**

**69,857**

**66,595**

**34,000**

**Title X of the Energy Policy Act of 1992: Uranium/Thorium Reimbursement Program  
 Status of Payments through Fiscal Year 2008 and Estimated Maximum Program Liability  
 (\$ Thousands)**

<u>Licenseses</u>	Total Payments FY 1994- FY 2008	Approved but Unpaid Claim Balances After FY 2008 Payments (Includes Costs for Some Uranium Licensees that Exceed Current Dry Short Ton Ceiling)	Maximum Remaining Program Liability Including Estimated Costs in Approved Plans for Subsequent Remedial Action
<b>Uranium</b>			
American Nuclear Corp. Site			
American Nuclear Corporation.....	820	0	0
State of Wyoming.....	1,244	1	796
Atlantic Richfield Company <sup>a</sup> .....	32,306	0	0
Atlas Corporation/Moab Mill Reclamation Trust <sup>a</sup> ....	9,694	0	0
Cotter Corporation.....	2,847	563	4,324
Dawn Mining Company.....	7,230	245	12,044
Homestake Mining Company.....	45,068	654	108,959
Pathfinder Mines Corporation.....	10,708	14	338
Petrotomics Company.....	2,840	11	11
Rio Algom Mining LLC <sup>b</sup> .....	29,107	1,652	17,752
Tennessee Valley Authority.....	14,688	10,442	10,442
Umetco Minerals Corporation-CO.....	51,529	18,442	37,228
Umetco Minerals Corporation-WY.....	19,008	4,520	7,679
Western Nuclear, Incorporated.....	30,851	126	2,446
Subtotal, Uranium.....	257,940	36,670	202,020

<sup>a</sup> Reimbursements have been completed to the Atlantic Richfield Company and the licensees of the Moab site.

<sup>b</sup> Formerly Quivira Mining Company.



Licensees  
**Thorium**

	Total Payments FY 1994- FY 2008	Approved but Unpaid Claim Balances After FY 2008 Payments (Includes Costs for Some Uranium Licensees that Exceed Current Dry Short Ton Ceiling)	Maximum Remaining Program Liability Including Estimated Costs in Approved Plans for Subsequent Remedial Action
Tronox Incorporated <sup>c</sup> .....	315,456	4,959	109,657
Subtotal, Thorium.....	315,456	4,959	109,657
Total, Uranium and Thorium.....	573,396	41,629	311,676

<sup>c</sup> Formerly Kerr-McGee Chemical Corp.

## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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<b>Defense Environmental Cleanup</b>	
<b>Congressionally Directed Projects</b>	
<b>Headquarters</b>	
<b>HQ-CDP-0100 / Congressionally Directed Projects</b>	
▪ No funding requested.	-17,908
<b>Program Support</b>	
<b>HQ-MS-0100 / Policy, Management, and Technical Support</b>	
▪ No significant change.	70
<b>Non-Defense Environmental Cleanup</b>	
<b>HQ-CDP-0100-N / Non-Defense Congressionally Directed Projects</b>	
▪ No funding requested.	-4,757
<b>Uranium Enrichment Decontamination and Decommissioning Fund</b>	
<b>U/Th Reimbursements</b>	
<b>HQ-UR-0100 / Reimbursements to Uranium/Thorium Licensees</b>	
▪ Decrease reflects scope of work that was included in the American Recovery and Reinvestment Act funding.	-10,000
<b>Total, Headquarters Operations</b>	<hr/> <b>-32,595</b>

## Program Direction

### Funding Profile by Category

(dollars in thousands/whole FTEs)

	FY 2008	FY 2009	FY 2010
<b>Carlsbad</b>			
Salaries and Benefits	6,250	6,091	6,573
Travel	339	359	363
Other Related Expenses	863	372	1,879
<b>Total, Carlsbad</b>	<b>7,452</b>	<b>6,822</b>	<b>8,815</b>
Full Time Equivalents	41	52	50
<b>Idaho</b>			
Salaries and Benefits	7,624	9,300	10,645
Travel	310	305	326
Support Services	20	17	275
Other Related Expenses	2,185	718	164
<b>Total, Idaho</b>	<b>10,139</b>	<b>10,340</b>	<b>11,410</b>
Full Time Equivalents	60	70	70
<b>Oak Ridge</b>			
Salaries and Benefits	10,958	12,628	13,800
Travel	236	229	275
Support Services	1,069	1,949	2,240
Other Related Expenses	3,262	1,952	3,113
<b>Total, Oak Ridge</b>	<b>15,525</b>	<b>16,758</b>	<b>19,428</b>
Full Time Equivalents	81	84	82
<b>Portsmouth/Paducah Project Office</b>			
Salaries and Benefits	5,839	6,670	6,810
Travel	270	292	295
Support Services	2,070	1,703	1,721
Other Related Expenses	1,130	1,225	1,238
<b>Total, Portsmouth/Paducah Project Office</b>	<b>9,309</b>	<b>9,890</b>	<b>10,064</b>
Full Time Equivalents	41	50	48
<b>Richland</b>			
Salaries and Benefits	33,885	37,264	39,142
Travel	675	697	790
Support Services	941	936	1,152
Other Related Expenses	9,505	6,144	8,557
<b>Total, Richland</b>	<b>45,006</b>	<b>45,041</b>	<b>49,641</b>
Full Time Equivalents	238	247	275
<b>River Protection</b>			
Salaries and Benefits	15,659	20,012	21,395
Travel	519	542	656
Support Services	2,714	2,866	3,438
Other Related Expenses	2,699	2,263	3,170
<b>Total, River Protection</b>	<b>21,591</b>	<b>25,683</b>	<b>28,659</b>
Full Time Equivalents	115	115	145
<b>Savannah River</b>			

(dollars in thousands/whole FTEs)

	FY 2008	FY 2009	FY 2010
Salaries and Benefits	41,193	43,493	50,448
Travel	956	873	1,396
Support Services	3,200	2,521	3,986
Other Related Expenses	3,540	2,341	3,816
Total, Savannah River Full Time Equivalents	48,889 307	49,228 339	59,646 345
Small Sites			
Salaries and Benefits	4,633	4,400	5,003
Travel	954	424	461
Support Services	1,902	1,226	2,556
Other Related Expenses	300	1,200	1,213
Total, Small Sites Full Time Equivalents	7,789 28	7,250 26	9,233 25
Nevada Site Office			
Salaries and Benefits	3,371	3,298	3,519
Travel	75	93	94
Support Services	470	467	587
Other Related Expenses	35	247	57
Total, Nevada Site Office Full Time Equivalents	3,951 23	4,105 23	4,257 25
NNSA Sites			
Salaries and Benefits	3,811	4,144	5,707
Travel	250	216	300
Support Services	2,302	920	1,012
Other Related Expenses	672	702	685
Total, NNSA Sites Full Time Equivalents	7,035 31	5,982 30	7,704 28
EM Career Development Corp			
Salaries and Benefits	0	3,906	2,920
Travel	0	600	863
Other Related Expenses	0	235	759
Total, EM Career Development Corp Full Time Equivalents	0 0	4,741 0	4,542 40
Field			
Salaries and Benefits	133,223	151,206	165,962
Travel	4,584	4,630	5,819
Support Services	14,688	12,605	16,967
Other Related Expenses	24,191	17,399	24,651
Total, Field Full Time Equivalents	176,686 965	185,840 1,036	213,399 1,133
Headquarters Operations			
Salaries and Benefits	50,733	53,889	55,167
Travel	3,867	3,568	3,605
Support Services	11,102	11,744	23,902
Other Related Expenses	20,667	26,124	26,629
Total, Headquarters Operations Full Time Equivalents	86,369 290	95,325 299	109,303 351
Consolidated Business Center			

(dollars in thousands/whole FTEs)

	FY 2008	FY 2009	FY 2010
Salaries and Benefits	26,481	23,594	23,947
Travel	1,705	1,235	1,248
Support Services	4,108	274	3,487
Other Related Expenses	11,592	3,539	3,616
Total, Consolidated Business Center Full Time Equivalents	43,886 164	28,642 170	32,298 190
Environmental Management			
Salaries and Benefits	210,437	228,689	245,076
Travel	10,156	9,433	10,672
Support Services	29,898	24,623	44,356
Other Related Expenses	56,450	47,062	54,896
Total, Environmental Management Full Time Equivalents	306,941 1,419	309,807 1,505 <sup>a</sup>	355,000 1,674

## Mission

Program Direction provides for the Federal workforce responsible for the overall direction and administrative support of the EM program, including both Headquarters and field personnel. The EM mission of safe, risk reduction and cleanup of the nuclear weapons environmental legacy is carried out by a workforce composed largely of contractors, although there are a variety of functions that are inherently governmental (e.g., program management, contract administration, budget formulation and execution, and interagency and international coordination) that require a dedicated Federal workforce.

The role of the Headquarters Federal workforce is to provide leadership, establish and implement policy, conduct analyses, and integrate activities across sites. Increasing standards of accountability for program performance and spending require Headquarters staff to closely analyze budget requests, track expenditures, and compile congressionally mandated and other program plans (e.g., life cycle baselines). Also, interactions with non-DOE government entities (e.g., participation in International Atomic Energy Agency activities, and negotiations with foreign embassies and reactor operators) are most appropriately performed by Federal employees rather than by contractors. Finally, Headquarters personnel assess the progress of planned program activities in order to report to Congress, Federal, State and local governments, Tribal Nations, citizen groups and the public on the status of EM programs.

Field personnel are responsible and directly accountable for implementing the EM program within the framework established by Headquarters policy and guidance. In addition, the field is responsible for the day-to-day oversight and project management of the Department's facilities, the facility contractors and other support contractors, as well as construction and test activities that support EM activities for DOE. The field office personnel are responsible for planning and implementing performance improvement programs and the technical programs needed to comply with safety and other standards and regulations. They are also responsible for the preparation of regulatory documents and interaction with the regulators who have oversight of facility operations and cleanup work scope. The field staffing levels include personnel supporting the analytical laboratories.

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<sup>a</sup> As of Spring 2009, the EM program has over 1,630 federal employees on board.

This request continues to include funding for eight Full-Time Equivalents associated with a Central Technical Authority that provides the central oversight function for nuclear safety as directed by the Defense Nuclear Facilities Safety Board Implementation Plan (recommendation 2004-1).

### **FY 2010 Budget Strategy**

During FY 2009, EM took an aggressive approach to hiring federal employees. This increase is consistent with the recommendations of the National Academy of Public Administration as discussed later in this section. As of Spring 2009, the EM program has over 1,630 federal employees on board. EM has been able to support this increased staffing level due to the use of unobligated balances that resulted from constrained hiring practices in FY 2008 and the utilization of uncosted carryover.

### **Environmental Management Professional Development**

EM will continue aggressive recruitment efforts to seek qualified personnel. Therefore, the EM Professional Development Corps (previously EM Career Intern Program) will be institutionalized to provide a means for succession planning and ensuring a continuing source of highly competent technical personnel with the skills and knowledge to meet EM's current and future technical staffing needs. The Program also includes components designed to nurture and develop individuals' potential to serve as future leaders and managers within EM and the Department. A variety of incentives such as recruitment bonuses, student loan repayment program and permanent change of station will be utilized to attract suitable applicants. The program began in FY 2007 with the hiring of 20 individuals. It is anticipated that a steady pipeline of 40 individuals will be participating in the program at any one time. Upon successful completion of the career development program, these individuals will be eligible for non-competitive conversion to permanent career conditional or career status.

### **National Academy of Public Administration Recommendations**

In December 2007 the National Academy of Public Administration published a report on the Environmental Management program which included recommendations on Human Capital. Specifically, the Academy "urged the Department to increase EM's staffing allocation by at least 200 over the currently budgeted levels." EM leadership collectively agreed that the recommended FTE ceiling increases were necessary to address our mission needs and began an aggressive campaign to improve recruitment strategies and address the Academy recommendation.

EM has successfully recruited and retained more than 200 people since the release of the Academy report. While there are still staffing gaps which will be addressed by our continued robust succession program with the EM Professional Development Corp, EM recognizes that there are still significant gaps in expertise until these new hires reach their optimal level of competence. As such, the budget request reflects a significant funding increase in order to be able to sustain our progress.

### **Functional Transfers**

The budget request reflects the transfer of six full-time equivalents and associated funding from Environmental Management at the NNSA Service Center supporting activities associated with Long-Term Stewardship and Waste Management.

## Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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<b>Salaries and Benefits</b>	<b>210,437</b>	<b>228,689</b>	<b>245,076</b>
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Provides funding for 1,674 full-time equivalent employees in FY 2010 with the responsibility for the overall direction and administrative support of the EM program, including Headquarters (351 employees based in Germantown, Maryland and Washington, DC), field personnel (2,001 employees at Operations/Field/Sites Offices located through out the United States), the EM Consolidated Business Center (182 employees in Cincinnati, Ohio), and the recruitment of 40 employees associated with the EM Professional Development Corp. The federal workforce performs a variety of functions that are inherently governmental such as project management, program management, contract management and administration, budget formulation and execution, and interagency and international coordination. In addition, funding is provided for workers' compensation payments to the Department of Labor, transit subsidies and incentive awards.

<b>Travel</b>	<b>10,156</b>	<b>9,433</b>	<b>10,672</b>
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The FY 2010 estimate reflects a higher amount of travel due to anticipated escalation of the costs of airfare, gasoline, and lodging. Total includes all costs of transportation of persons, subsistence of travelers, incidental travel expenses, as well as funding to support permanent change of duty station in accordance with Federal travel regulations that are directly chargeable to EM. In addition, travel costs associated with the continuation of the EM Professional Development Corps to support rotational assignments at EM sites, training, and participation at university sponsored career fairs, professional conferences and special interest/emphasis conferences for recruitment purposes are provided. Travel expenses for the certifications associated with Federal Project Directors and Procurement Specialists are also included.

<b>Support Services</b>	<b>29,898</b>	<b>24,623</b>	<b>44,356</b>
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Provides technical and administrative support for cost effective, short-term and intermittent requirements not available within the Federal workforce. Support services include but are not limited to technical and administrative support, program management and integration, management information and support systems, performance systems, and cost/schedule studies. Program management includes support for organizational and strategic planning; coordination and interaction with other Federal, State and local government agencies and private industrial concerns; performance measurement; and cost assessment.

Technical support services include feasibility of design considerations; development of specifications, system definition, system review and reliability analyses; trade-off analyses; economic and environmental analyses which may be used in DOE's preparation of environmental impact statements; and test and evaluation, surveys or reviews to improve the effectiveness, efficiency and economy of technical operations.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Management support services include analyses of workload and work flow; directives management studies; automated data processing; manpower systems analyses; assistance in the preparation of program plans; training and education; analyses of Departmental management processes; and any other reports or analyses directed toward improving the effectiveness, efficiency and economy of management and general administrative services.

**Other Related Expenses** **56,450**      **47,062**      **54,896**

Provides for the physical and administrative support to the Federal workforce at both Headquarters and the field. The level of support provided by EM varies at each site depending on EM's role in relation to other Departmental programs. Examples of the type of support that may be provided include training, rents and utilities, supplies, printing, maintenance and repair of government vehicles and equipment; maintenance and renovations of buildings; janitorial and custodial services; transit operations (shuttle bus); alarm protection systems; and other vendor services, including those associated with contractual services (storage of household goods and the buying/selling of homes) in conjunction with directed permanent change of duty station. Also includes funding to support core curriculum formal classroom training as well as recruitment incentives such as Student Loan Reimbursement for the EM Professional Development Corps.

A Working Capital Fund established at Headquarters to which EM contributes, allocates the costs of common administrative services to the recipient Headquarters organizations. Activities supported by the Working Capital Fund include automated office support, telephone services, postage, printing and graphics, supplies, building occupancy, payroll processing, contract closeouts, corporate training services, Project Management Career Development Program, the Standard Accounting and Reporting System, shuttle bus, logistics support services contract, Strategic Integrated Procurement Enterprise System, and On-line Learning Center. This category also includes the cost of training the Federal workforce, and the Corporate Asset Management and Capital Planning and Investment Control (CPIC) Information Technology Project Management Training. Significant portions of these expenditures are fixed in nature and do not change in relation to the workforce.

**Total, Program Direction** **306,941**      **309,807**      **355,000**



## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### Salaries and Benefits

- |  |
|--|
| <ul style="list-style-type: none"> <li>▪ Increase reflects an increase of 169 FTEs as recommended by the NAPA study. <span style="float: right;">12,504</span></li> <li>▪ Increase reflects government-wide 2.1 percent escalation for pay and personnel-related costs for 1,674 full-time equivalents (FTEs). <span style="float: right;">5,065</span></li> <li>▪ Decrease associated with the transfer of six full-time equivalents from Environmental Management at the NNSA Service Center supporting activities associated with Long-Term Stewardship and Waste Management <span style="float: right;">-1,182</span></li> </ul> |
|--|

### Travel

- |   |
|---|
| <ul style="list-style-type: none"> <li>▪ Increase in travel expenses associated with the increase of 169 FTEs. <span style="float: right;">575</span></li> <li>▪ Increase associated with economic assumptions. <span style="float: right;">100</span></li> <li>▪ Increase in travel expenses for the certifications associated with Federal Project Directors and Procurement Specialists. <span style="float: right;">320</span></li> <li>▪ Increase associated with the support of rotational assignments of EM Professional Development Corps at EM site offices. <span style="float: right;">244</span></li> </ul> |
|---|

### Support Services

- |   |
|---|
| <ul style="list-style-type: none"> <li>▪ Increase, in part, reflects efforts to fully implement the NAPA recommendations and strengthen project management, as well as depletion of carryover and unobligated balances <span style="float: right;">17,853</span></li> <li>▪ Increase associated with economic assumptions. <span style="float: right;">246</span></li> <li>▪ Increase to support DNFSB requirements at Savannah River for critical positions in contract acquisition, human resources, and procurement organizations. <span style="float: right;">1,634</span></li> </ul> |
|---|

### Other Related Expenses

- |  |
|--|
| <ul style="list-style-type: none"> <li>▪ Increase associated with economic assumptions. <span style="float: right;">471</span></li> <li>▪ Increase includes projected annual costs associated with the IT MEO at Richland. <span style="float: right;">2,600</span></li> <li>▪ Increase associated with FY 2010 Permanent Change of Stations, rent funding requirements and administrative support associated with increase staffing levels. <span style="float: right;">2,963</span></li> <li>▪ Increase associated with increase of Working Capital Fund (WCF) requirements. <span style="float: right;">1,800</span></li> </ul> |
|--|

<b>Total Funding Change, Program Direction</b>	<b>45,193</b>
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## Support Services by Category

(dollars in thousands/whole FTEs)

	FY 2008	FY 2009	FY 2010
<b>Technical Support Services</b>			
Feasibility of Design Considerations	165	182	164
Development of Specifications	1,996	2,903	3,517
System Definition	164	182	164
System Review and Reliability Analyses	329	363	328
Trade-Off Analyses	165	182	164
Economic and Environmental Analysis	1,785	2,505	2,348
Test and Evaluation Studies	409	524	474
Surveys or Reviews of Technical Operations	2,268	4,308	6,595
<b>Total, Technical Support Services</b>	<b>\$7,281</b>	<b>\$11,149</b>	<b>\$13,754</b>
<b>Management Support Services</b>			
Analyses of Workload and Work Flow	0	0	0
Directives Management Studies	14	19	17
Automatic Data Processing	2,316	120	109
Manpower Systems Analyses	110	120	109
Preparation of Program Plans	110	124	112
Training and Education	985	1,060	2,313
Analysis of DOE Management Processes	329	363	328
Reports and Analyses Management and General Administrative Support	19,484	11,668	27,614
<b>Total, Management Support Services</b>	<b>\$23,348</b>	<b>\$13,474</b>	<b>\$30,602</b>
<b>Total, Support Services</b>	<b>\$30,629</b>	<b>\$24,623</b>	<b>\$44,356</b>

## Other Related Expenses by Category

(dollars in thousands/whole FTEs)

	FY 2008	FY 2009	FY 2010
<b>Other Related Expenses</b>			
Rent to GSA	9,683	8,243	11,966
Rent to Others	1,171	942	2,179
Communication, Utilities, Misc.	8,438	5,867	7,326
Printing and Reproduction	495	581	559
Other Services	14,086	9,026	6,044
Training	765	593	992
Purchases from Gov. Accounts	2,494	6,086	5,955
Operation and Maintenance of Equipment	2,051	1,355	1,961
Supplies and Materials	1,778	123	819
Equipment	2,966	3,983	4,978
Working Capital Fund	9,850	10,263	12,117
<b>Total, Other Related Expenses</b>	<b>53,777</b>	<b>47,062</b>	<b>54,896</b>

## Safeguards and Security

### Funding Schedule by Activity

(dollars in thousands)

	FY 2008	FY 2009	FY 2010
Defense Environmental Cleanup			
Safeguards and Security			
OR-0020 / Safeguards and Security	16,622	27,020	32,400
PA-0020 / Safeguards and Security	0	8,196	8,190
PO-0020 / Safeguards and Security	0	4,500	17,509
RL-0020 / Safeguards and Security	86,503	79,765	82,771
SR-0020 / Safeguards and Security	148,040	134,336	132,064
CB-0020 / Safeguards and Security	4,882	5,124	4,644
OH-WV-0020 / Safeguards and Security-West Valley	1,585	1,400	1,859
Subtotal, Safeguards and Security	257,632	260,341	279,437

### Description

The Environmental Management safeguards and security program ensures appropriate levels of protection against unauthorized access, theft, diversion, loss of custody or destruction of DOE assets and hostile acts that may cause adverse impacts on fundamental national security or the health and safety of DOE and contractor employees, the public or the environment.

The Environmental Management protected assets include large quantities of nuclear and special nuclear materials, millions of classified documents, classified technology, and specialized equipment as well as more than 950 square miles of government owned land and hundreds of major nuclear and non-nuclear facilities at seven sites across the country. Nearly 27,000 contractor employees work at these sites which are protected by over 1,800 security personnel including nearly 1,500 protective force personnel. The majority of the budget covers salaries and benefits of the security personnel along with the weapons, ammunition, vehicles, and training required to keep them in an operational mode.

## **Benefits**

EM's landlord sites include the Savannah River Site<sup>a</sup>, the Hanford Site (including the Office of River Protection), Carlsbad/Waste Isolation Pilot Plant, West Valley Demonstration Project, East Tennessee Technology Park, Paducah Gaseous Diffusion Plant, and the Portsmouth Gaseous Diffusion Plant.

These sites are secured by multiple layers of security measures. Each site has a site safeguards and security plan, or a site security plan, and a cyber security plan addressing the protection planning for DOE interests including: classified information, nuclear weapons components, and special nuclear materials. In addition, personnel security programs ensure the continued reliability of employees having access to classified matter and special nuclear material at all EM sites.

Since the events of September 11, 2001, the Department has revised the Design Basis Threat several times to define the response capabilities that security programs throughout the complex must meet. The Design Basis Threat was increased for the Department's most critical facilities and materials/items in May 2003. Additional requirements were imposed in April 2004 as a result of a special evaluation team's review of protection requirements. In October 2004, the Design Basis Threat was again significantly increased. Subsequently, in late 2005, a reduction to limited Design Basis Threat requirements was adopted. However, this change did not affect Office of Environmental Management facilities or activities. Most recently in 2008, the Design Basis Threat was revised to address a broader threat spectrum and risk management principles. With these changes, the Design Basis Threat was renamed the "Graded Security Protection" policy.

Site implementation plans and associated vulnerability assessments (including Joint Conflict and Tactical Simulation runs) had to be significantly modified after each of these revisions. During the same period, EM made significant strides in consolidating its special nuclear material to fewer locations to minimize the number of facilities affected by increases in Design Basis Threat specifications. The Hanford Site and the Savannah River Site each have only one facility with Category I special nuclear material. Despite these significant consolidations, EM safeguards and security costs continue to be reviewed for additional efficiencies in implementing the recently promulgated Graded Security Protection policy.

The following is a brief description of the type of activities performed to fulfill EM's safeguards and security responsibilities:

## **Protective Forces**

Protective Forces are an integral part of the security program designed to protect EM assets, including special nuclear material, classified and sensitive information, and other EM interests. Protective Forces are a significant cost driver of the safeguards and security program and EM managers promote the use of new technologies which may reduce reliance on protective forces and associated costs. Protective Forces provide response capabilities to contain, deny, and neutralize any adversarial actions against Departmental assets.

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<sup>a</sup> The tritium facilities are under the purview of the National Nuclear Security Administration.

## **Transportation**

EM ensures security (including safe havens) for both inter- and intra-site transfers of special nuclear material and other classified and/or nuclear material. Domestic off-site special nuclear material shipments are made by the Office of Secure Transportation. Packages or containers containing the special nuclear material are sealed with tamper indicating devices. Protection measures for movements of the special nuclear material, between protected areas at the same site or between protected areas and staging areas on the same site, are under continual surveillance by armed Protective Force escorts.

## **Physical Security Systems**

Category I and II quantities of special nuclear material are protected by an integrated physical protection system including access controls, barriers or delay mechanisms and intrusion detection systems annunciating at central alarm stations.

- Access (ingress and egress) controls ensure that only appropriately cleared and authorized personnel are permitted access to special nuclear material and classified matter.
- Delay mechanisms are used to deter and delay access, removal, or unauthorized use of Category I and II quantities of special nuclear material. Delay mechanisms may include both passive physical barriers (e.g., walls, ceilings, floors, windows, doors, and security bars) and activated barriers (e.g., sticky foam, pop-up barriers, and cold smoke). Active and/or passive denial systems are employed at site-specific target locations, as appropriate, to reduce reliance on protective forces.
- Security systems provide intrusion detection by DOE Orders. Detection measures include sensors or alarms, and closed-circuit televisions are used to protect classified matter and special nuclear material. Additional security measures include: explosive detection, and other inspection procedures.

Physical security systems are periodically tested according to the approved site performance testing plan to ensure system effectiveness.

## **Information Security**

Information Security provides information protection, classification and declassification of classified and sensitive unclassified information, critical infrastructure which includes alarm systems and automated process control systems, technical security countermeasures and operations security.

## **Personnel Security**

Access authorizations are granted in accordance with DOE M 470.4-5, *Personnel Security*. Personnel Security encompasses the processes for administrative determination that an individual is eligible for access to classified matter, or is eligible for access to, or control over, special nuclear material. Personnel Security also includes security education and awareness programs for DOE federal and contractor employees and processing and hosting approved foreign visitors under United States and DOE initiatives. Security investigation activities performed by the Federal Bureau of Investigation and the Office of Personnel Management associated with access authorizations are funded in their entirety in FY 2010 by each EM site. In the past, the Office of Security has funded field access authorization personnel security investigations with incremental funding provided by EM sites where additional security investigations were required above the base-level.

## **Material Control and Accountability**

Material Control and Accountability programs are designed to deter and detect theft and diversion of nuclear material by both outside and inside adversaries. The level of control and accountability are graded based on the consequences of their loss. Material Control and Accountability programs address both the theft and diversion of special nuclear material or materials that can be used to make an improvised nuclear device.

Material accountability consists of five functional areas: accounting systems, physical inventories, measurement and measurement control, nuclear material transfers, and material control indicators.

Material control consists of four functional areas: access controls, material surveillance, material containment, and detection/assessment.

## **Program Management**

Safeguards and Security Program Management coordinates the management of Physical Protection, Protective Force, Information Security, Personnel Security, and Material Control and Accountability to achieve and ensure appropriate levels of protection against unauthorized access, theft diversion, loss of custody or destruction of DOE assets and hostile acts that may cause adverse impacts on fundamental national security or the health and safety of DOE and contractor employees, the public or the environment.

Appropriate levels of security are achieved by integrating site strategic and near-term operational planning with Complex wide requirements, in addition to the applicable laws, regulations, treaties, state, and local commitments. Foreign visits and assignments, safety, emergency management, cyber security, and intelligence and counterintelligence programs are also addressed under Safeguards and Security Program Management.

Program Management provides policy oversight and administration, planning, training, and development for the site's overall security program.

## **Cyber Security**

EM Cyber Security provides protection for the processing, storing, and transmission of unclassified and classified computer/telecommunications information, processes, methods, and tools to support certification and accreditation of secure and sensitive enterprise networks, to ensure that all DOE unclassified and classified information resources are identified and protected in a manner consistent with the site's mission and possible threats. In the last few years, the Department has seen an increase in the amount and sophistication of cyber attacks. In addition, the Office of Management and Budget has mandated additional steps and processes aimed at enhancing the security of information systems.

In response to the Office of Inspector General findings, EM has begun to implement a Cyber Security assessment program to ensure that EM field sites are providing appropriate cyber security based on sound risk management principles and is monitoring site progress in resolving identified weaknesses during the certification and accreditation process mandated under the Federal Information Management Act and Office of Management and Budget and directives. Through the assessment program, EM independently verifies and validates the effectiveness of mandatory controls and performs a discovery process to determine if additional weaknesses are present and not identified by the site self assessment process.

## Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**CB-0020 / Safeguards and Security** **4,882**      **5,124**      **4,644**

The Waste Isolation Pilot Plant in Carlsbad, New Mexico, is the nation’s only mined geologic repository for the permanent disposal of defense-generated transuranic waste. The scope of the Security Program at the Waste Isolation Pilot Plant includes, but is not limited to, planning, administering, and executing a program that protects government assets. In addition to normal safeguards and security, physical protection of transuranic waste and enhancements to the information security systems has been installed to support the receipt of classified waste from the generator sites.

In FY 2010, the following activities are planned:

- Maintain information and record systems to support receipt of classified transuranic waste from the generator sites across the complex.
- Maintain adequate security coverage at the Waste Isolation Pilot Plant.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Maintain Security Posture (FY 2008/September 2009/September 2010)</li> </ul>					

**OH-WV-0020 / Safeguards and Security-West Valley** **1,585**      **1,400**      **1,859**

The Safeguards and Security Program at the West Valley Demonstration Project includes those activities required to provide physical and cyber security for all project activities in accordance with applicable DOE standards. The West Valley Demonstration Project Safeguards and Security Program provides a secure working environment during execution of the Project by maintaining access controls and perimeter security of the site, and ensuring general site security for personnel and information technology systems.

This scope will continue until DOE’s mission at the West Valley Demonstration Project is complete.

In FY 2010, the following activities are planned:

- Provide physical and cyber security by an on-site guard force to ensure all DOE information resources are identified and protected at all times.
- Continue program management to oversee the security program including training and qualifications for the West Valley Demonstration Project.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"><li>Continue to support Project activities by providing physical security and protection, cyber security, visitor control, personnel security, and program management. (FY 2008/September 2009/September 2010)</li></ul>					

**OR-0020 / Safeguards and Security**

**16,622**

**27,020**

**32,400**

The Safeguards and Security Program at the East Tennessee Technology Park, in Oak Ridge, Tennessee, provides a safe environment for operations, incorporates changes when necessary by global conditions and/or DOE Orders, and focuses management attention on the primary safeguards and security issues.

The East Tennessee Technology Park's Safeguards and Security Program is comprised of the following eight program elements: Protective Force, Security Systems, Information Security, Cyber Security, Personnel Security, Nuclear Material Control and Accountability, and Program Management. The integration of these eight security elements provides stability and reliability to the overall security posture at the East Tennessee Technology Park.

The completion dates of the East Tennessee Technology Park's K-25 Building and Classified Burial Ground Remediation Projects have been accelerated, which include plans to add additional shifts. Due to the correlative relationship that the K-25 Building and Classified Burial Grounds have with the Safeguards and Security Program, a reciprocal response by the Protective Force, Physical Security, and Nuclear Material Control and Accountability program elements will be needed to provide the adequate level of protection for these projects.

The East Tennessee Technology Park's Cyber Security program requires upgrades to comply with DOE Order 205.1A and the Under Secretary of Energy's Cyber Security Plan, which includes the material costs to procure the necessary access instrumentation and individual unit "tokens" for employees to obtain specific code authorization that must be entered into their computer each time it is accessed.

The Safeguards and Security Program at the East Tennessee Technology Park also continues to work towards the initial completion and long term substitution of the Homeland Security Presidential Directive-12, which directed the Federal Government to transition to new identification credentials.

In FY 2010, the following activities are planned:

- Maintain DOE required security posture for the following major facilities: K-25, K-27, K-1037, Centrifuge Facilities, Classified Burial Grounds, Environmental Management Waste Management Facility, and Transuranic Waste Processing Facility.



(dollars in thousands)

FY 2008	FY 2009	FY 2010
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- Security protection provided for enriched uranium, transuranic material, classified components and equipment.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**PA-0020 / Safeguards and Security**

**0                      8,196                      8,190**

This project provides: visitor control, classification, personnel security, physical security (locks/alarms, access control), information security, implementation of the new Graded Security Protection policy (formerly the Design Basis Threat), Nuclear Material Control and Accountability, operations security, technical surveillance countermeasures, Safeguards and Security Awareness Program, foreign national visits/assignments management, a security management control system, classified computer security, personnel security, and review of incidents and infractions (many of which involve legacy issues with decontamination, decommissioning, and demolition and DOE Material Storage Areas projects) for DOE and its contractors at the Paducah Gaseous Diffusion Plant.

Protective Force personnel are employed on various fixed and mobile posts to perform normal and emergency security tasks. Classification and operations security review all documents released to the public including Freedom of Information Act and Privacy Act requests, litigation responses, and ongoing environmental health investigations, and classify/declassify documents. Oversight and management of Nuclear Material Control and Accountability activities are provided. Personnel security provides badging/clearance support for all employees, contractors, and visitors and visitor control.

In FY 2010, the following activities are planned:

- Provide security services for personnel, equipment, information, matter, and special nuclear materials relating to DOE missions, to include decommissioning, decontamination, and demolition activities.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>Ensure that no unauthorized person or persons will gain access to the site and that all sensitive material is safeguarded. (FY 2008/September 2009/September 2010)</li> </ul>					

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**PO-0020 / Safeguards and Security** **0            4,500            17,509**

This PBS provides an integrated Safeguards and Security Program which includes the following program elements: protective forces; physical security systems to include sub-elements barrier/secure storage/locks and entry control and access controls; information security including information protection, classification/declassification, technical surveillance countermeasures, and operations security; Personnel security including clearance program, security awareness, and visit control; Material Control and Accountability; program management which includes planning, professional training and development, and policy oversight and administration; and cyber security including classified computer security and communications security.

Protective Force personnel are employed on various fixed and mobile posts to perform normal and emergency security tasks. Information security includes protection of classified and unclassified sensitive information and classification, declassification and review of documents for release to the public including Freedom of Information Act and Privacy Act requests, and a limited number of litigation responses. Cyber Security includes the maintenance of one stand-alone desktop computer approved for classified processing. Oversight and management of Nuclear Material Control and Accountability activities is provided. Personnel Security provides processing access authorizations, security education and awareness and badging support.

In FY 2010, the following activities are planned using new budget authority:

- Maintain the appropriate level of safeguards and security using a graded approach for the non-leased portions of the Portsmouth Gaseous Diffusion Plant.
- Provide protective forces, Nuclear Material Control and Accountability and communications security services.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Maintain appropriate levels of safeguards and security. (FY 2008/September 2009/September 2010)</li> <li>▪ Install vault-type room for classified storage as a result of site transition to decontamination and decommissioning. (September 2009)</li> </ul>					

**RL-0020 / Safeguards and Security** **86,503            79,765            82,771**

The Safeguards and Security Program ensures appropriate levels of protection for the Hanford Site facilities against theft or diversion of special nuclear material; acts of radiological sabotage; espionage; theft or loss of classified matter; protection of sensitive information; theft or loss of government

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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property; and other hostile acts that may cause unacceptable impacts on national security, or the health and safety of employees, the public, or the environment.

In FY 2010, funding includes the procurement of safeguards and security equipment and weapons to support protective force defenses of the newly established protected area at the Canister Storage Building complex within the 200-East Area planned for completion in the first quarter. This new protected area will provide secure storage for nuclear materials pending disposition and will permit the closure of the Plutonium Finishing Plant protected area the accelerated decontamination and decommissioning of the Plutonium Finishing Plant complex.

In FY 2010, the following activities are planned:

- Maintain appropriate Hanford site access controls, emergency response, and physical security at both the Plutonium Finishing Plant and the Canister Storage Building Interim Storage Area during completion of material transfer operations. Complete newly established Interim Storage Area protected area at the Canister Storage Building complex to reduce future material safeguards and security costs.
- Maintain Material Control and Accountability, Information Security, Personnel Security, and Protective Force at all Hanford operations.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"> <li>▪ Implement security upgrades to Canister Storage Building (September 2009)</li> <li>▪ De-activate the Plutonium Finishing Plant's protected area (March 2010)</li> <li>▪ Complete ~ \$7.7M of critical SAS infrastructure/lifecycle one time upgrades (September 2010)</li> <li>▪ Maintain appropriate Hanford site access controls, emergency response, and physical security (September 2010)</li> </ul>					

**SR-0020 / Safeguards and Security** **148,040**      **134,336**      **132,064**

The DOE-Savannah River Office of Safeguards, Security, and Emergency Services oversees and manages, safeguards, security and emergency service activities at the Savannah River Site. This organization formulates and executes policies and programs in the areas of physical, information, internal, and personnel security; classification and declassification; computer security; technical surveillance countermeasures; foreign travel; protective force; and Material Control and Accountability. In addition, DOE provides direct management of the perimeter security upgrade construction projects, which are performed under separate contracts, outside the protective force and site management and

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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operations contracts.

The Savannah River Site Safeguards and Security Program employs a number of methods to ensure appropriate levels of protection against unauthorized access, theft, diversion, loss of custody or destruction of DOE assets and hostile acts that may cause adverse impacts on fundamental national security or the health and safety of DOE and contractor employees, the public or the environment. The Savannah River Site is required to ensure the security of the special nuclear material which it currently stores and processes.

EM fully implemented the 2005 Design Basis Threat requirements in FY 2008 at the Savannah River Site and is analyzing the specific changes required to fulfill the 2008 Graded Security Protection policy in FY 2009. Incorporation of these changes will begin in FY 2010.

In FY 2010, the following activities are planned:

- Maintain appropriate uniformed protective force personnel and supporting systems to safeguard nuclear materials and facilities, and other site assets.
- Operate and maintain physical security protection systems.
- Ensure protection of classified and unclassified computer security.
- Execute information and operational security measures, cyber security, personnel security and program management for the Savannah River Operations Office.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
Material Access Areas eliminated (Number of Material Access Areas)	2	2	2	3	+67.0%
Key Accomplishments (FY 2008)/Planned Milestones (FY 2009/FY 2010)					
<ul style="list-style-type: none"><li>▪ Complete 2005 Design Basis Threat Implementation in FY 2008. (FY 2008)</li><li>▪ Will ensure no theft of nuclear material takes place at the Savannah River Site (FY 2008/September 2009/September 2010)</li><li>▪ Will ensure that no unauthorized person or persons will gain access to limited areas within the Site perimeter (FY 2008/September 2009/September 2010)</li><li>▪ Will ensure timely and accurate Material Control and Accountability for nuclear materials at the Savannah River Site (FY 2008/September 2009/September 2010)</li><li>▪ Develop Implementation Plan for Graded Security Protection (GSP) policy . (September 2009)</li></ul>					

**Total, Safeguards and Security**

**257,632**

**260,341**

**279,437**

## Funding Schedule by Site and Activity

(dollars in thousands)

	FY 2008	FY 2009	FY 2010
<b>Carlsbad</b>			
Protective Forces	4,429	4,649	4,214
Information Security	201	211	191
Program Management	193	202	183
Subtotal, Carlsbad	4,823	5,062	4,588
Cyber Security	59	62	56
Total, Carlsbad	4,882	5,124	4,644
<b>Oak Ridge</b>			
Protective Forces	12,144	19,352	24,084
Physical Security Systems	0	1,910	1,916
Information Security	911	1,258	1,265
Personnel Security	425	688	699
Material Control and Accountability	1,109	1,562	2,250
Program Management	832	885	817
Subtotal, Oak Ridge	15,421	25,655	31,031
Cyber Security	1,201	1,365	1,369
Total, Oak Ridge	16,622	27,020	32,400
<b>Paducah</b>			
Protective Forces	0	4,797	4,578
Physical Security Systems	0	781	830
Information Security	0	1,174	1,248
Personnel Security	0	246	261
Material Control and Accountability	0	618	657
Program Management	0	580	616
Total, Paducah	0	8,196	8,190
<b>Portsmouth</b>			
Protective Forces	0	1,957	7,616
Physical Security Systems	0	230	896
Information Security	0	481	1,870
Personnel Security	0	118	458
Material Control and Accountability	0	123	478
Program Management	0	794	5,234
Subtotal, Portsmouth	0	3,703	16,552
Cyber Security	0	797	957
Total, Portsmouth	0	4,500	17,509
<b>Richland</b>			
Protective Forces	49,446	51,496	54,478
Physical Security Systems	11,511	12,470	10,099
Information Security	772	772	828
Personnel Security	2,116	2,348	2,870
Material Control and Accountability	2,224	2,396	2,599
Program Management	18,424	8,064	9,479
Subtotal, Richland	84,493	77,546	80,353
Cyber Security	2,010	2,219	2,418
Total, Richland	86,503	79,765	82,771

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Savannah River			
Protective Forces	88,190	90,043	87,816
Physical Security Systems	27,703	11,372	11,640
Information Security	2,287	2,596	2,511
Personnel Security	6,712	7,412	7,458
Material Control and Accountability	6,164	5,790	5,919
Program Management	12,366	12,368	12,226
Transportation	732	839	654
Subtotal, Savannah River	144,154	130,420	128,224
Cyber Security	3,886	3,916	3,840
Total, Savannah River	148,040	134,336	132,064
West Valley Demonstration Project			
Protective Forces	931	900	1,049
Program Management	317	250	359
Subtotal, West Valley Demonstration Project	1,248	1,150	1,408
Cyber Security	337	250	451
Total, West Valley Demonstration Project	1,585	1,400	1,859
Total, Safeguards and Security	257,632	260,341	279,437

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Protective Forces	155,140	173,194	183,835
Physical Security Systems	39,214	26,763	25,381
Information Security	4,171	6,492	7,913
Personnel Security	9,253	10,812	11,746
Material Control and Accountability	9,497	10,489	11,903
Program Management	32,132	23,143	28,914
Transportation	732	839	654
Subtotal, Safeguards and Security	250,139	251,732	270,346
Cyber Security	7,493	8,609	9,091
Safeguards and Security	257,632	260,341	279,437

## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### Defense Environmental Cleanup

#### Safeguards and Security

##### CB-0020 / Safeguards and Security

- Not a significant change.

-480

##### OH-WV-0020 / Safeguards and Security-West Valley

- Not a significant change.

459

##### OR-0020 / Safeguards and Security

- The increase at Oak Ridge is due to increased security operations, including protective force and Material Control and Accountability associated with increased decontamination and decommissioning operations to accelerate the East Tennessee Technology Park cleanup project.

5,380

##### PA-0020 / Safeguards and Security

- Not a significant change.

-6

##### PO-0020 / Safeguards and Security

- Increase at Portsmouth is mostly due to depletion of carryover balances in FY 2009 and the transition to decontamination and decommissioning.

13,009

##### RL-0020 / Safeguards and Security

- Increase at Richland is due to consolidation and relocation costs and capital improvements above safeguards and security base operations in support of Richland's goal to shrink the Hanford site protection footprint to approximately 75 square miles from the existing 586 square miles by 2015.

3,006

##### SR-0020 / Safeguards and Security

- Decrease at Savannah River reflects adjustments as the site implements the Graded Security Protection policy.

-2,272

<b>Total, Safeguards and Security</b>		<b>19,096</b>
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### Capital Operating Expenses

(dollars in thousands)

	FY 2008	FY 2009	FY 2010
General Plant Projects	11,511	12,470	10,099





## Technology Development and Deployment

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Technology Development and Deployment			
Projects to Reduce Technical Risk	20,600	31,415	52,060
Small Business Innovative Research Program	0 <sup>a</sup>	905	2,940 <sup>b</sup>
Total, Technology Development and Deployment	20,600	32,320	55,000

### Description

This program can be found within the Defense Environmental Cleanup appropriation. The scope of this program includes direct support of cleanup initiatives and opportunities for transformational technologies associated with environmental management. The program currently focuses on the highest risk and cost projects for the EM complex addressing issues related to: Tank Waste, Soil and Groundwater cleanup, and Deactivation and Decommissioning.

An Engineering and Technology Roadmap was developed in March 2008 to provide a guide to identify technology gaps and the strategies to address these gaps with mid- and long-term research and development. The National Research Council of the National Academies of Sciences in their March 2, 2009 report entitled “Advice on the Department of Energy’s Cleanup Technology Roadmap: Gaps and Bridges” observed: “The complexity and enormity of EM’s cleanup task require the results from a significant, ongoing R&D program so that EM can complete its cleanup mission safely, cost-effectively, and expeditiously.”

### Benefits

The Technology Development and Deployment program provides key investments in mid- and long-range research and development projects focused on high priority cleanup issues. These research and development projects are aimed at improving the technical maturity for current baseline technologies, developing cost-effect transformational alternative technologies, and improving or providing next-generation technologies for insertion into the baselines. The results of these research and development projects will address technology gaps and reduce technical uncertainty in the EM projects.

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<sup>a</sup> FY 2008 \$594,000 (\$530,000 for Small Business Innovative Research and \$64,000 for Small Business Technical Transfer Programs) transferred to the Office of Science for award and administration of grants to small businesses.

<sup>b</sup> Includes Small Business Innovative Research requirement associated with the Office of River Protection tank project.

## Basic and Applied Research and Development Coordination

EM will use breakthrough research from the Office of Science and other Departmental offices to improve predicting high-level waste performance and to understand the underlying chemical, geochemical, and geophysical processes involved in the highly radioactive environments. Major research priorities were identified jointly between the Office of Science and EM in the areas of computational thermodynamics of complex fluids and solids, nanoparticulate and colloid physics and chemistry, biogeochemistry in extreme and perturbed environments, highly reactive subsurface materials and environments, and simulation of complex multi-scale systems for ultra-long times that will provide the basic scientific underpinning to assist in EM in developing solutions for nuclear waste disposal and remediation.

### Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**Projects to Reduce Technical Risk** **20,600** **31,415** **52,060**

The program will focus on providing transformational technical solutions in response to the highest priority needs of the sites for three major challenges: 1) reducing or eliminating technical uncertainties and gaps in site baselines; 2) reducing cost and schedule for a site's current baseline; and 3) improving worker and public safety. This portion of the budget will include support for mid- and long-term applied engineering and research for developing and demonstrating the technical feasibility of higher-risk, high payoff technologies.

### Tank Waste

The Department has approximately 91 million gallons of liquid waste stored in underground tanks and approximately 4,000 m<sup>3</sup> of solid waste stored in bins derived from the liquids. The current DOE estimated cost for retrieval, treatment and disposal of this waste exceeds \$50 billion to be spent over several decades. The highly radioactive portion of this waste, located at the Office of River Protection, the Savannah River Site, and Idaho National Laboratory, must be retrieved from tanks, treated and immobilized, and dispositioned. Research will continue to address:

- Recommendations from the National Research Council of the National Academies of Sciences Final Report (April 2006) "Tank Waste Retrieval, Processing, and On-site Disposal at Three Department of Energy Sites" in areas of waste retrieval, waste separations, waste immobilization and tank closures;
- Recommendations for improvements from the Nuclear Regulatory Commission's Technical Evaluation Reports for Savannah River waste determinations under Section 3116 of the National Defense Authorization Act for FY 2005.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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In FY 2010, projects will focus on developing or improving:

- Waste retrieval technologies, especially for tanks residuals and for tanks with internal obstructions;
  - Waste storage technologies;
  - Separations processes to minimize the amount of waste to be processed as high level waste;
  - Tank closure processes to meet performance objectives, such as those in 10 CFR Part 61.40; and
  - Breakthrough immobilization technologies for tank closure.
- 
- In addition, applied research and technology development for tank waste funded within the Office of River Protection's PBS ORP-0014, Radioactive Liquid Tank Waste Stabilization and Disposition. In accordance with Public Law 102-564, this project will be assessed a percentage to support grants to small businesses associated with research and development.

### **Soil and Groundwater**

As a result of processes used for nuclear weapons production, vast areas of groundwater and soils were contaminated at DOE facilities with chemicals, metals, and radionuclides. Plumes of contaminated groundwater are migrating beneath these facilities, resulting in large quantities of contaminated soil in those areas. The conventional method for cleaning up contaminated ground water (pump and treat) is limited in its effectiveness because it fails to dislodge all of the contamination from the subsurface. Plutonium, uranium, strontium, technetium, chromium, and mercury are among the radionuclides and toxic metals that have been difficult to predict in occurrence and transport.

In FY 2010, activities will focus on the following high priority technical areas as identified by the sites:

- Developing advanced sampling and characterization technologies;
- Developing or improving advanced predictive models;
- Developing or improving enhanced in-situ and ex-situ remediation methods; and
- Developing cost-effective processes for long-term monitoring.

### **Deactivation and Decommissioning**

As the DOE complex sites prepare for closure, a large number of buildings and facilities must be deactivated and decommissioned. These facilities contain many complex systems (e.g., ventilation), miles of contaminated pipelines, gloveboxes, and unique processing equipment that require labor intensive deactivation and decommissioning methods.

In FY 2010, activities will focus on:

- Improving characterization techniques for detection and quantification of contamination; and
- Developing new technologies or adapting existing technologies for the contaminated environments found in DOE facilities, especially highly radioactive areas.

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**Small Business Innovative Research Program** **0** **905** **2,940**

Funding for the Small Business Innovative Research assessment is in accordance with Public Law 102-564, which mandates a percentage of all research and development dollars be set aside for grants to small businesses. Once funding is appropriated, it is transferred to the DOE Office of Science for award and administration of grants to small businesses.

In FY 2008, \$594,000 (\$530,000 for Small Business Innovation Research and \$64,000 for Small Business Technical Transfer Programs) was transferred to the Office of Science for award and administration of grants to small businesses. The FY 2009 and FY 2010 amounts shown are estimated requirements for the continuation of the Small Business Innovation Research and Small Business Technical Transfer programs. The FY 2010 amount also includes the estimate associated with the Office of River Protection tank project.

**Total, Technology Development and Deployment** **20,600** **32,320** **55,000**

**Key Accomplishments (FY 2008)**

**Tank Waste**

- Developed and demonstrated innovative technology to remove aluminum in the sludge resulting in a reduction of 100 waste canisters for Tank 51 at the Savannah River Site and potential reduction of 900 waste canisters at the Savannah River Site resulting in significant life-cycle cost savings. Demonstrated Fractional Crystallization pilot scale facility to improve sodium yield for double-shelled tank waste.
- Initiated a partnership among DOE, National Institute of Technical Standards, and Nuclear Regulatory Commission to support applied research and technology development for cementitious waste forms to support tank closure and to improve confidence in results of performance assessments.

**Soil and Groundwater**

- Implemented eight demonstration projects that will address the groundwater contamination from hexavalent chromium, strontium-90, uranium, and carbon tetrachloride at the Hanford site.

**Deactivation and Decommissioning**

- Completed two field demonstrations to evaluate fixative products and for remote imaging characterization of hazardous facilities to reduce risks and improve safety.

**Planned Accomplishments (FY 2009)**

**Tank Waste**

- Support the development of technologies to improve the removal of waste from the waste tanks at Hanford and the Savannah River Site and assist in the closure of these tanks, including: Measurement of sludge characteristics prior transfer to prevent line plugging; removal of recalcitrant waste deposits (residual heels); characterization of residual waste in waste tank pipelines; and grouting residual tank waste.
- Support the development of technologies to treat the waste in the waste tanks at Hanford and the Savannah River Site including: selective dissolution to remove aluminum and chromium; solid/liquid separation methods; alternative and

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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improved vitrification technology to increase waste loading and increased waste throughput; modified Monosodium Titanate ion exchange resin for the removal of strontium and actinides; and a small column ion exchange process to remove cesium from salt cake to meet the Waste Acceptance criteria.

- Develop a calcine stabilization technology, such as hot isostatic pressing, as a feasible option to stabilize calcine waste at Idaho.

#### **Soil and Groundwater**

- Support enhanced sampling and characterization, including new tools for characterization of buried pipes and soils under buildings and slabs and test geophysical tools to develop site conceptual model for mercury remediation.
- Support development of advanced transport and fate models to improve the ability to predict future plume movement and develop concepts for advanced predictive capabilities to provide input for development of next generation groundwater models.

#### **Deactivation and Decommissioning**

- Develop a "Deactivation and Decommissioning Toolbox" of technologies and approaches to reduce technical risks and uncertainty with future deactivation and decommissioning work scope at Oak Ridge and the Savannah River Site. Conduct technology demonstrations for fixatives/strippable coatings for hot cell and plutonium-238 decontamination, and robotic platforms for characterization.

#### **Planned Accomplishments (FY 2010)**

##### **Tank Waste**

- Improve waste storage technologies at the Savannah River Site by providing technologies to understand structural vulnerability and chemical corrosion mechanisms in waste tanks to preserve tank integrity and enable enhanced capacity and evaluating selected additives that can be mixed with waste slurries to improve the rheological properties in order to enable processing and increase solids loading.
- Provide efficient retrieval technology at the Savannah River Site to remove the most difficult waste heels from waste tanks and other ancillary systems with emphasis on tanks with obstructions and demonstrate a suite of rapid characterization technologies to directly measure waste properties to provide critical data needed to select the most efficient and cost-effective removal technology.
- Develop improved formulations and methods for using grout or other materials to stabilize residual tank waste and ancillary systems (e.g., pump tanks, transfer lines, etc.) to assure that long-term performance objectives are met.
- Demonstrate fluidized bed steam reforming technology as an alternative supplemental treatment method.
- Develop low temperature treatment processes to immobilize volatile and semi-volatile radionuclides (e.g., cesium-137, technetium-99, and iodine-129).
- Improve glass formulation and demonstration of high aluminum containing glasses for the Defense Waste Processing Facility.

##### **Soil and Groundwater**

- Improve sampling and characterization by demonstrating geophysical tools at Oak Ridge to detect contamination under slabs and other buried infrastructure such as piping to support remediation of mercury contamination.

## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### Projects to Reduce Technical Risk

- This increase supports applied research and technology development to reduce technical uncertainty, to improve technical maturity, to improve work safety, and to reduce lifecycle costs and schedule. This will increase the investment to address gaps in the areas of tank waste, soil and groundwater remediation, and deactivation and decommissioning.

20,645

### Small Business Innovative Research Program

- This increase is for a mandated tax based on the total amount of the Department's extramural research and development funds. Public Laws 106-554 and 107-50 require the Department to award not less than 2.8 percent of extramural research and development funds to the Small Business Innovative Research and Small Business Technology Transfer programs. Also, includes the tax associated with the Office of River Protection tank project.

2,035

### Total, Technology Development and Deployment

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**22,680**

## Federal Contribution to the Uranium Enrichment Decontamination and Decommissioning Fund

### Overview

The Defense Environmental Cleanup, Federal Contribution to the Uranium Enrichment Decontamination and Decommissioning Fund, funds the Federal Government contribution to the Uranium Enrichment Decontamination and Decommissioning Fund, as required by the Energy Policy Act of 1992 (The Act). Prior to October 24, 2007, the Act authorized annual fund contributions which came from both a special assessment on domestic utilities and annual Congressional appropriations.

The Administration is proposing an amendment to section 1802 of the Atomic Energy Act of 1954 (42 U.S.C. 2297g-1) to reinstate a special assessment on domestic utilities starting in FY 2010, as well as additional Federal deposits into the Fund. Collections resulting from the reinstatement would be deposited into the Uranium Enrichment Decontamination and Decommissioning Fund. The total amount collected from industry for a fiscal year shall not exceed \$200,000,000 (to be annually adjusted for inflation beginning in fiscal year 2011 using the Consumer Price Index for all-urban consumers published by the Department of Labor), and total annual deposits from industry and the Federal government shall not exceed \$663,000,000 (also adjusted for inflation, with the remainder above the industry assessment to come from appropriated funds). This proposal reiterates the ongoing need to decontaminate, decommission and remediate the uranium processing facilities, and the shared responsibility of both industry and the Federal government for these costs.

### Benefits

This fund is responsible for maintaining, decontaminating, decommissioning, and remediating uranium processing facilities. This includes the environmental management responsibilities at the nation's three gaseous diffusion plants at Paducah, Kentucky, Portsmouth, Ohio, and Oak Ridge, Tennessee.

The account also provides funding for reimbursement of licensees operating uranium or thorium processing sites for the cost of environmental cleanup at those sites. The funding request for Uranium/Thorium is found in the Headquarters chapter of the budget.

As the cleanup and decommissioning at the gaseous diffusion plants progresses (as well as the cleanup at uranium/thorium processing sites), the risk and hazard to human health and the environment is greatly reduced. In addition, as cleanup is completed, the financial resources needed to maintain site infrastructure will be reduced.

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Defense Environmental Cleanup			
Federal Contribution to the Uranium Enrichment D&D Fund			
HQ-DD-0100 / Federal Contribution to the Uranium			
Enrichment D&D Fund	458,787	463,000	463,000

## Detailed Justification

(dollars in thousands)

FY 2008	FY 2009	FY 2010
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**HQ-DD-0100 / Federal Contribution to the Uranium Enrichment D&D Fund**

**458,787      463,000      463,000**

The Energy Policy Act of 1992 created the Uranium Enrichment Decontamination and Decommissioning Fund to pay for the cost of cleanup of the gaseous diffusion facilities located in Oak Ridge, Tennessee; Paducah, Kentucky; and Portsmouth, Ohio. The fund also covers the Federal cost to reimburse operating uranium or thorium processing site licensees for the costs of their environmental cleanup at designated sites, subject to a specific reimbursement limit. The Department compensates site owners on a per-ton basis for the restoration costs for those tailings attributable to the Federal Government. The Act authorizes annual contributions to the fund of \$518,233,233 (amended August 2002) adjusted for inflation, from two sources: up to \$150,000,000 from a special assessment on domestic utilities based on the ratio of their separative work unit purchases from the Department to total purchases from the Department including those produced for defense purposes, with the remainder to come from annual Congressional appropriations. The purpose of this activity is to provide the annual Federal contribution (to cover shortfalls in the initial Federal Contributions to the Fund).

- Provide the FY 2010 Federal Government contribution to the Uranium Enrichment Decontamination and Decommissioning Fund, as required by the Energy Policy Act of 1992.

Metrics	Complete Through FY 2008	Complete Through FY 2009	Complete Through FY 2010	Life-cycle Quantity	FY 2010 % Complete
No metrics associated with this PBS					

**Total, D&D Fund Deposit**

**458,787      463,000      463,000**



# **Defense Nuclear Waste Disposal**

# **Defense Nuclear Waste Disposal**

## **Defense Nuclear Waste Disposal**

### **Proposed Appropriation Language**

For nuclear waste disposal activities to carry out the purposes of *the Nuclear Waste Policy Act of 1982*, Public Law 97-425, as amended, including the acquisition of real property or facility construction or expansion, [~~\$143,000,000~~]~~\$98,400,000~~, to remain available until expended. (Energy and Water Development and Related Agencies Appropriations Act, 2009.)



**Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Overview**

**Appropriation Summary by Program**

( dollars in thousands )

	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
Defense Nuclear Waste Disposal Repository Program	199,171	143,000	98,400
Total, Defense Nuclear Waste Disposal	199,171	143,000	98,400



**Nuclear Waste Disposal and Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Overview**

**Appropriation Summary by Program**

(dollars in thousands)

	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
Nuclear Waste Disposal			
Repository Program	117,454	68,552	28,400
Program Direction	68,215	74,983	70,000
Congressionally Directed Projects	1,600	1,855	-
Total, Nuclear Waste Disposal	<u>187,269</u>	<u>145,390</u>	<u>98,400</u>
Defense Nuclear Waste Disposal			
Repository Program	199,171	143,000	98,400
Total, Defense Nuclear Waste Disposal	<u>199,171</u>	<u>143,000</u>	<u>98,400</u>
Total, Nuclear Waste Disposal and Defense Nuclear Waste Disposal	386,440	288,390	196,800





**Nuclear Waste Disposal and Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

	(dollars in thousands)		
	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
Argonne National Laboratory			
Repository Project	1,302	---	---
Total, Argonne National Laboratory	1,302	---	---
Lawrence Berkeley National Laboratory			
Repository Project	3,500	---	---
Total, Lawrence Berkeley National Laboratory	3,500	---	---
Lawrence Livermore National Laboratory			
Repository Project	1,350	---	---
Total, Lawrence Livermore National Laboratory	1,350	---	---
Nevada Test Site			
Repository Project	10,000	---	---
Program Management and Integration	972	---	---
Total, Nevada Test Site	10,972	---	---
NNSA Service Center			
Program Direction	1,088	1,000	1,000
Oak Ridge National Laboratory			
Program Management and Integration	243	---	---
	243	---	---
Pacific Northwest Laboratory			
Repository Project	763	---	---
Total, Pacific Northwest Laboratory	763	---	---
Sandia National Laboratory			
Repository Project	67,500	47,000	40,000
Program Management and Integration	228	---	---
Total, Sandia National Laboratory	67,728	47,000	40,000

(table continues on next page)

**Nuclear Waste Disposal and Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

(table continued)

(dollars in thousands)

	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
Washington Headquarters			
Repository Project	9,832	13,000	10,200
Transportation System	7,759	1,000	---
Program Management and Integration	10,249	11,700	4,500
Program Direction	43,522	44,590	50,000
Total, Washington Headquarters	71,362	70,290	64,700
Repository Project Office			
Repository Project	179,266	125,107	65,900
Transportation	10,541	1,100	---
Program Direction	23,605	29,393	19,000
Program Management and Integration	14,720	14,500	6,200
Total, Yucca Mountain Project Office	228,132	170,100	91,100
Total, Nuclear Waste Disposal and Defense Nuclear Waste Disposal	386,440	288,390	196,800

**Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

	(dollars in thousands)		
	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
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Repository Project	1,302	---	---
Total, Argonne National Laboratory	1,302	---	---
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Repository Project	3,500	---	---
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Repository Project	1,350	---	---
Total, Lawrence Livermore National Laboratory	1,350	---	---
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Repository Project	10,000	---	---
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Total, Nevada Test Site	10,972	---	---
Pacific Northwest Laboratory			
Repository Project	763	---	---
Total, Pacific Northwest Laboratory	763	---	---
Sandia National Laboratory			
Repository Project	67,500	47,000	40,000
Total, Sandia National Laboratory	67,500	47,000	40,000
Repository Project Office			
Repository Project	113,784	96,000	58,400
	113,784	96,000	58,400
Total, Defense Nuclear Waste Disposal	199,171	143,000	98,400



**Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

(dollars in thousands)

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NNSA Service Center			
Program Direction	1,088	1,000	1,000
Total, NNSA Service Center	1,088	1,000	1,000
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Total, Nuclear Waste Disposal	187,269	145,390	98,400



**Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

The OCRWM program is funded from both the Defense Nuclear Waste Disposal and Nuclear Waste Disposal accounts. The overview narrative and detailed justification for the entire program supported by both accounts are provided in the Nuclear Waste Disposal section of this budget request.





# **Nuclear Waste Disposal**

# **Nuclear Waste Disposal**

## Nuclear Waste Disposal

### Proposed Appropriation Language

For nuclear waste disposal activities to carry out the purposes of the Nuclear Waste Policy Act of 1982, Public Law 97--425, as amended (the ``NWPAct"), including the acquisition of real property or facility construction or expansion, [\$145,390,000]\$98,400,000, to remain available until expended, and to be derived from the Nuclear Waste Fund: Provided, That of the funds made available in this Act [Nuclear Waste Disposal, \$5,000,000 ]from the Nuclear Waste Fund, 1.62 percent, but not to exceed \$3,182,900 shall be provided to the [Office of the Attorney General of the ]State of Nevada solely for expenditures, other than salaries and expenses of State employees, to conduct scientific oversight responsibilities and participate in licensing activities pursuant to the [Act]NWPAct: Provided further, That notwithstanding the lack of a written agreement with the State of Nevada under section 117(c) of the NWPAct, [\$1,000,000 ]0.32 percent, but not to exceed \$636,580, shall be provided to Nye County, Nevada, for on-site oversight activities under section 117(d) of [that Act]the NWPAct: Provided further, That [\$9,000,000]of the funds made available in this Act from the Nuclear Waste Fund, 2.1 percent, but not to exceed \$5,729,221, shall be provided to affected units of local government, as defined in the NWPAct, to conduct appropriate activities and participate in licensing activities under Section 116(c) of the NWPAct: Provided further, That of the [\$9,000,000]amounts provided to affected units of local government, 7.5 percent of the funds provided shall be made available to affected units of local government in California with the balance made available to affected units of local government in Nevada for distribution as determined by the Nevada affected units of local government: [Provided further, That this funding shall be provided to] [affected units of local government, as defined in the NWPAct]: Provided further, That [\$500,000]of the funds made available in this Act from the Nuclear Waste Fund, 0.16 percent, but not to exceed \$318,290 shall be provided to the[ Timbisha-Shoshone Tribe] affected Federally-recognized Indian tribes, as defined in the NWPAct, solely for expenditures, other than salaries and expenses of tribal employees, to conduct appropriate activities and participate in licensing activities under section 118(b) of the NWPAct: Provided further, That [notwithstanding the provisions of chapters 65 and 75 of title 31, United States Code, the Department shall have no monitoring, auditing or other oversight rights or responsibilities over amounts provided to affected units of local government: Provided further, That the funds for the State of Nevada shall be made available solely to the Office of the Attorney General by direct payment and to units of local government by direct payment]3.0 percent of the first \$300,000,000 made available in this Act for nuclear waste disposal and defense nuclear waste disposal activities, plus 2.5 percent of those funds in excess of \$300,000,000, shall be provided to Nye County, Nevada, as payment equal to taxes under section 116(c)(3) of the NWPAct: Provided further, That within 90 days of the completion of each Federal fiscal year, the [Office of the Attorney General of the ]State of Nevada, each affected Federally-recognized Indian tribe, and each of the affected units of local government shall provide certification to the Department of Energy that all funds expended from such payments have been expended for activities authorized by the NWPAct and this Act: Provided further, That failure to provide such certification shall cause such entity to be prohibited from any further funding provided for similar activities: Provided further, That none of the funds herein appropriated may be: (1) used directly or indirectly to influence legislative action, except for normal and recognized executive-legislative communications, on any matter pending before Congress or a State legislature or for lobbying activity as provided in 18 U.S.C. 1913; (2) used for litigation expenses; or (3) used to support multi-State efforts or other coalition building activities inconsistent with the restrictions contained in this Act: Provided further, That all proceeds and recoveries realized by the Secretary in carrying out activities authorized by the NWPAct, including but not limited to, any proceeds from the sale of assets, shall be available without further appropriation and shall

remain available until expended[: Provided further, That no funds provided in this Act or any previous Act may be used to pursue repayment or collection of funds provided in any fiscal year to affected units of local government for oversight activities that had been previously approved by the Department of Energy, or to withhold payment of any such funds: Provided further, That, of the amount appropriated in this paragraph, \$1,855,425 shall be used for projects specified in the table that appears under the heading ``Congressionally Directed Nuclear Waste Disposal Projects" in the text and table under this heading in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act)]. (Energy and Water Development and Related Agencies Appropriations Act, 2009.)

**Nuclear Waste Disposal and Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Overview**

**Appropriation Summary by Program**

( dollars in thousands )

	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
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Repository Program	199,171	143,000	98,400
Total, Defense Nuclear Waste Disposal	<u>199,171</u>	<u>143,000</u>	<u>98,400</u>
Total, Nuclear Waste Disposal and Defense Nuclear Waste Disposal	386,440	288,390	196,800

## **Preface**

OCRWM receives funds through two separate appropriation accounts, the Nuclear Waste Disposal and Defense Nuclear Waste Disposal appropriations. The overview narrative and detailed justification for the entire program, as supported by both accounts, is presented in the Nuclear Waste Disposal section of this budget request.

The FY 2010 budget request of \$197 million for OCRWM implements the Administration's decision to terminate the Yucca Mountain program while developing nuclear waste disposal alternatives. All funding for development of the Yucca Mountain facility would be eliminated, such as further land acquisition, transportation access, and additional engineering. The budget request includes the minimal funding needed to explore alternatives for nuclear waste disposal through OCRWM and to continue participation in the Nuclear Regulatory Commission (NRC) license application (LA) process, consistent with the provisions of the Nuclear Waste Policy Act. The Administration intends to convene a “blue-ribbon” panel of experts to evaluate alternative approaches for meeting the federal responsibility to manage and ultimately dispose of spent nuclear fuel and high-level radioactive waste from both commercial and defense activities. The panel will provide the opportunity for a meaningful dialogue on how best to address this challenging issue and will provide recommendations that will form the basis for working with Congress to revise the statutory framework for managing and disposing of spent nuclear fuel and high-level radioactive waste.

The OCRWM FY 2010 budget request is dedicated solely to supporting to the NRC LA process. Prior year activities that supported both the LA and other OCRWM activities have been scaled back to include only those elements specific to the LA and are, therefore, no longer included as distinct budget elements. The Program Direction budget has been restructured to support the LA activities. Finally, Project Support activities are limited to those required by law, regulation, or order for the operation of a federal program or essential to a full and fair license process.

## **Mission**

The mission of OCRWM is to manage and dispose of spent nuclear fuel (SNF) and high-level radioactive waste (HLW) in a manner that protects public health, safety, and the environment; enhances national and energy security; and merits public confidence.

## **Benefits**

OCRWM is critical to enhancing the national and economic security goals of the nation, and the Nuclear Waste Policy Act of 1982, as amended, mandates its activities. The safe management of spent nuclear fuel and high-level radioactive waste must protect the health, safety and environment of the United States. This increases credibility and public confidence in nuclear safety and security, and it allows nuclear energy to remain a significant contributor to the country's energy needs. The OCRWM program is also responsible for demonstrating progress in the cleanup of U.S. defense sites consistent with the mission of the DOE Office of Environmental Management as well as international nonproliferation goals, thereby supporting national security objectives, along with Department of Energy strategic goals.

The Nation's commercial and defense SNF and HLW must be safely and permanently isolated to minimize the risk to human health and the environment. Effective management of these materials will ensure that our country enjoys a diverse source of energy options, remains competitive in the global economy, maintains national security, supports cleanup of weapons sites, continues operation of the U.S. Navy's nuclear-powered vessels, and advances our international non-proliferation goals. Ultimately, the success of the program ensures the safe and secure management of SNF and HLW currently located at more than 120 above ground sites within 75 miles of over 160 million Americans, and nearly every major waterway.

### **License Application and Defense**

The Nuclear Waste Policy Act (NWPA) of 1982 made the Department of Energy (DOE) responsible for the permanent disposal of U.S. spent nuclear fuel and high-level nuclear waste. Following nine site recommendations, siting guidelines, and environmental assessments over several years, the 1987 NWPA amendments mandated one site for characterization. With the adoption of P.L. 107-200 in July of 2002, Yucca Mountain became the designated site for the national repository.

The Department is following the process and schedule outlined in the NWPA, as amended, to support the licensing review process underway by the U.S. Nuclear Regulatory Commission (NRC). On June 3, 2008, consistent with section 114(b) of the NWPA, the Department submitted a license application to the NRC. The NRC docketed the application on September 8, 2008 (73 Fed. Reg. 53284), and issued the Notice of Hearing and Opportunity to Petition for Leave to Intervene on the license application on October 22, 2008 (73 Fed. Reg. 63029). NRC's applicable regulations establish a detailed schedule for the conduct of the hearing process, including for the filing of petitions to intervene, discovery, summary disposition motions, the evidentiary hearing, proposed findings, appeals and a final decision by the Commission on the application. Section 114(d) of the NWPA requires NRC to issue a final decision approving or disapproving the issuance of construction authorization for the repository within three years; provided that, NRC may delay this deadline by an additional year pursuant to the procedures set forth in section 114(e) of the NWPA.

As stated in the preface, OCRWM's budget request for FY 2010 provides support for the NRC licensing process, and does not include any funding for any activities not directly related to supporting the NRC licensing process or required by law, regulation or order for the operation of a federal program or those being essential to a full and fair license process.

During FY 2010, the NRC staff will continue their review of the LA and will continue to submit to the DOE Requests for Additional Information (RAIs) resulting from their review. Additionally, the Atomic Safety and Licensing Board (ASLB) will continue the LA hearing process. Responding to questions from NRC and participating in the NRC licensing proceeding will require DOE effort in the following areas:

- Undertake additional preclosure and post-closure analytical activities, as required, to respond to potentially multiple rounds of highly technical, detailed NRC RAIs;
- Provide technical, scientific, and legal support for court challenges;
- Maintain and update the LA and supporting documents as issues resulting from contentions are resolved and RAIs are responded to;
- Ensure effective LA configuration control and consistency with supporting documents;
- Assist NRC in its review and acceptance of the Supplemental Environmental Impact Statement (SEIS) providing additional groundwater analysis;

- Preparation and review of depositions;
- Preparation of DOE witnesses and testimony for ASLB hearings;
- Addressing discovery, including derivative discovery;
- Preparation and response to interrogatories, and;
- Support for motions and other legal actions.

This effort will require sufficient technical, scientific, licensing, and legal resources, as appropriate for particular tasks, to ensure a full and fair license process.

### **Repository Design**

Repository design activities will be conducted only to provide support for RAIs or contention responses or resolutions, documents, or information updates that affect the LA references or require notification to the NRC of changes in LA content, and to correct conditions that have a potential impact on the LA. All Repository design activities not directly in support of the NRC licensing process will be suspended in FY 2010.

### **Transportation**

All transportation system development activities will be suspended in FY 2010.

### **Program Direction and Management**

OCRWM federal staff will manage and perform critical LA support functions in the face of a reduction of more than 2,000 contractor staff in FY 2008 and FY 2009. Many of the functions currently performed by contractor support will now be absorbed into the work by federal staff. Federal staff are funded from the program direction subaccount. Federal employees will perform technical work representing the Department as the license applicant before the NRC, in meetings with the NRC staff, and the public licensing hearings. In addition, federal staff will provide support to the Department of Justice in litigation related to the NWSA. Federal employees will perform mandatory activities required to comply with Federal laws, including the NWSA, DOE Orders, and other government regulations. In FY 2010, federal employees will manage and operate the Yucca Mountain Site, performing only those activities at the site to continue to meet all applicable safety, security, and other regulatory requirements, in order to facilitate ongoing performance confirmation scientific data collections that directly support the NRC licensing process.

The requested funding will be used in part to reimburse the costs of DOE contractor contributions to defined-benefit (DB) pension plans as required by the Employee Retirement Income Security Act (ERISA), as amended by the Pension Protection Act of 2006 (PPA), and consistent with Departmental direction. The PPA amended ERISA to require accelerated funding of DB pension plans so that the plans become 100% funded in 2011. Most contractors that manage and operate DOE's laboratories, weapons plants, and execute environmental clean-up projects at various government owned sites and facilities are contractually required to assume sponsorship of any existing contractor DB pension plans for incumbent employees who work and retire from these sites and facilities. Increased contributions began to be required for some of these DB pension plans as a result of the downturn in investment values in FY 2009. Whether additional funding will be needed in future years will depend on the funded status of the plans based on plan investment portfolios managed by the contractors as sponsors of the DB pension plans.



## **Strategic Themes, Goals and the Secretary's Initiatives**

A new strategic plan has not yet been established and approved by the Secretary of Energy. The Secretary has established major priorities and initiatives.

The Secretary's top ten initiatives are:

1. **Energy Efficient Homes and Businesses:** Funding provided through the states for homeowners and businesses to take immediate steps toward energy efficiency – reducing heating and air conditioning bills and creating jobs.
2. **Greening Federal Buildings:** Provide funding for the federal government to improve the efficiency of offices and buildings, reducing energy bills and creating jobs.
3. **Renewable Energy Projects:** Accelerate the construction of solar, wind, geothermal and other renewable energy generation facilities through a combination of loans and grants, creating jobs immediately and provide the United States with clean energy supply for the long term.
4. **SmartGrid Technology and Transmission Infrastructure:** Build the wires and infrastructure needed to transport electricity across the country – from renewable energy plants to population centers, reducing congestion and allowing for more clean energy – and improve the efficiency and reliability of the existing grid.
5. **Clean Coal Technology:** Develop and pilot innovative technologies for the emission-free coal plants of the future, allowing our nation to safely utilize our abundant coal resources.
6. **Next Generation Biofuels:** Provide loans and grants to accelerate the research and deployment of cellulosic biofuels technologies to provide a clean alternative to imported fossil fuel sources.
7. **Science and Basic Research in the Energy Technologies of the Future:** Investments in building and renovating laboratories and scientific research facilities that will create jobs immediately and enable the research on for technologies and innovations that will sustain American industry and provide new energy and climate solutions over the longer term.
8. **Battery Research and Advanced Vehicle Technologies:** Loans and grants to support the development of advanced vehicle batteries and battery systems to reinvigorate the U.S. auto industry, reduce the U.S. dependence on foreign oil and transforming the way automobiles are powered.
9. **Advanced Research Project Agency-Energy (ARPA-E):** Jump start advanced energy technologies by funding high-risk, high-payoff research in collaboration with industry.
10. **Cleanup of Nuclear Legacy:** Redouble the ongoing projects to clean up the radioactive waste from cold war nuclear project sites, creating jobs and reclaiming lands for communities across the country.

The following chart aligns the current Strategic Plan with the Secretary's priorities:

Strategic Theme	Strategic Goal Title	Secretary's Priorities	GPRA Unit Program Number	GPRA Unit Program Title	Office
4. Environmental Responsibility	2. Managing the Legacy	Clean, Secure Energy	54	Nuclear Waste Disposal	RW

## Annual Performance Results and Targets <sup>b</sup>

FY 2005 Results	FY 2006 Results	FY 2007 Results	FY 2008 Results	FY 2009 Results	FY 2010 Targets
Strategic Goal 4.2: Managing the Legacy					
Repository Program					
Completed 2 LA sections at 100%; 23 at 90%; and 70 at 50%. Signed memo and availability of data.	Submitted the LA to the NRC in 2008.	Completed 2 LA sections at 100%; 23 at 90%; and 70 at 50%. Signed memo and availability of data.	Submitted the LA to the NRC in 2008.	The program will respond to Requests for Additional Information (RAI's) within the manner and timeframe prescribed by the Nuclear Regulatory Commission, consistent with available funding.	The program will respond to Requests for Additional Information (RAI's) within the manner and timeframe prescribed by the Nuclear Regulatory Commission,.
Completed processing of documents and emails (dated June 30, 2007 or earlier) to be ready for LSN. Signed status reports.	Completed LSN Certification no later than six months prior to the submittal of the LA.	Completed processing of documents and emails (dated June 30, 2007 or earlier) to be ready for LSN. Signed status reports.	Completed LSN Certification no later than six months prior to the submittal of the LA.		
Published the Nevada Transportation Draft Rail Alignment Environmental Impact Statement. Supporting documentation: Federal Register notice or equivalent and publicly available document.	Published the Nevada Transportation Final Rail Alignment Environmental Impact Statement.	Published the Nevada Transportation Draft Rail Alignment Environmental Impact Statement. Supporting documentation: Federal Register notice or equivalent and publicly available document.	Published the Nevada Transportation Final Rail Alignment Environmental Impact Statement.		
	Issued a Record of Decision identifying alignment on which railroad may be built.		Issued a Record of Decision identifying alignment on which railroad may be built.		
Maintained total administrative overhead costs in relation to total program costs at 21%.	Maintained total administrative overhead costs in relation to total program costs at 23%.	Maintained total administrative overhead costs in relation to total program costs at 21%.	Maintained total administrative overhead costs in relation to total program costs at 23%.	Maintain total administrative overhead costs in relation to total program costs of less than 25%.	Maintain total administrative overhead costs in relation to total program costs of less than 25%.

<sup>b</sup> Annual effectiveness and efficiency performance targets will not be reported in the Department's annual Performance and Accountability Report (PAR)

### Facilities Maintenance and Repair

The Department's Facilities Maintenance and Repair activities are tied to its programmatic missions, goals, and objectives. Facilities Maintenance and Repair activities funded by this budget are displayed below.

In FY 2010, OCRWM will continue minimal levels of site activities ensuring the safe operation to support performance confirmation testing and site access requests in support of the NRC licensing process. OCRWM will continue to utilize a reactive maintenance approach (i.e. breakdown maintenance) for facilities and infrastructure. This approach provides little or no preventative repair and includes only maintenance on those systems that have a safety or environmental permit requirement basis.

### Direct-Funded Maintenance and Repair

	(dollars in thousands)		
	FY 2008	FY 2009	FY 2010
Repository Project	1,513	3,894	1,675
Total, Direct-Funded Maintenance and Repair	1,513	3,894	1,675

**Nuclear Waste Disposal and Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

	(dollars in thousands)		
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Repository Project	1,302	---	---
Total, Argonne National Laboratory	1,302	---	---
Lawrence Berkeley National Laboratory			
Repository Project	3,500	---	---
Total, Lawrence Berkeley National Laboratory	3,500	---	---
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Repository Project	1,350	---	---
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Repository Project	10,000	---	---
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NNSA Service Center			
Program Direction	1,088	1,000	1,000
Oak Ridge National Laboratory			
Program Management and Integration	243	---	---
	243	---	---
Pacific Northwest Laboratory			
Repository Project	763	---	---
Total, Pacific Northwest Laboratory	763	---	---
Sandia National Laboratory			
Repository Project	67,500	47,000	40,000
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(table continues on next page)

**Nuclear Waste Disposal and Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

(table continued)

(dollars in thousands)

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Washington Headquarters			
Repository Project	9,832	13,000	10,200
Transportation System	7,759	1,000	---
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Office of Civilian Radioactive Waste Management (OCRWM)**

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Office of Civilian Radioactive Waste Management (OCRWM)**

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	(dollars in thousands)		
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Repository Project	1,302	---	---
Total, Argonne National Laboratory	1,302	---	---
Lawrence Berkeley National Laboratory			
Repository Project	3,500	---	---
Total, Lawrence Berkeley National Laboratory	3,500	---	---
Lawrence Livermore National Laboratory			
Repository Project	1,350	---	---
Total, Lawrence Livermore National Laboratory	1,350	---	---
Nevada Test Site			
Repository Project	10,000	---	---
Program Management & Integration	972	---	---
Total, Nevada Test Site	10,972	---	---
Pacific Northwest Laboratory			
Repository Project	763	---	---
Total, Pacific Northwest Laboratory	763	---	---
Sandia National Laboratory			
Repository Project	67,500	47,000	40,000
Total, Sandia National Laboratory	67,500	47,000	40,000
Repository Project Office			
Repository Project	113,784	96,000	58,400
	113,784	96,000	58,400
Total, Defense Nuclear Waste Disposal	199,171	143,000	98,400

## **Major Changes or Shifts by Site**

In FY 2010, there is a general reduction of work at all OCRWM-related mission at any sites due to greatly reduced funding and a scaling back of activities associated with the Repository Project to the level needed to support U.S. Nuclear Regulatory Commission licensing. Repository Project work is all but ceased at Argonne National Laboratory, Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, the Nevada Test Site, Oak Ridge National Laboratory, and the Pacific Northwest National Laboratory.

### **Site Description**

#### **NNSA Service Center**

In support of the Repository Project and the Office of Civilian Radioactive Waste Management (OCRWM) Program Direction budget element, the NNSA – AL Service Center administers disbursement of external oversight and payments-equal-to-taxes (PETT) funds to affected units of government, and also administers contracts/agreements with the OCRWM management and operations (M&O) contractor, support services contracts and all other financial/contract agreements associated directly with Repository Project.

#### **Sandia National Laboratory**

The Sandia National Laboratories-New Mexico (SNL) site located in Albuquerque, New Mexico, is a research and development facility with a primary mission of developing and testing non-nuclear components of nuclear weapons.

The Department designated SNL as the lead laboratory to coordinate and organize the scientific work for the licensing review process. SNL staff are the national experts in in-situ monitoring in the exploratory studies facility and in the cross drift, performance confirmation testing, and performance assessment modeling for the preclosure and post-closure analysis. It also supports the reviews of the TSPA in support of the LA review process. These testing activities support performance confirmation and LA defense activities. Appropriate personnel will be available to support the license defense process.

#### **Repository Project in Nevada**

The Repository Project in Las Vegas, Nevada has the primary responsibility for supporting the License Application (LA) as it goes through the licensing process of the United States Nuclear Regulatory Commission (NRC). The Repository Project manages the contracts for the M&O contractor and the support services contractors.

**License Application:** Includes managing the effort for the support of the LA, including the Licensing Support Network, preparation and support for the licensing hearings. It includes regulatory issue resolution, interactions with the NRC and management of regulatory commitments and licensing action items by DOE to NRC.

**Preclosure and Post-closure Safety Analysis:** Includes collection of data; conducting analyses; and developing the TSPA, preclosure safety analyses, and performance confirmation documents. It also supports the NRC review of the safety analyses related portions of the LA and Safety Analysis Report.

Site Operations: Includes Site Maintenance and Operations. Activities include field procurement, project controls, procedure integration.

Project Support: Includes project management, project support and coordination activities. Project Management functions include Project Management and Integration for technical development and control of products, establishing and maintaining engineering and scientific processes and procedures. Project support functions including Project Controls, Systems Engineering, Safeguards and Security, Information Management, Procurement, Environmental, Safety and Health, and General Project Services (e.g., Administrative Services, Technical Support Services, Communications, Facility and Fleet Operational Services). It also includes compliance with National Environmental Policy Act requirements and other compliance management activities.

External Oversight, Cooperative Agreements, and PETT: Includes financial assistance for external oversight of the Project, cooperative agreement funding, and payments equal to taxes to the State of Nevada and Affected Units of Local Government. It also includes oversight of these forms of financial assistance.

Program Direction: Includes salaries and benefits, travel, and other related expenses of the federal work force in support of the Repository Project. It also includes Repository Project support services.



**Nuclear Waste Disposal and Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Repository Program**

**Funding Profile by Subprogram**

( dollars in thousands )

	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
Repository Program			
Repository Project	271,913	183,252	116,100
Transportation	18,300	2,100	-
Program Management & Integration	26,412	26,200	10,700
Congressionally Directed Projects	1,600	1,855	-
Subtotal, Repository Program	<u>318,225</u>	<u>213,407</u>	<u>126,800</u>
Program Direction	68,215	74,983	70,000
Total, Repository Program	<u>386,440</u>	<u>288,390</u>	<u>196,800</u>

## Repository Project

### Funding Schedule by Activity

(dollars in thousands)

	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
Repository Project			
License	66,459	73,000	86,500
Safety Analyses and Assessments	61,400	53,478	---
Waste Package	9,054	---	---
Receipt & Canister Receipt/Closure Facility	9,000	---	---
Canister Handling Facilities (RF/CRCF)	---	---	---
Initial and Wet Handling Facilities	9,000	---	---
Fuel Handling Facilities (IHF/WHF)	---	---	---
Balance of Plant Infrastructure	54,000	4,207	2,000
Initial Infrastructure Readiness	18,000	---	---
Project Support (Includes PETT-AULG)	43,000	49,667	27,600
Second Repository Report	2,000	---	---
Total, Repository Project	271,913	180,352	116,100

### Mission

The mission of the Office of Civilian Radioactive Waste Management (OCRWM) is to manage and dispose of Spent Nuclear Fuel (SNF) and High Level Radioactive Waste (HLW) in a manner that protects public health and safety and the environment; enhances national security; and merits public confidence.

The Repository Project mission is to support the U.S. Nuclear Regulatory Commission (NRC) licensing process consistent with existing law and to suspend all other repository activities.

### Repository Project

The NWPA of 1982 made the Department of Energy (DOE) responsible for the permanent disposal of U.S. spent nuclear fuel and high-level nuclear waste. With the adoption of P.L. 107-200 in July of 2002, Yucca Mountain became the designated site for the national repository, and, in accordance with the statutory framework set forth in the NWPA, DOE submitted a detailed License Application (LA) to the NRC in June 2008 and the NRC docketed the LA in September of 2008.

FY 2010 will be the second year of the multi-year licensing process. OCRWM's budget request for FY 2010 represents a scaling back of activities to provide support for the NRC licensing process, or otherwise required to be performed law, regulation or order for the operation of a federal program or those being essential to a full and fair license process. OCRWM's budget request for FY 2010 includes no funding for any activities not directly related to supporting the NRC licensing process.

During FY 2010, the NRC staff will continue their review of the LA and will continue to submit to the DOE Requests for Additional Information (RAIs) resulting from their review. Additionally, the Atomic Safety and Licensing Board (ASLB) will continue the LA hearing process. Responding to questions from NRC and participating in the NRC licensing proceeding will require significant DOE effort, and the budget request supports participation in the following areas:

- Undertake additional preclosure and post-closure analytical activities, as required, to respond to potentially multiple rounds of highly technical, detailed NRC RAIs;
- Provide technical, scientific, and legal support for court challenges;
- Maintain and update the LA and supporting documents as issues resulting from contentions are resolved and RAIs are responded to;
- Ensure effective LA configuration control and consistency with supporting documents;
- Assist NRC in its review and acceptance of the Supplemental Environmental Impact Statement (SEIS) providing additional groundwater analysis;
- Preparation and review of depositions;
- Preparation of DOE witnesses and testimony for ASLB hearings;
- Addressing discovery, including derivative discovery;
- Preparation and response to interrogatories, and;
- Support for motions and other legal actions.

This effort will require sufficient technical, scientific, licensing, and legal resources, as appropriate for particular tasks, to ensure a full and fair license process.

### Detailed Justification

(dollars in thousands)

FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
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#### Licensing Support

**66,459**

**73,000**

**86,500**

This budget element was renamed from “License” to better reflect the work performed under this budget element in the FY 2010 request. Activities in other budget categories that were providing support to licensing activities in previous budgets have been fully consolidated into the “Licensing Support” budget element.

#### License Application (LA):

The principal activities that will occur during the NRC LA review and hearing phase include: support for responses to the NRC staff’s technical review of the LA, including responding to RAIs; support of the NRC administrative hearing process; providing technical and regulatory support of anticipated litigation; Safety Analysis Report updates and ongoing LA-configuration control; and consistency management of all the technical documents, external correspondence, and external communications supporting the above activities.

#### NRC Interactions for Licensing Support:

Provide support for effective interactions with NRC to respond to questions and inquiries as identified in the NRC’s Post LA Interaction Plan. Supporting NRC requirements, OCRWM will: support bi-weekly telephone meetings to discuss issues related to project management (e.g. schedule of the LA review, NRC RAIs, and DOE responses to RAIs); support technical meetings to discuss specific

technical areas of the LA; clarification of RAIs, and DOE responses to RAIs; support quarterly management meetings with the NRC. Track status of issues and develop strategies and positions to support NRC closure of licensing technical issues and agreements. Support technical meetings with NRC and Nuclear Waste Technical Review Board (NWTRB). Manage regulatory review and regulatory compliance program. Maintain the Licensing Support Office to respond to requests from NRC in a timely matter. Manage interactions with internal and external organizations to resolve, determine status, and track issues/questions, commitments, and action items.

#### Licensing Support Network:

The Licensing Support Network, provided for in 10 CFR 2, Subpart J, is an information management system that provides documents related to the licensing proceeding. OCRWM will continue its actions to comply with these requirements through processing documentary material related to the licensing of a geologic repository and make material available on the NRC Licensing Support Network (LSN) internet portal. Provide support for document review to affirm legal, deliberative, and litigation privilege. Comply with applicable regulations, guidelines, and policies for records management, and maintenance of the LSN which contains over ten million documents.

#### License Legal Defense:

As the license applicant to the NRC, DOE will comply with the licensing process and schedule established by the NWPA and applicable NRC regulations. Moreover, DOE has the burden of proof in the hearing process. To meet this burden effectively and to ensure a full and fair licensing process that provides NRC an appropriate and sufficient basis on which it can fulfill its statutory obligations, the DOE Office of the General Counsel staff will represent OCRWM in the administrative litigation aspects of the licensing process. The Office of the General Counsel will be supported by outside legal counsel that will assist in addressing those issues that are fundamentally legal or administrative in nature. In addition, OCRWM federal staff will address those technical issues with the support of contractors and scientists from entities such as Sandia National Laboratories. With these resources, OCRWM will provide support for:

- the adjudicatory hearing process by appearing before the Atomic Safety Licensing Boards as issues are identified and addressed through interactions with the regulator and participants in the public process;
- identification of likely topics for interrogatories;
- response to admitted contentions;
- preparation of anticipatory response plans, responses, and draft testimony and assistance in the preparation of witnesses, and;
- presentation of affirmative case in support of license application and demonstration of compliance with applicable regulatory requirements..

Work previously done under the budget element “Safety Analyses and Assessments” is reflected now under this budget element, as follows:

#### Safety Analyses and Assessments of the License Application:

This work area includes activities related to the Total System Performance Assessment (TSPA) post closure and pre-close safety analyses program and the Performance Confirmation program, required to provide support the NRC licensing process. This includes: answering Requests for Additional Information (RAIs) from the NRC; supporting updates of the license application, as needed; conducting system and subsystem analyses; reporting of testing and analysis results to the NRC;



development of the safety analysis; and oversight and coordination of Safety Analysis and Assessment activities including planning, monitoring, and reporting functions.

**TSPA and Integration for Licensing Support:**

OCRWM will continue to provide support the NRC licensing process in addressing and responding to technical questions and inquiries on the TSPA in direct support of the LA. With the assistance of experts from the National Laboratories, OCRWM will develop responses to RAIs and any NRC specified analyses on an as needed basis. Conduct TSPA analyses of new information generated as a result of ongoing testing (e.g., performance confirmation program or long-term tests). Update the TSPA, as required, prior to the issuance of a license by the U.S. Nuclear Regulatory Commission.

**Preclosure Safety Analysis for Licensing Support:**

OCRWM will provide support in addressing and responding to technical questions and inquiries on the probabilistic risk assessment utilized for the Preclosure Safety Analysis (PCSA) and preclosure criticality analysis activities. With the assistance of available subject matter experts, OCRWM will develop responses to RAIs and any NRC specified analyses on an as needed basis on the design and operation of important to nuclear safety systems, structures, and components, including identification of initiating events, categorization or event sequences, consequences of event sequences, and safety classification of structures, systems and components. Additionally, updates to the Nuclear Safety Design Basis (NSDB) will be conducted.

**Performance Confirmation and Post-Closure Testing for Licensing Support:**

OCRWM will continue to conduct the performance confirmation data collection program required under 10 CFR 63, Subpart F, at the Yucca Mountain site including any collection of data requested by NRC during the licensing process. In FY 2010, OCRWM will manage, maintain, and ensure chain of custody traceability of drilling cores and samples collected during and after site characterization to support licensing inquiries and questions.

**Technical Data Management for Licensing Support:**

Manage and ensure the integrity and traceability of the technical data and Program records that have been compiled to provide support to the license application and associated design and analyses activities. FY 2010 activities include maintenance of the technical databases; which contain field data, results of laboratory tests, engineering analyses, location information, radioactive waste inventories, waste form characteristics, and data sets generated and used by the U.S. Department of Energy as input to design, performance assessment, and development of the license application.

**Post Closure Safety Analysis (PCSA) for Licensing Support:**

Supports the NRC licensing process for post-closure scientific technical analyses. FY 2010 activities in this area include responding to RAIs from the NRC on sub-system models; evaluate results from performance confirmation testing activities; conduct analyses as needed including evaluations of proposed operating conditions and specifications, and their potential impacts on post-closure performance; conduct evaluations of site activities to evaluate impacts on site characteristics. Support development of updates to the license application as needed to incorporate new information and information provided in responses to RAIs from the NRC. Additionally, updates to the Nuclear Safety Design Basis (NSDB) will be conducted where required.

Work previously done under the budget element “Waste Package” is reflected now under this budget element, as follows:

**Waste Package Design for Licensing Support:**

This work area includes only those activities related to waste package design and drip shield performance on the repository project required to support the NRC licensing process. Activities in this area include addressing RAIs from the NRC regarding the waste package design methodology and the analyzed configurations, the structural integrity of the waste package and drip shield, the thermal performance of the waste package, and the constructability of the drip shields and waste packages.

Work previously done under the budget element “Canister Handling Facilities (RF/CRCF)” is reflected now under this budget element, as follows:

**Canister Handling Facilities (RF/CRCF) Design for Licensing Support:**

This work area includes only those activities related to the Canister Handling Facilities (RF/CRCF) on the repository project required to support the NRC licensing process. Activities in this area include addressing RAIs from the NRC regarding seismic/structural response; protection systems such as HVAC and fire protection; controlled or limited operations; mechanical handling equipment; instrumentation and controls, electrical power, radiation protection (shielding, criticality/moderator exclusion); and the PCSA analyses for these items.

Work previously done under the budget element “Fuel Handling Facilities (IHF/WHF)” is reflected now under this budget element, as follows:

**Fuel Handling Facilities (IHF/WHF) Design for Licensing Support:**

This work area includes only those activities related to the Fuel Handling Facilities (IHF/WHF) on the repository project required to support the NRC licensing process. Activities in this area include addressing RAIs from the NRC regarding seismic/structural response; protections systems such as HVAC and fire protection; controlled or limited operations; mechanical handling equipment; instrumentation and controls, electrical power, radiation protection (shielding, criticality/moderator exclusion); and the PCSA analyses for these items.

Work previously done under the budget element “Balance of Plant Infrastructure, Subsurface Facility” is reflected now under this budget element, as follows:

**Balance of Plant Infrastructure Subsurface Facility Design for Licensing Support:**

This work area includes only those activities related to the subsurface facilities on the repository project required to support the NRC licensing process. Activities in this area include addressing RAIs regarding performance of ground support and the excavated facilities, TEV operations, drip shield gantry operations, rockfall impacts on performance, radiation shielding, mechanical properties of the geological units, thermal performance through thermal management, and subsurface ventilation.

**Safety Analyses and Assessments** **61,400** **53,478** **0**

The work previously done under this budget element is reflected now under the budget element “Licensing Support.” Funding requested under Licensing Support for these activities in FY 2010 provides support for the NRC licensing process.

<b>Waste Package</b>	<b>9,054</b>	<b>0</b>	<b>0</b>
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The work previously done under this budget element is reflected now under the budget element “Licensing Support.” Funding requested under Licensing Support for these activities in FY 2010 provides support for the NRC licensing process.

<b>Canister Handling Facilities (RF/CRCF)</b>	<b>9,000</b>	<b>0</b>	<b>0</b>
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The work previously done under this budget element is reflected now under the budget element “Licensing Support.” Funding requested under Licensing Support for these activities in FY 2010 provides support for the NRC licensing process.

<b>Fuel Handling Facilities (IHF/WHF)</b>	<b>9,000</b>	<b>0</b>	<b>0</b>
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The work previously done under this budget element is reflected now under the budget element “Licensing Support.” Funding requested under Licensing Support for these activities in FY 2010 provides support for the NRC licensing process.

<b>Balance of Plant Infrastructure</b>	<b>54,000</b>	<b>4,207</b>	<b>2,000</b>
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Site Operations and Maintenance:

OCRWM will continue to provide support of license applicant requirements for continuation of Performance Confirmation Program testing at the site in accordance with requirements under 10 CFR 63, Subpart F, and ability to support access requests under 10 CFR 2 for the NRC or interveners. Utilizing federal staff, activities in FY 2010 will include maintaining the safe operation of the Yucca Mountain site at minimal levels to support performance confirmation and site access requests in support of the NRC licensing process. As a government owned/government operated (GO/GO) site, OCRWM will ensure implementation of applicable minimal requirements to ensure safe operations, and maintaining regulatory compliance.

The Subsurface Facility work previously done under this budget element is reflected now under the budget element “Licensing Support.” Funding requested under Licensing Support for these activities in FY 2010 provides support for the NRC licensing process.

<b>Site Infrastructure Readiness</b>	<b>18,000</b>	<b>0</b>	<b>0</b>
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Activities under this heading have been suspended.

<b>Project Support</b>	<b>43,000</b>	<b>49,667</b>	<b>27,600</b>
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Project Control:

OCRWM will continue to manage the cost and schedule baseline in support of the NRC licensing process. OCRWM federal staff will monitor project activities to ensure that they are accomplished in accordance with approved contractual work scopes, authorized budgets, and scheduled contractual milestones; and to ensure compliance with applicable statutes, regulations, and DOE orders. OCRWM federal staff will provide baseline management, planning, scheduling, and cost estimating support; support for annual work plans; support for Nuclear Waste Fund fee adequacy assessments required by the NWPA; maintain the OCRWM risk management system and perform risk assessments. These activities provide the basis for prioritizing and allocating resources; defining, costing, and executing work scope and schedules; and monitoring, analyzing, and reporting project performance.

Compliance Management and Information Management:

OCRWM will continue to control the configuration of the LA, as required under 10 CFR 63.44. This

element will ensure integration of the technical baseline for safety analyses and technical bases, with requirements, processes, systems, and records. Commitments, including providing responses to NRC RAIs and other inquiries, will be tracked and responded to in a timely manner.

Information management activities support the NRC licensing process by managing and ensuring the integrity and traceability of the technical data, electronic management systems, and Program records that have been compiled to support the LA and associated design and analyses activities. Records will be developed, managed, and processed to the License Support Network (LSN) in compliance with the requirements under 10 CFR 2, and the requirements of the work performed under the auspices of the Quality Assurance Requirements Description document. In addition, the security of computer-based processes and records will be ensured.

#### Environmental, Safety and Health:

OCRWM will conduct activities necessary to ensure environmental, safety, and health support necessary to protect project personnel and the environment. Using predominantly federal staff, OCRWM will provide environmental compliance and permitting support, and provide support at the Yucca Mountain site to meet minimum requirements under 10 CFR 2 for access for NRC or interveners during the licensing process.

#### National Environmental Policy Act (NEPA):

OCRWM will provide overall technical and procedural expertise to support compliance with NEPA. The NWPA requires the NRC to adopt, to the extent practicable, the repository Final Environmental Impact Statement (EIS) during the licensing process. The NRC adopted the EIS, but directed that supplemental groundwater analyses be provided. This work includes assisting the NRC in its review and acceptance of such analyses, and providing support to NRC hearings, if any, regarding the EIS and the supplemental analyses. OCRWM will continue to develop the Supplemental EIS analysis to address issues identified during the NRC licensing process. In addition, OCRWM will support Department of Justice in defending DOE actions under NEPA related to NWPA matters.

#### Procurement:

OCRWM will manage and oversee its contractual procurement actions supporting the NRC licensing process in compliance with Federal Acquisition Regulations and DOE Acquisition Regulations. OCRWM will monitor, assess, and audit its subcontractor services, utilizing small and disadvantaged business contracting where possible.

#### Communications/Intergovernmental Relations:

OCRWM will support its obligation to provide effective and responsive communications with the NRC, affected units of local government, and Native American tribes. Utilizing federal staff resources in FY 2010 OCRWM will respond to public inquiries, maintain the OCRWM external website, continue the toll-free 800 numbers, conduct an intergovernmental program with the affected units of government in Nevada and any affected Native American Tribes.

#### Property Management:

OCRWM will manage real and personal property acquired under the Nuclear Waste Fund in accordance with DOE and federal property management requirements. Using predominantly federal staff resources, OCRWM will monitor, track, and report property. OCRWM will maintain, manage, and oversee current leases on office space occupied by the OCRWM federal staff, national laboratory personnel, and management and operating contractor staff. OCRWM negotiated the leases to carry

the least lease termination liability.

**Licensing Integration:**

To meet commitments and agreements, OCRWM will coordinate both internally and with various stakeholders, parties, and organizations involved in or supportive of the LA including the U.S. Navy Spent Fuel program and the DOE Environmental Management program. OCRWM will use predominantly federal staff to perform work related to the documentation and development of the business and regulatory processes necessary for a nuclear culture that the NRC requires of license applicants.

**Financial Assistance:**

OCRWM will continue to meet its obligation as mandated by the Nuclear Waste Policy Act of 1982, as amended (see the table below for specific citations) to provide financial assistance to the State of Nevada, Affected Units of Local Government (AULG), affected Native American tribes, and Payments-Equal-to-Taxes (PETT). The proposed FY 2010 funding profile is as follows.

Funding Purpose	Proposed Amount (\$M)
Oversight §116(c), State of Nevada	\$3.2
Oversight §116(c), AULG	\$5.7
Oversight §118(b), Timbisha Shoshone	\$0.3
On-Site Representative §117(d), Nye County	\$0.6
PETT §116(c), State of Nevada	\$0.9
PETT §116(c), Nye County	\$5.9
PETT §116(c), Clark County	\$0.1
<b>TOTAL</b>	<b>\$16.8</b>

**Total, Repository Project**

**271,913**

**180,352**

**116,100**

## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### License

+13,500

The increase is due to the work directly in support of the LA that was previously done under the budget element “Safety Analyses and Assessments” being reflected now under this budget element.

Compared to the combined FY 2009 total of the License and Safety Analyses and Assessments budget elements, the net decrease of \$39,978,000 is due to the scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.

Also reflected in the net decrease is a Congressionally Directed Project in the amount of \$1,522,000 contained in the FY 2009 Omnibus appropriation that is not included in the FY 2010 request.

### Safety Analyses and Assessments

-53,478

The decrease is due to the work directly in support of the LA previously done under this budget element being reflected now under “License” and all other work being suspended.

### Balance of Plant Infrastructure

-2,207

Decrease in funding reflects a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process. Remaining budget reflects the minimal scope and cost to meet the license applicant responsibilities for access to the site.

### Project Support

-22,067

The decrease reflects a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.

Also reflected in the decrease is a Congressionally Directed Project in the amount of \$333,025 contained in the FY 2009 Omnibus appropriation that is not included in the FY 2010 request.

### Total Funding Change, Repository Project

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-64,252

## Transportation

### Funding Schedule by Activity

(dollars in thousands)

	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
Transportation			
National Transportation			
Intitutional Planning, Policy and Analysis	150	---	---
Stakeholder Relations	3,000	---	---
180(c) Grants	850	---	---
Nat'l Transportation Institutional	---	1,100	---
Corporate Management	1,000	---	---
Nat'l Transportation Management	---	1,000	---
Transportation Logistics Development	---	---	---
Total National Transportation	5,000	2,100	---
Nevada Transportation			---
Nevada Rail	6,300	---	---
National Environmental Policy Act (NEPA)	7,000	---	---
Nevada Rail Envir. Impact Statement (EIS)	---	---	---
Design/EIS Suppt. Field Invest. & Analysis	---	---	---
Total Nevada Transportation	13,300	---	---
Total Transportation	18,300	2,100	---

## Transportation

### Description

The mission of the transportation program is to develop and manage a safe, secure, and efficient transportation system for shipping Spent Nuclear Fuel (SNF) and High-Level Waste (HLW) from locations throughout the United States to a location for effective management and disposal. The transportation program focuses on developing transportation assets, operational strategies, and policies that will support shipments and shipment training exercises as soon as possible. The transportation program includes collaboration with stakeholders and interested parties to develop this transportation system in support of the OCRWM mission.

### National Transportation

The program will suspend all transportation system development this fiscal year. Activities mandated by the Nuclear Waste Policy Act Section 180(c) will be archived. Collaboration with States, Tribes and industry stakeholders on transportation planning will be suspended this fiscal year.

### Nevada Transportation

In FY 2010, no activities associated with Nevada Transportation will continue.

### Detailed Justification

(dollars in thousands)

FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
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### National Transportation

No funding is requested for activities within this budget element in FY 2010, reflecting a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.

<b>▪ National Transportation Institutional</b>	<b>4,000</b>	<b>1,100</b>	<b>0</b>
<b>▪ National Transportation Management</b>	<b>1,000</b>	<b>1,000</b>	<b>0</b>

<b>Total, National Transportation</b>	<b>5,000</b>	<b>2,100</b>	<b>0</b>
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### Nevada Transportation

No funding is requested for activities within this budget element in FY 2010, reflecting a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.

<b>▪ Nevada Rail</b>	<b>6,300</b>	<b>0</b>	<b>0</b>
<b>▪ Nevada Rail Environmental Impact Statement (EIS)</b>	<b>7,000</b>	<b>0</b>	<b>0</b>



<b>Total, Nevada Transportation</b>	<b>13,300</b>	<b>0</b>	<b>0</b>
<b>Total, Transportation</b>	<b>18,300</b>	<b>2,100</b>	<b>0</b>

**Explanation of Funding Changes**

	FY 2010 vs. FY 2009 (\$000)
<b>National Transportation</b>	
<b>National Transportation Institutional</b> Decrease in funding reflects a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.	-1,100
<b>National Transportation Management</b> Decrease in funding reflects a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.	-1,000
<b>Total Funding Change, National Transportation</b>	<hr/> -2,100
<b>Total Funding Change, Transportation</b>	<hr/> -2,100

## Program Management and Integration

### Funding Schedule by Activity

(dollars in thousands)

	FY 2008 Appropriation	FY 2008 Appropriation	FY 2010 Request
Program Management and Integration			
Quality Assurance	---	10,000	6,970
Program Management			
Quality Assurance	8,529	---	---
Program Management and Control	3,020	500	30
Information Management	4,157	4,000	---
Human Resources and Education	650	500	500
Total, Program Management	16,356	5,000	530
Safeguards and Security	---	5,000	3,000
Waste Acceptance	---	4,000	---
System Analysis and Strategy Development			
System Engineering	720	---	---
Fee Adequacy Assessment	485	200	200
Waste Acceptance	4,376	---	---
Regulatory Coordination	2,950	---	---
System Configuration Management	525	---	---
Total, System Analysis and Strategy Development	9,056	200	200
Science and Technology and International			
International Program and Coordination	1,000	2,000	---
Total, Science and Technology and International	1,000	2,000	---
Total, Program Management and Integration	26,412	26,200	10,700

## Program Management and Integration

### Description

The Program Management and Integration activity provides strategic integration and planning, guidance, quality assurance, budgeting, management of the Nuclear Waste Fund, and program management support in executing the Program's Mission. Many of the functions previously conducted by contractor staff will now be absorbed into the work by federal staff. In addition, in FY 2010 the federal staff will be available to provide assistance, as requested, in re-evaluating National policy on high-level radioactive waste disposal issues.

### Detailed Justification

(dollars in thousands)

FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
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#### Quality Assurance

**\*0**

**10,000**

**6,970**

The OCRWM's Quality Assurance (QA) program ensures effective implementation of requirements under 10 CFR 63.21(c)(2), and 10 CFR 63, Subpart G for nuclear quality assurance and as specified as a commitment in License Application section 5.01. Effective implementation of the QA program is performed at the line level incorporating and embracing a nuclear quality culture in all work activities. OCRWM maintains a separate and independent QA oversight program which performs surveillance, audits, and inspections to verify the quality of work in progress; develop and maintain the QA Requirements Description (QARD), identify conditions adverse to quality; assure that prompt corrective actions are taken by management responsible for performing the work; and verify the timely implementation, adequacy, and effectiveness of corrective actions.

#### Performance Assurance:

The OCRWM Performance Assurance program, as an element of quality, ensures effective implementation of License Application commitments for maintenance of a viable, visible, and transparent corrective action program. In addition, this program maintains other critical elements including a self-assessment program, trend identification and reporting program, lessons learned, and operating experience program. OCRWM will continue to implement its Safety Conscious Work Environment program. In addition, as an initiative to improve human performance, OCRWM is implementing the Principles of a Nuclear Safety Culture, developed by the Institute of Nuclear Power Operations (INPO).

\*In FY 2008, Quality Assurance was included within the Program Management budget element at a cost of \$8,529,000. The budget was restructured in FY 2009 to give these important activities more visibility.

#### Program Management

**\*16,356**

**5,000**

**530**

The request funds the following, as detailed below:

- **Program Management and Control**

**3,020**

**500**

**30**

OCRWM will continue to ensure meeting requirements for effective interaction and responsiveness to questions and inquiries by the U.S. Congress, the Office of Management and Budget (OMB), regulatory and oversight bodies, other federal, State, and local government

agencies, international entities, program customers and stakeholders, and the public at large

Implementation of an appropriate investment strategy and the prudent management of the Nuclear Waste Fund investment portfolio are also essential to fulfilling the program's fiduciary responsibility under the Nuclear Waste Policy Act.

- |                               |              |              |          |
|-------------------------------|--------------|--------------|----------|
| <b>Information Management</b> | <b>4,157</b> | <b>4,000</b> | <b>0</b> |
|-------------------------------|--------------|--------------|----------|

The work previously done under this budget element is reflected now under the budget element "Information Technology" within the Program Direction section of the budget. Funding requested under "Information Technology" for these activities in FY 2010 is at the minimum level needed to support the NRC licensing process.
- |                                      |            |            |            |
|--------------------------------------|------------|------------|------------|
| <b>Human Resources and Education</b> | <b>650</b> | <b>500</b> | <b>500</b> |
|--------------------------------------|------------|------------|------------|

Compliance with executive orders and support of the Department's education initiatives by conducting at Historically Black Colleges and Universities (HBCU) an Undergraduate Scholarship program and Radioactive Waste Management Graduate Fellowship program.

<b>Total Program Management</b>	<b>*16,356</b>	<b>5,000</b>	<b>530</b>
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<b>Safeguards and Security</b>	<b>**0</b>	<b>5,000</b>	<b>3,000</b>
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Safeguards and Security (S&S):

OCRWM will conduct the safeguard and security functions necessary to address NRC questions and inquiries and RAIs on the License Application. In addition, OCRWM will continue to meet DOE Order requirements for physical security and access control (e.g., badging). Utilizing federal staff, OCRWM will continue to develop safeguard and security strategies and multiyear approaches to meet License Application commitments, NRC requirements, and Department of Homeland Security requirements. In FY 2010, the focus of the S&S program is on maintaining effective protection of current program systems, facilities, equipment, communications, and personnel supporting OCRWM. All S&S activities will be coordinated with other Federal, State, and local agencies as necessary to ensure adequate protection of all OCRWM assets.

Emergency Management:

OCRWM will conduct the emergency management functions necessary to meet DOE Order requirements. Utilizing federal staff, OCRWM will continue to develop emergency preparedness and response strategies and multiyear approaches to meet License Application commitments and NRC requirements. In FY 2010, efforts will be focused on providing emergency management and response capability for all locations where OCRWM has assets. Funding will support a capability to respond to RAIs related to the Radiological Emergency Response Plan design of integrated accident detection and warning system. Emergency response plans/resources sharing agreements with nearby Federal, State and local resources will be maintained. These activities are necessary to fulfill 10 CFR 63.161 requirements

\*\*In FY 2008, Safeguards and Security was included within the System Analysis and Strategy Development budget element at a cost of \$7,200,000. The budget was restructured in FY 2009 to give these important activities more visibility.

<b>Waste Acceptance</b>	<b>**0</b>	<b>4,000</b>	<b>0</b>
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The work previously done under this budget element is reflected now under the budget element “Salaries and Benefits” within the Program Direction section of the budget. Federal employees will now perform the work previously performed by contractors funded under this budget element as part of the level of effort of their job functions.

\*\*In FY 2008, Waste Acceptance was included within the System Analysis and Strategy Development budget element at a cost of \$4,376,000. The budget was restructured in FY 2009 to give these activities more visibility.

<b>System Analysis and Strategy Development</b>	<b>**9,056</b>	<b>200</b>	<b>200</b>
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The request funds the following, as detailed below:

▪ <b>System Engineering</b>	<b>720</b>	<b>0</b>	<b>0</b>
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All system engineering efforts are terminated.

▪ <b>System Analysis</b>	<b>0</b>	<b>0</b>	<b>0</b>
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All system analysis efforts are terminated.

▪ <b>Fee Adequacy Assessment</b>	<b>485</b>	<b>200</b>	<b>200</b>
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This element is a requirement of Section 302(a) of the Nuclear Waste Policy Act of 1982, as amended where by the Secretary is to determine annually the adequacy of the fee charged to generators of commercial spent nuclear fuel (SNF).

Efforts to update a total system life cycle cost estimate have been eliminated to focus funding on the licensing support. The FY 2010 fee adequacy assessment will utilize the prior cost estimate until new policy direction on the implementation of the Nuclear Waste Policy Act is determined and revised costs are analyzed. The assessment of the fee will utilize updated economic projections and the existing defense and civilian share calculations to ensure that the program remains a full cost recovery program, as required by the Nuclear Waste Policy Act. Activities include interfacing with the Nuclear Waste Fund managers for investment projections, updating the economic forecasts, and interface with external auditors for the Department. Additional activities include responding to inquiries on the adequacy of the fee.

▪ <b>System Configuration Management</b>	<b>525</b>	<b>0</b>	<b>0</b>
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All system configuration management efforts under this budget element are terminated.

<b>Total, System Analysis and Strategy Development</b>	<b>**9,056</b>	<b>200</b>	<b>200</b>
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<b>Science and Technology, and International</b>	<b>1,000</b>	<b>2,000</b>	<b>0</b>
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The request funds the following, as detailed below:



## Explanation of Funding Changes

FY 2010 vs. FY 2009 (\$000)
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### Quality Assurance

Decrease in funding reflects a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.

-3,030

### Program Management

The majority of the decrease (-\$4,000,000) is due to the “Information Management” work directly in support of the LA previously under this budget element being reflected now under the budget element “Information Technology” within the Program Direction section of the budget. Funding requested under “Information Technology” for these activities in FY 2010 is at the minimum level needed to support the NRC licensing process.

-4,470

The remaining decrease in funding reflects a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.

### Safeguards and Security

Decrease in funding reflects a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.

-2,000

### Waste Acceptance

The decrease is due to the work directly in support of the LA previously done by contractors under this budget element being performed now by federal employees as part of the level of effort of their job functions.

-4,000

### Science and Technology and International

Decrease in funding reflects a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.

-2,000

### Total Funding Change, Program Management and Integration

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-15,500





## Program Direction

### Funding Profile by Category

(dollars in thousands/whole FTEs)

	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
<b>Office of Repository Development</b>			
Salaries and Benefits	19,823	25,066	26,883
Travel	629	800	685
Information Technology	8,900	8,900	8,700
Support Services	8,000	4,540	3,500
Other Related Expenses	1,535	1,500	1,880
<b>Total, Office of Repository Development</b>	<b>38,887</b>	<b>40,806</b>	<b>41,648</b>
Full-Time Equivalents	131	175	175
<b>NNSA Service Center</b>			
Salaries and Benefits	917	917	935
<b>Total, NNSA Service Center</b>	<b>917</b>	<b>917</b>	<b>935</b>
Full-Time Equivalents	3	3	3
<b>Headquarters</b>			
<b>Management &amp; Operational Support</b>			
Salaries and Benefits	10,751	14,927	14,682
Travel	346	700	300
Information Technology	4,100	3,800	3,800
Support Services	6,300	6,433	2,600
Other Related Expenses	465	500	120
Working Capital Fund	2,000	2,500	2,500
	<b>23,962</b>	<b>28,860</b>	<b>24,002</b>
<b>Other Matrix Support</b>			
Salaries and Benefits	4,424	4,375	3,400
Travel	25	25	15
<b>Total, Headquarters</b>	<b>28,411</b>	<b>33,260</b>	<b>27,417</b>
Full-Time Equivalents	110	118	118
<hr/>			
<b>Total Program Direction</b>			
Salaries and Benefits	35,915	45,285	45,900
Travel	1,000	1,525	1,000
Information Technology	13,000	12,700	12,500
Support Services	14,300	10,973	6,100
Other Related Expenses	2,000	2,000	2,000
Working Capital Fund	2,000	2,500	2,500
<b>Total, Program Direction</b>	<b>68,215</b>	<b>74,983</b>	<b>70,000</b>
Full-Time Equivalents	244	296	296

## Program Direction

### Description

Program Direction provides overall federal direction and administrative support for the Office of Civilian Radioactive Waste Program (OCRWM). In FY 2010, federal staff will continue to support the licensing process with the U.S. Nuclear Regulatory Commission (NRC) and maintain the administrative functions of OCRWM as required by the Nuclear Waste Policy Act of 1982, as amended.

This budget provides for salaries and benefits of federal staff and the support services contracts required for advisory and assistance services. In addition, in FY 2010 federal staff will be available to provide assistance, as requested, in re-evaluating National policy on high-level radioactive waste disposal issues. Support services contracts with clearly defined scope of work can be funded also from non-program direction funds, and the program may choose to fund some support service contracts with operating funds should the need arise during the execution of the FY 2010 budget.

### Detailed Justification

(dollars in thousands)

FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
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#### Salaries and Benefits

**35,915**

**45,310**

**45,900**

OCRWM federal staff will continue to provide leadership and management as the License Applicant in interactions with the NRC. This includes overseeing managing and developing responses to NRC questions and inquiries including Requests for Additional Information. With the reduction of more than 2,000 contractor staff since FY 2007, OCRWM federal staff have assumed more technical and managerial leadership in all elements of Program execution. With the further contractor reductions that will result from this budget, federal staff will take on even more technical work related to supporting the NRC licensing process, including work related to commercial waste acceptance and government-managed materials waste acceptance.

#### Travel

**1,000**

**2,000**

**1,000**

The request funds minimal travel by OCRWM and other staff to meet with NRC officials to discuss and review NRC Requests for Additional Information as part of the defense of the License Application. Includes all costs of transportation of persons, subsistence of travelers, and incidental travel expenses in accordance with federal travel regulations which are directly chargeable to OCRWM.

#### Information Technology

**13,000**

**12,700**

**12,500**

Work previously done under the budget element "Information Management" within the Project Management and Integration section of the budget is reflected now under this budget element, as follows.

Maintain existing information systems and networks for facilities in the Washington, DC metropolitan area and the Repository Program Office in Nevada; validate Information Management in strategic places; support enterprise architecture development and management efforts; develop integrated annual planning guidance for IT capital investments; and conduct short range and integrated Information Management budget planning. Funding requested for these activities in FY 2010 is at the

minimum level needed to support the NRC licensing process.

<b>Support Services</b>	<b>14,300</b>	<b>10,973</b>	<b>6,100</b>
The OCRWM Support Services budget element provides necessary other License support and defense functions, defined as advisory and assistance services acquired by contract from non-governmental services to support the OCRWM organization. Included under the Support Services element for FY 2010 are information technology and computer system operations support, and administrative and clerical support.			
<b>Other Related Expenses</b>	<b>2,000</b>	<b>2,500</b>	<b>2,500</b>
This budget element includes costs for building leases and other related expenses such as communications, utilities, computer/video support, training, printing and graphics, photocopying, postage, supplies, and common administrative services.			
<b>Working Capital Fund</b>	<b>2,000</b>	<b>2,500</b>	<b>2,500</b>
This budget element funds legal support services and other Working Capital Fund expenses; such as funding for headquarters building maintenance, rents, communications, utilities, computer and video support, printing and graphics, photocopying, postage, supplies and common administrative services.			
<b>Total, Program Direction</b>	<b>68,215</b>	<b>74,983</b>	<b>70,000</b>

## Explanation of Funding Changes

FY 2009 vs. FY 2010 (\$000)
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### Salaries and Benefits

+615

Increase is minimal. OCRWM federal staff will continue to provide leadership and management as the License Applicant in interactions with the NRC. This includes overseeing managing and developing responses to NRC questions and inquiries including Requests for Additional Information. With the reduction of more than 2,000 contractor staff since FY 2007, OCRWM federal staff have assumed more technical and managerial leadership in all elements of Program execution. With the further contractor reductions that will result from this budget, federal staff will take on even more technical work related to supporting the NRC licensing process, including work related to commercial waste acceptance and government-managed materials waste acceptance.

### Travel

-525

Decrease in funding reflects a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.

### Information Technology

-200

Decrease in funding reflects a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process.

### Support Services

-4,873

Decrease in funding reflects a scaling back of activities associated with the repository program to the minimum level needed to support the NRC licensing process, and a substantial increase in the roles assumed by OCRWM and other federal staff.

### Total Funding Changes, Program Direction

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-4,983

## Support Services by Category

(dollars in thousands)

	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
Technical Support			
Repository Project			
Management and Technical Services	5,459	9,268	4,400
Administrative Services	1,000	1,400	1,395
Total, Repository Project	6,459	10,668	5,795
Transportation			
National Transportation	500	---	---
Nevada Transportation	1,041	---	---
Total, Transportation	1,541	---	---
System Analysis and Strategic Development			
System Engineering	400	---	---
System Analysis	200	---	---
Waste Acceptance	600	---	---
Regulatory Coordination	500	---	---
Total, System Analysis & Strategic Development	1,700	---	---
Total, Technical Support	9,700	10,668	5,795
Management Support			
Program Management & Integration			
Quality Assurance	3,200	300	300
Program Management & Control			
Program Management, Planning & Control	400	5	5
Audits and Reports	400	---	---
Program & Policy Integration	600	---	---
Total, Program Management & Control	1,400	5	5
Total, Program Management & Integration	4,600	305	305
Total, Management Support	4,600	305	305
Total, Support Services	14,300	10,973	6,100

**Other Related Expenses by Category  
(Including Working Capital Fund)**

(dollars in thousands)

	FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
Other Related Expenses			
Repository Project			
Communication, Other Rent, and Utilities	1,660	1,660	1,660
Other Services	90	90	90
Human Resources & Administration	60	60	60
Total, Repository Project	<u>1,810</u>	<u>1,810</u>	<u>1,810</u>
			-
Headquarters			
Other Services	40	40	40
Human Resources & Administration	30	30	30
Supplies and Materials	20	20	20
Services Performed by Other Agencies	100	100	100
Working Capital Fund	2,000	2,500	2,500
Total, Headquarters	<u>2,190</u>	<u>2,690</u>	<u>2,690</u>
Total, Other Related Expenses	<u>4,000</u>	<u>4,500</u>	<u>4,500</u>

## Congressionally Directed Projects

### Funding Profile by Subprogram

(dollars in thousands)

FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
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Congressionally Directed Projects	1,600	1,855	---
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#### **Description**

The FY 2009 Omnibus Act included two (2) congressionally directed projects within the Office of Civilian Radioactive Waste Management (OCRWM). Funding for these projects was appropriated in FY 2009 as a separate funding line, even though the specific Congressionally Directed Projects were related to ongoing work in a specific program area that was included in the budget request.

#### **Detailed Justification**

(dollars in thousands)

FY 2008 Appropriation	FY 2009 Appropriation	FY 2010 Request
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#### **Congressionally Directed Projects**

- **Cooperative Agreement between the Department of Energy and Inyo County (CA)**
- **Inyo County Affected Unit of Local Government (CA)**

	<b>1,600</b>	<b>1,522</b>	<b>0</b>
	<b>0</b>	<b>333</b>	<b>0</b>
<b>Total, Program Direction</b>	<b>1,600</b>	<b>1,855</b>	<b>0</b>





## GENERAL PROVISIONS

### Sec. 301. Contract Competition.

(a) None of the funds in this or any other appropriations Act for fiscal year [2009] 2010 or any previous fiscal year may be used to make payments for a noncompetitive management and operating contract, or a contract for environmental remediation or waste management in excess of \$100,000,000 in annual funding at a current or former management and operating contract site or facility, or to award a significant extension or expansion to an existing management and operating contract, or other contract covered by this section, unless such contract is awarded using competitive procedures or the Secretary of Energy grants, on a case-by-case basis, a waiver to allow for such a deviation. The Secretary may not delegate the authority to grant such a waiver.

(b) Within 30 days of formally notifying an incumbent contractor that the Secretary intends to grant such a waiver, the Secretary shall submit to the Subcommittees on Energy and Water Development of the Committees on Appropriations of the House of Representatives and the Senate a report notifying the Subcommittees of the waiver and setting forth, in specificity, the substantive reasons why the Secretary believes the requirement for competition should be waived for this particular award.

(c) In this section the term "competitive procedures" has the meaning provided in section 4 of the Office of Federal Procurement Policy Act (41 U.S.C. 403) and includes procedures described in section 303 of the Federal Property and Administrative Services Act of 1949 (41 U.S.C. 253) other than a procedure that solicits a proposal from only one source.

Sec. 302. Unfunded Requests for Proposals. None of the funds appropriated by this Act may be used to prepare or initiate Requests For Proposals (RFPs) for a program if the program has not been funded by Congress.

Sec. 303. Department of Energy Defense Nuclear Facilities Workforce Restructuring. None of the funds appropriated by this Act may be used--

- (1) to augment the funds made available for obligation by this Act for severance payments and other benefits and community assistance grants under section 4604 of the Atomic Energy Defense Act (50 U.S.C. 2704) unless the Department of Energy submits a reprogramming [request]notice to the appropriate congressional committees; or
- (2) to provide enhanced severance payments or other benefits for employees of the Department of Energy under such section; or
- (3) develop or implement a workforce restructuring plan that covers employees of the Department of Energy.

Sec. 304. Unexpended Balances. The unexpended balances of prior appropriations provided for activities in this Act may be available to the same appropriation accounts for such activities established pursuant to this title. Available balances may be merged with funds in the applicable established accounts and thereafter may be accounted for as one fund for the same time period as originally enacted.

Sec. 305. Bonneville Power Authority Service Territory. None of the funds in this or any other Act for the Administrator of the Bonneville Power Administration may be used to enter into any agreement to perform energy efficiency services outside the legally defined Bonneville service territory, with the exception of services provided internationally, including services provided on a reimbursable basis, unless the Administrator certifies in advance that such services are not available from private sector businesses.

Sec. 306. User Facilities. When the Department of Energy makes a user facility available to universities or other potential users, or seeks input from universities or other potential users regarding significant characteristics or equipment in a user facility or a proposed user facility, the Department shall ensure broad public notice of such availability or such need for input to universities and other potential users. When the Department of Energy considers the participation of a university or other potential user as a formal partner in the establishment or operation of a user facility, the Department shall employ full and open competition in selecting such a partner. For purposes of this section, the term "user facility" includes, but is not limited to: (1) a user facility as described in section 2203(a)(2) of the Energy Policy Act of 1992 (42 U.S.C. 13503(a)(2)); (2) a National Nuclear Security Administration Defense Programs Technology Deployment Center/User Facility; and (3) any other Departmental facility designated by the Department as a user facility.

Sec. 307. Intelligence Activities. Funds appropriated by this or any other Act, or made available by the transfer of funds in this Act, for intelligence activities are deemed to be specifically authorized by the Congress for purposes of section 504 of the National Security Act of 1947 (50 U.S.C. 414) during fiscal year [2009] 2010 until the enactment of the Intelligence Authorization Act for fiscal year [2009] 2010.

Sec. 308. Laboratory Directed Research and Development. Of the funds made available by the Department of Energy for activities at government-owned, contractor-operated laboratories funded in this Act or subsequent Energy and Water Development Appropriations Acts, the Secretary may authorize a specific amount, not to exceed 8 percent of such funds, to be used by such laboratories for laboratory directed research and development: *Provided*, That the Secretary may also authorize a specific amount not to exceed 4 percent of such funds, to be used by the plant manager of a covered nuclear weapons production plant or the manager of the Nevada Site Office for plant or site directed research and development[: *Provided further*, That notwithstanding Department of Energy order 413.2A, dated January 8, 2001, beginning in fiscal year 2006 and thereafter, all DOE laboratories may be eligible for laboratory directed research and development funding].

[Sec. 309. Reliable Replacement Warhead. None of the funds provided in this Act shall be available for the Reliable Replacement Warhead (RRW).]

Sec. [310]309. General Plant Projects. Plant or construction projects for which amounts are made available under this and subsequent appropriation Acts with a current estimated cost of less than \$10,000,000 are considered for purposes of section 4703 of Public Law 107-314 as a plant project for which the approved total estimated cost does not exceed the minor construction threshold and for purposes of section 4704 of Public Law 107--314 as a construction project with a current estimated cost of less than a minor construction threshold.

[Sec. 311. Energy Production. The Secretary of Energy shall provide funding to the National Academy of Sciences to conduct an inventory of the energy development potential on all lands currently managed by the Department of Energy together with a report, to be submitted not later than July 1, 2009, which includes (1) a detailed analysis of all such resources including oil, gas, coal, solar, wind, geothermal and other renewable resources on such lands, (2) a delineation of the resources presently available for development as well as those potentially available in the future, and (3) an analysis of the environmental impacts associated with any future development including actions

necessary to mitigate negative impacts.]

[Sec. 312.

(a) Reno Hydrogen Fuel Project. The non-Federal share of project costs shall be 20 percent.

(b) The cost of project vehicles, related facilities, and other activities funded from the Federal Transit Administration sections 5307, 5308, 5309, and 5314 program, including the non-Federal share for the FTA funds, is an eligible component of the non-Federal share for this project.

(c) Contribution of the non-Federal share of project costs for all grants made for this project may be deferred until the entire project is completed.

(d) All operations and maintenance costs associated with vehicles, equipment, and facilities utilized for this project are eligible project costs.

(e) This section applies to project appropriations beginning in fiscal year 2004.]

[Sec. 313.

(a) Integrated University Program. The Secretary of Energy, along with the Administrator of the National Nuclear Security Administration and the Chairman of the Nuclear Regulatory Commission, shall establish an Integrated University Program.

(b) For the purposes of carrying out this section, \$45,000,000 is authorized to be appropriated in each of fiscal years 2009 to 2019 as follows:

(1) \$15,000,000 for the Department of Energy;

(2) \$15,000,000 for the Nuclear Regulatory Commission; and

(3) \$15,000,000 for the National Nuclear Security Administration.

(c) Of the amounts authorized to carry out this section, \$10,000,000 shall be used by each organization to support university research and development in areas relevant to their respective organization's mission, and \$5,000,000 shall be used by each organization to support a jointly implemented Nuclear Science and Engineering Grant Program that will support multiyear research projects that do not align with programmatic missions but are critical to maintaining the discipline of nuclear science and engineering.]

*Sec. 310. None of the funds made in this or subsequent Acts may be used for the testing of nuclear explosives in the recovery of oil and gas.*

*Sec. 311. (a) Section 1801 of the Atomic Energy Act of 1954 (42 U.S.C. 2297g) is amended in subsection (b)(2) by striking "amounts contained within the Fund" and inserting "assessments collected pursuant to section 1802 of the Atomic Energy Act of 1954 (42 U.S.C. 2297g-1) as amended".*

*(b) Section 1802 of the Atomic Energy Act of 1954 (42 U.S.C. 2297g-1) is amended:*

*(1) in subsection (a):*

*(A) by striking "\$518,233,333" and inserting "\$663,000,000"; and*

*(B) by striking "on October 24, 1992" and inserting "with fiscal year 2011".*

*(2) in subsection (c):*

*(A) by inserting "(1)" before "The Secretary";*

*(B) by inserting after "utilities": ", only to the extent provided in advance in appropriation Acts";*

*(C) by striking "\$150,000,000" and inserting "\$200,000,000";*

*(D) by inserting "beginning in fiscal year 2011" after "adjusted for inflation";*

*(E) by striking "(1)" and inserting "(A)";*

*(F) by striking "(2)" and inserting "(B)";*

*(G) by adding a new paragraph 2, ",(2) Amounts authorized to be collected pursuant to this section shall be deposited in the Fund and credited as offsetting receipts."*

*(3) in subsection (d), by striking "for the period encompassing 15 years after the date of the enactment of this title" and inserting "through fiscal year 2025"; and*

*(4) in subsection (e):*

*(A) in paragraph (1), by striking "15 years after the date of the enactment of this title" and inserting "September 30, 2025";*

*(B) in paragraph (2), by striking "\$2,250,000,000" and inserting "\$3,000,000,000"; and*

*(C) in paragraph (2) by inserting "beginning in fiscal year 2011" after "adjusted for inflation".*

*Sec. 312. Not to exceed 5 per centum, or \$100,000,000, of any appropriation, whichever is less, made available for Department of Energy activities funded in this Act or subsequent Energy and Water Development Appropriations Acts may hereafter be transferred between such appropriations, but no such appropriation, except as otherwise provided, shall be increased or decreased by more than 5 per centum by any such transfers, and notification of such transfers shall be submitted promptly to the Committees on Appropriations of the House and Senate.(Energy and Water Development and Related Agencies Appropriations Act, 2009.)*