

# *Department of Energy*



## *FY 2009 Congressional Budget Request*

### *Environmental Management*

### *Defense Nuclear Waste Disposal Nuclear Waste Disposal*



# *Department of Energy*



## *FY 2009 Congressional Budget Request*

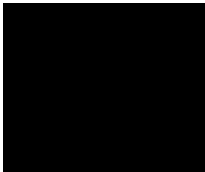
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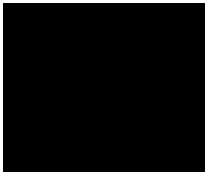




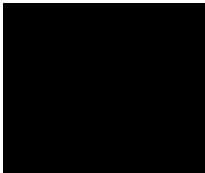
**Environmental Management**



**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>.





Department of Energy  
Appropriation Account Summary  
(dollars in thousands - OMB Scoring)

FY 2007 Current Op. Plan	FY 2008 Current Approp.	FY 2009 Congressional Request	FY 2009 vs. FY 2008	
			\$	%

**Discretionary Summary By Appropriation**

Energy And Water Development, And Related Agencies

Appropriation Summary:

Energy Programs

Energy efficiency and renewable energy.....	—	1,722,407	1,255,393	-467,014	-27.1%
Electricity delivery and energy reliability.....	—	138,556	134,000	-4,556	-3.3%
Nuclear energy.....	—	961,665	853,644	-108,021	-11.2%
Legacy management.....	—	33,872	—	-33,872	-100.0%

Energy supply and Conservation.....	2,145,149	—	—	—	—
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Fossil energy programs

Clean coal technology.....	—	-58,000	—	+58,000	+100.0%
Fossil energy research and development.....	580,946	742,838	754,030	+11,192	+1.5%
Naval petroleum and oil shale reserves.....	21,316	20,272	19,099	-1,173	-5.8%
Strategic petroleum reserve.....	164,441	186,757	344,000	+157,243	+84.2%
Northeast home heating oil reserve.....	7,966	12,335	9,800	-2,535	-20.6%
Total, Fossil energy programs.....	774,669	904,202	1,126,929	+222,727	+24.6%

Uranium enrichment D&D fund.....	556,606	622,162	480,333	-141,829	-22.8%
Energy information administration.....	90,653	95,460	110,595	+15,135	+15.9%
Non-Defense environmental cleanup.....	349,687	182,263	213,411	+31,148	+17.1%
Science.....	3,836,613	3,973,142	4,721,969	+748,827	+18.8%
Nuclear waste disposal.....	99,206	187,269	247,371	+60,102	+32.1%
Departmental administration.....	147,943	148,415	154,827	+6,412	+4.3%
Inspector general.....	41,819	46,057	51,927	+5,870	+12.7%
Innovative technology loan guarantee program.....	—	4,459	—	-4,459	-100.0%
Total, Energy Programs.....	8,042,345	9,019,929	9,350,399	+330,470	+3.7%

Atomic Energy Defense Activities

National nuclear security administration:

Weapons activities.....	6,258,583	6,297,466	6,618,079	+320,613	+5.1%
Defense nuclear nonproliferation.....	1,824,202	1,335,996	1,247,048	-88,948	-6.7%
Naval reactors.....	781,800	774,686	828,054	+53,368	+6.9%
Office of the administrator.....	358,291	402,137	404,081	+1,944	+0.5%
Total, National nuclear security administration.....	9,222,876	8,810,285	9,097,262	+286,977	+3.3%

Environmental and other defense activities:

Defense environmental cleanup.....	5,731,240	5,349,325	5,297,256	-52,069	-1.0%
Other defense activities.....	636,271	754,359	1,313,461	+559,102	+74.1%
Defense nuclear waste disposal.....	346,500	199,171	247,371	+48,200	+24.2%
Total, Environmental & other defense activities.....	6,714,011	6,302,855	6,858,088	+555,233	+8.8%

Total, Atomic Energy Defense Activities.....	15,936,887	15,113,140	15,955,350	+842,210	+5.6%
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Power marketing administrations:

Southeastern power administration.....	5,602	6,404	7,420	+1,016	+15.9%
Southwestern power administration.....	29,998	30,165	28,414	-1,751	-5.8%
Western area power administration.....	232,326	228,907	193,346	-35,561	-15.5%
Falcon & Amistad operating & maintenance fund.....	2,665	2,477	2,959	+482	+19.5%
Colorado River Basins.....	—	-23,000	-23,000	—	—
Total, Power marketing administrations.....	270,591	244,953	209,139	-35,814	-14.6%

Federal energy regulatory commission.....	—	—	—	—	—
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Subtotal, Energy And Water Development and Related

Agencies.....	24,249,823	24,378,022	25,514,888	+1,136,866	+4.7%
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Uranium enrichment D&D fund discretionary payments.....	-452,000	-458,787	-463,000	-4,213	-0.9%
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Excess fees and recoveries, FERC.....	-43,595	-34,411	-36,932	-2,521	-7.3%
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<b>Total, Discretionary Funding.....</b>	<b>23,754,228</b>	<b>23,884,824</b>	<b>25,014,956</b>	<b>+1,130,132</b>	<b>+4.7%</b>
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# **Environmental Management**

# **Environmental Management**

## 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>.



## Environmental Management

### Proposed Appropriation Language

#### DEFENSE ENVIRONMENTAL CLEANUP

##### (INCLUDING TRANSFER OF FUNDS)

For the 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, [5,398,573,000] **\$5,297,256,000**, to remain available until expended, of which \$463,000,000 shall be transferred to the “Uranium Enrichment Decontamination and Decommissioning Fund”. **(Energy and Water Development and Related Agencies Appropriation Act, 2008)**

#### NON-DEFENSE ENVIRONMENTAL CLEANUP

For the 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, [and the purchase of not to exceed three passenger motor vehicles for replacement only, \$183,937,000] **\$213,411,000**, to remain available until expended [: Provided, that \$13,000,000 is appropriated for 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 to conduct a joint comprehensive radioactive site characterization of Area IV of the SSFL; (2) the Department shall ensure that all aspects of the cleanup of radioactive contamination at Area IV of the SSFL comply fully with the Comprehensive Environmental Response, Compensation and Liability Act, if applicable; and (3) the Department shall retain control Federal control of ETEC and it shall not be released for other use until such time as the Department has complied with actions directed in paragraphs (1) and (2)]. **(Energy and Water Development and Related Agencies Appropriation Act, 2008)**

#### 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, as amended, and title X, subtitle A, of the Energy Policy Act of 1992, [\$627,876,000] **\$480,333,000**, to be derived from the Fund, to remain available until expended [of which \$20,000,000 shall be available in accordance with title X, subtitle A, of the Energy Policy Act of 1992]. **(Energy and Water Development and Related Agencies Appropriation Act, 2008)**





## Environmental Management Overview

### Appropriation Summary

(dollars in thousands)

	FY 2007 Current Appropriation	FY 2008 Original Appropriation	FY 2008 Adjustments	FY 2008 Current Appropriation	FY 2009 Request
Defense Environmental Cleanup	5,731,240	5,398,573	-49,248	5,349,325	5,298,365
Non-Defense Environmental Cleanup	349,687	183,937	-1,674	182,263	214,064
Uranium Enrichment Decontamination and Decommissioning Fund	556,606	627,876	-5,714	622,162	480,333
Subtotal, Environmental Management	6,637,533	6,210,386	-56,636	6,153,750	5,992,762
Use of Prior Year (Defense)	0	0	0	0	-1,109
Use of Prior year (Non-Defense)	0	0	0	0	-653
D&D Fund Offset	-452,000	-463,000	4,213	-458,787	-463,000
Total, Environmental Management	6,185,533	5,747,386	-52,423	5,694,963	5,528,000

### Appropriation Summary by Program

(dollars in thousands)

	FY 2007 Current Appropriation	FY 2008 Original Appropriation	FY 2008 Adjustments	FY 2008 Current Appropriation	FY 2009 Request
Defense Environmental Cleanup					
Closure Sites					
Ashtabula	1,295	295	-3	292	0
Closure Sites Administration	56,648	11,834	-108	11,726	13,209
Fernald	254,754	0	0	0	2,100
Miamisburg	39,869	30,308	-276	30,032	30,574
Rocky Flats	115,487	0	0	0	0
Total, Closure Sites	468,053	42,437	-387	42,050	45,883
Hanford Site					
2012 Completion Projects	425,204	423,038	-3,849	419,189	400,902
2035 Completion Projects	410,112	471,602	-4,293	467,309	450,885
Total, Hanford Site	835,316	894,640	-8,142	886,498	851,787
Idaho National Laboratory	520,883	513,026	-4,668	508,358	432,124
NNSA Sites					
California Site Support	370	370	-3	367	0
Kansas City Plant	1,697	0	0	0	0
Lawrence Livermore National Laboratory	24,136	8,680	-79	8,601	0
Los Alamos National Laboratory	139,900	153,467	-1,397	152,070	162,467
Nevada Off-Sites	5,132	0	0	0	0
Nevada	87,768	81,106	-738	80,368	65,674

(dollars in thousands)

	FY 2007 Current Appropriation	FY 2008 Original Appropriation	FY 2008 Adjustments	FY 2008 Current Appropriation	FY 2009 Request
NNSA Service Center/Separations Processing Research Unit (SPRU)	6,222	29,096	-265	28,831	16,943
Pantex	23,726	20,211	-184	20,027	0
Sandia National Laboratories	10,394	0	0	0	0
Total, NNSA Sites	299,345	292,930	-2,666	290,264	245,084
Oak Ridge	214,162	192,284	-1,749	190,535	237,670
Office of River Protection Tank Farm Activities	277,127	288,443	-2,625	285,818	288,443
Waste Treatment and Immobilization Plant	690,000	690,000	-6,278	683,722	690,000
Total, Office of River Protection	967,127	978,443	-8,903	969,540	978,443
Savannah River Site 2012 Completion Projects	244,511	11,000	-100	10,900	2,032
2035 Completion Projects	280,574	514,071	-4,677	509,394	498,651
Tank Farm Activities	617,105	616,519	-5,611	610,908	705,742
Total, Savannah River Site	1,142,190	1,141,590	-10,388	1,131,202	1,206,425
Waste Isolation Pilot Plant	228,818	236,739	-2,154	234,585	211,524
Program Support	28,031	33,146	-302	32,844	33,930
Program Direction	282,080	309,760	-2,819	306,941	308,765
Safeguards and Security	272,520	261,714	-2,382	259,332	251,341
Technology Development and Deployment	20,715	21,389	-195	21,194	32,389
Federal Contribution to the Uranium Enrichment D&D Fund	452,000	463,000	-4,213	458,787	463,000
Congressionally Directed Projects	0	17,475	-280	17,195	0
Total, Defense Environmental Cleanup	5,731,240	5,398,573	-49,248	5,349,325	5,298,365
Non-Defense Environmental Cleanup					
Fast Flux Test Reactor Facility D&D	34,843	10,342	-94	10,248	10,755
Gaseous Diffusion Plants Paducah Gaseous Diffusion Plant	48,013	17,366	-70	17,296	38,959
Portsmouth Gaseous Diffusion Plant	74,026	20,754	-277	20,477	42,337
Total, Gaseous Diffusion Plants	122,039	38,120	-347	37,773	81,296
Small Sites Argonne National Laboratory	10,726	437	-4	433	459
Brookhaven National Laboratory	30,860	28,699	-261	28,438	8,433
California Site Support	160	160	-2	158	187
Completed Sites/Program Support	599	1,200	-11	1,189	1,100
Energy Technology Engineering Center	16,000	13,000	-118	12,882	12,533

(dollars in thousands)

	FY 2007 Current Appropriation	FY 2008 Original Appropriation	FY 2008 Adjustments	FY 2008 Current Appropriation	FY 2009 Request
Idaho National Laboratory	7,000	5,400	-49	5,351	4,400
Inhalation Toxicology Laboratory	3,358	427	-4	423	0
Lawrence Berkeley National Laboratory	1,710	0	0	0	0
Los Alamos National Laboratory	1,025	1,905	-17	1,888	1,905
Moab	28,056	23,952	-218	23,734	30,513
Stanford Linear Accelerator Center	5,720	5,900	-54	5,846	4,883
Total, Small Sites	105,214	81,080	-738	80,342	64,413
West Valley Demonstration Project	87,591	54,395	-495	53,900	57,600
Total, Non-Defense Environmental Cleanup	349,687	183,937	-1,674	182,263	214,064
Uranium Enrichment Decontamination and Decommissioning Fund					
D&D Activities					
Oak Ridge	288,911	284,773	-2,592	282,181	184,230
Paducah Gaseous Diffusion Plant	96,575	116,676	-1,062	115,614	95,879
Portsmouth Gaseous Diffusion Plant	151,320	206,427	-1,878	204,549	200,224
Total, D&D Activities	536,806	607,876	-5,532	602,344	480,333
U/Th Reimbursements	19,800	20,000	-182	19,818	0
Total, Uranium Enrichment Decontamination and Decommissioning Fund	556,606	627,876	-5,714	622,162	480,333
Subtotal, Environmental Management	6,637,533	6,210,386	-56,636	6,153,750	5,992,762
Use of Prior Year (Defense)	0	0	0	0	-1,109
Use of Prior year (Non-Defense)	0	0	0	0	-653
D&D Fund Offset	-452,000	-463,000	4,213	-458,787	-463,000
Total, Environmental Management	6,185,533	5,747,386	-52,423	5,694,963	5,528,000

## Funding by Budget Chapters

(dollars in thousands)			
	FY 2007	FY 2008	FY 2009
Carlsbad	228,818	234,585	211,524
Idaho			
Idaho National Laboratory	527,883	513,709	436,524
Oak Ridge			
Oak Ridge	503,073	472,716	421,900
Paducah			
Paducah Gaseous Diffusion Plant	144,588	132,910	134,838
Portsmouth			
Portsmouth Gaseous Diffusion Plant	225,346	225,026	242,561
Richland	870,159	896,746	862,542
River Protection	967,127	969,540	978,443
Savannah River	1,142,190	1,131,202	1,206,425
NNSA Sites			
California Site Support	370	367	0
Kansas City Plant	1,697	0	0
Lawrence Livermore National Laboratory	24,136	8,601	0
Los Alamos National Laboratory	140,925	153,958	164,372
Nevada Off-Sites	5,132	0	0
Nevada	87,768	80,368	65,674
NNSA Service Center/Separations			
Processing Research Unit (SPRU)	6,222	28,831	16,943
Pantex	23,726	20,027	0
Sandia National Laboratories	10,394	0	0
Total, NNSA Sites	300,370	292,152	246,989
Closure Sites			
Ashtabula	1,295	292	0
Closure Sites Administration	56,648	11,726	13,209
Fernald	254,754	0	2,100
Miamisburg	39,869	30,032	30,574
Rocky Flats	115,487	0	0
Total, Closure Sites	468,053	42,050	45,883
Headquarters Operations			
Headquarters	47,831	69,857	33,930
West Valley Demonstration Project	87,591	53,900	57,600
All Other Sites			
Argonne National Laboratory	10,726	433	459
Brookhaven National Laboratory	30,860	28,438	8,433
California Site Support	160	158	187
Completed Sites/Program Support	599	1,189	1,100
Energy Technology Engineering Center	16,000	12,882	12,533
Inhalation Toxicology Laboratory	3,358	423	0
Lawrence Berkeley National Laboratory	1,710	0	0

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Moab	28,056	23,734	30,513
Stanford Linear Accelerator Center	5,720	5,846	4,883
Total, All Other Sites	97,189	73,103	58,108
Program Direction	282,080	306,941	308,765
Safeguards and Security	272,520	259,332	251,341
D&D Fund Deposit	452,000	458,787	463,000
Technology Development & Deployment	20,715	21,194	32,389
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Use of Prior Year (Defense)	0	0	-1,109
Use of Prior year (Non-Defense)	0	0	-653
D&D Fund Offset	-452,000	-458,787	-463,000
Total, Environmental Management	6,185,533	5,694,963	5,528,000

## 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 accomplished cleanup and closure of 14 sites, including three former weapons production sites as part of its risk-reduction driven cleanup strategy: Rocky Flats and Fernald, which have transferred to the DOE Office of Legacy Management; and Mound, which will complete cleanup in FY 2008.

EM is aggressively pursuing the consolidation and disposition of surplus plutonium and other special nuclear materials to enhance security, as well as to minimize the storage risks associated with these materials to the public and the environment. In addition, EM continues to make progress on the construction and operation of waste treatment and immobilization facilities. Specifically, EM is constructing three major tank waste processing facilities across the complex: a Salt Waste Processing Facility at Savannah River, a Waste Treatment and Immobilization Facility at Hanford, and a Sodium Bearing Waste Treatment Facility at Idaho. Additionally, EM initiated shipment of remote handled transuranic waste to the Waste Isolation Pilot Plant in Carlsbad, New Mexico. Accomplishment of these activities is critical to further reducing risks to the public and environment.

These efforts have allowed the EM program to establish the project management expertise needed to effectively focus EM's resources on cleanup progress and advancing risk reduction across the complex. To sustain this momentum, the EM program is strengthening its project baselines by completing the review and approval of all environmental cleanup project baselines by the end of January 2008. In addition to providing a plan to measure project performance against, approved project baselines will

provide the basis for conducting credible and defensible analyses allowing EM to better assess existing priorities and identify opportunities to accelerate cleanup work.

### ***Management Strategies and Initiatives***

#### **Project Management**

EM gave direction to the sites to develop near-term baselines. Each site has undergone an independent review to verify the reasonableness of the scope, cost, and schedule for each project. This review also documented assumptions and associated risk management plans that supported baseline development. EM is on track to have all near-term baselines reviewed and approved early in 2008.

An approved near-term baseline reflects the identified scope that can reasonably be accomplished for the identified cost in the identified time period if near-term baselines are funded as profiled and contingency funds are provided as required during project execution. It also establishes the baseline as an acceptable point from which to track and control future change. The review and approval process accommodates the likely changes in the EM complex, site priorities and funding plans. These changes could affect both near-term (within the next five years) and life-cycle cost, schedule and scope. Such future changes may be required to comply with applicable environmental legal obligations while maintaining essential functions necessary to protect human health, the environment and national security; reflect funding different from the baseline assumptions; incorporate technological advances; realize specific programmatic risks; or implement programmatic business cases. For sites whose cleanup extends beyond the near-term, life-cycle planning estimates (ranges) have also been developed and independently reviewed.

Project performance, schedules, and costs continue to be reviewed on a regular basis. EM sites are now reporting earned value against realigned baselines. Also, EM is embarking on a complex-wide effort to have earned value management systems for its contractors certified to ANSI Standard 478 by the end of FY 2008.

#### **Strategic Planning**

##### ***Near-Term Completions***

The majority of EM sites contain baselines with completion dates beyond 2013. Through a collaborative process with the Field sites, EM is seeking to define aggressive, but achievable strategies for accelerating cleanup of distinct and discrete sites or segments of work. Functional and cross-site activities such as elimination of specific groundwater contaminants, waste or material processing campaigns, or achievement of an interim or final end state are being evaluated.

##### ***Program Elements and Priorities***

All programmatic elements and priorities will be evaluated to enhance EM's funding allocation decisions. This evaluation includes understanding and documenting priorities, cost-benefit analyses, drivers, assumptions, economies of scale, and understanding full implications of shifts in priorities or program elements.

EM will focus its activities on identifying and evaluating potential cost savings associated with the management and operation of tank waste and special nuclear material processing capabilities. In addition, EM will be analyzing the potential cost savings associated with various "footprint" reduction strategies.

The approved baselines establish the framework from which EM, regulators, and stakeholders can understand the complex inter-relationship of activities within and among sites' cleanup scope. Therefore, the approved near-term baseline, in conjunction with the life-cycle cost estimate, will be used as the rigorously defined basis from which EM can evaluate implications of various strategic options for completion of EM's overall mission

#### *Optimization and Unfunded Liabilities*

In addition to focusing on near-term completions and the evaluation of alternative program priorities, EM will revisit life-cycle cost profiles to inform a more optimum allocation of out-year resources at each site. A major component of this effort will be the determination of the magnitude of the Department's unfunded liability which is primarily the D&D of hundreds of excess (surplus) facilities from other Department of Energy mission programs (i.e., the National Nuclear Security Administration, the Office of Science, and the Office of Nuclear Energy). In addition EM will be able to determine when the program has sufficient capability to accommodate both existing EM cleanup scope and new cleanup scope from other Departmental programs. EM is leading a department-wide effort to update DOE Order 430.1B, Real Property Asset Management and its Implementation Guide 430.1G, Transition Implementation Guide, in 2008 so that the transfer process from other programs to EM proceeds in a disciplined, formal process. As part of this process, acceptance criteria must be met prior to the programmatic transfer to EM. As a result, EM and the Department will have a process by which these unfunded liabilities can be estimated and transitioned into the EM cleanup program in an orderly fashion.

#### **Contract Acquisition and Execution**

EM has established a new acquisition process that is an integrated business system which supports operations and field offices in managing their major EM acquisitions efficiently and effectively by using standardized and repeatable business processes. The primary objectives of the new EM acquisition process are to establish and maintain:

- A cadre of skilled, experienced acquisition personnel to support operations and field managers, on a recurring basis, for major EM acquisition planning and source selection activities;
- A central repository of DOE and EM-specific acquisition procedures, policies and templates; and other information that promotes common practices and workflows; and
- A well-defined system of governance, with clearly defined roles and responsibilities throughout the acquisition process.

In addition, EM is in the process of defining what enhancements would be required to make the EM organization Best-in-Class for project management and contract management. As part of this effort, EM has partnered with the Corps of Engineers to conduct an assessment of the project management capabilities and contract management within each site as well as the Consolidated Business Center and Headquarters. This assessment will identify the systems and human capital (both numbers and skill mix). It will identify the gaps in critical areas such as project controls, baseline management, cost estimation, change control and schedule management. A review of the contract execution and management functions is also being included in the effort. Since the contract serves as the principal agreement on how a project is executed between DOE and the contractor, it is important to assess the systems in place for administration of the contracts, and roles and responsibilities of contracts and project management staff.

## **Regulatory**

EM is committed to meeting its regulatory obligations and is taking a number of steps to expand and improve the tools used to monitor and ensure regulatory compliance. EM has entered all enforceable agreement commitments into its centralized database, allowing both Headquarters and Field offices to track commitments and to identify and report potential compliance issues as far in advance as possible. EM continuously monitors Field progress toward meeting the enforceable agreement commitments and provides regular status reports to EM senior managers. In addition, EM has renewed guidance that requires Field offices to notify and coordinate with EM Headquarters before entering into negotiations with regulators regarding new or modified enforceable commitments. Where technical issues and other obstacles to compliance arise, EM actively engages its regulators to develop mutually acceptable alternative commitments and schedules. EM has also continued to expand its Environmental Compliance Audit Program, which measures site compliance with the full range of statutory and regulatory environmental requirements, and voluntarily reports instances of non-compliance to EM' regulators.

## **National Academy of Public Administration (NAPA) Report**

On December 18, 2007, NAPA released their comprehensive management review: "The National Academy of Public Administration Report on the Office of Environmental Management: Managing America's Defense Nuclear Waste". This report identified a number of opportunities for program enhancements, which coupled with EM's ongoing management initiatives, will enable EM to continue momentum toward performance excellence. The areas of focus in the NAPA review included program management, acquisition, human capital, and overall organization. Action plans have been identified and are being implemented to achieve enhancements to the program for the future. The study recognizes EM's continued emphasis on recruiting and retaining a highly competent workforce in a progressive organization with clear lines of authority and accountability; managing projects in the most efficient and effective manner; strengthening our acquisition process; and promoting safety as the top priority.

To complement ongoing initiatives to improve project management, acquisition and safety, EM is implementing a number of management initiatives which will provide a systematic framework for organizational improvement. Key EM management initiative components include: 1) establishment of a clearly defined, integrated and systematic approach for EM planning, budget formulation, program implementation, and analysis and evaluation; 2) development and issuance of an EM Program Management Guide and Manual to provide all employees with guidance regarding EM practices, processes, procedures, and roles and responsibilities; 3) an EM workforce analysis which systematically identifies current and future EM workload and workforce requirements to ensure that the right number of the right people are doing the right things now and in the years ahead; and 4) EM program management training to provide managers and staff with training tailored to their specific needs.

## **Human Capital**

EM is committed to building a high performing organization and implementing an integrated approach to strategic management of its human capital in accomplishing our challenging cleanup mission. EM is integrating human capital management strategies into all aspects of our decision-making processes. Our efforts are multi-dimensional and include creating new organizational structures to become a better performing organization, focusing on successful execution of our contracts, and facing the challenge of an aging workforce with succession planning. EM must ensure it has the workforce necessary to accomplish the cleanup of the Department of Energy's (DOE) sites. Our program plans to accomplish our mission by refining and improving our internal business processes in the areas of safety,



environmental compliance and remediation, project management, performance, occupational health, contract planning and execution, and human capital.

EM, like DOE and most of the other Federal agencies, is facing the challenge of maintaining a well-qualified, competent workforce in light of growing numbers of projected retirements and limited hiring abilities. To address all the challenges EM faces and to establish a sustained human capital organization, EM has undertaken a wide range of steps. EM is reshaping its workforce through staff attrition while acquiring new talent and rebuilding critical competencies needed for continued support to Departmental goals.

The EM Professional Development Corps (PDC) is a continuing source of highly competent technical personnel with the skills and knowledge to meet our current and future technical staffing needs, while also nurturing their potential as future leaders and managers within DOE. The EM PDC will attract college graduates (entry level at GS-7-11). Participants will maintain FTE status during the graduate study phase of the EM PDC. The program consists of general and specific technical training activities and rotational work experiences in a variety of functional program areas and program support areas at various Headquarters and Field Offices. Participants will undergo a structured regimen of training and development for a minimum of two years before being assigned to his/her present duty station. Having just completed the program's first year, EM plans to hire thirty to thirty-five participants in FY 2008 and in FY 2009.

EM established the EM Human Capital Steering Committee to oversee and facilitate development of forward-looking HC strategies, plans, and execution; recognize competing interests; ensure HC initiatives are sustained with continued budgetary support; facilitate corporate agreement; and provide leadership oversight. EM is creating a competency-based leadership program that incorporates many existing programs. The Leadership Excellence Program (LEP) leadership training and development programs are based on leadership competencies (tied to EM-specific requirements), encompass all levels of leaders. The LEP program will improve the leadership and management skills of EM's current managers and develop potential future leaders within the EM workforce complex wide. The program will comprise of two distinct elements. One will focus on specific targeted areas of improvement in the short term. The second element will focus on training for enhancing and upgrading the leadership skills. For the first element, EM is identifying immediate challenges faced by the EM leaders and managers as well as the individuals that need training. EM is planning on putting in place a short-term training for the first quarter of FY 2008.

An EM workforce plan will be based on a comprehensive, integrated set of HC goals and objectives, with detailed policy and program priorities and initiatives. EM will continue the workload forecasting and workforce planning initiative that was implemented by the field offices and expand the scope to include planning for HQs. The initiative is intended to get the right people; with the right skills; at the right time by aligning resource planning with mission requirements.

### **Engineering and Technology**

The EM program has always required a strong technology component to accomplish its mission, one that is focused on developing technologies to enhance safety, effectiveness, and efficiency. The unique nature of many of the technical challenges facing the program requires a strong and responsive applied research and engineering program. While much has been done to reduce technical risk in the EM program, the technical complexities associated with the cleanup of EM sites represents a significant and continuing challenge. EM continues to face formidable technical uncertainties and challenges in the

nuclear waste legacy cleanup efforts. To address this need and guide EM's engineering and technology program, a strategic framework for the Technology Development and Demonstration (TD&D) Program is being developed.

Input is being provided by Federal Project Directors, stakeholders, site contractors, National Laboratories, and the National Academy of Science. This process will identify the technical risks the EM program faces over the next ten years; the strategies EM will use to minimize those risks; and the planned outcomes of implementing those strategies. To accomplish this work, EM, with its Federal Project Directors, will develop, refine, and implement a detailed scope and schedule for each initiative, as well as identify the point at which the technologies developed will be inserted into EM cleanup projects. This process, when implemented, will: reduce technical uncertainties at each of the sites; deliver transformational approaches by leveraging science and technology investments; accelerate the cleanup schedule; enhance efficiency; reduce costs; and reduce the adverse effects of contaminants on human health and the environment.

Based on this process to date, the FY 2009 TD&D Program will be highly focused and concentrate its investments in EM high priority cleanup areas, including radioactive tank waste, soils and groundwater remediation, and deactivation and decommissioning excess facilities. Best-in-class performers, including other Federal Agencies, the national laboratories, the university system, and private industry will be utilized to conduct the necessary TD&D scope.

EM is using Technology Readiness Assessments to evaluate the maturity of critical technologies prior to incorporating them into cleanup projects. The Technology Readiness Assessment process was originally developed by NASA and has been adopted by the U. S. Air Force (USAF). In March 2007, GAO recommended to the Department the use of the Technology Readiness Assessment process for the management of EM projects. EM conducted eight (8) pilot Technology Readiness Assessments in FY 2007, using available USAF guidance, and in FY 2008 developed EM-specific policy and guidance for the conduct of Technology Readiness Assessments based on lessons learned from the pilots and validated by dialogue with USAF and NASA experts. The most important outcome of the process is the development of a Technology Maturation Plan for the additional engineering and testing needed to mature technology systems to a level that supports insertion into projects. Technology Readiness Assessments are complemented with External Technical Reviews which focus nationally-recognized engineering expertise on specific technical issues that are pivotal to the success of EM projects. These 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 project management (including cost and schedule performance).

## ***Summary of the FY 2009 Request***

### **Program Priorities**

The Administration recognizes that EM's FY 2009 budget request of \$5.528 billion is based on, and would implement, an environmental management approach under which the Department would not meet some of the milestones and obligations contained in all of the environmental agreements that have been negotiated over many years with regulators. It is also important to recognize that some upcoming milestones will be missed regardless of the approach that is chosen and its associated level of funding. Moreover, some of the relevant agreements were negotiated many years ago, with incomplete knowledge by any of the parties of the technical complexity and magnitude of costs that would be involved in attempting to meet the requirements. This incomplete knowledge, coupled with other issues including contractor performance, overly optimistic planning assumptions, and emerging technical barriers, also have impeded the Department in meeting all milestones and obligations contained in the environmental compliance agreements.

To achieve a balance that allowed EM to continue to achieve risk reduction and pursue its cleanup goals, EM funded the following risk reduction and regulatory activities in priority order:

- Stabilizing radioactive tank waste in preparation for treatment (about 34 percent of the FY 2009 request);
- Storing, stabilizing, and safeguarding nuclear materials and spent nuclear fuel (about 20 percent of the FY 2009 request);
- Disposing of transuranic, low-level, and other solid wastes (about 14 percent of the FY 2009 request);
- Remediating major areas of EM sites and decontamination and decommissioning excess facilities (about 23 percent of the FY 2009 request).

Overlaid onto these activities are other equally important priorities - priorities important not only to the achievement of EM cleanup objectives, but also important to the communities and states where cleanup sites are located. EM will continue to discharge its responsibilities within the resources afforded the cleanup program with the goal of accomplishing the following objectives:

- 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;
- Establishing a disposition capability for radioactive liquid tank waste and spent nuclear fuel;
- Securing and storing nuclear material in a stable, safe configuration in secure locations to protect national security;
- Transporting and disposing of transuranic and low-level wastes in a safe and cost-effective manner to reduce risk;
- Remediating soil and groundwater in a manner that will assure long-term environmental and public protection; and
- Decontaminating and decommissioning facilities that provide no further value to reduce long term liabilities while remediating the surrounding environment.

These objectives have allowed the EM program to continue to reduce risk and make significant cleanup progress at each of our sites across the complex.

## Highlights of the Request

For FY 2009, 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 2009 request of \$5.528 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 supplemental treatment activities (\$15.6M);
- Tank farm operations at the Hanford, Idaho, and Savannah River sites (\$515.2M);
- Idaho Sodium Bearing Waste Treatment activities (\$86.7M);
- Savannah River Salt Waste Processing Facility construction and pre-operations (\$126M);
- Special nuclear material consolidation/disposition and storage (\$522M), this includes H canyon operations (\$227M), Plutonium disposition planning (\$3M) and U-233/Building 3019 processing (\$58M);
- DUF6 Operations at Portsmouth and Paducah (\$74M);
- Solid Waste (TRU and Mixed/Low level waste) storage, treatment, and disposal (\$196M), includes 21 contact-handled shipments and 5 remote-handled shipments weekly of TRU waste disposal at WIPP;
- High-priority soil and ground water remediation and excess facility D&D at Portsmouth, Paducah, Los Alamos, Savannah River, Oak Ridge, Idaho, Hanford and other sites (\$1,385M);
- Technology Development and Deployment in support of tank waste, soil and groundwater, and facility D&D (\$32M); and
- Community and Regulatory activities (\$50M).

## *FY 2008 Accomplishments and FY 2009 Highlights*

EM continues to make significant cleanup progress demonstrated by:

- Completing stabilization and packaging for all plutonium residues, metals, and oxides and beginning consolidation of all materials at the Savannah River Site.
- Producing for disposition over 2,500 cans of vitrified high-level waste from highly radioactive liquid wastes. (Savannah River Site, West Valley Demonstration Project)
- Completing retrieval and packaging for disposal over 2,100 metric tons of spent nuclear fuel from K-basins on the Hanford site to protect the Columbia River.
- Characterizing, certifying, and shipping close to 40,000 cubic meters of transuranic waste from numerous sites to the Waste Isolation Pilot Plant for permanent disposal.
- Disposing of close to one million cubic meters of legacy low-level waste and mixed low-level waste.
- Eliminating 11 of 13 high-risk material access areas through material consolidation and cleanup.

- Cleaning up the Melton Valley area at the Oak Ridge Reservation and continuing the decontamination and decommissioning of three gaseous diffusion buildings at the Oak Ridge Reservation.
- Disposing of over 8,500 tons of scrap metal from Portsmouth.

### **Strategic Themes and Goals and GPRA Program Goals**

The Department's Strategic Plan identifies five Strategic Themes (one for nuclear, energy, science, management, and environmental aspects of the mission) plus 16 Strategic Goals that tie to the Strategic Themes. The three EM appropriations (Defense Environmental Cleanup, Non-Defense Environmental Cleanup, and Uranium Enrichment Decontamination and Decommissioning Fund) support the following strategic theme and strategic goal:

Strategic Theme 4, Environmental Responsibility: Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production.

Strategic Theme Goal 4.1, Environmental Cleanup: Complete cleanup of nuclear weapons manufacturing and testing sites across the United States; completing cleanup of 100 contaminated sites by 2025

The programs funded within the Defense Environmental Cleanup, the Non-Defense Environmental Cleanup, and the Uranium enrichment D&D Fund have one Program Goal that contributes to the General Goals in the "goal cascade." This goal is:

Program Goal 4.1.53.00 (Environmental Management): EM is targeting 95 geographic sites to be completed by the end of FY 2020.

### **Contribution to Strategic Goal**

The EM program is now aligned to achieve the objectives of the above goals. Annual progress towards meeting these goals is demonstrated by EM's 16 corporate performance measures. Each site establishes annual targets for specific corporate performance measures that are applicable to that site's scope of work. The corporate measures for a site collectively represent the totality of EM risk reduction activities that must be achieved to complete site cleanup.

## Funding by Strategic and GPRA Unit Program Goal

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Strategic Goal 4, Environmental Management			
Program Goal 4.1.53.00, Environmental Management			
Defense Environmental Cleanup			
Closure Sites	467,838	42,050	45,883
Congressionally Directed Projects	0	17,195	0
Hanford Site	816,984	867,057	832,167
Idaho National Laboratory	517,200	504,605	428,257
NNSA Sites	294,175	285,945	240,972
Oak Ridge	209,163	184,623	231,570
Office of River Protection	966,656	969,073	978,443
Program Support	28,031	32,844	33,930
Safeguards and Security	272,520	259,332	251,341
Savannah River Site	1,129,648	1,118,816	1,193,925
Technology Development and Deployment	20,715	21,194	32,389
Waste Isolation Pilot Plant	203,703	208,139	183,664
Total, Strategic Goal 4 (Defense Environmental Cleanup)	4,926,633	4,510,873	4,452,541
Non-Defense Environmental Cleanup			
Fast Flux Test Reactor Facility D&D	34,843	10,248	10,755
Gaseous Diffusion Plant	122,039	37,773	81,296
Program Management	599	1,189	1,100
Small Sites	104,365	78,904	63,198
West Valley Demonstration Project	87,591	53,900	57,600
Total, Strategic Goal 4 (Non-Defense Environmental Cleanup)	349,437	182,014	213,949
Uranium Enrichment Decontamination and Decommissioning Fund			
D&D Activities	536,806	602,344	480,333
All Other			
Community and Regulatory Support	70,777	72,973	74,174
Federal Contribution to the Uranium Enrichment D&D Fund	452,000	458,787	463,000
Program Direction	282,080	306,941	308,765
U/Th Reimbursements	19,800	19,818	0
Total, Strategic Goal 4 (All Other)	824,657	858,519	845,939
Total, Strategic Goal 4, Environmental Management	6,637,533	6,153,750	5,992,762

## **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:

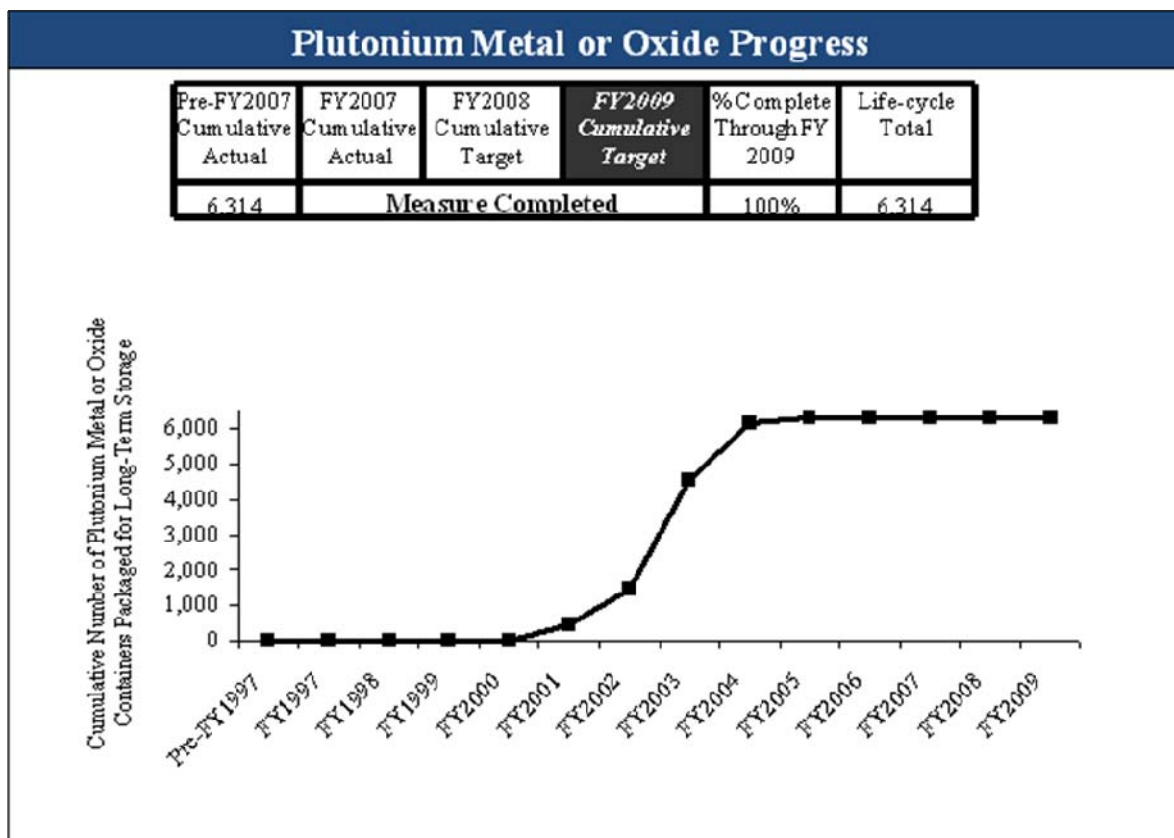
1. Certified DOE storage/treatment/disposal 3013 containers (or equivalent) of plutonium metal or oxide packaged ready for long-term storage;
2. Certified containers of enriched uranium packaged ready for long-term storage;
3. Plutonium or uranium residues packaged for disposition (kg of bulk material);
4. Depleted and other uranium packaged for disposition (metric tons).
5. Liquid waste eliminated (millions of gallons);
6. Number of liquid tanks closed;
7. Canisters of high-level waste packaged for final disposition;
8. Spent nuclear fuel packaged for final disposition (metric tons of heavy metal);
9. Transuranic waste shipped for disposal at the Waste Isolation Pilot Plant (cubic meters);
10. Low-level waste/mixed low-level waste disposed (cubic meters);
11. Number of material access areas eliminated;
12. Number of nuclear facilities completed;
13. Number of radioactive facilities completed;
14. Number of industrial facilities completed;
15. Number of geographic sites closed;
16. Number of release sites remediated.

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. Recently, the corporate performance measures have been updated to be consistent with current approved baselines. As part of this effort, performance measure annual targets and life-cycle estimates have been updated to better reflect current project baselines. Significant changes in life-cycle quantities are footnoted in the discussion below. Current progress against each of the 16 corporate performance measures is available on the EM web site at [www.em.doe.gov](http://www.em.doe.gov) and is discussed in the site project baseline summary narratives. The following pages discuss progress to date for each of these measures, based on appropriations received and this budget request.

## 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);
- Enriched uranium containers packaged for long-term storage (Hanford Site, Savannah River Site, and Idaho National Laboratory)<sup>a</sup>
- Plutonium or uranium residues packaged for disposition (all work for this corporate performance measure has been completed except for a small fraction remaining at the Savannah River Site expected to be completed in FY 2008); and
- Depleted and other uranium packaged for disposition (Hanford, Savannah River Site, Paducah, and Portsmouth).<sup>b</sup>



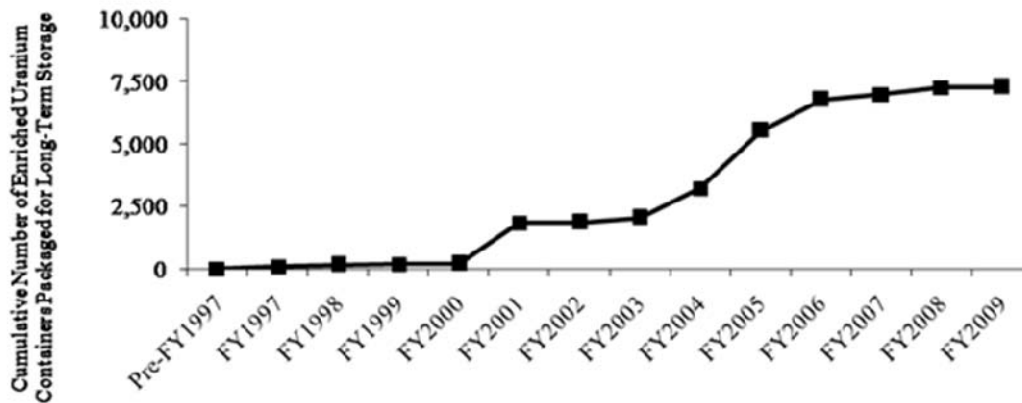
<sup>a</sup> New disposition plans for enriched uranium containers resulted in revised life-cycle quantities and targets.

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



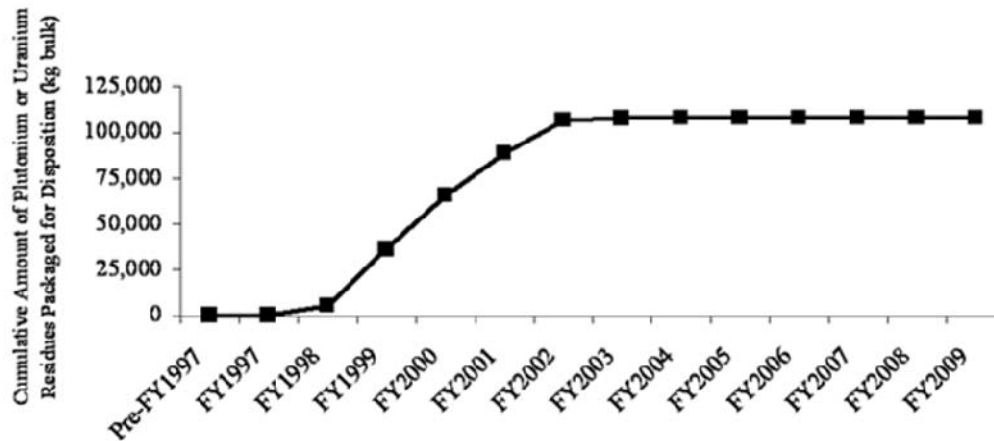
## Enriched Uranium Progress

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
6,796	6,986	7,278	7,300	98%	7,482



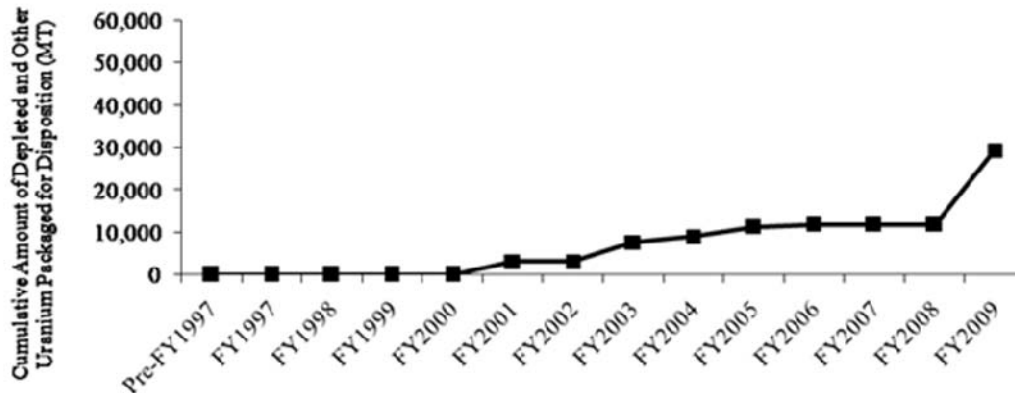
## Plutonium or Uranium Residues Progress

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
107,817	107,817	107,828	107,828	100%	107,828



## Depleted and Other Uranium Progress

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
11,804	11,860	11,860	29,371	4%	692,982



### Liquid Waste

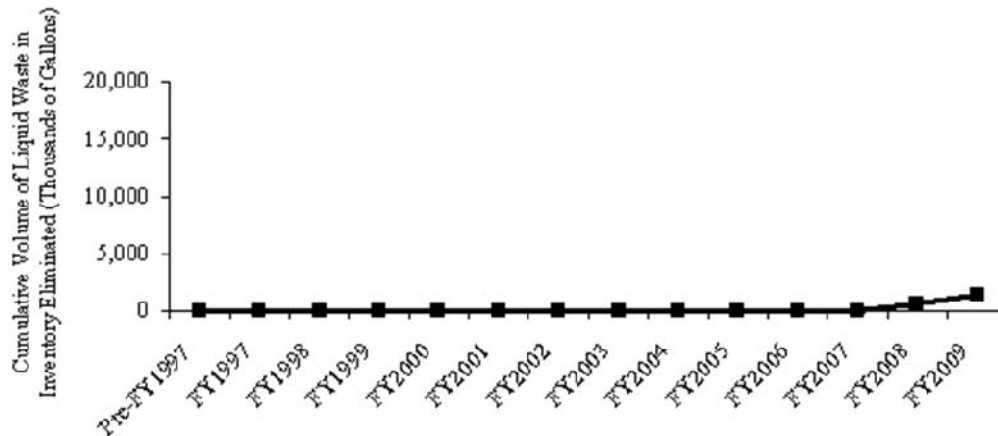
By reducing the amount of high risk radioactive liquid waste in the inventory and subsequent closing of the liquid waste tanks, EM is demonstrating tangible evidence of the program's goal to reduce the highest risks in the complex first. In addition to eliminating high-risk material, corresponding life-cycle 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).<sup>a</sup>

<sup>a</sup> Changes in the FY 2008 target for liquid waste tanks closed reflect a modes delay in the Idaho site performance at the end of FY 2007.

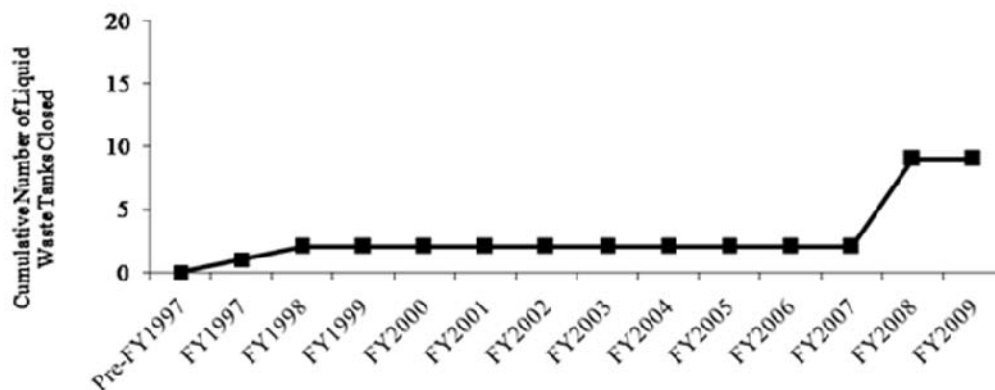
## Liquid Waste in Inventory Progress

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
0	0	700	1,400	2%	88,000



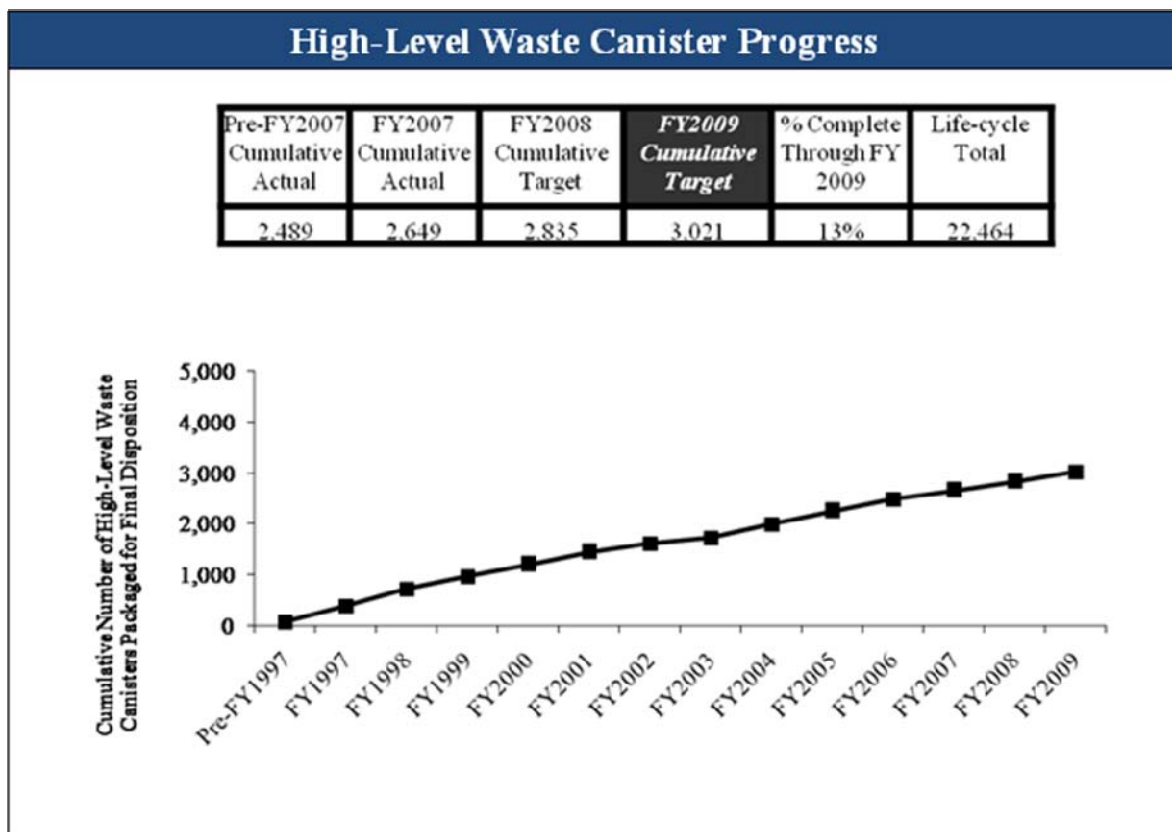
## Liquid Waste Tank Progress

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
2	2	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 disposal in the federal geologic repository. 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.<sup>b</sup> Both corporate performance measures are depicted below.

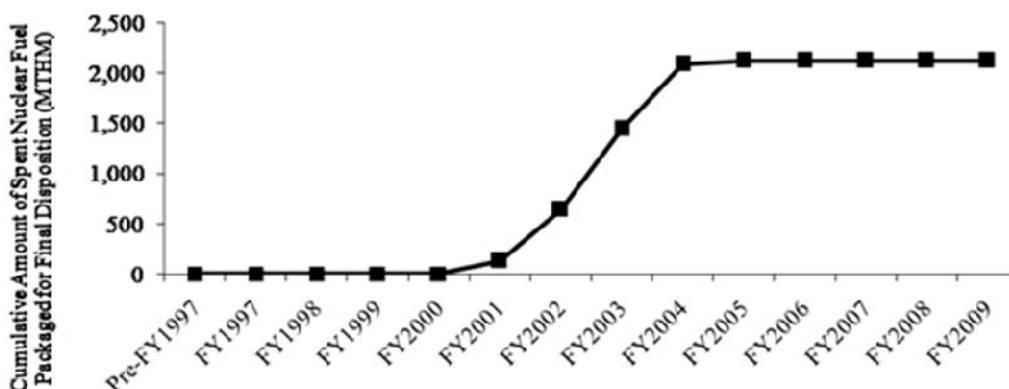


<sup>a</sup> Changes in high-level waste canisters totals reflect revised estimate at the Savannah River Site in response to performance in FY 2007 and an updated estimate from Idaho.

<sup>b</sup> Changes in the spent nuclear fuel totals reflect a modest change in the estimated quantities at the Savannah River Site.

## Spent Nuclear Fuel Progress

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
2,127	2,128	2,128	2,128	88%	2,418

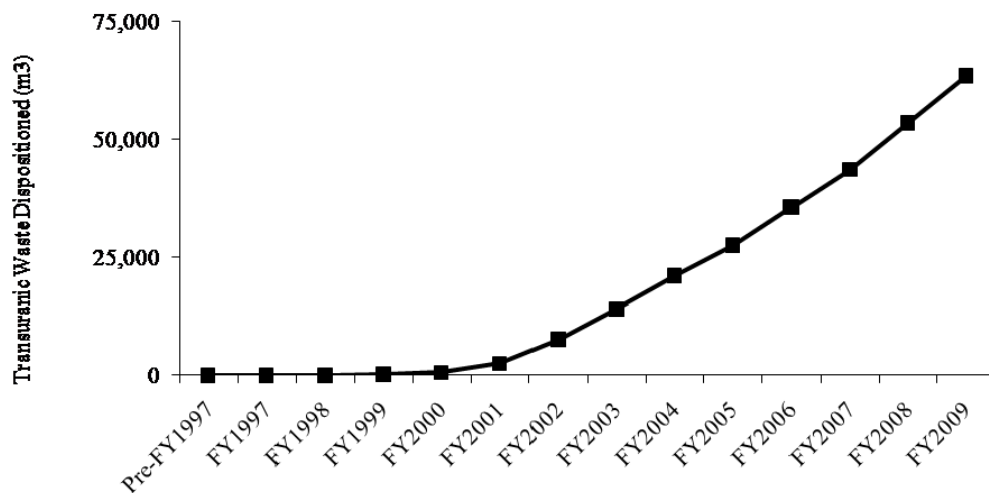


### Transuranic Waste and Legacy and Newly Generated Low-Level/Mixed Low-Level Waste

The disposition of transuranic waste (TRU) measures a site's progress towards accelerating cleanup and reducing risk. In FY 2009, the Idaho National Laboratory, Savannah River Site, Los Alamos National Laboratory, and Hanford Site primarily contribute to the transuranic waste corporate measure. This metric also provides information on the disposition of both remote-handled TRU and contact-handled TRU. 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. The two corporate measures portrayed below demonstrate progress towards EM's ultimate goal of site completion.

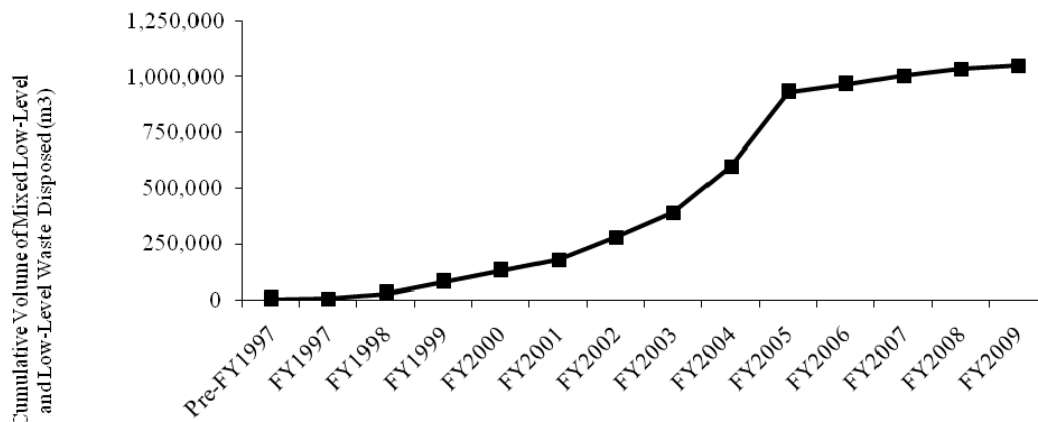
## Transuranic Waste Progress

	Pre-FY 2007 Cumulative Actual	FY 2007 Cumulative Actual	FY 2008 Cumulative Target	<i>FY 2009 Cumulative Target</i>	% Complete Through FY 2009	Life-Cycle Total
TRU Total	35,644	43,703	53,608	63,738	40%	157,664
RH-TRU	0	23	183	279	2.5%	7,305
CH-TRU	35,644	43,680	53,425	63,459	42%	150,359



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

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
966,623	1,004,537	1,035,030	1,049,410	76%	1,380,370

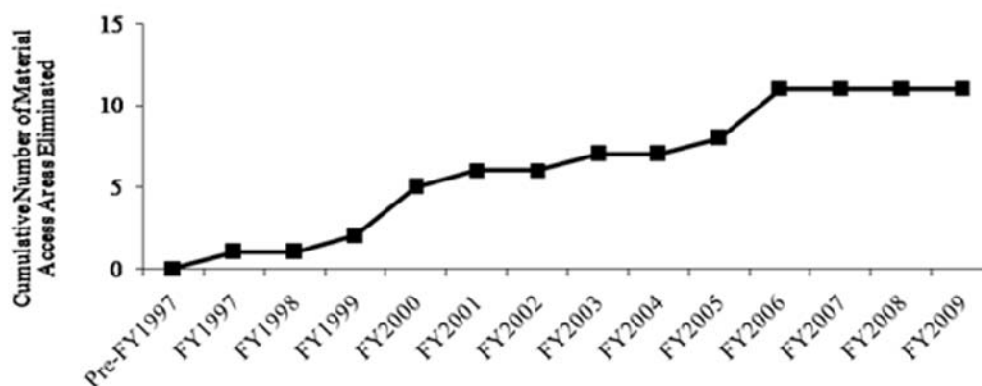


### Material Access Areas

The elimination of a material access area indicates the completion of a segment of work, thus removing 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, Savannah River Site, Hanford Site, and Idaho National Laboratory contribute to this corporate measure, which is depicted below.

## Material Access Area Progress

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
11	11	11	11	85%	13



### Facility Completions

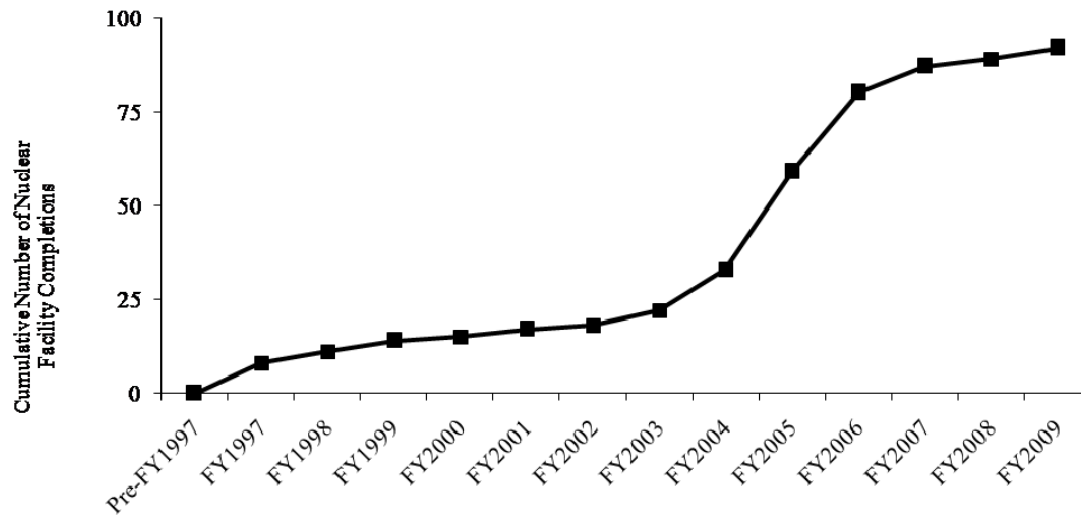
Three corporate performance measures (i.e., nuclear, radioactive, and industrial facilities) encompass facility completions; measured are the number of facilities that have reached their end state within the EM program.<sup>a</sup> The endpoint corresponds to one of the following: decommissioning, deactivation, 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> The total number and classifications of facilities throughout the complex are the results of reviewing the targets and performance throughout the complex, resulting in changes in the lifecycle totals being reported.



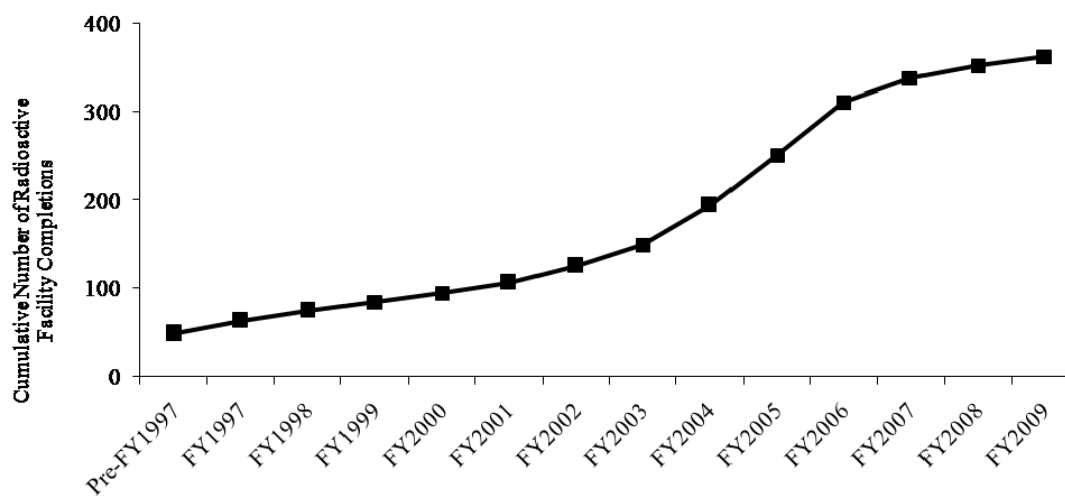
## Nuclear Facility Progress

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
80	87	89	92	20%	454



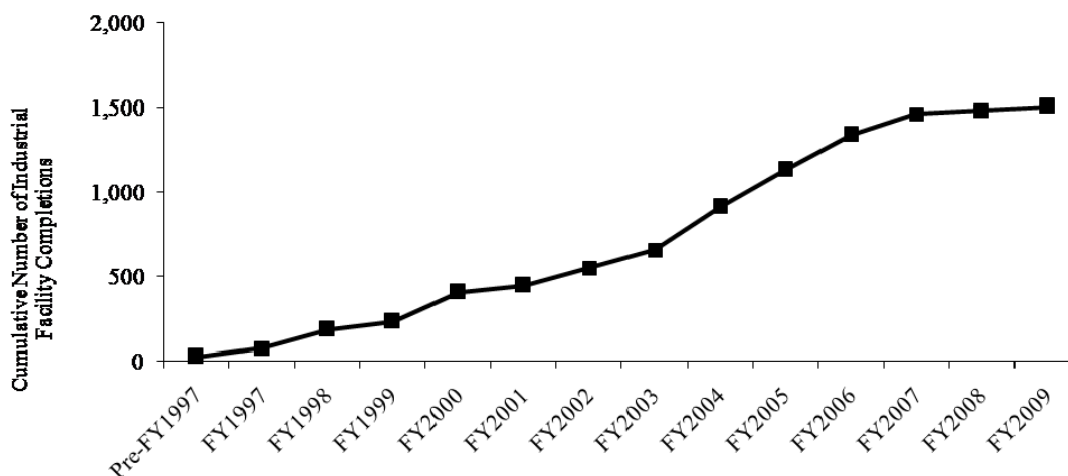
## Radioactive Facility Progress

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
311	338	352	362	40%	902



## Industrial Facility Progress

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	FY2009 Cumulative Target	% Complete Through FY 2009	Life-cycle Total
1,336	1,462	1,480	1,474	42%	3,619



### Geographic Sites and Remediation Completions

Completion of a geographic site best reflects EM's goal of accelerating cleanup and reducing risk. A geographic site in its entirety is considered complete when active remediation has been completed in accordance with the terms and conditions of cleanup agreements.<sup>a</sup> Stewardship or non-EM activities may be on going after a site is completed. EM tracks cleanup responsibilities for 108 contaminated sites.

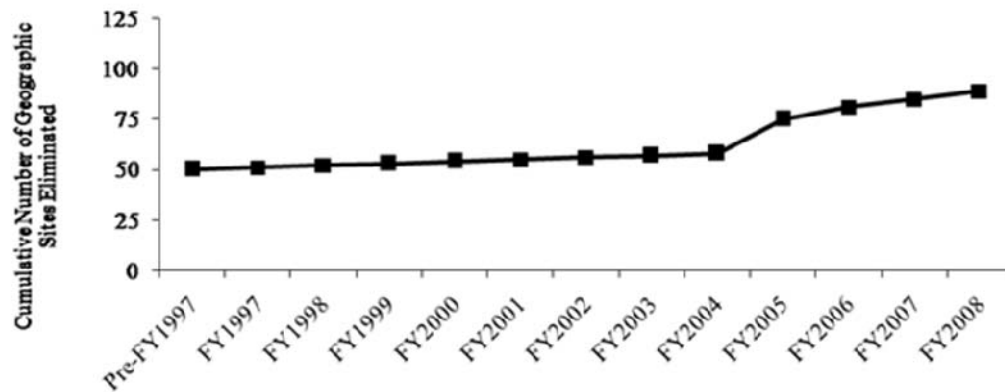
- In FY 2007 EM completed cleanup five sites – Amchitka Island, Fernald, Columbus, Ashtabula, and the Lawrence Berkeley National Laboratory.
- In FY 2008 EM plans to cleanup an additional four sites – Miamisburg, Pantex Plant, Inhalation Toxicology Laboratory, and Lawrence Livermore National Laboratory-Site 300.
- In FY 2009 EM plans to cleanup two additional sites – Argonne National Laboratory, and Sandia National Laboratory.

In order to complete a geographic site (e.g., Fernald), EM must complete remediation of all release sites present at the site. The completion of release sites, discrete areas of contamination at a site, is a good indicator of a site's progress towards completions. All sites except for the Waste Isolation Pilot Plant contribute to this corporate measure. These two corporate performance measures are shown below.

<sup>a</sup> Targets and Life-cycle total has been adjusted to reflect revised baselines throughout the complex.

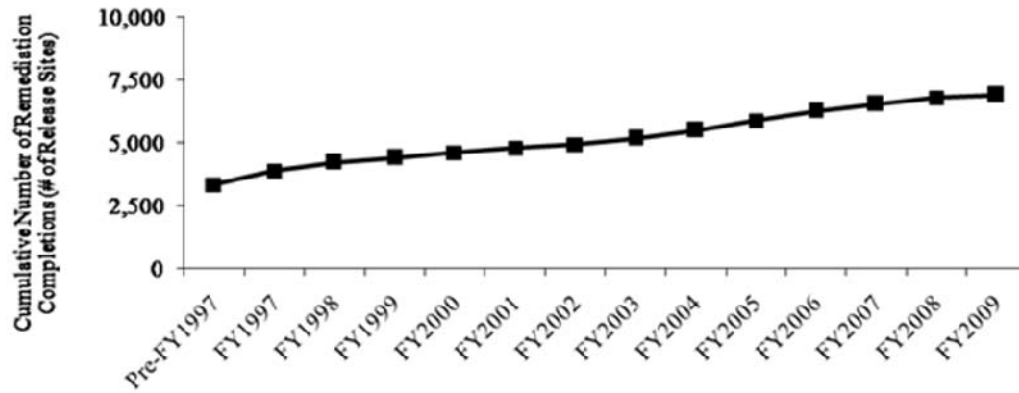
## Geographic Sites Eliminated

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
81	85	89	91	84%	108



## Remediation Completion Progress

Pre-FY2007 Cumulative Actual	FY2007 Cumulative Actual	FY2008 Cumulative Target	<i>FY2009 Cumulative Target</i>	% Complete Through FY 2009	Life-cycle Total
6,261	6,526	6,772	6,900	65%	10,547



## Annual Performance Results and Targets

EM uses 16 corporate performance measures in addition to an efficiency measure to track program performance. These measures represent the broad scope of cleanup challenges the program faces in completing its mission. These targets and EM's actual performance are reported in the Annual Performance and Accountability Report.

Measures	FY 2003 Results	FY 2004 Results	FY 2005 Results	FY 2006 Results	FY 2007 Results	FY 2008 Cumulative Targets	FY 2009 Cumulative Targets
Strategic Goal 4, Environmental Management							
GPRA Unit Program Goal 04.1.53.00, Environmental Management							
Plutonium and Uranium Residues Packaged for Disposition	Not an Annual Performance Plan (APP) measure in FY 2004.	Package a cumulative total of 107,706 kg of PU/U residues. (Not an APP measure in FY 2004.)	Package a cumulative total of 107,775 kg of PU/U residues. (MET GOAL)	Not an APP measure in FY 2006.	Not an APP measure in FY 2007.	<b>Measure Complete</b>	<b>Measure Complete</b>
Transuranic Waste (TRU) Shipped for Disposal at WIPP*	Ship for disposal at WIPP a cumulative total of 12,242 cubic meters of transuranic waste. (MET GOAL)	Ship for disposal at WIPP a cumulative total of 24,944 cubic meters of transuranic waste. (GOAL NOT MET)	Ship for disposal at WIPP a cumulative total of 39,856 cubic meters of transuranic waste. (GOAL NOT MET)	Ship for disposal at WIPP a cumulative total of 50,095 cubic meters of transuranic waste. (GOAL NOT MET)	Ship for disposal at WIPP a cumulative total of 47,301 cubic meters of transuranic waste. (MET GOAL)	Disposition of a cumulative total of 53,608 cubic meters of transuranic waste consisting of 183 cubic meters of Remote Handled TRU and 53,425 cubic meters of Contact Handled TRU	Disposition of a cumulative total of 63,378 cubic meters of transuranic waste consisting of 279 cubic meters of Remote Handled TRU and 63,459 cubic meters of Contact Handled TRU
Liquid Waste Tanks Closed	Close a cumulative total of 3 liquid waste tanks. (GOAL NOT MET)	Close a cumulative total of 12 liquid waste tanks. (Not an APP measure in FY 2004)	Close a cumulative total of 12 liquid waste tanks. (GOAL NOT MET)	Not an APP measure in FY 2006.	Not an APP measure in FY 2007.	Not an APP measure in FY 2008.	Not an APP measure in FY 2009.
High-Level Waste Canisters Packaged	Package a cumulative total of 1,742 canisters of high-level waste. (NEARLY MET GOAL)	Package a cumulative total of 1,992 canisters of high-level waste. (Not an APP measure in FY 2004)	Package a cumulative total of 2,242 canisters of high-level waste. (MET GOAL)	Package a cumulative total of 2,492 canisters of high-level waste. (MET GOAL)	Package a cumulative total of 2,675 canisters of high-level waste. (NEARLY MET GOAL)	Package a cumulative total of 2,835 canisters of high-level waste.	Package a cumulative total of 3,021 canisters of high-level waste.
Release Sites Completed	Complete a cumulative total of 5,141 release sites. (MET GOAL)	Complete a cumulative total of 5,330 release sites. (MET GOAL)	Complete a cumulative total of 5,630 release sites. (MET GOAL)	Complete a cumulative total of 6,018 release sites. (MET GOAL)	Complete a cumulative total of 6,532 release sites. (MET GOAL)	Complete a cumulative total of 6,772 release sites.	Complete a cumulative total of 6,900 release sites.
Enriched Uranium Packaged for Disposition	Package for disposition a cumulative total of 2,130 containers of enriched uranium. (GOAL NOT MET)	Package for disposition a cumulative total of 3,055 containers of enriched uranium. (Not an APP measure in FY 2004)	Package for disposition a cumulative total of 3,944 containers of enriched uranium. (MET GOAL)	Package for disposition a cumulative total of 6,159 containers of enriched uranium. (MET GOAL)	Package for disposition a cumulative total of 6,972 containers of enriched uranium. (NEARLY MET GOAL)	Package for disposition a cumulative total of 7,278 containers of enriched uranium.	Package for disposition a cumulative total of 7,300 containers of enriched uranium.
Radioactive Facility Completions	Complete a cumulative total of 130 radioactive facilities. (MET GOAL)	Complete a cumulative total of 167 radioactive facilities. (NEARLY MET GOAL)	Complete a cumulative total of 261 combined nuclear and radioactive facilities. (MET GOAL)	Complete a cumulative total of 261 combined nuclear and radioactive facilities. (MET GOAL)	Complete a cumulative total of 403 combined nuclear and radioactive facilities. (MET GOAL)	Complete a cumulative total of 352 radioactive facilities.	Complete a cumulative total of 362 radioactive facilities.
Nuclear Facility Completions	Complete a cumulative total of 20 nuclear facilities. (MET GOAL)	Not an APP measure in FY 2004				Not an APP measure in FY 2008.	Not an APP measure in FY 2009.
Efficiency Measure: Cost and Schedule Variance of Selected Projects	N/A	N/A	N/A	No greater than 10% negative cost and schedule variance for the overall cost – weighted mean cost and schedule performance indices for 80 operating projects and nine line item projects that are baselined and under configuration control. (MET GOAL)	No greater than 10% negative cost and schedule variance for the overall cost – weighted mean cost and schedule performance indices for 80 operating projects and nine line item projects that are baselined and under configuration control. (MET GOAL)	Remain within the limits of no greater than 10% negative cost and schedule variance for the overall cost – weighted mean cost and schedule performance indices for 80 operating projects and nine line item projects that are baselined and under configuration control.	Remain within the limits of no greater than 10% negative cost and schedule variance for the overall cost – weighted mean cost and schedule performance indices for 80 operating projects and nine line item projects that are baselined and under configuration control.

## 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.
  - High-level waste/tank waste storage, treatment, disposal
  - Spent nuclear fuel storage, receipt, disposition
  - Solid waste (transuranic waste and low-level waste/mixed low-level waste) storage, treatment, disposal
  - Special nuclear material storage, processing and disposition
  - Higher risk groundwater remediation
  - Soil and groundwater remediation
  - 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.

### **Program Assessment Rating Tool (PART)**

The Department implemented a tool to evaluate selected programs. The PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. DOE will take the necessary steps to continue to improve performance.



**FY 2004 PART** The EM program received a FY 2004 PART score of 49 (ineffective). OMB's assessment found that the program was generally effective in planning and managing cleanup activities. Average or above scores of 80, 88, and 73 were received in the "Purpose," "Planning," and "Management" sections of the PART evaluation, respectively. For the last section of the PART assessment, "Results/Accountability," an unsatisfactory score of 20 was assigned due in large part to OMB's position that a lack of annual cost and schedule performance measures made it difficult for the EM program to demonstrate progress towards its program goal. In the FY 2004 Congressional Budget Request, EM acknowledged that the program needed to continue to improve upon progress made to further develop project management techniques and associated cost and schedule performance measures.

**FY 2005 PART** EM made significant progress over the year, demonstrated by the program receiving a FY 2005 PART score of 61 (adequate). OMB assigned scores in the "Purpose," "Planning," and "Management Sections" of 100, 80, and 100, respectively. The assessment found that EM's managers were implementing reforms that were improving program performance. It was noted that the EM program had been redesigned to focus on its cleanup mission. The score for the "Results/Accountability" section was 26, also an improvement compared to the value previously assigned. OMB's primary finding was that EM had not developed annual cost and schedule performance measures to monitor progress towards completing the EM mission. EM has taken steps to fully incorporate and address this finding. It was EM's goal to have validated baselines for all of its sites approved by the Assistant Secretary and to develop annual cost and schedule measures by the end of FY 2004. (See FY 2006 PART for update.)

**FY 2006 PART** Given its participation the past two years, it was not necessary for EM to do a PART evaluation for the FY 2006 budget. EM has made significant progress towards meeting its goal to have resource-loaded baselines in place at each EM site that reflect its accelerated closure strategy. All site baselines have been reviewed for acceptance into the program's configuration control process. All but four site baselines (West Valley, Stanford Linear Accelerator Center, Los Alamos National Laboratory, and Energy Technology Engineering Center) are under configuration control. These sites did not have defined end states to enable firm baselines; they are targeted to be placed under configuration control in FY 2006. When the remaining site baselines are placed under configuration control, all project earned value cost and schedule information will be tracked.

**FY 2007 PART** EM was not required to do a PART evaluation for the FY 2007 budget. However, EM has updated information from previous PART evaluations and posted it to the website: [www.ExpectMore.gov](http://www.ExpectMore.gov). This allows for rapid reporting of progress on activities meeting mission goals while performing work safely. EM also seeks to improve the linkage between performance measures so that there is a clearer, discernable relationship between how much cleanup has been accomplished and costs incurred in completing the work and identify and highlight in its progress using those performance measures that are the most critical to assessing overall progress toward meeting accelerated cleanup plan goals.

In addition, EM continues to utilize earned value management system (EVMS) data as a means to link performance and cost and to more completely integrate performance accomplishments into the budget decision-making process. The Office of Engineering and Construction Management has implemented a program to certify the EVMS of the Department's contractors. This certification confirms that a standard, capable EVMS is in place and is being used to manage EM projects. In addition, EM will be emphasizing project risk management as a method to better manage the uncertainties associated with achieving mission goals.

**FY 2008 PART** EM was not required to do a PART evaluation for the FY 2008 budget. However, EM continues to update previous PART information and posting it to the OMB website, allowing for rapid reporting of progress on activities towards meeting its mission goals while performing work safely.

EM has applied project management principles to all cleanup projects and formally reports project progress to senior Departmental leadership on a monthly basis. In addition to line-item construction projects, EM is the only DOE program that is applying DOE Order 413.3A project management requirements to its portfolio of operations-funded projects. EM completed initial reviews of resource-loaded cost and schedule baselines for 89 mission-related projects, including 7 line item construction projects. These mission-related projects, which reflect EM's cleanup and closure strategy, describe in detail the activities, schedule, and resources required to complete the EM cleanup mission at each site or to construct a major facility at a site. For these projects, EM is collecting and analyzing earned value cost and schedule information on a monthly basis to monitor and measure the cleanup progress of each site against its cleanup objectives and take corrective action as necessary. Senior EM management conducts quarterly project reviews as well. With EM's management of the EM site baselines, the program is effectively monitoring performance towards meeting its mission goals.

**FY 2009 PART** EM was not required to do a PART evaluation for the FY 2009 budget. However, EM continues to update previous PART information and posting it to the OMB website, allowing for rapid reporting of progress on activities towards meeting its mission goals while performing work safely. EM has also aligned the PART database with the internal Department databases such that all information reported will be consistent.

EM has applied project management principles to all cleanup projects having a total estimated cost greater than \$20 million and is continuing its review of resource-loaded cost and schedule baselines for 79 active projects. The baselines describe in detail the activities, schedule and resources required to complete the EM cleanup mission at each site or to construct a major facility at a site. Of the 79 projects, 69 are in the execution phase. External independent reviews (EIR) have been completed on 100% of those projects in the execution phase. For these projects, EM is collecting and analyzing earned value cost and schedule information on a monthly basis to monitor and measure the cleanup progress of each site against its cleanup objectives, and apply corrective action as necessary. Senior EM management conducts quarterly project reviews as well. With EM's management of the EM site baselines, the program is effectively monitoring performance towards meeting its mission goals.

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

	Cumulative FY 2007 Target	Cumulative FY 2008 Target	Cumulative FY 2009 Target	Cumulative FY 2010 Target
Geographic Sites Eliminated (number of sites)	85	89	91	92
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	6,314	6,314	6,314	6,314
Enriched Uranium packaged for disposition (Number of Containers)	6,986	7,278	7,300	7,300
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	107,828	107,828	107,828	107,828
Depleted and Other Uranium packaged for disposition (Metric Tons)	11,860	11,860	29,371	63,007
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	700	1,400	2,723
Liquid Waste Tanks closed (Number of Tanks)	2	9	9	11
High-Level Waste packaged for final disposition (Number of Containers)	2,649	2,835	3,021	3,207
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	2,128	2,128	2,128	2,133
Transuranic Waste shipped for disposal (Cubic meters) - CH	43,680	53,425	63,459	73,183
Transuranic Waste shipped for disposal (Cubic meters) - RH	23	183	279	520
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	1,004,537	1,035,030	1,049,410	1,062,023
Material Access Areas eliminated (Number of Material Access Areas)	11	11	11	11
Nuclear Facility Completions (Number of Facilities)	87	89	92	103
Radioactive Facility Completions (Number of Facilities)	338	352	362	366
Industrial Facility Completions (Number of Facilities)	1,462	1,480	1,503	1,519
Remediation Complete (Number of Release Sites)	6,526	6,747	6,868	6,987

In preparing the FY 2009 budget, EM used performance data in making management and budget decisions. The following examples illustrate how budget decisions were influenced by program performance.

The cleanup contractor at Los Alamos National Laboratory has developed a baseline to support required cleanup activities. The cleanup baseline has been validated. As a result of the validated baseline, the FY 2009 funding request for the Los Alamos National Laboratory remediation work that is required under the Los Alamos National Laboratory Consent Order in the areas of soil and groundwater cleanup and nuclear facility D&D is slightly more than the FY 2008 appropriated level.

EM has put in place a new baseline at the Savannah River Site for the design and construction of the Salt Waste Processing Facility and the FY 2009 funding request supports execution of this baseline. The

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

new baseline reflects increased confidence in project execution and adherence to sound project management principles as outlined in DOE Order 413.3A.

In FY 2009, the Department continues to request \$690 million to support design and construction of the Waste Treatment and Immobilization Plant at the Office of River Protection. Lacking stable funding, the project would once again require re-planning and rescheduling with consequential impact. EM continues to make significant progress in resolving project performance issues associated with this project.

The Sodium Bearing Waste Treatment Project at Idaho has been recognized as a “model” project by the Defense Nuclear Facility Safety Board (DNFSB) for its efforts to integrate safety early in the design and critical decision 2/3 per DOE Order 413.3A. The FY 2009 funding request fully supports this project.

### **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 cost of near-term baselines (generally defined as a five-year period or existing contract duration, whichever is longer) with a resulting higher confidence level (from a nominal 50% confidence level to 80% confidence level). This contingency is a critical component of the independent review and certification (i.e., agreement that the identified scope can be accomplished within the stated costs and completion dates, if the projects are funded consistent with their respective cost profiles and contingency funds are provided as and when required, and that the baseline is acceptable as a point from which to control future change) of the baselines by the DOE Office of Engineering and Construction Management. 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 as part of EM’s baseline approval process. Ranges, coupled with the approved near-term project baselines, represent EM’s best estimate for life-cycle cost.

In previous years, EM has presented the life-cycle cost and scheduled completion date for the EM program as a single point estimate based on the most probable cost of the project. As a result of EM’s efforts to have independent review of its baselines, life-cycle cost estimates and schedules can be presented as a range of cost and schedule estimates that account for uncertainties associated with long-term project execution. In the table below, life-cycle cost estimates and schedule ranges are shown for those baselines that have been approved by EM. In instances where project schedules and cost estimates have not been approved by EM the most recent single point estimates are provided or preliminary cost ranges are shown when available. 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 2007.

ENVIRONMENTAL MANAGEMENT PROGRAM LIFE-CYCLE COST RANGE

Site	LCC Total Range
Fernald Environmental Management Project	3,203,481
Ashtabula Environmental Management Project	147,054
Lawrence Berkeley National Laboratory	43,504
Columbus Environmental Management Project - West Jefferson	170,241
Inhalation Toxicology Laboratory	11,270
Miamisburg Environmental Management Project	1,057,507
Lawrence Livermore National Laboratory - Site 300	122,580
Pantex Plant	186,522
Sandia National Laboratories - NM	232,290
Argonne National Laboratory - East	101,574
Stanford Linear Accelerator Center *	49,320
General Electric Vallecitos Nuclear Center *	66,200
Energy Technology Engineering Center *	286,060 - 332,260
Brookhaven National Laboratory	404,975 - 430,625
West Valley Demonstration Project	1,850,695 - 1,970,095
Separations Process Research Unit *	314,800 - 491,800
Oak Ridge Reservation	9,408,916 - 9,644,852
Los Alamos National Laboratory	2,626,399 - 3,598,399
Nevada Test Site Projects	2,337,600 - 2,670,400
Moab	723,482 - 950,482
Savannah River Site	51,021,088 - 65,902,088
Idaho National Laboratory	18,723,551 - 19,724,651
Waste Isolation Pilot Plant	9,248,503 - 10,312,803
Paducah Gaseous Diffusion Plant	13,703,463 - 13,901,763
Portsmouth Gaseous Diffusion Plant	9,918,412 - 16,127,312
Hanford Site	53,973,542 - 57,190,942
Office of River Protection	57,019,683 - 74,956,683
Headquarters	14,751,092
Technology Development & Deployment	2,821,214
Post Closure Liabilities	
Rocky Flats Environmental Technology Site - Post Closure Liabilities	2,632,089
Fernald Environmental Management Project - Post Closure Liabilities	358,440
Miamisburg Environmental Management Project - Post Closure Liabilities	844,577
Completed Sites	
Kansas City Plant	28,345
Lawrence Livermore National Laboratory - Main Site	190,332
Rocky Flats	6,519,882
<b>TOTAL EM PROGRAM</b>	<b>265,098,683 - 305,004,110</b>

## Site Closure Dates

Consistent with EM's baseline review and approval process for those sites with cleanup work scope beyond the near-term that have approved baselines, EM's lifecycle cost estimates will reflect a range of site completion dates. This range is shown on the following table. In instances where baselines have not been approved by EM, the current single point schedule estimate is provided. Note that the dates in the table are based on fiscal years to conform with the budget cycle. Changes from the FY 2008 Congressional Request are discussed in each site's budget narrative.

Site	Completion Date
Fernald Environmental Management Project	2007
Ashtabula Environmental Management Project	2007
Lawrence Berkeley National Laboratory	2007
Columbus Environmental Management Project - West Jefferson	2007
Inhalation Toxicology Laboratory	2008
Miamisburg Environmental Management Project	2008
Lawrence Livermore National Laboratory - Site 300	2008
Pantex Plant	2008
Sandia National Laboratories - NM	2009
Argonne National Laboratory - East	2009
Stanford Linear Accelerator Center *	2010
General Electric Vallecitos Nuclear Center *	2012
West Valley Demonstration Project	2012
Separations Process Research Unit *	2013 - 2014
Los Alamos National Laboratory	2015
Energy Technology Engineering Center *	2018 - 2020
Brookhaven National Laboratory	2018 - 2020
Oak Ridge Reservation	2021 - 2022
Nevada Test Site Projects	2027 - 2038
Moab*	2028
Savannah River Site	2038 - 2040
Idaho National Laboratory	2035 - 2044
Waste Isolation Pilot Plant	2035 - 2039
Paducah Gaseous Diffusion Plant*	2040
Portsmouth Gaseous Diffusion Plant	2044 - 2052
Hanford Site	2050 - 2062

\* Project baselines for these sites have not been approved by DOE

## 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 and predicting high level waste system performance over extreme time horizons (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 2007	FY 2008	FY 2009
Characterization of Radioactive Waste	2,100	2,100	9,500
Predicting High Level Waste System Performance over Extreme Time Horizons	500	500	1,500
	2,600	2,600	11,000

## 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 2007	FY 2008	FY 2009
Carlsbad	10,277	13,386	16,189
East Tennessee Technology Park	12,564	11,211	9,480
Idaho National Laboratory	15,982	12,584	10,737
Paducah	2,336	2,405	2,529
Portsmouth	0	49,179	32,756
Richland Operations Office	87,362	82,692	81,627
Office of River Protection	23,971	27,939	27,794
Savannah River	124,403	111,375	107,250
	276,895	310,771	288,362

<sup>a</sup> Data is as of fourth quarter FY 2007.

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

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Carlsbad	0	0	0
East Tennessee Technology Park	0	0	0
Idaho National Laboratory	0	0	0
Paducah	0	0	0
Portsmouth	0	0	0
Richland Operations Office	2,403	2,714	1,846
Office of River Protection	0	0	0
Savannah River	41,468	37,125	35,750
	43,871	39,839	37,596

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<sup>a</sup> Data is as of fourth quarter FY 2007.



# **ANCILLARY TABLES**



## Detailed Funding Table

(dollars in thousands)			
	FY 2007 Current Appropriation	FY 2008 Current Appropriation	FY 2009 Request
Defense Environmental Cleanup			
Closure Sites			
Operating	468,053	42,050	45,883
Hanford Site			
2012 Completion Projects			
Operating	425,204	419,189	400,902
2035 Completion Projects			
Operating	410,112	467,309	450,885
Subtotal, Hanford Site	835,316	886,498	851,787
Idaho National Laboratory			
Operating	489,883	396,584	345,424
Construction:			
06-D-401 / Sodium Bearing Waste Treatment Project, Idaho National Laboratory (INL), Idaho	31,000	111,774	86,700
Subtotal, Idaho National Laboratory	520,883	508,358	432,124
NNSA Sites			
Operating	299,345	290,264	245,084
Oak Ridge			
Operating	214,162	190,535	237,670
Office of River Protection			
Waste Treatment and Immobilization Plant			
Construction:			
01-D-16A / Low Activity Waste Facility, RL	186,000	141,699	160,000
01-D-16B / Analytical Laboratory, RL	59,000	44,591	65,000
01-D-16C / Balance of Facilities, RL	57,000	71,345	75,000
01-D-16D / High Level Waste Facility, RL	177,000	175,389	125,000
01-D-16E / Pretreatment Facility, RL	211,000	250,698	265,000
Subtotal, Construction	690,000	683,722	690,000
Tank Farm Activities			
Operating	277,127	285,818	288,443
Subtotal, Office of River Protection	967,127	969,540	978,443
Savannah River Site			
2012 Completion Projects			
Operating	241,576	0	0
Construction:			
04-D-414 / 04-03 PED: 3013 Container Surveillance Capability in 105-K, SR	0	0	2,032
04-D-414 / 04-01 PED: 3013 Container Surveillance Capability in 235-F, SR	2,935	0	0

	(dollars in thousands)		
	FY 2007 Current Appropriation	FY 2008 Current Appropriation	FY 2009 Request
04-D-423 / 3013 Container Surveillance Capability in 105-K, SR	0	10,900	0
Subtotal, Construction	2,935	10,900	2,032
Subtotal, 2012 Completion Projects	244,511	10,900	2,032
2035 Completion Projects			
Operating	280,574	508,403	498,651
Construction:			
08-D-414 / PED: 08-01 Plutonium Vitrification Facility	0	991	0
Subtotal, 2035 Completion Projects	280,574	509,394	498,651
Tank Farm Activities			
Operating	512,809	513,799	578,218
Construction:			
03-D-414 / 03-01 PED: Salt Waste Processing Facility Alternative, SR	104,296	9,910	0
05-D-405 / Salt Waste Processing Facility, SR	0	87,199	127,524
Subtotal, Construction	104,296	97,109	127,524
Subtotal, Tank Farm Activities	617,105	610,908	705,742
Subtotal, Savannah River Site	1,142,190	1,131,202	1,206,425
Waste Isolation Pilot Plant			
Operating	228,818	234,585	211,524
Program Support			
Operating	28,031	32,844	33,930
Program Direction			
Operating	282,080	306,941	308,765
Safeguards and Security			
Operating	272,520	259,332	251,341
Technology Development and Deployment			
Operating	20,715	21,194	32,389
Federal Contribution to the Uranium Enrichment D&D Fund			
Operating	452,000	458,787	463,000
Congressionally Directed Projects			
Operating	0	17,195	0
Subtotal, Defense Environmental Cleanup	5,731,240	5,349,325	5,298,365
Non-Defense Environmental Cleanup			
Fast Flux Test Reactor Facility D&D			
Operating	34,843	10,248	10,755
Gaseous Diffusion Plants			
Operating	27,363	37,773	81,296
Construction:			

	(dollars in thousands)		
	FY 2007 Current Appropriation	FY 2008 Current Appropriation	FY 2009 Request
02-U-101 / Depleted Uranium Hexafluoride Conversion Project, Paducah, KY & Portsmouth, OH	94,676	0	0
Subtotal, Gaseous Diffusion Plants	122,039	37,773	81,296
Small Sites			
Operating	105,214	80,342	64,413
West Valley Demonstration Project			
Operating	87,591	53,900	57,600
Subtotal, Non-Defense Environmental Cleanup	349,687	182,263	214,064
Uranium Enrichment Decontamination and Decommissioning Fund			
D&D Activities			
Operating	536,806	602,344	480,333
U/Th Reimbursements			
Operating	19,800	19,818	0
Subtotal, Uranium Enrichment Decontamination and Decommissioning Fund	556,606	622,162	480,333
Subtotal, Environmental Management	6,637,533	6,153,750	5,992,762
Use of Prior Year (Defense)	0	0	-1,109
Use of Prior year (Non-Defense)	0	0	-653
D&D Fund Offset	-452,000	-458,787	-463,000
Total, Environmental Management	6,185,533	5,694,963	5,528,000

## Funding Summary by Office

(dollars in thousands)

Site	FY 2007 Current Appropriation	FY 2008 Current Appropriation	FY 2009 Request
Carlsbad	228,818	234,585	211,524
Idaho	527,883	513,709	436,524
Oak Ridge	503,073	472,716	421,900
Paducah	144,588	132,910	134,838
Portsmouth	225,346	225,026	242,561
Richland	870,159	896,746	862,542
River Protection	967,127	969,540	978,443
Savannah River	1,142,190	1,131,202	1,206,425
NNSA Sites	300,370	292,152	246,989
Closure Sites	468,053	42,050	45,883
Headquarters Operations	47,831	69,857	33,930
West Valley Demonstration Project	87,591	53,900	57,600
All Other Sites	97,189	73,103	58,108
Program Direction	282,080	306,941	308,765
Safeguards and Security	272,520	259,332	251,341
D&D Fund Deposit	452,000	458,787	463,000
Technology Development & Deployment	20,715	21,194	32,389
Subtotal, Environmental Management	6,637,533	6,153,750	5,992,762
Offsets	-452,000	-458,787	-464,762
Total, Environmental Management	6,185,533	5,694,963	5,528,000

## Environmental Management Federal Staffing

(Full-Time Equivalents)

	FY 2007 Current Appropriation	FY 2008 Current Appropriation	FY 2009 Request
Carlsbad	42	50	52
Chicago	4	0	0
Idaho	59	67	70
Oak Ridge	81	83	84
Portsmouth/Paducah Project Office	40	47	50
Ohio	16	0	0
Richland	235	244	247
River Protection	101	112	115
Savannah River	317	339	339
Small Sites	16	37	34
Nevada Site Office	26	25	23
NNSA Sites	22	35	30
Subtotal, Field, Full-Time Equivalents	959	1,039	1,044
Headquarters Operations	259	299	299
Consolidated Business Center	143	162	162
Total, Field, Full-Time Equivalents	1,361	1,500	1,505

## Funding by Office/Site/Location

	(dollars in thousands)		
	FY 2007 Current Appropriation	FY 2008 Current Appropriation	FY 2009 Request
Carlsbad			
Carlsbad Field Office	25,115	26,446	27,860
Waste Isolation Pilot Plant	203,703	208,139	183,664
Total, Carlsbad	228,818	234,585	211,524
Idaho			
Idaho National Laboratory	527,883	513,709	436,524
Oak Ridge			
East Tennessee Technology Park	288,911	285,504	184,335
Oak Ridge National Laboratory	85,600	80,705	116,160
Oak Ridge Reservation	104,989	86,833	89,013
Y-12 Plant	23,573	19,674	32,392
Total, Oak Ridge	503,073	472,716	421,900
Paducah			
Paducah Gaseous Diffusion Plant	144,588	132,910	134,838
Portsmouth			
Portsmouth Gaseous Diffusion Plant	225,346	225,026	242,561
Richland			
Hanford Site	851,827	877,305	842,922
Richland Operations Office	18,332	19,441	19,620
Total, Richland	870,159	896,746	862,542
River Protection			
River Protection	967,127	969,540	978,443
Savannah River			
Savannah River National Laboratory	71,192	71,500	66,000
Savannah River Operations Office	12,542	12,386	12,500
Savannah River Site	1,058,456	1,047,316	1,127,925



(dollars in thousands)

	FY 2007 Current Appropriation	FY 2008 Current Appropriation	FY 2009 Request
Total, Savannah River	1,142,190	1,131,202	1,206,425
<b>NNSA Sites</b>			
California Site Support	370	367	0
Kansas City Plant	1,697	0	0
Lawrence Livermore National Laboratory	24,136	8,601	0
Los Alamos National Laboratory	140,925	153,958	164,372
Nevada Test Site	87,768	80,368	65,674
NNSA Service Center	2,722	1,497	1,443
Offsites	5,132	0	0
Pantex Plant	23,726	20,027	0
Sandia National Laboratory	10,394	0	0
Separations Process Research Unit	3,500	27,334	15,500
Total, NNSA Sites	300,370	292,152	246,989
<b>Closure Sites</b>			
Ashtabula	1,295	292	0
Consolidated Business Center	56,648	11,726	13,209
Fernald	254,754	0	2,100
Miamisburg	39,869	30,032	30,574
Rocky Flats Environmental Technology Site	115,487	0	0
Total, Closure Sites	468,053	42,050	45,883
<b>Headquarters Operations</b>			
Congressionally Directed Projects	0	17,195	0
Headquarters	47,831	52,662	33,930
Total, Headquarters Operations	47,831	69,857	33,930
<b>West Valley Demonstration Project</b>			
West Valley Demonstration Project	87,591	53,900	57,600
<b>All Other Sites</b>			
Argonne National Laboratory-East	10,726	433	459
Brookhaven National Laboratory	30,860	28,438	8,433
California Site Support	160	158	187
Consolidated Business Center	599	1,189	1,100

	(dollars in thousands)		
	FY 2007 Current Appropriation	FY 2008 Current Appropriation	FY 2009 Request
Energy Technology Engineering Center	16,000	12,882	12,533
Inhalation Toxicology Laboratory	3,358	423	0
Lawrence Berkeley National Laboratory	1,710	0	0
Moab	28,056	23,734	30,513
Stanford Linear Accelerator Center	5,720	5,846	4,883
Total, All Other Sites	97,189	73,103	58,108
Program Direction			
Program Direction	282,080	306,941	308,765
Safeguards and Security			
Carlsbad Field Office	4,232	4,882	5,124
East Tennessee Technology Park	18,900	18,322	27,020
Fernald	377	0	0
Hanford Site	73,436	86,503	75,265
Paducah Gaseous Diffusion Plant	11,707	0	8,196
Portsmouth Gaseous Diffusion Plant	15,642	0	0
Savannah River Site	146,626	148,040	134,336
West Valley Demonstration Project	1,600	1,585	1,400
Total, Safeguards and Security	272,520	259,332	251,341
D&D Fund Deposit			
D&D Fund Deposit	452,000	458,787	463,000
Technology Development & Deployment			
Technology Development and Deployment	20,715	21,194	32,389
Subtotal, Environmental Management	6,637,533	6,153,750	5,992,762
Use of Prior Year (Defense)	0	0	-1,109
Use of Prior year (Non-Defense)	0	0	-653
D&D Fund Offset	-452,000	-458,787	-463,000
Total, Environmental Management	6,185,533	5,694,963	5,528,000

## Capital Operating Expenses and Construction Summary

### Capital Operating Expenses

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Capital Equipment	735	1,815	0
General Plant Projects	96,014	51,826	9,577
Total, Capital Operating Expenses	96,749	53,641	9,577

### Construction Projects

	(dollars in thousands)				
Total Estimated Cost (TEC)	Prior-Year Appropriations	FY 2007	FY 2008	FY 2009	Unappropriated Balance

#### Defense Environmental Cleanup

Idaho National Laboratory 06-D-401, Sodium Bearing Waste Treatment Project, Idaho National Laboratory (INL), Idaho, ID-0014B	269,620	30,729	31,000	111,774	86,700	+9,417
Office of River Protection 01-D-16A, Low Activity Waste Facility, RL, ORP-0060	1,748,000	788,000	186,000	141,699	160,000	+472,301
01-D-16B, Analytical Laboratory, RL, ORP-0060	676,000	162,000	59,000	44,591	65,000	+345,409
01-D-16C, Balance of Facilities, RL, ORP-0060	1,137,000	395,000	57,000	71,345	75,000	+538,655
01-D-16D, High Level Waste Facility, RL, ORP-0060	3,308,000	903,000	177,000	175,389	125,000	+1,927,611
01-D-16E, Pretreatment Facility, RL, ORP-0060	5,394,000	1,392,838	211,000	250,698	265,000	+3,274,464
Total, Office of River Protection			690,000	683,722	690,000	

Savannah River Site 04-D-414, 04-03 PED: 3013 Container Surveillance Capability in 105-K, SR, SR-0011B	0	0	0	0	2,032	+0
03-D-414, 03-01 PED: Salt Waste Processing Facility Alternative, SR, SR-0014C	228,796	114,499	104,296	9,910	0	+91
04-D-414, 04-01 PED: 3013 Container Surveillance Capability in 235-F, SR, SR-0011B	34,573	31,638	2,935	0	0	+0
04-D-423, 3013 Container Surveillance Capability in 105-K, SR, SR-0011B	93,588	31,688	0	10,900	0	+51,000

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior-Year Appro- priations	FY 2007	FY 2008	FY 2009	Unappro- priated Balance
05-D-405, Salt Waste Processing Facility, SR, SR-0014C	497,199	6,287	0	87,199	127,524	+276,189
08-D-414, PED: 08-01 Plutonium Vitrification Facility, SR-0011C	88,000	0	0	991	0	+87,009
Total, Savannah River Site			107,231	109,000	129,556	
Total, Defense Environmental Cleanup			828,231	904,496	906,256	

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

	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Life-cycle Estimates
<b><u>Carlsbad</u></b>					
Waste Isolation Pilot Plant					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
<b><u>Idaho</u></b>					
Argonne National Laboratory - West					
Remediation Complete (Number of Release Sites)	37	37	37	37	37
Argonne National Laboratory-West					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Idaho National Laboratory					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Enriched Uranium packaged for disposition (Number of Containers)	1,121	1,311	1,511	1,533	1,533
High-Level Waste packaged for final disposition (Number of Containers)	0	0	0	0	6,660
Industrial Facility Completions (Number of Facilities)	111	122	126	128	262
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	0	0	900
Liquid Waste Tanks closed (Number of Tanks)	0	0	7	7	11
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	53,672	58,752	61,341	65,146	110,560
Material Access Areas eliminated (Number of Material Access Areas)	1	1	1	1	1
Nuclear Facility Completions (Number of Facilities)	20	22	23	25	75
Radioactive Facility Completions (Number of Facilities)	20	27	29	29	50
Remediation Complete (Number of Release Sites)	184	218	224	232	327
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	12,741	18,933	26,048	33,495	80,004
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	23	74	74	697
Idaho Operations Office					
Remediation Complete (Number of Release Sites)	233	233	233	233	233

<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.

	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Life-cycle Estimates
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
<b><u>Oak Ridge</u></b>					
East Tennessee Technology Park					
Industrial Facility Completions (Number of Facilities)	214	284	285	294	598
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	38,250	38,250	38,799	38,799	38,799
Nuclear Facility Completions (Number of Facilities)	5	6	6	6	8
Radioactive Facility Completions (Number of Facilities)	4	7	8	8	30
Remediation Complete (Number of Release Sites)	68	87	87	88	167
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	131
FUSRAP					
Geographic Sites Eliminated (number of sites)	25	25	25	25	25
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)	6,852	7,157	7,620	8,105	44,227
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

	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Life-cycle Estimates
<b>Oak Ridge Reservation</b>					
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)	59,284	59,786	61,078	62,192	82,243
Nuclear Facility Completions (Number of Facilities)	2	2	2	2	2
Radioactive Facility Completions (Number of Facilities)	10	15	15	15	15
Remediation Complete (Number of Release Sites)	111	112	113	114	114
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	187	467	1,414
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	64	160	600
<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
Remediation Complete (Number of Release Sites)	28	28	28	28	138
<b><u>Paducah</u></b>					
<b>Paducah Gaseous Diffusion Plant</b>					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	7,500	418,960
Enriched Uranium packaged for disposition (Number of Containers)	0	0	0	0	182
Industrial Facility Completions (Number of Facilities)	12	12	12	19	172
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	9,769	12,680	18,337	20,006	27,464
Nuclear Facility Completions (Number of Facilities)	0	0	0	0	18
Radioactive Facility Completions (Number of Facilities)	1	2	3	4	22
Remediation Complete (Number of Release Sites)	86	91	91	93	205
<b><u>Portsmouth</u></b>					
<b>Portsmouth Gaseous Diffusion Plant</b>					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	7,875	247,740
Industrial Facility Completions (Number of Facilities)	7	7	9	10	121

	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Life-cycle Estimates
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	22,423	24,078	30,508	30,508	30,508
Nuclear Facility Completions (Number of Facilities)	0	0	0	0	13
Radioactive Facility Completions (Number of Facilities)	5	7	7	7	27
Remediation Complete (Number of Release Sites)	149	150	150	150	151

### **Richland**

#### **Hanford Site**

Geographic Sites Eliminated (number of sites)	0	0	0	0	1
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)	279	312	317	319	1,047
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	44,773	45,698	45,804	45,804	51,555
Material Access Areas eliminated (Number of Material Access Areas)	1	1	1	1	2
Nuclear Facility Completions (Number of Facilities)	24	28	28	28	80
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	3,500	3,500	3,500	3,500	3,500
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)	40	46	55	55	333
Remediation Complete (Number of Release Sites)	427	448	502	506	1,645
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	1,781	2,481	3,181	3,531	24,580
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	858

### **River Protection**

#### **River Protection**

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)	0	6,211	9,189	11,843	197,832



	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Life-cycle Estimates
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

### **Savannah River**

#### **Savannah River Site**

Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Depleted and Other Uranium packaged for disposition (Metric Tons)	8,704	8,760	8,760	10,896	23,182
Enriched Uranium packaged for disposition (Number of Containers)	2,717	2,717	2,809	2,809	2,809
High-Level Waste packaged for final disposition (Number of Containers)	2,214	2,374	2,560	2,746	5,862
Industrial Facility Completions (Number of Facilities)	224	232	232	232	759
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	700	1,400	33,100
Liquid Waste Tanks closed (Number of Tanks)	2	2	2	2	51
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	86,888	94,179	103,039	107,483	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)	479	490	490	490	490
Radioactive Facility Completions (Number of Facilities)	8	8	8	8	40
Remediation Complete (Number of Release Sites)	325	339	352	363	515
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	2	3	3	3	40
Transuranic Waste shipped for disposal (Cubic meters) - CH	4,302	5,031	5,681	5,841	15,553
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	28	28	68

### **NNSA Sites**

#### **Kansas City Plant**

Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Remediation Complete (Number of Release Sites)	43	43	43	43	43

	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Life-cycle Estimates
Lawrence Livermore National Laboratory					
Geographic Sites Eliminated (number of sites)	1	1	2	2	2
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	2,766	2,766	2,766	2,766	2,766
Remediation Complete (Number of Release Sites)	189	193	194	194	194
Transuranic Waste shipped for disposal (Cubic meters) - CH	125	125	125	125	125
Los Alamos National Laboratory					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	5,978	5,978	5,978	5,978	5,978
Radioactive Facility Completions (Number of Facilities)	0	0	0	0	1
Remediation Complete (Number of Release Sites)	1,410	1,417	1,472	1,537	2,129
Transuranic Waste shipped for disposal (Cubic meters) - CH	1,267	1,682	2,480	4,226	10,001
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	17	17	95
Nevada Test Site					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Remediation Complete (Number of Release Sites)	864	936	996	1,021	2,036
Transuranic Waste shipped for disposal (Cubic meters) - CH	392	392	687	688	688
New Mexico Site Support					
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
NNSA Service Center					
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	50	50
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

	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Life-cycle Estimates
Industrial Facility Completions (Number of Facilities)	4	4	4	4	4
Remediation Complete (Number of Release Sites)	134	211	237	237	237
Sandia National Laboratory					
Geographic Sites Eliminated (number of sites)	1	1	1	2	2
Radioactive Facility Completions (Number of Facilities)	1	1	1	1	1
Remediation Complete (Number of Release Sites)	258	263	263	264	265
Separations Process Research Unit					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
<b><u>Closure Sites</u></b>					
Ashtabula					
Geographic Sites Eliminated (number of sites)	0	1	1	1	1
Industrial Facility Completions (Number of Facilities)	3	7	7	7	7
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	104	3,707	3,707	3,707	3,707
Radioactive Facility Completions (Number of Facilities)	26	28	28	28	28
Remediation Complete (Number of Release Sites)	0	3	3	3	3
Columbus					
Geographic Sites Eliminated (number of sites)	1	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)	0	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)	4	6	6	6	6
Miamisburg					
Geographic Sites Eliminated (number of sites)	0	0	1	1	1
Industrial Facility Completions (Number of Facilities)	116	116	116	116	116

	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Life-cycle Estimates
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
Rocky Flats Environmental Technology Site 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><u>West Valley Demonstration Project</u></b>					
West Valley Demonstration Project					
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
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	16,594	26,025	27,498	27,707	27,786
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><u>All Other Sites</u></b>					
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	0	1	1
Radioactive Facility Completions (Number of Facilities)	68	69	69	78	78

	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Life-cycle Estimates
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	10	11
Remediation Complete (Number of Release Sites)	76	76	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	5
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
General Atomics					
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
General Electric					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1

	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Life-cycle Estimates
Geothermal Test Facility					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Grand Junction					
Geographic Sites Eliminated (number of sites)	2	2	2	2	2
Headquarters					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Inhalation Toxicology Laboratory					
Geographic Sites Eliminated (number of sites)	0	0	1	1	1
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	207	207	303	303	303
Remediation Complete (Number of Release Sites)	9	9	9	9	9
Laboratory for Energy-Related Health Research					
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
Lawrence Berkeley National Laboratory					
Geographic Sites Eliminated (number of sites)	0	1	1	1	1
Remediation Complete (Number of Release Sites)	181	181	181	181	181
Moab					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
New Mexico Site Support					
Geographic Sites Eliminated (number of sites)	5	5	5	5	5
Princeton Plasma Physics Laboratory					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
South Valley					
Geographic Sites Eliminated (number of sites)	1	1	1	1	1
Stanford Linear Accelerator Center					
Geographic Sites Eliminated (number of sites)	0	0	0	0	1
Remediation Complete (Number of Release Sites)	17	17	17	20	20
UMTRA					
Geographic Sites Eliminated (number of sites)	24	24	24	24	24

West Valley Demonstration Project

	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Life-cycle Estimates
Industrial Facility Completions (Number of Facilities)	10	10	16	18	29
Nuclear Facility Completions (Number of Facilities)	3	3	4	4	14
Radioactive Facility Completions (Number of Facilities)	3	3	4	4	13

## Budget Authority

### Estimates by Project Baseline Summary Category

(dollars in thousands)

	FY 2007 Current Appropriation	FY 2008 Current Appropriation	FY 2009 Request
NM Stabilization & Disposition	567,478	493,650	596,152
Nuclear Facility D&D	1,042,702	1,042,779	858,704
Operate Waste Disposal Facility	183,076	206,318	168,342
Other:			
Community and Regulatory Support	40,661	43,115	42,831
Fed. Contribution to the UE D&D Fund	452,000	458,787	463,000
Other	185,474	168,777	129,233
Program Direction	282,080	306,941	308,765
Technology Development	20,715	21,194	32,389
Rad Liquid Waste Stabilization & Disposition	990,275	1,074,043	1,126,910
Rad Liquid Waste Stabilization & Disposition - Major Construction	690,000	683,722	690,000
Safeguards & Security	272,520	259,332	251,341
SNF Stabilization & Disposition	203,678	164,030	171,013
Soil & Water Remediation	910,080	537,309	527,421
SW Stabilization & Disposition	767,710	666,866	598,491
Waste & Material Transportation	29,084	26,887	28,170
Subtotal, Environmental Management	6,637,533	6,153,750	5,992,762
Offsets	-452,000	-458,787	-464,762
Total, Environmental Management	6,185,533	5,694,963	5,528,000



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

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
<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)	1,121	1,311	1,511	1,533	0	1,533
		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	12,741	18,899	24,599	30,299	33,870	64,169
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	23	74	74	0	74

<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.

<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.

**Environmental Management/**

**Overview**

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	53,672	58,752	61,341	65,146	14,253	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	0	7	7	4	11
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	623	623
Idaho National Laboratory	ID-0014C	Radioactive Liquid Tank Waste 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	0	34	1,449	3,196	5,241	8,437
		Remediation Complete (Number of Release Sites)	184	218	224	232	72	304
Idaho National Laboratory	ID-0030C	Soil and Water Remediation-2035						
		Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	7,398	7,398
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	0	0	0	0	31,161	31,161
		Remediation Complete (Number of Release Sites)	0	0	0	0	23	23
Idaho National Laboratory	ID-0040B	Nuclear Facility D&D-2012						
		Nuclear Facility Completions (Number of Facilities)	20	22	23	25	17	42

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
Idaho National Laboratory	ID-0040C	Nuclear Facility D&D-2035						
		Nuclear Facility Completions (Number of Facilities)	0	0	0	0	33	33
		Radioactive Facility Completions (Number of Facilities)	0	0	0	0	10	10
		Industrial Facility Completions (Number of Facilities)	0	0	0	0	77	77
Idaho National Laboratory	ID-0050B	Non-Nuclear Facility D&D-2012						
		Radioactive Facility Completions (Number of Facilities)	20	27	29	29	11	40
		Industrial Facility Completions (Number of Facilities)	111	122	126	128	57	185
Idaho Operations Office	ID-0900	Pre-2004 Completions (Defense)						
		Remediation Complete (Number of Release Sites)	233	233	233	233	0	233
<b><u>Oak Ridge</u></b>								
Oak Ridge National Laboratory	HQ-SW-0013X	Solid Waste Stabilization and Disposition-Science Current Generation						
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	6,852	7,157	7,157	7,157	0	7,157
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)	3	4	4	4	0	4
East Tennessee Technology Park	OR-0011Z	Downblend of U-233 in Building 3019						
		Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	0	131	131

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
Oak Ridge Reservation	OR-0013A	Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	0	0	549	549	0	549
		Solid Waste Stabilization and Disposition-2006						
Oak Ridge Reservation	OR-0013B	Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	48,584	48,584	48,584	48,584	0	48,584
		Solid Waste Stabilization and Disposition-2012						
		Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	187	467	947	1,414
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	64	160	440	600
Oak Ridge Reservation	OR-0030	Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	10,700	11,202	12,494	13,608	20,051	33,659
		Soil and Water Remediation-Melton Valley						
		Nuclear Facility Completions (Number of Facilities)	2	2	2	2	0	2
		Radioactive Facility Completions (Number of Facilities)	10	15	15	15	0	15
		Industrial Facility Completions (Number of Facilities)	2	2	2	2	0	2
		Remediation Complete (Number of Release Sites)	106	106	106	106	0	106
Oak Ridge Reservation	OR-0031	Soil and Water Remediation-Offsites						
		Remediation Complete (Number of Release Sites)	5	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

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
Y-12 Plant	OR-0041	Nuclear Facility Completions (Number of Facilities)	2	2	2	2	2	4
		Radioactive Facility Completions (Number of Facilities)	4	7	8	8	5	13
		Industrial Facility Completions (Number of Facilities)	208	278	279	288	221	509
		Remediation Complete (Number of Release Sites)	68	87	87	88	79	167
		Nuclear Facility D&D-Y-12						
		Industrial Facility Completions (Number of Facilities)	1	1	1	1	1	2
Oak Ridge National Laboratory	OR-0042	Remediation Complete (Number of Release Sites)	28	28	28	28	110	138
		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	0	463	948	36,122	37,070
		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
		Nuclear Facility D&D-East Tennessee Technology Park (Defense)						
East Tennessee Technology Park	OR-0043	Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	32,979	32,979	32,979	32,979	0	32,979

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
Oak Ridge Operations Office	OR-0900-D	Radioactive Facility Completions (Number of Facilities)	0	0	0	0	17	17
		Industrial Facility Completions (Number of Facilities)	6	6	6	6	83	89
		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><u>Paducah</u></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	7,500	411,460	418,960
Paducah Gaseous Diffusion Plant	PA-0013	Solid Waste Stabilization and Disposition						
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	9,769	12,680	18,337	20,006	7,458	27,464
Paducah Gaseous Diffusion Plant	PA-0040	Nuclear Facility D&D-Paducah						
		Industrial Facility Completions (Number of Facilities)	12	12	12	19	153	172

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
		Nuclear Facility Completions (Number of Facilities)	0	0	0	0	18	18
		Radioactive Facility Completions (Number of Facilities)	1	2	3	4	18	22
		Remediation Complete (Number of Release Sites)	86	91	91	93	112	205
<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	7,875	239,865	247,740
Portsmouth Gaseous Diffusion Plant	PO-0013	Solid Waste Stabilization and Disposition						
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	22,423	24,078	30,508	30,508	0	30,508
Portsmouth Gaseous Diffusion Plant	PO-0040	Nuclear Facility D&D-Portsmouth						
		Industrial Facility Completions (Number of Facilities)	7	7	9	10	111	121
		Nuclear Facility Completions (Number of Facilities)	0	0	0	0	13	13
		Radioactive Facility Completions (Number of Facilities)	5	7	7	7	20	27
		Remediation Complete (Number of Release Sites)	19	20	20	20	1	21
Portsmouth Gaseous Diffusion Plant	PO-0900	Pre-2004 Completions						
		Remediation Complete (Number of Release Sites)	130	130	130	130	0	130

**Richland**

Hanford Site                      RL-0011                      NM Stabilization and Disposition-PFP

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
		Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	3,100	3,100	3,100	3,100	0	3,100
		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	1	1	1	2
		Nuclear Facility Completions (Number of Facilities)	17	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- 2035						
		Transuranic Waste shipped for disposal (Cubic meters) - CH	1,781	2,481	3,181	3,531	21,049	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)	44,773	45,698	45,804	45,804	5,751	51,555
Hanford Site	RL-0040	Nuclear Facility D&D-Remainder of Hanford - 2035						
		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)	201	212	212	212	437	649
		Remediation Complete (Number of Release Sites)	35	39	48	48	809	857



Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
Hanford Site	RL-0041	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	3	3	6
		Radioactive Facility Completions (Number of Facilities)	28	34	43	43	75	118
		Industrial Facility Completions (Number of Facilities)	78	100	105	107	260	367
		Remediation Complete (Number of Release Sites)	392	409	454	458	330	788
Hanford Site	RL-0042	Nuclear Facility D&D-Fast Flux Test Facility Project						
		Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	400	400	400	400	0	400
		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

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
		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
		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)	0	6,211	9,189	11,843	185,989	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><u>Savannah River</u></b>								
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)	479	490	490	490	0	490
Savannah River Site	SR-0011C	NM Stabilization and Disposition-2035						

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
		Enriched Uranium packaged for disposition (Number of Containers)	2,717	2,717	2,809	2,809	0	2,809
		Depleted and Other Uranium packaged for disposition (Metric Tons)	8,704	8,760	8,760	10,896	12,286	23,182
Savannah River Site	SR-0012	SNF Stabilization and Disposition						
		Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	2	3	3	3	37	40
Savannah River Site	SR-0013	Solid Waste Stabilization and Disposition						
		Transuranic Waste shipped for disposal (Cubic meters) - CH	4,302	5,031	5,681	5,841	9,712	15,553
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	28	28	40	68
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	86,888	94,179	103,039	107,483	30,096	137,579
Savannah River Site	SR-0014C	Radioactive Liquid Tank Waste Stabilization and Disposition-2035						
		Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	700	1,400	31,700	33,100
		Liquid Waste Tanks closed (Number of Tanks)	2	2	2	2	49	51
		High-Level Waste packaged for final disposition (Number of Containers)	2,214	2,374	2,560	2,746	3,116	5,862
Savannah River Site	SR-0020	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)	325	339	352	363	152	515
Savannah River Site	SR-0040	Nuclear Facility D&D						
		Nuclear Facility Completions (Number of Facilities)	11	11	11	11	180	191

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
		Radioactive Facility Completions (Number of Facilities)	8	8	8	8	32	40
		Industrial Facility Completions (Number of Facilities)	224	232	232	232	527	759
<b><u>NNSA Sites</u></b>								
Offsites	NV-0030	Soil and Water Remediation-Nevada 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
Kansas City Plant	VL-KCP-0030	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	1,267	1,682	2,480	4,226	5,775	10,001
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	17	17	78	95
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	552	552	552	552	0	552
Los Alamos National Laboratory	VL-LANL-0030	Soil and Water Remediation-LANL						
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	5,426	5,426	5,426	5,426	0	5,426
		Remediation Complete (Number of Release Sites)	1,410	1,417	1,472	1,537	592	2,129

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
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	125	125	125	125	0	125
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	2,766	2,766	2,766	2,766	0	2,766
Lawrence Livermore National Laboratory	VL-LLNL-0030	Soil and Water Remediation-Lawrence Livermore National Laboratory - Main Site Remediation Complete (Number of Release Sites)	120	120	120	120	0	120
Lawrence Livermore National Laboratory	VL-LLNL-0031	Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300 Remediation Complete (Number of Release Sites)	69	73	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	392	687	688	0	688
Nevada Test Site	VL-NV-0030	Soil and Water Remediation-Nevada Test Site Remediation Complete (Number of Release Sites)	863	935	995	1,020	1,015	2,035
Pantex Plant	VL-PX-0030	Soil and Water Remediation-Pantex Remediation Complete (Number of Release Sites)	134	211	237	237	0	237
Pantex Plant	VL-PX-0040	Nuclear Facility D&D-Pantex						

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
Sandia National Laboratory	VL-SN-0030	Industrial Facility Completions (Number of Facilities)	4	4	4	4	0	4
		Soil and Water Remediation-Sandia						
		Radioactive Facility Completions (Number of Facilities)	1	1	1	1	0	1
NNSA Service Center	VL-SPRU-0040	Remediation Complete (Number of Release Sites)	258	263	263	264	1	265
		Nuclear Facility D&D-Separations Process Research Unit						
		Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	50	0	50
		Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	0	0
		Nuclear Facility Completions (Number of Facilities)	0	0	0	0	4	4
		Remediation Complete (Number of Release Sites)	0	0	4	4	2	6
		South Valley Superfund						
Nevada Test Site	VL-SV-0100	Remediation Complete (Number of Release Sites)	1	1	1	1	0	1
<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)	104	3,707	3,707	3,707	0	3,707
		Radioactive Facility Completions (Number of Facilities)	26	28	28	28	0	28
		Industrial Facility Completions (Number of Facilities)	3	7	7	7	0	7
		Remediation Complete (Number of Release Sites)	0	3	3	3	0	3

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
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 Release Sites)	4	4	4	4	0	4
Fernald	OH-FN-0030	Soil and Water Remediation-Fernald						
		Remediation Complete (Number of Release Sites)	0	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
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	3,947	3,947	3,947	3,947	0	3,947
Miamisburg	OH-MB-0030	Soil and Water Remediation-Miamisburg						
		Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	0	0

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
Miamiisburg	OH-MB-0040	Remediation Complete (Number of Release Sites)	178	178	178	178	0	178
		Nuclear Facility D&D-Miamiisburg						
		Nuclear Facility Completions (Number of Facilities)	8	8	8	8	0	8
		Radioactive Facility Completions (Number of Facilities)	11	11	11	11	0	11
Rocky Flats Environmental Technology Site	RF-0011	Industrial Facility Completions (Number of Facilities)	116	116	116	116	0	116
		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 Technology Site	RF-0013	Solid Waste Stabilization and Disposition						
		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						



Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
Rocky Flats Environmental Technology Site	RF-0041	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
		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>West Valley Demonstration Project</u></b>						
		West Valley Demonstration Project	OH-WV-0013	Solid Waste Stabilization and Disposition-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)	16,594	26,025	27,498	27,707	79	27,786
<b><u>All Other Sites</u></b>								
Brookhaven National Laboratory	BRNL-0030	Soil and Water Remediation-Brookhaven National Laboratory						

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
Brookhaven National Laboratory	BRNL-0040	Radioactive Facility Completions (Number of Facilities)	3	3	3	3	0	3
		Remediation Complete (Number of Release Sites)	75	75	75	75	0	75
		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	7	1	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	0	1	1	0	1
California Site Support	CBC-CA-0013B- N	Solid Waste Stabilization and Disposition-California 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	1	5
		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						

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
Lawrence Berkeley National Laboratory	CBC-LBNL-0030	Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	207	207	303	303	0	303
		Remediation Complete (Number of Release Sites)	9	9	9	9	0	9
		Soil and Water Remediation-Lawrence Berkeley National Laboratory						
Stanford Linear Accelerator Center	CBC-SLAC-0030	Remediation Complete (Number of Release Sites)	181	181	181	181	0	181
		Soil and Water Remediation-Stanford Linear Accelerator Center						
		Remediation Complete (Number of Release Sites)	17	17	17	20	0	20
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
		Nuclear Facility D&D-Argonne National Laboratory-East						
Argonne National Laboratory-East	CH-ANLE-0040	Nuclear Facility Completions (Number of Facilities)	0	0	0	0	0	0
		Radioactive Facility Completions (Number of Facilities)	68	69	69	78	0	78
		Pre-2004 Completions						
Chicago Operations Office	CH-OPS-0900	Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	537	537	537	537	0	537
		Remediation Complete (Number of Release Sites)	30	30	30	30	0	30
		Nuclear Facility D&D-Laboratory for Energy-Related Health Research						
Laboratory for Energy-Related Health Research	LEHR-0040	Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	944	944	944	944	0	944

Office / Installation	Project Number	Project Name / Measure	Complete Through 2006	Complete Through 2007	Targeted Completion Through 2008	Targeted Completion Through 2009	Balance Remaining	Life-Cycle Quantity
West Valley Demonstration Project	OH-WV-0040	Industrial Facility Completions (Number of Facilities)	1	1	1	1	0	1
		Remediation Complete (Number of Release Sites)	16	16	16	16	0	16
		Nuclear Facility D&D-West Valley						
		Nuclear Facility Completions (Number of Facilities)	3	3	4	4	10	14
		Radioactive Facility Completions (Number of Facilities)	3	3	4	4	9	13
		Industrial Facility Completions (Number of Facilities)	10	10	16	18	11	29
California Site Support	VL-FOO-0900-N	Pre-2004 Completions (Non-Defense)						
		Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	189	189	189	189	0	189
		Remediation Complete (Number of Release Sites)	3	3	3	3	0	3
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
		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

## Carlsbad

### Funding by Site

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Carlsbad Field Office	25,115	26,446	27,860
Waste Isolation Pilot Plant	203,703	208,139	183,664
Total, Carlsbad	228,818	234,585	211,524

### 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 cleanup of transuranic waste from waste generator and storage sites. It is not a cleanup site.

### Site Completion (End State)

EM's end state for Waste Isolation Pilot Plant is the cessation of disposal activities for legacy and newly generated transuranic waste from the DOE complex. Based on the approved baseline, the lifecycle planning estimate range is 2035 to 2039 for decommissioning of the surface facilities and permanent closure of the underground.

## **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 CFR 191. 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 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 and the *Letter of Intent for Meeting Environmental Responsibilities at New Mexico DOE Facilities* commits to accelerated cleanup of transuranic waste at Sandia National Laboratories and the Los Alamos National Laboratory in the State of New Mexico.

## **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 increase the backlog of certified waste through 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.

## 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. Because the temporary storage facilities located across the United States were never intended to become permanent disposal sites, the Waste Isolation Pilot Plant has become the 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 \$16,189,000.

### Funding Schedule by Activity

(dollars in thousands)			
	FY 2007	FY 2008	FY 2009
Defense Environmental Cleanup			
Waste Isolation Pilot Plant			
CB-0080 / Operate Waste Disposal Facility-WIPP	142,069	148,653	126,425
CB-0081 / Central Characterization Project	32,550	32,599	29,069
CB-0090 / Transportation-WIPP	29,084	26,887	28,170
CB-0101 / Economic Assistance to the State of New Mexico	25,115	26,446	27,860
Subtotal, Waste Isolation Pilot Plant	228,818	234,585	211,524
Total, Carlsbad	228,818	234,585	211,524

### Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life-Cycle	FY 2009 % Complete
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#### Carlsbad

Geographic Sites Eliminated (number of sites)	0	0	0	1	0%
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## Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**CB-0080 / Operate Waste Disposal Facility-WIPP** **142,069**      **148,653**      **126,425**

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. Defense-generated transuranic waste from all of the generator sites eligible for Waste Isolation Pilot Plant disposal must ultimately come 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.

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.

Waste Emplaced in the WIPP Repository, Cumulative Volume by Site (m3)											
Fiscal Year	LANL	INL(CH)	INL(RH)	RFETS	Hanford	SRS	ANL-E	NTS	LLNL	WIPP	Cumulative Total
FY 1999	190	15		62	0	0	0	0	0	0	266
FY 2000	190	101	0	314	13	0	0	0	0	0	618
FY 2001	263	819	0	1,358	80	62	0	0	0	0	2,583
FY 2002	271	2,883	0	4,261	98	203	0	0	0	1	7,717
FY 2003	598	3,450	0	8,278	348	2,488	97	0	0	1	15,259
FY 2004	598	3,792	0	12,928	796	5,728	121	106	0	1	24,069
FY 2005	769	6,356	0	15,062	1,649	7,281	121	341	146	1	31,726
FY 2006	1,315	14,246	0	15,062	2,364	8,622	121	405	146	1	42,282
FY 2007	2,138	19,636	23	15,062	3,129	10,170	121	405	146	1	50,831



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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### **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 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 2009, the following activities are planned:

- Operate the Waste Isolation Pilot Plant site in a safe, quality manner to support a disposal capability of 21 shipments per week of contact-handled transuranic waste and 5 shipments per week of remote-handled transuranic waste.
- Provide underground mining of waste panels and panel closure activities to support the planned shipping rate.
- Maintain Waste Isolation Pilot Plant site environmental compliance.
- Operate to the Carlsbad Field Office Quality Assurance Plan and conduct necessary quality assurance and transuranic waste program audits at DOE sites across the country, as well as on Waste Isolation Pilot Plant participants.
- Complete work on the second Environmental Protection Agency Compliance Recertification due to the Environmental Protection Agency in 2009.
- Complete Environmental Protection Agency Plan change requests and New Mexico Environment Department Resource Conservation and Recovery Act permit modifications.
- Complete placement of contact-handled waste in Panel 4.
- Continue payments to the New Mexico Environment Department and the Environmental Protection Agency for enhanced actions on Waste Isolation Pilot Plant matters.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"><li>• Received remote-handled transuranic waste permit. (FY 2007)</li><li>• Began placement of remote-handled waste. (FY 2007)</li><li>• Completed placement of contact-handled waste in Panel 3. (FY 2007)</li><li>• Emplaced 50,831 cubic meters of transuranic waste at the Waste Isolation Pilot Plant Repository. (FY 2007)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Complete placement of Contact-Handled Waste in Panel 4. (June 2008)
- Start Large Box Characterization. (September 2008)
- Submit Compliance Recertification Application to the Environmental Protection Agency. (March 2009)
- Submit Hazardous Waste Permit Facility Renewal Application. (June 2009)

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

**32,550**

**32,599**

**29,069**

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 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 full 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 2009, the following activities are planned:

- Perform compilation and review of generator site's transuranic waste Acceptable Knowledge for approval prior to certifying the waste for disposal at the Waste Isolation Pilot Plant.
- Generate and maintain program documents and procedures necessary for the Central Characterization Project program to perform work on contact-handled and remote-handled waste characterization and shipping at generator/storage sites across the DOE complex.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Review generator site's transuranic waste program documents and procedures necessary for generator site or Central Characterization Project transuranic waste certification for shipment and eventual disposal at the Waste Isolation Pilot Plant.
- Provide mobile loading services at generator/storage sites necessary to ship contact-handled and remote-handled waste between sites or to the Waste Isolation Pilot Plant.
- Provide remote-handled transuranic waste certification services to the DOE complex to support planned remote-handled shipments.
- Provide headspace gas analysis and solids sampling and analysis in accordance with the Waste Isolation Pilot Plant Resource Conservation and Recovery Act Hazardous Waste Permit.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Initiated a DOE-wide capability to certify transuranic waste at generator sites for shipment to another DOE site to increase efficiency. (FY 2007)</li><li>• Initiated a DOE-wide single certification program for remote-handled transuranic waste shipments to Waste Isolation Pilot Plant at the generator/shipping sites. (FY 2007)</li><li>• Initiated a DOE-wide transuranic waste shipping confirmation process required by the revised New Mexico Environment Department Waste Isolation Pilot Plant Hazardous Waste Permit. (FY 2007)</li><li>• Began remote-handled waste characterization. (FY 2007)</li><li>• Began standard waste box characterization at the Los Alamos National Laboratory. (FY 2007)</li><li>• Provide characterization services to the Savannah River Site and the Los Alamos National Laboratory with a one-shift operation at a nominal capacity of 90 contact-handled drums per week. (September 2008)</li><li>• Complete legacy waste characterization at the Savannah River Site (September 2009)</li></ul>					

**CB-0090 / Transportation-WIPP**

**29,084**

**26,887**

**28,170**

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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 2009, the following activities are planned:

- Administer grants to transportation route states, tribal nations, and related associations for emergency preparedness and related training, to keep the approved routes for transuranic waste disposal shipments open.
- Obtain approval and maintain authorization from the Nuclear Regulatory Commission for transuranic waste transportation packages.
- Perform needed maintenance on existing transuranic waste transportation packages and trailers.
- Provide trucking services capability to transport transuranic waste from the DOE complex to Waste Isolation Pilot Plant to maintain an average of 21 contact-handled shipments and 5 remote-handled shipments per week.
- Ship remote-handled waste from Idaho, Oak Ridge, Los Alamos National Laboratory, Argonne National Laboratory and other small sites to the Waste Isolation Pilot Plant.
- Provide transportation services for the shipment of transuranic waste from sites not certified to ship to Waste Isolation Pilot Plant to a site with a Waste Isolation Pilot Plant certification program.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Began shipment of remote-handled waste. (FY 2007)</li><li>• Received Nuclear Regulatory Commission Approval of TRUPACT-III and Large Box shipping containers. (FY 2007)</li><li>• Begin Oak Ridge National Laboratory contact-handled waste shipments. (June 2008)</li><li>• Support 21 contact-handled transuranic waste shipments per week and ramps up to six remote-handled transuranic waste shipments per week. (September 2008)</li><li>• Maintain shipping capability at 21 contact-handled shipments per week and 5 remote-handled shipments per week (September 2009)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**CB-0101 / Economic Assistance to the State of New Mexico**

**25,115                      26,446                      27,860**

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 2009, the following activity is planned:

- Meet Land Withdrawal Act requirements for funding the State of New Mexico for Impact Assistance.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<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 2007/September 2008/September 2009)</li></ul>					

**Total, Carlsbad**

**228,818                      234,585                      211,524**

## Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$000)
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### Defense Environmental Cleanup

#### Waste Isolation Pilot Plant

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

- Decrease is due to deferral of some groundwater well drilling and plugging activities and purchase of site equipment replacements (e.g., above and below ground haul trucks, existing remote-handled reliability equipment, modifications and spares for existing equipment and TRUPACT III site modifications) and maintenance/reliability projects, and due to congressionally directed activities not being requested in FY 2009. -22,228

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

- Decrease due to reduction of characterization services for large boxes at Savannah River, and drummed, standard, and large waste boxes at small quantity sites. -3,530

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

- Increase is due to the award of two new fixed-price transportation contracts and escalation in transportation maintenance and fuel costs. 1,283

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

- Increase due to 4.4% escalation based on the average Consumer Price Index for the prior fiscal year, pursuant to the terms of the Waste Isolation Pilot Plant Land Withdrawal Act of 1992. 1,414

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<b>Total, Carlsbad</b>	<b>-23,061</b>
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## Idaho

### Funding by Site

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Idaho National Laboratory	527,883	513,709	436,524
Total, Idaho	527,883	513,709	436,524

### Site Overview

Since its establishment in 1949, the Idaho National Laboratory Site has fulfilled numerous Department of Energy (DOE) missions including 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).

#### 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 low-level radioactive waste from Idaho National Laboratory Site operations.

#### 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 and high-risk facility deactivations and demolitions remain.

#### 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.



## **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:

- Of the 596 Comprehensive Environmental Response, Compensation, and Liability Act sites identified as being potentially contaminated, 82 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;
- Seven of 11 tanks have been emptied and cleaned;
- Approximately 18,000 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. Based on the approved baseline, 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;
- Deactivate EM spent nuclear fuel wet storage basins (Chemical Processing Plant 603);
- Disposition all excess nuclear material;
- Complete Waste Area Group 3 remediation; Idaho will issue the last Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for release site 14 for the soil under buildings; and
- Place calcine (4,400 m<sup>3</sup>) in a condition that is road-ready for shipment out of the state.

### ***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; and
- 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 (only facilities required for groundwater remediation remain);
- Complete all remediation of contaminated soils and tanks at Test Area North (Operable Unit 1-10);
- Continue Comprehensive Environmental Response, Compensation, and Liability Act remedial pump and treat activities (Operable Unit 1-07B); and
- Complete all activities per the Waste Area Group 1 Records of Decision. If there are future Comprehensive Environmental Response, Compensation, and Liability Act actions, they will be covered under the site-wide Record of Decision 10-08.

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

- Demolish all EM-owned facilities; and
- Dispose the Engineering Test Reactor and Materials Test Reactor under the Comprehensive Environmental Response, Compensation, and Liability Act.

### **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 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, 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 schedules for the calcined waste support direct disposal to the proposed mined geologic repository at Yucca Mountain pending license application submission. 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 the proposed mined geologic repository at Yucca Mountain without Environmental Protection Agency delisting the Resource Conservation and Recovery Act hazardous high-level waste.

#### **Interdependencies**

The Idaho site's current interdependencies are the availability of shipping containers and trailers for transuranic waste (TRUPACT IIs) for the shipment of transuranic waste to the Waste Isolation Pilot Plant; the future availability of casks and transporters 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; and, planned exchange of spent nuclear fuel with the Savannah River Site. The availability of a geologic repository is required for the off-site disposition of the high-level waste and spent nuclear fuel, and will require Federal and State regulators to review, approve, oversee, and monitor the DOE repository shipping casks construction, availability, and shipping corridors.

### **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 EM Program focuses on cleaning up historic contamination at the site. As of July 2007, the primary EM site contractors are Bechtel BWXT Idaho, LLC for operation of the Advanced Mixed Waste Treatment Project through April 30, 2008, which supports transuranic waste shipments to the Waste Isolation Pilot Plant, and the CH2M Hill Washington Group, whose contract extends through September 30, 2012. 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 a monitored geological repository. Alternate means for repackaging and shipping spent fuel to the geologic repository are under study.

The Idaho Operations Office conducted a competitive acquisition to select an Indefinite Delivery/Indefinite Quantity contractor to decontaminate and decommission equipment/facilities associated with an earlier 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 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 two facility areas (Power Burst Facility and Test Area North). The remaining facilities will be in a cold, dark, and dry status, awaiting final disposition.

The targeted transuranic waste identified in the current Integrated Cleanup Project contract buried in the Subsurface Disposal Area will be removed and shipped to the Waste Isolation Pilot Plant, the 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 \$10,737,000.

## Funding Schedule by Activity

(dollars in thousands)

	FY 2007	FY 2008	FY 2009
Defense Environmental Cleanup			
Idaho National Laboratory			
Idaho National Laboratory			
ID-0011 / NM Stabilization and Disposition	4,000	2,230	2,030
ID-0012B-D / SNF Stabilization and Disposition-2012 (Defense)	35,415	28,922	20,334
ID-0013 / Solid Waste Stabilization and Disposition	210,210	152,225	178,767
ID-0014B / Radioactive Liquid Tank Waste Stabilization and Disposition-2012	96,514	177,784	132,725
ID-0030B / Soil and Water Remediation-2012	92,520	111,366	70,268
ID-0040B / Nuclear Facility D&D-2012	78,541	32,078	24,133
ID-0100 / Idaho Community and Regulatory Support	3,683	3,753	3,867
Subtotal, Idaho National Laboratory	520,883	508,358	432,124
Non-Defense Environmental Cleanup			
Small Sites			
Idaho National Laboratory			
ID-0012B-N / SNF Stabilization and Disposition-2012 (Non-Defense)	7,000	5,351	4,400
Total, Idaho	527,883	513,709	436,524

## Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life-Cycle	FY 2009 % Complete
<b>Idaho</b>					
Geographic Sites Eliminated (number of sites)	4	4	4	5	80%
Enriched Uranium packaged for disposition (Number of Containers)	1,311	1,511	1,533	1,533	100%
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	0	900	0%
Liquid Waste Tanks closed (Number of Tanks)	0	7	7	11	64%
High-Level Waste packaged for final disposition (Number of Containers)	0	0	0	6,660	0%
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	18,933	26,048	33,495	80,004	42%
Transuranic Waste shipped for disposal (Cubic meters) - RH	23	74	74	697	11%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	58,752	61,341	65,146	110,560	59%
Material Access Areas eliminated (Number of Material Access Areas)	1	1	1	1	100%
Nuclear Facility Completions (Number of Facilities)	22	23	25	75	33%
Radioactive Facility Completions (Number of	27	29	29	50	58%

Facilities)					
Industrial Facility Completions (Number of Facilities)	122	126	128	262	49%
Remediation Complete (Number of Release Sites)	488	494	502	597	84%

### Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**ID-0011 / NM Stabilization and Disposition** **4,000** **2,230** **2,030**

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).

The end-state for this PBS is to complete transfer of all 600 discrete special nuclear material items to off-site locations and/or transfer to other program sponsors by the end of FY 2009, in accordance with the Performance Management Plan for Accelerating Cleanup of the Idaho National Laboratory.

Currently, 324 items have been disposed.

In FY 2009, the following activities are planned:

- Complete any/all remaining material dispositions and closeout of the project.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Enriched Uranium packaged for disposition (Number of Containers)	1,311	1,511	1,533	1,533	100%
Material Access Areas eliminated (Number of Material Access Areas)	1	1	1	1	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"> <li>Completed packaging and shipping 602 Miscellaneous Waste. (FY 2007)</li> </ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Complete scheduled Experimental Test Reactor/General Electric Test Reactor shipments to Y-12. (September 2008)
- Complete scheduled Experimental Test Reactor/General Electric Test Reactor shipments. (September 2008)
- Complete scheduled shipments of Unirradiated Light Water Breeder Reactor. (September 2008)
- Start and complete up to one-third of the Light Water Reactor Breeder Reactor (Shipping Port) U-233 shipments to the Nevada Test Site. (September 2008)
- Complete shipment of remaining EM special nuclear material to another site(s). (September 2009)
- Project Completion (September 2009)

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

**35,415                      28,922                      20,334**

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, which involves long-term planning for geologic disposal of all DOE-owned spent nuclear fuel. The DOE Office of Civilian Radioactive Waste Management is responsible for building and operating the geologic repository.

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).

Preparations will be initiated in FY 2009 for the spent nuclear fuel exchange with the Savannah River Site.



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Aluminum-clad spent nuclear fuel will be shipped from Idaho National Laboratory to the Savannah River Site and non-aluminum-clad spent nuclear fuel will be shipped from the Savannah River Site to the Idaho National Laboratory. The aluminum-clad fuel can then be dispositioned through the Savannah River Site's H-Canyon facility, while the non aluminum-clad fuel can be packaged for disposition at the Idaho National Laboratory.

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 the Federal geologic repository. By the end of 2012, all on-site spent nuclear fuel will be in safe, dry storage.

Currently, 1,239 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 in FY 2007, and one shipment (two casks) of Foreign Research Reactor fuel was received.

In FY 2009, 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 one shipment of Domestic or Foreign Research Reactor spent nuclear fuel.
- Develop a site-wide environmental impact statement, which will analyze current spent nuclear fuel options and site-wide conditions, as an update to the 1995 Environmental Impact Statement.
- Continue planning and preparation for the exchange of spent nuclear fuel with the Savannah River Site which could begin as early as the FY 2009/FY 2010 time frame. Aluminum-clad spent nuclear fuel will be shipped from the Idaho National Laboratory to Savannah River and non-aluminum-clad spent nuclear fuel will be shipped from Savannah River to the Idaho National Laboratory.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"><li>• Completed Readiness Assessment for 6 cask moves at Test Area North. (FY 2007)</li><li>• Continued spent nuclear fuel transfers from wet storage to dry storage. (FY 2007)</li><li>• Complete FERMI fuel transfers. (September 2008)</li><li>• Receive 31 shipments of Advanced Test Reactor Spent Nuclear Fuel. (September 2008)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Receive Domestic Research Reactor Spent Nuclear Fuel shipments.  
(September 2008)
- Receive Foreign Research Reactor Spent Nuclear Fuel shipments.  
(September 2008)
- Complete transfer of all EM-owned spent nuclear fuel to dry storage.  
(September 2009)

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

**210,210**

**152,225**

**178,767**

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 64,000 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 completed.

Contact-handled transuranic waste will be processed in the Advanced Mixed Waste Treatment Facility and shipped to the Waste Isolation Pilot Plant for disposal. Remote-handled transuranic waste (approximately 315 m<sup>3</sup>) at the Radioactive Waste Management Complex will be packaged for shipment to the Waste Isolation Pilot Plant. On-site low-level waste disposal at the Radioactive Waste Management Complex will continue for contact-and 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 transuranic waste is disposed of at the Waste Isolation Pilot Plant and low-level waste is managed by the Office of Nuclear Energy. 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 19,000 m<sup>3</sup> of contact-handled transuranic waste has been shipped to the Waste Isolation Pilot Plant. Also, 34 of the 74 m<sup>3</sup> of remote-handled transuranic waste have been shipped to the Waste Isolation Pilot Plant. The Radioactive Waste Management Complex continues the disposal of contact handled transuranic, low-level and mixed low-level waste while remote handled disposition activities occur at the Idaho Nuclear Technology and Engineering Center.

In FY 2009, the following activities are planned:

- Provide for site-wide environmental compliance.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- 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.
- Disposition of low and mixed low-level waste at the Radioactive Waste Management Complex disposal pits.
- Meeting requirements of the Idaho Settlement Agreement by shipping stored contact-handled transuranic waste to the Waste Isolation Pilot Plant (approximately 6,400 m<sup>3</sup>), using the Advanced Mixed Waste Treatment Facility waste characterization, treatment, and packaging capabilities.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	58,752	61,341	65,146	79,399	82%
Transuranic Waste shipped for disposal (Cubic meters) - CH	18,899	24,599	30,299	64,169	47%
Transuranic Waste shipped for disposal (Cubic meters) - RH	23	74	74	74	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Completed FY 2007 Site Treatment Plan for High-Efficiency Particulate Air Filters. (October 2007)</li><li>• Complete shipments of remote-handled transuranic waste to the Waste Isolation Pilot Plant. (September 2008)</li><li>• Ship 5,700 cubic meters of contact-handled transuranic waste to the Waste Isolation Pilot Plant. (September 2009)</li><li>• Dispose of 3,805 cubic meters of low-level and mixed low-level wastes. (September 2009)</li></ul>					

#### **ID-0014B / Radioactive Liquid Tank Waste**

##### **Stabilization and Disposition-2012**

**96,514**

**177,784**

**132,725**

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, 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 at a federal waste repository. 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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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, 4 small (30,000 gallon) tanks and 4 large (300,000 gallon) tanks have been fully grouted. Also, 3 (300,000 gallon) tanks have been grouted to the dome, and are expected to be fully grouted by January 2008. The other 4 large tanks will be flushed, cleaned and grouted once the sodium bearing waste campaign is complete.

This PBS includes design and construction of the Sodium Bearing Waste Treatment Facility. \$31,000,000 was appropriated in FY 2007 for construction of the facility (06-D-401), \$111,774,000 was appropriated in FY 2008 and \$86,700,000 is requested in FY 2009.

In FY 2009, the following activities are planned:

- Continue sodium-bearing waste treatment facility construction in preparation of a hot startup in FY 2010.
- Continue providing acceptable Idaho Nuclear Technology and Engineering Center utilities, maintenance and operations for the process waste system, support labs, and existing process facilities.
- Continue Liquid Waste Facility closure activities, and provide safe Resource Conservation and Recovery Act-compliant operations.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	0	0	900	0%
Liquid Waste Tanks closed (Number of Tanks)	0	7	7	11	64%

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	623	0%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>Began Construction of the Sodium-Bearing Waste Treatment Facility. (FY 2007)</li><li>Complete cleaning and grouting of the west side of the Tank Farm Facility tanks. (September 2008)</li><li>Receive Sodium Bearing Waste permit mod and temporary authorization. (September 2008)</li><li>Obtain Calcine Disposition Project Baseline approval. (September 2009)</li></ul>					

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

**92,520**

**111,366**

**70,268**

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

The objective of this project is to accelerate remediation of contaminated soil and groundwater and closure of legacy Resource Conservation and Recovery Act issues at the Idaho Site 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. 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 2012. Soil actions under an existing Waste Area Group 10 Record of Decision will also be complete by 2012. 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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 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, institutional controls and stewardship management are implemented to enable reuse of areas for current and future DOE missions, as needed.

Currently, under Waste Area Group 7, the Remedial Investigation and Baseline Risk Assessment document was finalized and the feasibility study was being prepared for submission to regulatory agencies. Also, under the existing agreement with the State, approximately 3,726 m<sup>3</sup> of soil has been exhumed from the subsurface disposal area, and about 1,200 (55 gallon) drums have been packaged and accepted for disposal at the Waste Isolation Pilot Plant. Under Waste Area Group 1, treatment of V-tank contents was completed with exception of the V-9 tank. Disposition of the V-9 tank will be completed during 2008. 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.

In FY 2009, the following activities are planned:

- 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 transuranic waste to the Waste Isolation Pilot Plant 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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	218	224	232	304	76%
Transuranic Waste shipped for disposal (Cubic meters) - CH	34	1,449	3,196	8,437	38%
<b>Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)</b> <ul style="list-style-type: none"> <li>• Sent Operable Unit 3-14 draft record of decision to the Environmental Protection Agency and the Idaho Department of Environmental Quality. (FY 2007)</li> <li>• Submitted for review the Operable Unit 7-13/14 Draft Feasibility Study. (FY 2007)</li> <li>• Submitted for review the Operable Unit 7-13/14 Draft Proposed Plan. (FY 2007)</li> <li>• Per agreement with the State of Idaho and the Environmental Protection Agency, continue with buried waste retrievals within Pits 4 and 6 (approximately 1,700 cubic meters). (FY 2007/September 2009)</li> <li>• Completed the V-Tanks Remedial Action Report. (October 2007)</li> <li>• Developed the Operable Unit 7-13/14 Draft Record of Decision to select the remedial approach for the entire Subsurface Disposal Area. (December 2007)</li> <li>• Submitted for review Draft Record of Decision for Operable Unit 7-13/14. (December 2007)</li> <li>• Plan to dispose of 4,718 cubic meters of low-level and mixed low-level waste generated from environmental restoration and D&amp;D activities. (September 2009)</li> <li>• Continue buried waste retrievals (approximately 850 cubic meters) finalize Waste Area Group 7 Record of Decision. (September 2009)</li> </ul>					

**ID-0040B / Nuclear Facility D&D-2012****78,541****32,078****24,133**

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, but are a risk because they contain 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 removal of radiologically contaminated water from four nuclear fuel storage pools, disposition of four nuclear reactors, and disposition of a fuel reprocessing complex, specifically involving: 1) the spent nuclear fuel pools at Test Area North- 607, Materials Test Reactor-603, Power Burst Facility-620, and Chemical Processing Plant-603; 2) the Materials Test Reactor, Engineering Test Reactor, Loss of Fluid Test Reactor, and the Power Burst Facility; 3) the Chemical Processing

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Plant-601/627/640 nuclear fuel reprocessing complex; and 4) final disposition of 18 other nuclear facilities.

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.

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, and the Engineering Test Reactor Cubicles have been decontaminated to provide access for removal and final disposal of the reactor vessel. Deactivation and decontamination work was initiated on the Materials Test Reactor, Chemical Processing Plant-601/640 (Fuel Processing Complex) and the Power Burst Facility Reactor Building.

In FY 2009, the following activities are planned:

- Completion of final decommissioning of the Power Burst Facility Reactor Building.
- Initiation of decommissioning of the Material Test Reactor Complex.
- Initiation of decommissioning of the Chemical Processing Plant-601/640 Fuel Reprocessing Complex.
- Completion of decommissioning of the Chemical Processing Plant Coal Plant Complex.
- Completion of decommissioning of the Engineering Test Reactor complex.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Nuclear Facility Completions (Number of Facilities)	22	23	25	42	60%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Completed Reactor Technology Complex-784 D&amp;D. (FY 2007)</li><li>• Completed Test Area North-630 facility decontamination and dismantlement. (FY 2007)</li><li>• Completed loss of fluid test on underground storage tank demolition. (FY 2007)</li><li>• Completed demolition of the Loss of Fluid Test complex. (FY 2007)</li><li>• Chemical Processing Plant-603 Basins grouted and water transferred to the Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility. (FY 2007)</li></ul>					



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Completed Test Area North loss of fluid test facilities D&D. (FY 2007)
- Completed CCP-601 Characterization. (FY 2007)
- Completed Test Area North-650 Containment Facility Decontamination and Dismantlement. (FY 2007)
- Completed numerous cubicle demolitions within Test Reactor Area-642, Engineering Test Reactor. (FY 2007)
- Issued Chemical Processing Plant-640 Engineering Evaluation/cost Analysis. (October 2007)
- Complete Chemical Processing Plant-603A Basin disposition. (September 2008)
- Complete final decommissioning of the Power Burst Facility Reactor Building. (September 2009)
- Complete decommissioning of the Chemical Processing Plant Coal Plant Complex. (September 2009)
- Complete decommissioning of the Engineering Test Reactor complex. (September 2009)

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

**3,683**

**3,753**

**3,867**

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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 2009, 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.
- Continue support for the Idaho Site Citizen Advisory Board.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• The Citizens Advisory Board held its six bi-monthly two-day meetings and will continue to provide recommendations and advice on issues and accelerated cleanup plans. (FY 2007/September 2008/September 2009)</li><li>• The United States Geological Survey provided expert analysis of contaminants and transport mechanisms affecting the Snake River Plain Aquifer to support decision-making and risk assessment. (FY 2007/September 2008/September 2009)</li><li>• Department of Environmental Quality grants to support hazardous waste management closure plans, permits or permit modifications, and Comprehensive Environmental Response, Compensation, and Liability Act compliance. (September 2008)</li></ul>					

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

**7,000                      5,351                      4,400**

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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, 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 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

<b>Total, Idaho</b>	<b>527,883</b>	<b>513,709</b>	<b>436,524</b>
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### Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$000)
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## Defense Environmental Cleanup

### Idaho National Laboratory

#### ID-0011 / NM Stabilization and Disposition

- |  |      |
|--|------|
| ▪ Decrease is due to the completion and close out of the project in FY 2009. | -200 |
|--|------|

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

- |   |        |
|---|--------|
| ▪ Decrease is a result of completion of EM-owned wet to dry transfers in FY 2009. A total of 3,178 fuel handling units will be transferred from Chemical Processing Plant building 666 to Chemical Processing Plant building 603. | -8,588 |
|---|--------|

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

- |   |        |
|---|--------|
| ▪ Funding increase allows the Advanced Mixed Waste Treatment Facility to operate at a level that will allow project completion in the 2014-2015 timeframe. The Advanced Mixed Waste Treatment Project scope includes retrieving, certifying and preparing 65,000 m <sup>3</sup> of transuranic waste for disposal at the Waste Isolation Pilot Plant. It also allows for disposition of mixed low-level and low-level waste required to meet contractual and regulatory requirements. | 26,542 |
|---|--------|

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

- |   |         |
|---|---------|
| <ul style="list-style-type: none"> <li>Decrease is due to the ramp-down of construction activities at the Sodium Bearing Waste Treatment Facility.</li> </ul> | -45,059 |
|---|---------|

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

- |  |         |
|--|---------|
| <ul style="list-style-type: none"> <li>The decrease reflects a reduction (approximately 850 m<sup>3</sup>) in buried transuranic/low-level waste retrievals in the Waste Area Group 7 Subsurface Disposal Area.</li> </ul> | -41,098 |
|--|---------|

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

- |  |        |
|--|--------|
| <ul style="list-style-type: none"> <li>Funding decrease reflects the final decommissioning of four main excess facilities (Materials Test Reactor, Engineering Test Reactor, Loss of Fluid Test Reactor, and the Power Burst Facility) at the Idaho National Laboratory site.</li> </ul> | -7,945 |
|--|--------|

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

- |  |     |
|--|-----|
| <ul style="list-style-type: none"> <li>No significant change.</li> </ul> | 114 |
|--|-----|

**Non-Defense Environmental Cleanup**

**Small Sites**

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

- |   |      |
|---|------|
| <ul style="list-style-type: none"> <li>The work scope in FY 2009 remains the same as FY 2008; however, the savings resulting from the five year Nuclear Regulatory Commission aging study reduces requirements in FY 2009.</li> </ul> | -951 |
|---|------|

<b>Total, Idaho</b>	<b>-77,185</b>
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## 06-D-401, Sodium Bearing Waste Treatment Project, Idaho National Laboratory (INL) Idaho

### 1. Significant Changes

The most recent DOE Order 413.3A Critical Decision 2 (CD-2) was approved establishing a performance baseline and total project cost of \$461.6M for this project. This project continues to be managed by a federal project director with a level IV certification. This Project Data Sheet is an update of the FY 2008 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 (Construction Complete)	D&D Start	D&D Complete
FY 2006	2Q FY2005		4Q FY2006		1Q FY2008	3Q FY2009	TBD	TBD
FY 2007	4Q FY2005		1Q FY2007		1Q FY2007	3Q FY2008		
FY 2006 Reprogram	4Q FY2005		2Q FY2007		3Q FY2007	2Q FY2009		
FY 2008	4Q FY2005		3Q FY2007		3Q FY2007	4Q FY2010		
FY 2009	4Q FY2005	4Q FY2005	4Q FY2007	1Q FY2007	4Q FY2007	4Q FY2010	Note 1	Note 1

Note 1: The Sodium Bearing Waste Treatment Facility is being designed to allow for future mission options, including a possible calcine treatment option, as described above – for this reason, the scope of this line item project does not include D&D activities, nor is D&D funding being sought via this Project Data Sheet. D&D of this facility will be addressed as part of the Idaho Cleanup Project future funding requirements.

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-1/3A (Start of Construction for long lead items)	CD-3B (Early Site Preparation)	CD-3C (Start Balance of Construction)	CD-4A			
FY 2006								
FY 2007								
FY 2006 Reprogram								
FY 2008								
FY 2009	1Q FY2007	4Q FY2006	1Q FY2007	TBD	TBD			

CD-2A/3A/3B – Long Lead for Equipment, Early Site Preparation  
 CD-3C – Start Balance of Construction  
 CD-4A – Beneficial Occupancy

### 3. Baseline and Validation Status

	(dollars in thousands)							
	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D (Note #1)	OPC, Total	TPC	
FY 2006	54,280	250,230	304,510	74,700	TBD	74,700	379,210	
FY 2007	54,188	249,992	304,180	74,700	TBD	74,700	378,880	
FY 2008	86,188	257,520	343,708	117,900	TBD	117,900	461,608	
FY 2009	86,188	269,620	355,808	105,800	TBD	105,800	461,608	

Note 1: The Sodium Bearing Waste Treatment Facility is being designed to allow for future mission options, including a possible calcine treatment option. Therefore, the scope of this line item project does not include D&D activities, nor is D&D funding being sought via this Project Data Sheet. D&D of this facility will be addressed as part of the Idaho Cleanup Project future funding requirements.

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.

On December 29, 2006 the project received approval for Critical Decision -2 and 3B with Critical Decision 3C being approved on August 28, 2007.

### 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 Centers 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

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

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 a Federal repository. 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 at Yucca Mountain if needed, and to allow processing of the calcine high level waste, if direct disposal to Yucca Mountain 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 2009 budget request will accomplish the following activities:

- Continue mechanical/electrical construction
- Continue construction testing
- Initiate systems turnover and start-up testing

The project is being conducted in accordance with the project management requirements in DOE Order 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	32,100
Total, PED (04-D-414)	86,188	86,188	86,188
Construction			
FY 2006	30,729	30,729	1,000
FY 2007	31,000	31,000	48,729
FY 2008	111,774	111,774	123,774
FY 2009	86,700	86,700	86,700
FY 2010	9,417	9,417	9,417
Total, Construction	269,620	269,620	269,620
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	80,829
FY 2008	111,774	111,774	123,774
FY 2009	86,700	86,700	86,700
FY 2010	9,417	9,417	9,417
Total, TEC	355,808	355,808	355,808
Other Project Cost (OPC)			
OPC except D&D			
Prior Years	37,500	37,500	37,500
FY 2005	12,795	12,795	12,795
FY 2006	3,469	3,469	3,469
FY 2007	12,336	12,336	12,336
FY 2008	17,300	17,300	17,300
FY 2009	9,300	9,300	9,300
FY 2010	13,100	13,100	13,100
Total, OPC except D&D	105,800	105,800	105,800
D&D (Note #1)			
Total, D&D	TBD	TBD	TBD
OPC			
Prior Years	37,500	37,500	37,500
FY 2005	12,795	12,795	12,795



	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2006	3,469	3,469	3,469
FY 2007	12,336	12,336	12,336
FY 2008	17,300	17,300	17,300
FY 2009	9,300	9,300	9,300
FY 2010	13,100	13,100	13,100
Total, OPC	105,800	105,800	105,800
Total Project Cost (TPC)			
FY 2004 (Note #2)	57,879	37,500	37,500
FY 2005	37,496	57,875	16,795
FY 2006	75,306	75,306	54,557
FY 2007	43,336	43,336	93,165
FY 2008	129,074	129,074	141,074
FT 2009	96,000	96,000	96,000
FY 2010	22,517	22,517	22,517
Total, TPC	461,608	461,608	461,608

Note 1: The Sodium Bearing Waste Treatment Facility is being designed to allow for future mission options, including a possible calcine treatment option, as described in section 1 – for this reason, the scope of this line item project does not include D&D activities, nor is D&D funding being sought via this Project Data Sheet. D&D of this facility will be addressed as part of the Idaho Cleanup Project future funding requirements

Note 2: \$37,500,000 of pre Critical Decision-0 costs for this project Sodium Bearing Waste Treatment Facility is included in this value.

Design funding was appropriated under 04-D-414, Project Engineering and Design.

FY 2006 Design funding appropriations and obligations includes a FY 2006 Reprogramming of \$32,000,000 for Project Engineering and Design funding.

FY 2006 Construction funding appropriations and obligations includes a reduction of \$23,000,000 for the FY 2006 Reprogramming.

## 6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)	355,808	355,808	355,808
Design (PED)			
Design	86,188	86,188	86,188
Contingency			
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	115,383	115,383	115,383
Contingency	34,500	34,500	34,500
Total, Construction	269,620	269,620	269,620
Total, TEC	355,808	355,808	355,808

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Contingency, TEC	34,500	34,500	34,500
Other Project Cost (OPC)			
OPC except D&D	105,800	105,800	105,800
Conceptual Planning	37,500	37,500	37,500
Conceptual Design	56,865	56,865	56,865
Start-Up	6,935	6,935	6,935
Contingency	4,500	4,500	4,500
Total, OPC except D&D	105,800	105,800	105,800
D&D			
D&D	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, D&D (Note #1)	TBD	TBD	TBD
Total, OPC	105,800	105,800	105,800
Contingency, OPC	4,500	4,500	4,500
Total, TPC	461,608	461,608	461,608
Total, Contingency	39,000	39,000	39,000

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

Note 1: The Sodium Bearing Waste Treatment Facility is being designed to allow for future mission options, including a possible calcine treatment option, as described in section 1 – for this reason, the scope of this line item project does not include D&D activities, nor is D&D funding being sought via this Project Data Sheet. D&D of this facility will be addressed as part of the Idaho Cleanup Project future funding requirements

## 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 FY 2010
Expected Useful Life (number of years)	Note 1
Expected Future Start of D&D of this capital asset (fiscal quarter)	Note 1

Note 1: The Sodium Bearing Waste Treatment Facility is being designed to allow for future mission options, including a possible calcine treatment option, as described in section 1 – for this reason, the scope of this line item project does not include D&D activities, nor is D&D funding being sought via this Project Data Sheet. D&D of this facility will be addressed as part of the Idaho Cleanup Project future funding requirements

**(Related Funding requirements)**

	(dollars in thousands)			
	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	32,000		46,645	40,500
Maintenance	4,372		7,913	
Total, Operations & Maintenance	36,372	N/A	54,558	40,500

**9. Required D&D Information**

Area	Square Feet
Area of new construction	58,000
Area of existing facility(s) being replaced	TBD (Note 1)
Area of additional D&D space to meet the “one-for-one” requirement	TBD (Note 1)

Name(s) and site location(s) of existing facility(s) to be replaced:

Note 1: The Sodium Bearing Waste Treatment Facility is being designed to allow for future mission options, including a possible calcine treatment option, as described in section 1 – for this reason, the scope of this line item project does not include D&D activities, nor is D&D funding being sought via this Project Data Sheet. D&D of this facility will be addressed as part of the Idaho Cleanup Project future funding requirements. The current baseline requires all facility D&D to start in time to meet the Idaho site completion date of 2035. The operational life of this facility will be determined after 2010.

**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, and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets.



## Oak Ridge

### Funding by Site

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
East Tennessee Technology Park	288,911	285,504	184,335
Oak Ridge National Laboratory	85,600	80,705	116,160
Oak Ridge Reservation	104,989	86,833	89,013
Y-12 Plant	23,573	19,674	32,392
Total, Oak Ridge	503,073	472,716	421,900

### 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 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. The reduction of mortgage costs provides a dramatic benefit when allowed to reinvest the saved funds into accelerating follow-on risk reduction activities. This ultimately will reduce the amount and duration of funding needed.

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)**

At the end of cleanup, planned by FY 2015, the East Tennessee Technology Park will be available for use as a private-sector industrial park. 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. Based on the approved baseline, the lifecycle planning estimate range 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 now be no earlier than FY 2015. 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 K-25 and K-27, while the K-31 and K-33 buildings are assumed to be available for transfer under the site industrial closure plan.

*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 0 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.

*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 and K-33 gaseous diffusion plant buildings 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 is a cost-plus-incentive-fee contract with cost and schedule incentives.

*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 was converted to a more suitable cost-plus-fixed-fee contract in September 2006.

*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 execution which includes a performance-based fee provision. 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. While risk reduction is the major driver of the plan, the reduction of the East Tennessee Technology Park site mortgage costs will free funding for the reinvestment in other near-term risk reduction projects. In addition, there will be benefits for the Oak Ridge community that are derived from completing the cleanup of the site, such as potential reuse as a reindustrialized commercial park.

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 the East Tennessee Technology Park is estimated to be \$9,480,000.

## Funding Schedule by Activity

(dollars in thousands)

	FY 2007	FY 2008	FY 2009
Defense Environmental Cleanup			
Oak Ridge			
Oak Ridge			
HQ-SW-0013X-OR / Solid Waste Stabilization and Disposition-Science Current Generation	18,544	0	0
OR-0011Z / Downblend of U-233 in Building 3019	35,500	29,727	58,000
OR-0013B / Solid Waste Stabilization and Disposition-2012	92,957	71,627	78,183
OR-0031 / Soil and Water Remediation-Offsites	7,033	9,294	4,730
OR-0041 / Nuclear Facility D&D-Y-12	23,573	19,674	32,392
OR-0042 / Nuclear Facility D&D-Oak Ridge National Laboratory	31,556	50,978	58,160
OR-0043 / Nuclear Facility D&D-East Tennessee Technology Park (Defense)	0	3,323	105
OR-0100 / Oak Ridge Reservation Community & Regulatory Support (Defense)	4,999	5,912	6,100
Subtotal, Oak Ridge	214,162	190,535	237,670
Uranium Enrichment Decontamination and Decommissioning Fund			
D&D Activities			
Oak Ridge			
OR-0040 / Nuclear Facility D&D-East Tennessee Technology Park (D&D Fund)	273,411	255,923	166,060
OR-0102 / East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration	15,500	26,258	18,170
Subtotal, Oak Ridge	288,911	282,181	184,230
Total, Oak Ridge	503,073	472,716	421,900

## Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life-Cycle	FY 2009 % Complete
<b>Oak Ridge</b>					
Geographic Sites Eliminated (number of sites)	28	28	28	29	97%
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	187	467	1,625	29%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	64	160	622	26%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	105,193	107,497	109,096	165,269	66%
Nuclear Facility Completions (Number of Facilities)	8	8	8	25	32%
Radioactive Facility Completions (Number of Facilities)	25	26	26	71	37%
Industrial Facility Completions (Number of Facilities)	297	298	307	630	49%
Remediation Complete (Number of Release Sites)	404	405	407	694	59%

## Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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### HQ-SW-0013X-OR / Solid Waste Stabilization and Disposition-Science Current Generation

**18,544                      0                      0**

This PBS is within the Defense Environmental Cleanup appropriation.

This work scope was transferred to PBS OR-0042 in FY 2008.

- In FY 2009, no activities are planned.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"> <li>• Oak Ridge National Laboratory Process Waste Operations - Provided regulatory compliant operation of the Process Waste Collection/Transfer System with an annual operational goal of 180,000,000 gallons discharged and operational goal of continuous ventilation. (FY 2007)</li> </ul>					

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

**35,500                      29,727                      58,000**

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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, the following activities are planned:

- Complete dismantlement of the hot cells, laboratories and miscellaneous equipment.
- Complete final design for the U-233 Project.
- Obtain Critical Decision 3B (start of construction) approval and start facility modifications.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	0	549	549	549	100%
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	0	131	0%
<b>Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)</b> <ul style="list-style-type: none"><li>• Completed transition of ownership and operational responsibility to EM. (FY 2007)</li><li>• Begin hot cell and laboratory cleanout. (May 2008)</li><li>• Begin long lead procurement. (June 2008)</li><li>• Begin equipment disassembly and continue hot cell and laboratory cleanout. (September 2008)</li><li>• Continue design of U-233 down-blending equipment and Building 3019 modifications. (September 2008)</li><li>• Start construction/facility modifications. (April 2009)</li><li>• Finalize design of U-233 down-blending equipment and Building 3019 modifications. (September 2009)</li></ul>					

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

**92,957**

**71,627**

**78,183**

This PBS is within the Defense Environmental Cleanup appropriation.

This project funds storage, 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 Reservation's approximately 4,000 cubic meters of transuranic waste, operation of the Transuranic Waste Processing Center, and the management of waste stored at East Tennessee Technology Park.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Contact-handled transuranic debris processing was initiated in FY 2006 and processing of remote-handled transuranic debris is currently scheduled to start in FY 2008. Processed waste is shipped to the Waste Isolation Pilot Plant or Nevada Test Site for disposal. Processing and disposal of contact-handled and remote-handled transuranic debris will continue in FY 2009.

As of September 2007, all legacy hazardous waste and approximately 11,200 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 2,000,000 kg of liquid waste and 540,000 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 for treatment and disposal approximately 8,500 kgs of “lab pack type” Polychlorinated Biphenyl Federal Facility Compliance Agreement waste and has processed approximately 150 m<sup>3</sup> of contact handled transuranic waste for disposition.

In FY 2009, the following activities are planned:

- Process approximately 300 m<sup>3</sup> of contact-handled transuranic debris, 100 m<sup>3</sup> of remote-handled transuranic debris and dispose of waste at the Nevada Test Site and Waste Isolation Pilot Plant.
- Conduct equipment installation and check-out for remote-handled transuranic sludge processing.
- Operate the Toxic Substance Control Act Incinerator and supporting facilities.
- Perform surveillance and maintenance of waste storage facilities.
- Continue management and storage of mixed low-level and industrial waste.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	11,202	12,494	13,608	33,659	40%
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	187	467	1,414	33%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	64	160	600	27%
<b>Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)</b> <ul style="list-style-type: none"><li>• Continued processing contact-handled transuranic debris. (FY 2007)</li><li>• Completed preparation for remote-handled transuranic debris processing. (FY 2007)</li><li>• Initiate processing of remote-handled transuranic debris. (February 2008)</li><li>• Complete operations at the Central Neutralization Facility. (September 2008)</li><li>• Continue processing contact-handled and remote-handled transuranic debris. (September 2008/September 2009)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Continue disposition of the East Tennessee Technology Park legacy Polychlorinated Biphenyl Federal Facility Compliance Agreement Waste. (September 2008/September 2009)
- Manage and store mixed low-level waste in compliance with regulations. (September 2009)

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

**7,033**

**9,294**

**4,730**

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 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 2007, remediation has been completed at the David Witherspoon, Inc. 901 site and 60 percent at the David Witherspoon, Inc. 1630 site.

In FY 2009, the following activities are planned:

- Complete ongoing field work at David Witherspoon 1630 site to reduce the risk of potential public exposure to radiologically and chemically contaminated debris and soil.
- Off-site program site evaluations.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	6	7	8	8	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Project Completion (September 2009)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**OR-0041 / Nuclear Facility D&D-Y-12**

**23,573**

**19,674**

**32,392**

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 2007, 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 2009, the following activities are planned:

- Oak Ridge Reservation Waste Landfills for sanitary and industrial wastes generated by the Oak Ridge Reservation will operate as planned to support waste acceptance and placement.



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Perpetual Care Fund payment of \$1,000,000 in accordance with consent order with the State of Tennessee to support ongoing waste acceptance and placement activities.
- Operate the Environmental Management Waste Management Facilities and begin an expansion of the cell capacity.
- Conduct routine surveillance and maintenance of surplus facilities and remedial action sites in Y-12 and Bear Creek Valley.
- Conduct routine compliance monitoring of surface water, groundwater, sediments, and biota to evaluate effectiveness of past remedial actions and support future cleanup decisions.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	1	1	1	2	50%
Remediation Complete (Number of Release Sites)	28	28	28	138	20%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Submit Environmental Management Waste Management Facility Waste Acceptance Criteria Attainment Capacity Assurance Remedial Action Report to Regulators for approval. (March 2009)</li><li>• Submit Generic D&amp;D engineering evaluation/cost analysis for the D&amp;D of the Alpha-4 Building at Y-12, as well as future D&amp;D at Y-12, for concurrence. (April 2009)</li></ul>					

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

**31,556**

**50,978**

**58,160**

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: remediation of the source of the most significant groundwater contaminant plume at the Oak Ridge National Laboratory (i.e., the Corehole 8 plume); excavation of highly contaminated sediments from surface impoundments located

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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adjacent to White Oak Creek; and decontamination and decommissioning of high-priority facilities to ensure worker safety and mitigate the potential for contaminant release. In addition, the Molten Salt Reactor Experiment facility will undergo removal of uranium and removal of the fuel and flush salts, which are important and challenging activities required for eventual demolition of the facility. Defueling will be completed in FY 2008; salt removal will be completed in FY 2012; and decontamination and decommissioning in FY 2015. Cleanup actions currently in the EM baseline will be completed by FY 2015, including the decontamination and decommissioning of remaining inactive facilities, capping 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 baseline 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. Planning for this additional scope and post-closure contract activities will begin in FY 2008.

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.

Work scope associated with treatment and disposal of newly generated waste, formerly in PBS HQ-SW-0013X-OR, was transferred to this PBS in FY 2008 and programmatic responsibility for solid waste will be transferred to the Office of Science in FY 2009.

As of September 2007, 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 Gunite Tanks and the Metal Recovery Facility.

In FY 2009, the following activities are planned:

- Continue routine surveillance and maintenance of surplus facilities and remedial action sites at the Oak Ridge National Laboratory.
- Continue acquisition planning and baseline development for all cleanup scope at Oak Ridge National Laboratory.
- Continue providing regulatory compliant operation of the waste treatment systems.
- Conduct groundwater, surface water and biota sampling.
- Provide surveillance and maintenance for Molten Salt Reactor Experiment until decontamination and decommissioning.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	7	7	7	25	28%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	0	463	948	37,070	3%
Nuclear Facility Completions (Number of Facilities)	0	0	0	15	0%
Radioactive Facility Completions (Number of Facilities)	3	3	3	26	12%
Remediation Complete (Number of Release Sites)	80	80	80	178	45%
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%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"> <li>• Treat and dispose of Newly Generated Mixed Low-Level Waste to comply with Resource Conservation and Recovery Act requirements. (September 2008)</li> <li>• Complete Molten Salt Reactor Experiment fuel removal. (September 2008)</li> <li>• Submit Oak Ridge National Laboratory Small Facilities D&amp;D Remedial Action Work Plan to Regulators for approval. (January 2009)</li> <li>• Submit Bethel Valley D&amp;D Reactor Area Facilities Remedial Action Work Plan. (April 2009)</li> <li>• Submit Bethel Valley D&amp;D Reactor Area Facilities Waste Handling Plan. (September 2009)</li> </ul>					

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

**0                      3,323                      105**

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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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As of September 2007, six facilities have been completed (demolished and waste disposed). Hazardous materials and equipment have been removed from the Centrifuge Facilities.

In FY 2009, the following activities are planned:

- Maintain necessary surveillance and maintenance on East Tennessee Technology Park facilities funded by this PBS to ensure compliance with safety basis documents.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	6	6	6	89	7%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	32,979	32,979	32,979	32,979	100%
Radioactive Facility Completions (Number of Facilities)	0	0	0	17	0%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Conduct decommissioning activities at the Central Neutralization Facility. (September 2008)</li></ul>					

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

**4,999**

**5,912**

**6,100**

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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, the following activities are planned:

- Continue support to the State of Tennessee for conducting annual oversight, monitoring, and reporting. This includes: (1) annual reports to the public; (2) independent monitoring program of all environmental media; (3) off reservation monitoring program of wells owned by private citizens adjacent to DOE land; (4) establishment of background levels; (5) DOE facility surveillance walkthroughs; (6) Federal Facility Agreement activities; and (7) 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 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

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

**273,411      255,923      166,060**

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 and K-27 gaseous diffusion process buildings is the current priority because of worker safety concerns stemming from the continuing deteriorating condition of the buildings. The scope of the K-25/K-27 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 current schedule reflects a 2010 K-25 completion date and a 2011 K-27 completion date. The remaining work at the site includes remedial actions in Zone 1 (1,400 acres located outside the fenced Main Plant area), remedial action for Zone 2 (800 acres inside the Main Plant area inside fence) and decontamination and decommissioning of the remaining facilities, which will be complete in 2015. 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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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The East Tennessee Technology Park closure milestone assumes buildings K-31 and K-33 are reindustrialized. 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 2007, 287 facilities have been decommissioned and 87 release sites have been completed. The K-25/K-27 Decontamination and Decommissioning Subproject progress includes: continued immobilization (foaming) of process equipment with 193 of 328 cells on the west wing cell floor area completed; completed removal, non-destructive assay, and necessary segmentation/mining of 103 High Risk Equipment items; and completed 3,247 waste shipments for disposal. Ongoing activities within the K-27 Building are removing excess equipment and taking structural samples. 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 2009, the following activities are planned:

- Maintain the East Tennessee Technology Park in compliance with safety basis requirements.
- Continue vent, purge and drain, characterization, high risk equipment removal and required foaming activities for east and north wing of K-25 process building.
- Conduct demolition of west wing of K-25 process building.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	278	279	288	509	57%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	5,178	5,178	5,178	5,178	100%
Nuclear Facility Completions (Number of Facilities)	2	2	2	4	50%
Radioactive Facility Completions (Number of Facilities)	7	8	8	13	62%
Remediation Complete (Number of Release Sites)	87	87	88	167	53%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"> <li>• Submitted K-1085 Drum Burial Site Completion Letter to Regulators for approval. (FY 2007)</li> <li>• Began venting, purging, draining, and foaming of K-25 east wing. (November 2007)</li> <li>• Declaration of criticality incredibility and readiness for demolition on K-25 process building. (September 2008)</li> </ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Submit East Tennessee Technology Park Ponds Removal Action Report to Regulators for approval. (October 2008)
- Excavate K-1070 Burial Grounds. (September 2009)
- Complete K-770 Soils Remediation. (September 2009)
- Complete Power House Area Soils Remediation. (September 2009)
- Start K-1007 Ponds Cleanup Action. (September 2009)

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

**Contract/Post-Closure Liabilities/Administration**

**15,500**

**26,258**

**18,170**

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 2009, the following activities are planned:

- Continue funding contractor post-retirement life and medical, long-term disability and pension benefits.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

**Total, Oak Ridge**

**503,073**

**472,716**

**421,900**

## Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$000)
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### Defense Environmental Cleanup

#### Oak Ridge

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

- Increase will complete the dismantlement of existing hot cells and laboratories in Building 3019; begin procurement of process equipment and begin modifications to Building 3019 required for U-233 downblending operations. 28,273

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

- Increase will fund installation of equipment to mobilize remote handled transuranic sludge stored in tanks and to prepare the transuranic waste treatment facility to process the sludge to be ready for disposal in FY 2010. 6,556

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

- Decrease reflects the ramp down in the field work leading to completion of the David Witherspoon 1630 site cleanup. -4,564

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

- Increase reflects additional cleanup activities at Y-12 (e.g. initiation of mercury reduction activities) and expansion of the Environmental Management Waste Management Facility. 12,718

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

- Increase reflects remediation of Corehole 8. 7,182

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

- Decrease reflects reduction of decontamination and decommissioning activities within this PBS. Funding provided will maintain buildings in a safe and compliant manner. -3,218

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

- No significant change. 188



FY 2009 vs. FY 2008 (\$000)
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**Uranium Enrichment Decontamination and Decommissioning Fund**

**D&D Activities**

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

- |  |         |
|--|---------|
| ▪ Decrease reflects a reduction in remedial actions and focuses decommissioning and decontamination activities at the East Tennessee Technology Park on the K-25 process building. | -89,863 |
|--|---------|

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

- |  |        |
|--|--------|
| ▪ Decrease reflects realignment of costs not associated with post closure contract liabilities to PBS OR-0040. | -8,088 |
|--|--------|

<b>Total, Oak Ridge</b>	<hr/> <b>-50,816</b>
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## Paducah

### Funding by Site

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Paducah Gaseous Diffusion Plant	144,588	132,910	134,838
Total, Paducah	144,588	132,910	134,838

### 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.

Initial production of enriched uranium began in 1952. In 1953, recycled uranium from nuclear reactors was introduced into the Paducah enrichment process, which continued through 1964. In 1964, feed material was switched to virgin-mined uranium. Use of recycled uranium resumed in 1969 and continued through 1976, when it was permanently ceased. In 2001, the United States Enrichment Corporation selected Paducah as the site to continue gaseous diffusion operations pending successful pilot plant demonstration (lead cascade) and deployment of the next generation of enrichment technology.

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, currently scheduled for 2012. 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.

Paducah is focusing on cleanup of high-risk areas first. The site has completed a wide variety of characterization projects, installed groundwater treatment facilities, put in place institutional controls for offsite drinking water, removed two major sources of surface water contamination, removed one subsurface trichloroethylene groundwater contamination source, removed five inactive facilities, dispositioned scrap materials, and disposed of legacy waste streams. Additional activities include completing legacy waste disposal, removing additional subsurface trichloroethylene groundwater contamination sources, remediation of groundwater plumes, and decontamination and decommissioning of multiple facilities.

In the FY 2006 Energy and Water Development Appropriations Act, Congress directed DOE to study the purchase of the property above a contaminated groundwater plume and to “consider whether such purchase, when taking into account the cost of remediation, long-term surveillance and maintenance, is in the best interest of the taxpayers.” The result of this study may be considered in any final cleanup strategy. The "Property Acquisition Study for Areas near the Paducah Gaseous Diffusion Plant, Paducah, Kentucky" was delivered to Congress on May 1, 2007. The first major conclusion of the study was that purchasing property to limit or eliminate exposure to contaminated groundwater is significantly more expensive than purchasing conservation easements, which would legally prohibit use of the groundwater, or the purchase of conservation easements with continuation of the current “Water Policy.” The “Water Policy” is a current action under which the Department provides municipal water at no cost to residences currently overlying contaminated groundwater. The second major conclusion of the study was that the cost of property purchase or purchase of conservation easements is independent of potential actions taken to cleanup sources of groundwater contamination, the currently contaminated groundwater, or both. That is, the cost of property purchase or purchase of conservation easements remains the same, even if very costly actions or no actions are taken to address sources or currently contaminated groundwater.

## **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. In FY 2003, DOE signed a Letter of Intent with the Commonwealth of Kentucky that includes completion milestones for groundwater sources in 2010, soils in 2015, surface water in 2017, and burial grounds in 2019.

In addition, Paducah will complete construction and begin operating a depleted uranium hexafluoride conversion facility. Including the known workscope for decontamination and decommissioning of the main gaseous diffusion plant facilities and the approved baseline, the lifecycle planning estimate is 2040.

## **Regulatory Framework**

Regulatory requirements to address contaminated groundwater at the Paducah site were initially included in an Administrative Consent Order issued by the Environmental Protection Agency in 1988. The Commonwealth of Kentucky and the Environmental Protection Agency issued a Resource Conservation and Recovery Act permit in 1991 for storage and treatment of hazardous wastes at Paducah and a permit for the remediation of solid waste management units under the Resource Conservation and Recovery Act. 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 and the Kentucky Division of Waste Management are the regulatory agencies for Paducah's waste management operations. Requirements applicable to Paducah's waste management activities are included within the Resource Conservation and Recovery Act - Part B, Hazardous Waste Management Permits; Toxic Substances Control Act regulations for polychlorinated biphenyl wastes, DOE Order 435.1 - Radioactive Waste Management, and Kentucky solid waste regulations.

Agreements related to the implementation of these regulations and the DOE Order follow the Site Treatment Plan and associated Agreed Order under the Federal Facility Compliance Agreement for characterization, treatment, and disposal of mixed hazardous/radioactive wastes, Toxicity Characteristic Leaching Procedure Federal Facility Compliance Agreement for characterization under the Resource Conservation and Recovery Act (for waste generated prior to September 25, 1990), and the Toxic Substance Control Act - Federal Facility Compliance Agreement for use, cleanup, storage, treatment, and disposal of polychlorinated biphenyls.

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**

It is uncertain whether the Environmental Protection Agency or the Commonwealth of Kentucky will accept the probabilistic groundwater and trichloroethylene degradation modeling for the southwest plume in support of the conclusion of “no further action.”

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 remediation, and that the operable units will be capped and managed in situ, is a significant uncertainty associated with the project lifecycle cost estimate. In addition, the current baseline does not assume long-term 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.

### **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. 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 Project Office is estimated to be \$2,529,000.

### Funding Schedule by Activity

(dollars in thousands)			
	FY 2007	FY 2008	FY 2009
Non-Defense Environmental Cleanup			
Gaseous Diffusion Plants			
Paducah Gaseous Diffusion Plant			
PA-0011 / NM Stabilization and Disposition-Paducah			
Uranium Facilities Management	2,501	1,896	1,767
PA-0011X / NM Stabilization and Disposition-Depleted			
Uranium Hexafluoride Conversion	45,512	15,400	37,192
Subtotal, Paducah Gaseous Diffusion Plant	48,013	17,296	38,959
Uranium Enrichment Decontamination and Decommissioning Fund			
D&D Activities			
Paducah Gaseous Diffusion Plant			
PA-0013 / Solid Waste Stabilization and Disposition	23,831	39,305	13,218
PA-0040 / Nuclear Facility D&D-Paducah	69,022	72,620	78,478
PA-0102 / Paducah Contract/Post-Closure			
Liabilities/Administration (D&D Fund)	1,299	1,206	1,536
PA-0103 / Paducah Community and Regulatory Support (D&D Fund)	2,423	2,483	2,647
Subtotal, Paducah Gaseous Diffusion Plant	96,575	115,614	95,879
Total, Paducah	144,588	132,910	134,838

### Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life-Cycle	FY 2009 % Complete
<b>Paducah</b>					
Industrial Facility Completions (Number of Facilities)	12	12	19	190	10%
Geographic Sites Eliminated (number of sites)	0	0	0	1	0%
Enriched Uranium packaged for disposition (Number of Containers)	0	0	0	182	0%
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	7,500	418,960	2%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	12,680	18,337	20,006	27,464	73%
Radioactive Facility Completions (Number of Facilities)	2	3	4	22	18%
Remediation Complete (Number of Release Sites)	91	91	93	205	45%

## Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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### PA-0011 / NM Stabilization and Disposition-Paducah

#### Uranium Facilities Management

**2,501**

**1,896**

**1,767**

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

This project scope includes surveillance and maintenance of fifteen inactive facilities, management of uranium hexafluoride cylinders, support to the Nuclear Regulatory Commission for the five-year report to Congress on environmental, safety, and health, and management of legacy polychlorinated biphenyl remediation activities. Of the fifteen inactive facilities that were originally part of this PBS, only five are currently receiving surveillance and maintenance support. The remaining facilities are being supported in PBS PA-0040.

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.

This PBS scope also includes management of polychlorinated biphenyl remediation activities. Gaskets 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 2,618 polychlorinated biphenyl spills have been cleaned up.

In FY 2009, the following activities are planned:

- Conduct safe and compliant surveillance and maintenance of inactive facilities.
- Inspect and maintain polychlorinated biphenyl collection and containment systems.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Enriched Uranium packaged for disposition (Number of Containers)	0	0	0	182	0%



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)

- Continue management of polychlorinated biphenyl collection and containment system. (FY 2007)
- Continue surveillance and maintenance of inactive facilities. (FY 2007/September 2008)
- Inspect and maintain the polychlorinated biphenyl collection and containment system. (September 2008/September 2009)

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

**45,512                      15,400                      37,192**

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

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

Groundbreaking for the Depleted Uranium Hexafluoride Conversion Project occurred in FY 2004 and the Department formally approved construction of the facility in FY 2005. A revised projected baseline was approved in October 2007 approving a Total Project Cost (Paducah and Portsmouth combined) of \$429,000,000 with a second quarter FY 2009 completion date (including contingency) for line item construction. In FY 2007, \$45,387,000 was appropriated for the Depleted Uranium Hexafluoride Conversion Project line item. In FY 2008, \$15,260,000 is allotted as operating expenses for the Depleted Uranium Hexafluoride Conversion Project.

Currently, construction is approximately 70 percent complete. Hot operations are expected to commence second quarter FY 2009.

In FY 2009, the following activities are planned:

- Initiate operations of conversion facility.
- Cylinder surveillance and maintenance, to keep existing material in a safe, stable condition.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	7,500	418,960	2%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>Completed construction of the administration building and warehouse. (FY 2007)</li><li>Completed construction of the conversion building structure. (FY 2007)</li><li>Completed major equipment installation. (March 2008)</li><li>Beneficial occupancy of the conversion building. (July 2008)</li><li>Initiate operations of conversion facility. (March 2009)</li></ul>					

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

**23,831**

**39,305**

**13,218**

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

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 small quantities of 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 Corporations operation of the plant. DOE handles this waste as newly generated waste. The primary waste streams are low-level, mixed low-level, hazardous, transuranic, polychlorinated biphenyl, and sanitary/industrial/construction wastes. DOE plans to disposition all the remaining legacy waste by FY 2010. The waste streams have been ranked for treatment and disposal using a risk-based methodology system. 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.

Currently, approximately 9,768m<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 2009, the following activities are planned:

- Continue landfill operations and maintenance.
- Complete disposition of legacy waste and newly generated waste.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	12,680	18,337	20,006	27,464	73%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Disposed of 2,509 cubic meters of newly generated waste and legacy waste. (FY 2007)</li><li>• Complete expansion of five new sections of on-site landfill for non-hazardous waste disposal. (September 2008)</li><li>• Complete ongoing characterization, treatment, and disposal of all legacy mixed low-level waste. (September 2008)</li><li>• Dispose of 3,155 cubic meters of newly-generated waste and legacy mixed waste. (September 2008)</li><li>• Dispose of 2,200 cubic meters of legacy waste and newly-generated waste. (September 2009)</li></ul>					

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

**69,022**

**72,620**

**78,478**

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.

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 the security fence, recreational areas located outside the security fence, with adjacent private property including some residential areas. The Commonwealth of Kentucky and the DOE signed a Letter of Intent in August 2003 that outlined the commitment to accelerating environmental cleanup at the plant. The parties will work to complete remediation activities at the plant by FY 2019 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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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There are 10 scrap yards (originally estimated at 54,000 tons but has been re-estimated at 30,000 tons of scrap), 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 now 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 siting 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, 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 22 Final Inventory and Characterization Reports, ten Closure Plans, nine Closure Reports, and characterization of 34,418 cubic feet of material.

In FY 2009, the following activities are planned:

- Emergency management and infrastructure surveillance and maintenance.
- Transition expenses related to the remediation contract.
- Pump and treat operations and environmental surveillance, monitoring, and reporting.
- C-400 groundwater remediation, Southwest Plume, and Offsite Plume actions.
- Closure and disposition of all DOE Material Storage Areas.
- Remediation of the surface water operable units (submittal of D1 Removal Action Work Plan).
- Characterization and disposition of recently discovered soil/rubble piles along the river.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	12	12	19	172	11%
Nuclear Facility Completions (Number of Facilities)	0	0	0	18	0%
Radioactive Facility Completions (Number of Facilities)	2	3	4	22	18%

(dollars in thousands)

FY 2007	FY 2008	FY 2009
---------	---------	---------

Remediation Complete (Number of Release Sites)	91	91	93	205	45%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>Completed scrap metal disposition. (FY 2007)</li><li>Submitted D1 Proposed Plan for the Groundwater Operable Unit (Southwest Plume and Sources) to the US Environmental Protection Agency and the Commonwealth of Kentucky. (FY 2007)</li><li>Completed disposition of 26 inside DOE Material Storage Areas. (FY 2007)</li><li>Completed disposition of all outside DOE Material Storage Areas and continued characterization and disposition of inside DOE Material Storage Areas. (FY 2007)</li><li>Submitted closure plans to state for 28 inside DOE Material Storage Areas. (FY 2007)</li><li>Completed Remedial Investigation Field Work including waste disposal for Burial Ground Operable Unit. (December 2007)</li><li>Submit D1 Remedial Investigation Report for Burial Grounds Operable Unit to the US Environmental Protection Agency and the Commonwealth of Kentucky. (July 2008)</li><li>Continue decontamination and decommissioning of the C-410 complex. (September 2008)</li><li>Continue remedial action activities for the southwest plume/sources and removal action activities for the surface water (on-site) project. (September 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. (September 2008)</li><li>Start decontamination and decommissioning of the C-746-A West End Smelter and C-405 Incinerator. (September 2008)</li><li>Submit D1 Remedial Investigation Work Plan for the Site-Wide Soils Operable Unit Remediation to the US Environmental Protection Agency and the Commonwealth of Kentucky. (March 2009)</li><li>Complete construction of Outfall 11 sediment basin. (April 2009)</li><li>Complete infrastructure removal of Sector 3 of the C-410 complex. (June 2009)</li><li>Complete closure activities for 39 DOE Materials Storage Areas. (September 2009)</li><li>Complete disposition of 7 DOE Material Storage Areas (September 2009)</li></ul>					

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

**1,299                      1,206                      1,536**

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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, the following activities are planned:

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

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

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

**2,423                      2,483                      2,647**

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 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 also covers the activities performed by the Paducah Citizens Advisory Board. The funds from the decontamination and decommissioning account are for activities directly related to the cleanup of the gaseous diffusion plants. Other activities not directly related to decommissioning of the gaseous diffusion plants are covered in the Non-Defense Environmental Cleanup appropriation. Support for these activities from the Uranium Enrichment Decontamination and Decommissioning Fund will continue until final decontamination and decommissioning and remediation of the plant is complete.

In FY 2009 the following activities are planned:

- Complete media monitoring activities and complete FY 2009 media monitoring report.
- Complete annual reporting to the public on management and operational activities.
- Complete review and approval of the Comprehensive Environmental Response, Compensation, and Liability Act Federal Facility Agreement documents produced by DOE.
- Continue support to the Citizens Advisory Board to assist in the public participation activities required by the Comprehensive Environmental Response, Compensation, and Liability Act.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
---------	---------	---------

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Provide financial support to the Commonwealth of Kentucky as required by the Agreement-in-Principle. (FY 2007/September 2008/September 2009)</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 2007/September 2008/September 2009)</li></ul>					

**Total, Paducah**

**144,588**

**132,910**

**134,838**

**Explanation of Funding Changes**

FY 2009 vs.  
FY 2008  
(\$000)

**Non-Defense Environmental Cleanup**

**Gaseous Diffusion Plants**

**Paducah Gaseous Diffusion Plant**

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

- No significant change. -129

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

- Increase supports DUF6 operations at approximately 10,000 metric tons of material. 21,792

**Uranium Enrichment Decontamination and Decommissioning Fund**

**D&D Activities**

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

- Decrease reflects completion of the majority of the scope included in this PBS with legacy waste disposition completed in FY 2009. -26,087

FY 2009 vs. FY 2008 (\$000)
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**PA-0040 / Nuclear Facility D&D-Paducah**

- |   |       |
|---|-------|
| ▪ Increase reflects soil/rubble pile remediation activities for FY 2009 completion. | 5,858 |
|---|-------|

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

- |  |     |
|--|-----|
| ▪ Increase in funding to support pending litigation. | 330 |
|--|-----|

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

- |                          |     |
|--------------------------|-----|
| ▪ No significant change. | 164 |
|--------------------------|-----|

<b>Total, Paducah</b>	<hr/> <b>1,928</b>
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## Portsmouth

### Funding by Site

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Portsmouth Gaseous Diffusion Plant	225,346	225,026	242,561
Total, Portsmouth	225,346	225,026	242,561

### 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 is transitioning from primarily enrichment operations to environmental cleanup, waste management, depleted uranium conversion, deactivation and decommissioning, re-industrialization, and long-term stewardship.

Construction of the Portsmouth Gaseous Diffusion Plant began in late 1952 with a mission to increase the national production of enriched uranium and maintain the nation's superiority in the development and use of nuclear energy. The first enrichment diffusion cells went on line in September 1954, and the facility was fully operational in March 1956. The enriched uranium was required for both government and commercial uses.

In the mid-1980s, the facilities and equipment required for the next generation of enrichment facility technology, the Gas Centrifuge Enrichment Plant (GCEP), was constructed and installed at Portsmouth. However, the project was terminated in 1985, before going into full production, due to a significant reduction in the worldwide market for enriched material. The newly constructed facilities were placed in shutdown mode until, ultimately, much of the process-unique equipment was removed and a substantial number of the remaining buildings were renovated into office space, warehouses, or storage facilities, including permitted storage for hazardous and mixed waste.

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 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 are or will be transitioning to DOE under the terms of the lease agreement.

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 were initiated. In FY 2007, the

Department formally established the approach to be taken to implement decontamination, decommissioning and cleanup of the site.

The Department is committed to clean up the Portsmouth site to industrial reuse standards. Limited land areas will require institutional controls following remediation. Equipment and material removed from buildings will be decontaminated, reused, or recycled to the extent practicable.

#### 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. This facility will operate over the next two decades. DOE is ultimately responsible for the deactivation 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 remain to process to American Society for Testing and Materials standards. The estimated cost for completing the uranium decontamination program from FY 2007 through the first quarter of FY 2009 is approximately \$150,000,000. Funds necessary to complete this program were obtained from previous sales of DOE's cleaned excess uranium inventory.

#### **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. 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.

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

With the decision to include decontamination and decommissioning into the Portsmouth project, the current end state completion for environmental restoration coincides with that of decontamination and decommissioning. The primary objectives of the near-term cleanup program during this period will be to implement the last remaining 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 complete construction and begin operating a depleted uranium hexafluoride conversion facility. Future plans include the transfer of leased gaseous diffusion plant facilities to DOE for surveillance, maintenance, and deactivation activities in preparation for their decontamination and decommissioning. Including the known workscope for decontamination and decommissioning of the Gaseous Diffusion Plant's and the approved baseline, the lifecycle planning estimate for completing all cleanup is 2044 to 2052.

The DOE obligation for D&D of the Portsmouth Gaseous Diffusion Plant is a requirement of the Energy Policy Act of 1992. In addition to the D&D 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*, allows EM to prepare for an efficient and strategically planned D&D project. Transition of the currently leased gaseous diffusion plant facilities to DOE for surveillance and maintenance and deactivation activities in preparation of decontamination and decommissioning is scheduled to begin in FY 2008.

### **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.

### **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.

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 Toxic Substance Control Act Incinerator at the East Tennessee Technology Park in Oak Ridge, Tennessee, for waste treatment, and the Nevada Test Site waste facility 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.

### **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, and an acquisition strategy for follow-on work is in preparation.

The current remediation contract does not include decontamination and decommissioning of the main gaseous diffusion plant buildings. The main process buildings are currently leased by the United States Enrichment Corporation. Currently, surveillance and maintenance is performed by the United States Enrichment Corporation under a contract with DOE. In FY 2007, DOE formally decided to proceed with decontamination and decommissioning of the main gaseous diffusion plant buildings. DOE is currently developing its acquisition strategy for the decontamination and decommissioning contract workscope, and intends to issue the Request for Proposal in 2008.

## 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 future site missions and reduced environmental health and safety risks.

Direct maintenance and repair at the Portsmouth Project Office is estimated to be \$35,756,000.

## Funding Schedule by Activity

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Non-Defense Environmental Cleanup			
Gaseous Diffusion Plants			
Portsmouth Gaseous Diffusion Plant			
PO-0011 / NM Stabilization and Disposition-Portsmouth			
Other Uranium Facilities Management	19,515	7,477	8,564
PO-0011X / NM Stabilization and Disposition-Depleted			
Uranium Hexafluoride Conversion	52,511	13,000	33,773
PO-0041 / Nuclear Facility D&D-Portsmouth GCEP	2,000	0	0
Subtotal, Portsmouth Gaseous Diffusion Plant	74,026	20,477	42,337
Uranium Enrichment Decontamination and Decommissioning Fund			
D&D Activities			
Portsmouth Gaseous Diffusion Plant			
PO-0013 / Solid Waste Stabilization and Disposition	25,410	33,999	25,000
PO-0040 / Nuclear Facility D&D-Portsmouth	125,202	169,274	174,276
PO-0103 / Portsmouth Contract/Post-Closure Liabilities/Administration (D&D Fund)	410	720	635
PO-0104 / Portsmouth Community and Regulatory Support (D&D Fund)	298	556	313
Subtotal, Portsmouth Gaseous Diffusion Plant	151,320	204,549	200,224
Total, Portsmouth	225,346	225,026	242,561

## Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life-Cycle	FY 2009 % Complete
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### Portsmouth

Industrial Facility Completions (Number of Facilities)	14	16	17	161	11%
Geographic Sites Eliminated (number of sites)	0	0	0	1	0%
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	7,875	247,740	3%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	24,078	30,508	30,508	30,508	100%
Remediation Complete (Number of Release Sites)	150	150	150	151	99%

## Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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### **PO-0011 / NM Stabilization and Disposition-**

#### **Portsmouth Other Uranium Facilities Management**

**19,515**

**7,477**

**8,564**

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 disposition of the highly enriched uranium. The project scope includes storage, shipment, treatment, and disposition of filter ashes and oil-leak gunk; disposition of remaining highly enriched uranium materials (i.e., oils, acids, incinerator ashes and alumina) stored in X-326 L-Cage; interim storage and eventual processing of highly enriched uranium materials; surveillance and maintenance of 158 permanently shut-down cells in X-326, DOE non-leased facilities, two cylinder yards, and special nuclear materials; operation of Enriched Uranium - DOE Materials Storage Area-12; and related technical support activities. Management of depleted uranium hexafluoride cylinders continued until FY 2005, when turnover to the depleted uranium hexafluoride conversion facility operator occurred. 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.

DOE plans to complete the removal of technetium-99 from uranium feed in FY 2009 using proceeds from previous sales of excess clean uranium.

Currently, Portsmouth has received and stacked a cumulative total of 5,873 cylinders from the East Tennessee Technology Park. For the Highly Enriched Uranium Program, a revised approach for reprocessing and disposal of enriched uranium filter ash and oil-leak material was developed based upon a cost/benefit analysis of alternatives.

In FY 2009, 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.
- Continue disposition activities for large low-enriched uranium cylinders.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Complete conversion and final processing of highly enriched uranium recovery from inventory stored at commercial vendor.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"><li>• Continued to process highly enriched uranium. (FY 2007)</li><li>• Complete conversion and final processing of highly enriched uranium. (September 2008)</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></ul>					

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

**52,511**

**13,000**

**33,773**

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 operation of 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, the hydrogen fluoride by-products will be sold on the commercial market, and the empty cylinders will be sent to disposal or reused.

This project also includes surveillance and maintenance of all depleted uranium hexafluoride cylinders during conversion of the existing stockpile, which will take about 18 years. The conversion facility operator assumed responsibility for maintenance and surveillance of all depleted uranium hexafluoride cylinders in FY 2005.

Groundbreaking for the Depleted Uranium Hexafluoride Conversion Project occurred in FY 2004 and the Department formally approved construction of the facility in FY 2005. A revised project baseline was approved in October 2007 approving a Total Project Cost (Portsmouth and Paducah combined) of \$429,000,000 with a second quarter FY 2009 completion date (including contingency) for line item construction. In FY 2007, \$49,289,000 was appropriated for the Depleted Uranium Hexafluoride Conversion Project line item. In FY 2008, \$12,882,000 is allotted as operating expenses for the Depleted Uranium Hexafluoride Conversion Project.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Currently, construction is approximately 70 percent complete. Hot operations are expected to commence second quarter FY 2009.

In FY 2009, the following activities are planned:

- Initiate operations of conversion facility.
- Cylinder surveillance and maintenance, to keep existing material in a safe, stable condition.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	7,875	247,740	3%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Completed construction of administration building and warehouse. (FY 2007)</li><li>• Completed major equipment installation. (FY 2007)</li><li>• Completed construction activities. (March 2008)</li><li>• Beneficial occupancy of the conversion building. (March 2008)</li><li>• Initiate operations of conversion facility. (March 2009)</li></ul>					

**PO-0041 / Nuclear Facility D&D-Portsmouth GCEP** **2,000** **0** **0**

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

This project scope includes cleanup of the Gas Centrifuge Enrichment Plant facilities for use by the United States Enrichment Corporation in developing an advanced uranium enrichment process. On December 4, 2002, the United States Enrichment Corporation announced that it would locate its lead cascade centrifuge uranium test facility at the Portsmouth site. This announcement was based on a June 17, 2002, agreement between DOE and the United States Enrichment Corporation where DOE committed to work with the United States Enrichment Corporation to develop and deploy an advanced centrifuge uranium enrichment plant by 2010-2011. Part of this commitment involved the cleanup of the Gas Centrifuge Enrichment Plant facilities at Portsmouth. The Gas Centrifuge Enrichment Plant cleanup program included cleanup of designated waste and centrifuge equipment in process buildings X-3001 and X-3002, facility repairs and modifications to existing facilities for office space related to waste management operations, maintenance, storage, training, relocation of DOE operations, and project management costs from FY 2004 to FY 2007.

As of September 2007, the Gas Centrifuge Enrichment Plant project was completed. Completion activities included disassembly and cleanout, disposition of waste oils and recyclable materials, two truck shipments (one for oils and one for recyclable material), and subcontractor personnel moves from X-7725 to X-720.



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, the following activities are planned:

- Project completed in FY 2007.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Completed disposition of the Gas Centrifuge enrichment Plant waste oils and recyclable material. (FY 2007)</li><li>• Plan two truck shipments (one for oils and one for recyclable material) and subcontractor personnel moves from X-7725 to X-720. (FY 2007)</li><li>• Project Completion (FY 2007)</li></ul>					

**PO-0013 / Solid Waste Stabilization and Disposition**                      **25,410**                      **33,999**                      **25,000**

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

This project scope includes storage, characterization, treatment, and disposition of legacy waste generated by activities at the Portsmouth Gaseous Diffusion Plant. These activities will reduce risks and storage costs. The primary waste streams are low-level, mixed low-level, Toxic Substances Control Act low-level, hazardous, and sanitary wastes. This project incorporates pollution prevention projects to reduce the generation, volume, toxicity, and release of multi-media waste to promote the use of non-hazardous materials, and to achieve operating efficiencies through the application of pollution prevention principles. Disposal of legacy waste is critical to completing cleanup of the site. This project also includes the disposition of inventory stored at the Uranium Management Center (Building X-744G) which has no economic value or identifiable reuse. The Uranium Management Center was part of a complex-wide effort to consolidate uranium in a central location for storage and disposition. Inventory includes depleted uranium and 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 to be considered for disposition includes depleted uranium metal.

Currently, approximately 27,700 m<sup>3</sup> (cumulative) of low-level and mixed low-level waste have been dispositioned. All legacy waste was dispositioned by the end of FY 2007. The waste streams have been ranked for treatment and disposal using a risk-based prioritization methodology.

In FY 2009, the following activities are planned:

- Complete the management and disposal of 6,980m<sup>3</sup> low-level waste associated with 438 converter shells in storage with potentially classified waste.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Complete disposition activities for 814 small cylinders containing uranium hexafluoride material.
- Initiate disposition of depleted uranium metal stored at the Uranium Management Center.
- Maintain waste minimization and pollution prevention programs to reduce waste costs.
- Characterize, treat, and dispose of any newly generated waste.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	24,078	30,508	30,508	30,508	100%
<b>Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)</b> <ul style="list-style-type: none"><li>• Submitted annual Site Treatment Plan to the Ohio Environmental Protection Agency. (FY 2007)</li><li>• Completed Site Treatment Plan milestone to ship mercury for processing. (FY 2007)</li><li>• Disposed of all legacy waste. (FY 2007)</li><li>• Complete Site Treatment Plan milestone for macro-encapsulation. (September 2008)</li><li>• Dispose of low-level waste associated with 438 converter shells in storage. (September 2008)</li><li>• Disposition excess site equipment and poly-bottle solutions. (September 2008)</li><li>• Disposition of classified material in DOE Material Storage Areas 11 and 12. (September 2008)</li><li>• Repackage and dispose of low-level waste associated with 438 converter shells in storage with potentially classified waste. (September 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**

**125,202**

**169,274**

**174,276**

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. With the decision to include decontamination and decommissioning into the Portsmouth project, the current end state completion for environmental restoration coincides with that of decontamination and decommissioning, which is projected to be 2044-2052. Contaminants of concern include radioactive technetium-99, polychlorinated biphenyls, trichloroethylene, and heavy metals. DOE

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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will continue to operate active and passive groundwater treatment systems until regulatory cleanup levels are achieved. Approximately 14 excess non-leased facilities have been decontaminated and decommissioned, reducing surveillance and maintenance costs.

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 DOE obligation for D&D of the Portsmouth Gaseous Diffusion Plant is a requirement of the Energy Policy Act of 1992. In addition to the D&D 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*, allows EM to prepare for an efficient and strategically planned D&D project. Transition of the currently leased gaseous diffusion plant facilities to DOE for surveillance and maintenance and deactivation activities in preparation of decontamination and decommissioning is scheduled to begin in FY 2008.

Currently, Quadrant I, II, 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. During FY 2007, the groundwater treatment facilities treated over 27.2 million gallons of groundwater and removed over 731 pounds of trichloroethylene. Cold shutdown activities continued and formal Department approval for the decontamination and decommissioning of the Portsmouth Gaseous Diffusion Plant occurred on August 17, 2007. DOE is currently developing its acquisition strategy for the decontamination and decommissioning contract workscope, and intends to issue the Request for Proposal in 2008.

In FY 2009, the following activities are planned.

- Complete Cold Shutdown activities in the former gaseous diffusion operations facilities.
- 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.
- Complete X-701B oxidation injection system field treatment activities.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Complete disposal cell strategy and regulatory submissions and analysis.
- Complete Quadrant II remedial actions, which are the last remedial actions at Portsmouth.
- 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.
- Award Gaseous Diffusion Plant decontamination and decommissioning contract and initiate large scale decontamination and decommissioning.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	7	9	10	121	8%
Nuclear Facility Completions (Number of Facilities)	0	0	0	13	0%
Radioactive Facility Completions (Number of Facilities)	7	7	7	27	26%
Remediation Complete (Number of Release Sites)	20	20	20	21	95%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"><li>• Submit Quarterly Progress Report to the US Environmental Protection Agency. (FY 2007/October 2008/January 2009)</li><li>• Submitted Quarterly Surveillance and Maintenance Report to the Ohio Environmental Protection Agency. (FY 2007)</li><li>• Submitted Annual Groundwater Monitoring Report to the Ohio Environmental Protection Agency. (FY 2007)</li><li>• Began activities to remove 14 excess, inactive facilities and complete decontamination and decommissioning of the excess facilities. (FY 2007)</li><li>• Submit Monthly Technical Progress Report to the Ohio Environmental Protection Agency. (FY 2007/March 2008/August 2008/October 2008)</li><li>• Submit Phase IIc Report for the remediation of the X-701B Solid Waste Management Unit to Ohio and US Environmental Protection Agency. (February 2008)</li><li>• Release solicitations for decontamination and decommissioning and surveillance and maintenance contracts. (September 2008)</li><li>• Continue X-701B Oxidation Treatment Field activities. (September 2008)</li></ul>					

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

**410                      720                      635**

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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 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 2009, 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 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"><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. (FY 2007/September 2008/September 2009)</li><li>• Defend legal claims filed against the Government and its contractors. (FY 2007)</li><li>• Defend against legal claims filed against the Government's contractors. (September 2008/September 2009)</li><li>• Project Completion (September 2009)</li></ul>					

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

**298                      556                      313**

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. These activities promote active involvement with the state in the EM planning and decision-making processes and provide the opportunity for meaningful involvement in managing the cleanup and closure of the site.

In FY 2009, the following activities are planned:

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Continue to support oversight activities of the Ohio Environmental Protection Agency.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"> <li>Continue support to the Ohio Environmental Protection Agency associated with the Portsmouth Consent Decree oversight activities. (FY 2007/September 2008/September 2009)</li> </ul>					

**Total, Portsmouth****225,346****225,026****242,561****Explanation of Funding Changes**

FY 2009 vs. FY 2008 (\$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**

- Increase in funding supports the completion of the highly enriched uranium recovery processing activities. 1,087

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

- Increase funding supports the DUF6 operations to process over 7,500 metric tons of material. 20,773

**Uranium Enrichment Decontamination and Decommissioning Fund****D&D Activities****PO-0013 / Solid Waste Stabilization and Disposition**

- Decrease reflects the completion of legacy waste management efforts and disposition of uranium hexafluoride small cylinders. -8,999

FY 2009 vs. FY 2008 (\$000)
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**PO-0040 / Nuclear Facility D&D-Portsmouth**

- |   |       |
|---|-------|
| ▪ Increase reflects completion of remediation in FY 2009 and continuation of planning and preparation to decontamination and decommissioning. | 5,002 |
|---|-------|

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

- |                          |     |
|--------------------------|-----|
| ▪ No significant change. | -85 |
|--------------------------|-----|

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

- |  |      |
|--|------|
| ▪ Decrease reflects only continued support for the Ohio EPA grant. | -243 |
|--|------|

<b>Total, Portsmouth</b>	<hr/> <b>17,535</b>
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## Richland

### Funding by Site

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Hanford Site	851,827	877,305	842,922
Richland Operations Office	18,332	19,441	19,620
Total, Richland	870,159	896,746	862,542

### Site Overview

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

The 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 that was originally stored in the K-Basins has since been relocated to dry storage on the Central Plateau (also known as the 200 Area). Soil and groundwater contamination from past operations resulted in placement of the Hanford Site on the National Priorities (Superfund) List. 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, and the Fast Flux Test Facility.

#### 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 - 67 meters (200 -250 feet) above the water table at the Columbia River shore (100 and 300 areas). The 200 Area is where fuel irradiated in the production reactors was chemically processed 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 from one another. This was strategically done so that it would be difficult for an enemy aerial attack to destroy all of the chemical separations buildings. 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 facilities.

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 is to be processed in the Waste Receiving and Processing facility for shipment to the Waste Isolation Pilot Plant. The non-transuranic waste is permanently disposed at the Environmental Restoration and 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 Container Storage Building used in waste management activities are located in this area. 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 processing since 1956, but is now being used to perform on a limited basis characterization and packaging activities of remote-handled wastes. Connected to S Plant was the 233-S Plutonium Concentration Facility, a building originally built for concentrating plutonium before it was sent to the Plutonium Finishing Plant. 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 contains the following areas which are located along the Columbia River in southeastern Washington State:

- **100 B & C Areas:** B Reactor, the first full-size nuclear reactor in the world, was the first reactor built on the Hanford Site. It has received several national awards as a nuclear and engineering landmark, and has the distinction of being listed on the National Register of Historic Places. Near B Reactor, in an area between the Columbia River and the reactor, is a site where contaminated soil is being remediated. When the reactors operated, water pumped from the Columbia River circulated around the radioactive fuel to cool it while it was in the reactor. This water was then sent through underground pipes to pond sites. The water was temporarily kept there to allow it to both cool off in temperature and to let some of the short-lived radioactivity decay. The water was then discharged to the river. The soil under and around the ponds became contaminated and it is this soil that is being transported to the on-site Environmental Restoration and Disposal Facility (located in the 200 Area) for placement in a safe, long-term disposal configuration.

C Reactor has been placed in interim safe storage that will last for up to 75 years. This has 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 2,300 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, 44 cubic meters of highly radioactive sludge remain in K-West Basin that must be removed and treated. The K-East Basin is currently undergoing demolition activities and will 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 on 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 Area has been deactivated. 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 soil in the 100-D Area began in 1996.
- 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.
- 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.
- 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 production process. 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 and deactivation. The 300 Area buildings that remain active include laboratories, technical shops, engineering offices, their support facilities and 310 Treated Effluent Disposal Facility and the 340 Facility.

#### Fast Flux Test Facility

This activity is located in the 400 Area of the Hanford Site. The Fast Flux Test Facility planning began in 1965, during the heyday 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. It 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 major deactivation, leading to a low-cost surveillance and maintenance mode (until cleaning out sodium residuals in the plant systems, processing and dispositioning bulk sodium, and decommissioning and demolition of the facility are conducted in the future).

#### 600 Area

The 600 Area includes all of the Hanford Site not occupied by the 100, 200, 300 and 400. 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. In the 600 area are also utility corridors and remediation sites, such as 618-10 and 618-11, that are outside the 100 Area reactor boundaries and the 200 Area.

## 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 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 to maintain 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:** The K Basins are the highest risk reducing project because of its proximity to the Columbia River. Significant risk reduction has been achieved through removal of 2,300 tons of spent nuclear fuel from K Basins, representing over 55 million curies of radioactivity reduction (95 percent of the radioactivity in Hanford's River Corridor) from near the Columbia River. Additional risk reduction will be achieved by treating sludge and placing it in a form suitable for disposal. The schedule for sludge treatment and disposal is currently under development.
- **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 2010, 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 waste will have been retrieved and transferred to a treatment, storage, and/or disposal facility.
- **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. Groundwater remediation facilities are projected to be constructed and 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 or the Environmental Restoration Disposal Facility. About 130,000 cubic meters of low-level waste will be disposed of through site closure. In addition, liquid waste will be treated through the Effluent Treatment Facility, the Liquid Effluent Retention Facility, and the Treated Effluent Disposal Facility. 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 plans to complete major elements of deactivation, including reactor defueling, fuel washing, dry packaging, storage (in storage casks) of the mixed oxide fuel, disposition of 367 reactor fuel assemblies, and the draining of 260,000 gallons of bulk sodium in

plant systems, reactor vessel and fuel storage vessels. DOE has begun transfer of all sodium-bonded fuel to the Idaho National Laboratory and has begun to transition the facility into long-term surveillance and maintenance.

## **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 the agreement.

### **Tri-Party Agreement/Compliance Milestones:**

Tri-Party Agreement major milestones for K Basin Closure

- M-034-00A, Complete Removal of the K Basins and their Content by March 2009

Tri-Party Agreement major milestones for Plutonium Finishing Plant Project

- M-083-00A, Plutonium Finishing Plant Facility Transition and Selected Disposition Activities by September 2016

Tri-Party Agreement major 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-091-44B, Complete Retrieval of the 200A Caisson Remote-Handled Waste in 218-W-4B by December 2018

Tri-Party Agreement major milestones for Fast Flux Test Facility

- M-081-14, Complete Fast Flux Test Facility Sodium Drain by September 2009 (completed September 16, 2006)
- M-081-00A, Complete Fast Flux Test Facility Transition by February 2011

Tri-Party Agreement major 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 Action for the 100 Areas by December 2012
- 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 major 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-020-00, Submit Part B Permit Application or Closure/Post Closure Plans for all Resource Conservation and Recovery Act Treatment, Storage, and Disposal Units by December 2008

- M-034-30, Initiate Sludge Treatment by December 2008
- M-034-31, Complete Sludge Treatment by November 2009
- 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:

- The opening date of a Federal repository for spent nuclear fuel and high-level waste and subsequent receipt of spent nuclear fuel and high-level waste from the Hanford Site;
- The acceptance of cleanup levels in Interim 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 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 is to be transported to a Federal repository for disposal.
- Approximately 1,936 cesium and strontium capsules currently in interim storage at the Hanford Site are to be transported to a Federal repository for 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.
- Fast Flux Test Facility sodium-bonded fuel is to be transported to the Idaho National Laboratory for storage and ultimate disposition.
- Consolidation of special nuclear materials must be coordinated with sites presently storing materials, NNSA transportation assets and the Savannah River Site.



## **Contract Synopsis**

Currently, two major contracts to implement the cleanup strategy across the Hanford Site are expiring: the Project Hanford Management Contract and the Tank Farm Management Contract. Extensions through FY 2008 were negotiated and signed. Based on an approved acquisition strategy, the Request for Proposals for competitive selections of the mission support and Central Plateau remediation contracts were issued May 17, 2007, and June 25, 2007, respectively, and proposals are under DOE evaluation.

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.

## **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. 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 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 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, plutonium will be shipped off-site to eliminate risk and allow the Plutonium Finishing Plant to be decommissioned and decontaminated.
- 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.

Direct maintenance and repair at the Richland Operations Office is estimated to be \$81,626,000.

### Funding Schedule by Activity

(dollars in thousands)			
	FY 2007	FY 2008	FY 2009
Defense Environmental Cleanup			
Hanford Site			
2012 Completion Projects			
RL-0011 / NM Stabilization and Disposition-PFP	77,565	97,110	113,483
RL-0012 / SNF Stabilization and Disposition	136,086	98,907	122,171
RL-0013B / Solid Waste Stabilization and Disposition-2012	798	0	0
RL-0041 / Nuclear Facility D&D-River Corridor Closure Project	210,755	223,172	165,248
Subtotal, 2012 Completion Projects	425,204	419,189	400,902
2035 Completion Projects			
RL-0013C / Solid Waste Stabilization and Disposition-2035	218,036	242,124	175,930
RL-0030 / Soil and Water Remediation-Groundwater/Vadose Zone - 2035	87,314	104,591	169,682
RL-0040 / Nuclear Facility D&D-Remainder of Hanford - 2035	83,231	97,854	85,653
RL-0080 / Operate Waste Disposal Facility	3,199	3,299	0
RL-0100 / Richland Community and Regulatory Support	18,332	19,441	19,620
Subtotal, 2035 Completion Projects	410,112	467,309	450,885
Total, Hanford Site	835,316	886,498	851,787
Non-Defense Environmental Cleanup			
Fast Flux Test Reactor Facility D&D			
RL-0042 / Nuclear Facility D&D-Fast Flux Test Facility Project	34,843	10,248	10,755
Total, Richland	870,159	896,746	862,542

### Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life- Cycle	FY 2009 % Complete
<b>Richland</b>					
Geographic Sites Eliminated (number of sites)	0	0	0	1	0%
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	3,500	3,500	3,500	3,500	100%
Enriched Uranium packaged for disposition (Number of Containers)	2,958	2,958	2,958	2,958	100%
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	3,437	3,437	3,437	3,437	100%
Depleted and Other Uranium packaged for disposition (Metric Tons)	3,100	3,100	3,100	3,100	100%
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	2,124	2,124	2,124	2,124	100%
Transuranic Waste shipped for disposal (Cubic meters) - CH	2,481	3,181	3,531	24,580	14%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	858	0%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	45,698	45,804	45,804	51,555	89%
Material Access Areas eliminated (Number of Material Access Areas)	1	1	1	2	50%
Nuclear Facility Completions (Number of Facilities)	28	28	28	80	35%
Radioactive Facility Completions (Number of Facilities)	46	55	55	333	17%
Industrial Facility Completions (Number of Facilities)	312	317	319	1,047	30%
Remediation Complete (Number of Release Sites)	448	502	506	1,645	31%

### Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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<b>RL-0011 / NM Stabilization and Disposition-PFP</b>	<b>77,565</b>	<b>97,110</b>	<b>113,483</b>
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This PBS can be found within the Defense Environmental Cleanup appropriation.

The Plutonium Finishing Plant complex consists of several buildings that were used for defense production of plutonium nitrates, oxides and metal from 1950 through early 1989. The bulk of the plutonium bearing materials at the Plutonium Finishing Plant are stored in vaults. This PBS implements actions to package and ship special nuclear materials and fuels to long-term storage facilities; cleanout facilities and demolish them to slab-on-grade; and transition the below grade structures to PBS RL-0040, Nuclear Facility Decommissioning & Decontamination - Remainder of Hanford. These actions can be grouped in the following key categories: 1) stabilization, packaging and shipment of the special nuclear

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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materials and residues from the Plutonium Finishing Plant complex; 2) interim storage of special nuclear materials; 3) maintaining the facilities in a safe and secure manner until the completion of demolition; and 4) cleanout and demolition of facilities.

As of September 30, 2007, the Plutonium Finishing Plant Closure Project has: completed stabilization and packaging of plutonium-bearing material into DOE-STD-3013 containers for shipment to an offsite storage location; completed repackaging and transfer of over 3,400 kilograms of bulk plutonium residue out of the Plutonium Finishing Plant protected area for shipment to the Savannah River site (authorization to ship was received on September 5, 2007); completed 100 percent of 'legacy' plutonium holdup (residual in hot cells) which is required for decommissioning and decontamination to proceed; and demolished 21 facilities.

The end-state for this PBS is dismantlement of the nuclear facilities in the Plutonium Finishing Plant complex to slab-on-grade.

In FY 2009, the following activities are planned:

- Maintain Plutonium Finishing Plant complex facilities.
- Maintain safe and secure storage of special nuclear materials.
- Continue shipment of plutonium off-site to the Savannah River Site and procure additional casks to support shipment campaign.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Material Access Areas eliminated (Number of Material Access Areas)	1	1	1	2	50%
Nuclear Facility Completions (Number of Facilities)	21	21	21	31	68%
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	3,100	3,100	3,100	3,100	100%
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	3,437	3,437	3,437	3,437	100%
Radioactive Facility Completions (Number of Facilities)	0	0	0	26	0%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Submitted Below Grade Structures Engineering Evaluation/Cost Analysis and Action Memorandum to the Washington State Department of Ecology for the Plutonium Finishing Plant complex below grade structures infrastructure. (FY 2007)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Demolished 241-Z facility to slab-on-grade. (FY 2007)
- Initiated off-site shipments of Plutonium. (FY 2007)
- Completed 100 percent of 'Legacy' plutonium holdup (residual in hot cells) required for decommissioning and decontamination. (FY 2007)
- De-inventory 1,500 model 3013 containers. (September 2008)
- Continue shipment of Plutonium off-site. (September 2009)

#### **RL-0012 / SNF Stabilization and Disposition**

**136,086**

**98,907**

**122,171**

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, 2007, 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 in progress.

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 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 2009, the following activities are planned:

- Maintain safe and compliant 100K Area facilities.
- Complete conceptual design (Critical Decision-1) for the sludge treatment project.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Complete processing of residual/legacy spent fuel found during containerization of spent fuel sludge and from River Corridor contractor activities.
- Complete demolition of K-East Basin.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	2,117	2,117	2,117	2,117	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"> <li>• Completed transfer of containerized sludge from the K-East Basin to engineered containers within the K-West Basin. (FY 2007)</li> <li>• Complete K-West Basin final pass cleanup. (January 2008)</li> <li>• Complete decontamination and decommissioning of K East Basin. (September 2009)</li> </ul>					

### RL-0013B / Solid Waste Stabilization and Disposition-2012

798                      0                      0

Scope of this PBS was transferred to RL-0013C in FY 2008 to consolidate all activities in one PBS for clarity.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

### RL-0041 / Nuclear Facility D&D-River Corridor Closure Project

210,755                      223,172                      165,248

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 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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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, 2007, activities completed include: remediation of 409 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 2009, the following activities are planned:

- Completion of Burial Grounds 100-D-32, 100-D-45 and 100-D-40 loadout along with restricted additional waste site and burial ground remediation in the 100-B/C and 100-D Areas along the Columbia River.
- Completion of Waste Site 300-48 and Burial Ground 100-D-41 loadout along with restricted waste site and burial ground remediation in and near the 300 Area along the Columbia River.
- Completion of Burial Ground 118-H-1 loadout.
- Maintenance of safety systems and operations in the 100 Area, 200 Area (Environmental Restoration Disposal Facility), 300 Area, 400 Area, and 600 Area.
- Surveillance and maintenance for inactive facilities, waste sites, and burial grounds in the 100 Area, 200 Area, 300 Area, 400 Area, and 600 Area.
- Operations of the Environmental Restoration Disposal Facility and construction of new disposal cells.
- Interim safe stabilization of the N Reactor in the 100 Area along the Columbia River.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Risk assessment activities in support of final end state and River Corridor closure.
- Deactivation activities at Building 324 (Chemical Engineering Laboratory) and Building 327 (Post-Irradiation Test Laboratory) in the 300 Area along the Columbia River.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Depleted and Other Uranium packaged for disposition (Metric Tons)	3,100	3,100	3,100	3,100	100%
Enriched Uranium packaged for disposition (Number of Containers)	2,958	2,958	2,958	2,958	100%
Industrial Facility Completions (Number of Facilities)	100	105	107	367	29%
Nuclear Facility Completions (Number of Facilities)	3	3	3	6	50%
Radioactive Facility Completions (Number of Facilities)	34	43	43	118	36%
Remediation Complete (Number of Release Sites)	409	454	458	788	58%
<p>Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)</p> <ul style="list-style-type: none"> <li>• Completed Interim Remedial Actions for at least three High Environmental Priority 300-FF-2 Waste Sites and Confirmatory Sampling of 2 of the 300-FF-2 Candidate Sites. (FY 2007)</li> <li>• Continued Interim Remedial Action for 100 B/C Area. (FY 2007)</li> <li>• Initiated construction of new disposal Cells 7 and 8 to provided needed capacity at the Environmental Restoration Disposal Facility. (FY 2007)</li> <li>• Disposed of up to 400,000 tons of remediation waste at the Environmental Remediation Disposal Facility at Hanford. (FY 2007)</li> <li>• Initiated Response Actions for Remaining Waste Sites for 100 N Area. (July 2008)</li> <li>• Completed the selected removal and/or remedial actions that are selected for three high priority facilities in the 300 Area. (September 2008)</li> <li>• Dispose of over 550,000 tons of remediation waste at the Environmental Remediation Disposal Facility (ERDF) at Hanford. (September 2008)</li> <li>• Initiate Substantial and Continuous Soil Remediation at the 618-1 Burial Ground. (September 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 Burial Ground 118-H-1 Load out. (September 2009)</li> </ul>					



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**RL-0013C / Solid Waste Stabilization and Disposition-  
2035**

**218,036      242,124      175,930**

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, 2007, 5,580 cubic meters of suspect transuranic waste have been retrieved; over 2,550 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 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 the national repository; all site waste disposal operations are complete; and, facilities are transitioned for decontamination and decommissioning.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, the following activities are planned:

- Operate the T Plant Facility in support of treatment and repackaging of mixed low-level and transuranic waste.
- Operate the Waste Receiving and Processing Facility in support of transuranic waste certification and shipment for disposal at the Waste Isolation Pilot Plant.
- Operate the liquid Effluent Treatment Facility to support site cleanup activities including dewatering of the K Basins, groundwater remediation, radioactive waste tank volume reduction, and treatment of disposal facility leachate.
- Retrieve 1,100 cubic meters of suspect transuranic waste from the low-level burial grounds.
- Continue certification of transuranic waste.
- Dispose of on-site generated low-level and mixed low-level wastes at the mixed waste disposal trenches.
- Support work on tank closure and waste management Environmental Impact Statement.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	45,698	45,804	45,804	51,555	89%
Transuranic Waste shipped for disposal (Cubic meters) - CH	2,481	3,181	3,531	24,580	14%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	858	0%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"> <li>• Retrieved 2,400 cubic meters of suspect transuranic waste. (FY 2007)</li> <li>• Completed thermal treatment of 600 cubic meters of mixed low-level waste. (FY 2007)</li> <li>• Treated 1,630 cubic meters of mixed low-level waste. (December 2007)</li> <li>• Retrieve 2,500 cubic meters in FY 2008 of suspect transuranic waste. (September 2008)</li> <li>• Retrieve 1,100 cubic meters of suspect transuranic waste. (September 2009)</li> </ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**RL-0030 / Soil and Water Remediation-  
Groundwater/Vadose Zone - 2035**

**87,314      104,591      169,682**

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 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, 2007: 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 2009, the following activities are planned:

- Monitor groundwater wells for contaminants of concern above drinking water standards.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Continue groundwater River Corridor remedial investigations including well drilling and characterization.
- Perform geophysical logging to provide additional subsurface information on containment distribution.
- Provide groundwater and environmental data management.
- Operate existing groundwater remediation systems.
- Drill and install a minimum of 30 monitoring wells to maintain compliant network and to address emerging groundwater plumes and remediation requirements.
- Upgrade remediation approach for hexavalent chromium plumes for 100-KR-4, 100-HR-3H, and 100-HR3D groundwater remediation systems.
- Initiate design for the final remedial action for 100-D Area.
- Complete milestone M-015-38B to submit a revised feasibility study and revised proposed plan for 200-CW-1 to the Regulators.
- Complete milestone M-015-44B to submit a feasibility study and proposed plan for 200-MW-1 to the Regulators.
- Complete milestone M-015-49A to submit a feasibility study and proposed plan for 200-MG-1 to the Regulators.
- Complete milestone M-015-49B to submit a feasibility study and proposed plan for 200-MG-1 to the Regulators.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Initiated Remedial Investigation/Feasible Study Comprehensive Environmental Response, Compensation, and Liability Act process for the BP-5 and PO-1 groundwater operable units. (FY 2007)</li><li>• Completed cumulative installation of 75 groundwater protection, monitoring, and remediation wells. (December 2007)</li><li>• Conduct Biennial Assessments of Information and Data Access Needs with the Environmental Protection Agency and Ecology. (March 2008)</li><li>• Complete an additional installation of 30 groundwater compliance wells to support monitoring, remedial investigations, and remediation. (December 2008/December 2009)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Initiate design for final remedial actions for the ZP-1 groundwater operable unit in 200 West. (September 2009)
- Initiate design for the final remedial action for 100-D Area. (September 2009)
- Upgrade remediation approach for hexavalent chromium plumes for 100-KR4, 100-HR-3H, and 100-HR3D groundwater remediation systems. (September 2009)

#### **RL-0040 / Nuclear Facility D&D-Remainder of Hanford - 2035**

**83,231                      97,854                      85,653**

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, 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; minimum safe operation of facilities awaiting deactivation and demolition; and maintenance and repair of system infrastructure.

As of September 30, 2007, activities completed include: remediation of 39 out of 857 waste sites and burial grounds; disposition of 228 excess facilities; and procurement of capital equipment replacements. Other activities include regulatory document development, surveillance and maintenance, infrastructure operations, and litigation support.

In FY 2009, the following activities are planned:

- Conduct surveillance and maintenance for Central Plateau facilities and waste sites.
- Replace and upgrade utility systems for the water, sewer, electrical distribution, primary road refurbishment and telecommunications including but not limited to:
  - Complete upgrades to Fleet Service Consolidation Facility to enable onsite repair of vehicles.
  - Complete 200 East and West Areas Clearwell Modifications to improve the chlorination process and minimize the spread of unnecessary water through the vadose zone.
- Support infrastructure activities such as steam, occupational medicine, and services contracts.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Close out of Project Hanford Management Contract.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	212	212	212	649	33%
Nuclear Facility Completions (Number of Facilities)	4	4	4	39	10%
Radioactive Facility Completions (Number of Facilities)	12	12	12	180	7%
Remediation Complete (Number of Release Sites)	39	48	48	857	6%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"><li>• Completed construction of A-8 Electrical Substation upgrade. (FY 2007)</li><li>• Continued U Plant waste site remediations. (FY 2007)</li><li>• Continue remedial investigations and characterization. (September 2008)</li><li>• Prepare Comprehensive Environmental Response, Compensation, and Liability Act/Resource Conservation and Recovery Act documentation for waste sites and surplus facilities. (September 2008)</li><li>• Complete upgrades to Fleet Service Consolidation Facility. (September 2009)</li><li>• Complete 200 East and Waste Areas Clearwell modifications. (September 2009)</li></ul>					

#### **RL-0080 / Operate Waste Disposal Facility**

**3,199**

**3,299**

**0**

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

This PBS scope has been transferred to RL-0013C starting with the FY 2009 Budget Request.

The scope provides on-going operations of the Hanford low-level waste and mixed low-level waste disposal facilities, e.g., burial grounds. Examples of the operations include: surveillance and maintenance, Resource Conservation and Recovery Act inspections, sample analysis, waste acceptance criteria review and update, support to operating assessments and audits, performance assessments and composite analysis, facility permitting, risk assessments, regulatory support, and transportation and packaging support to move waste around the burial grounds, etc.

These operations support remediation and other operational mission goals of Hanford and other off-site DOE and Department of Defense generators. It provides significant support for other DOE site closures. Disposal costs are paid for by generators and are not funded under this PBS.

In FY 2009, no activities are planned for this PBS.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Provided on-going operations of the Hanford Site waste disposal facilities for the low-level and mixed low-level waste. (FY 2007)</li><li>• Operations of Waste Disposal Facilities. (September 2008)</li></ul>					

**RL-0100 / Richland Community and Regulatory  
Support**

**18,332                      19,441                      19,620**

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 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, 2007, all required permits, fees, and invoices have been paid.

In FY 2009, the following activities are planned:

- Reimburse the Department of Ecology and the Department of Health for regulatory oversight in accordance with the Tri-Party Agreement and state law.
- Provide Payment-in-Lieu-of-Taxes to three host counties of the Hanford Site.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Provide grants to Washington and Oregon for participation/oversight in Hanford cleanup and Emergency Preparedness activities and to the Self-Reliance Foundation for public outreach.
- Support for the Hanford Advisory Board for public involvement related to the cleanup mission.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"> <li>• Provided Payment-in-Lieu-of-Taxes to three counties (Benton, Franklin, and Grant). (FY 2007/September 2008/September 2009)</li> <li>• Support Washington and Oregon States emergency preparedness, environmental oversight and other activities related to Hanford cleanup. (FY 2007/September 2008/September 2009)</li> <li>• Support activities required by the Resource Conservation and Recovery Act, Comprehensive Environmental Response, Compensation and Liability Act, Tri-Party Agreement, Clean Air Act, and other State and local laws and regulations. (FY 2007/September 2008/September 2009)</li> <li>• Reimburse the Department of Ecology and the Department of Health for regulatory oversight in accordance with the Tri-Party Agreement and state law. (FY 2007/September 2008/September 2009)</li> <li>• Support the Hanford Advisory Board for public involvement related to the cleanup mission. (September 2009)</li> </ul>					

#### **RL-0042 / Nuclear Facility D&D-Fast Flux Test Facility Project**

**34,843                      10,248                      10,755**

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.



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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The current approach for the Fast Flux Test Facility Project is to complete sodium drain from the Fast 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, 2007, 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 are sodium-bonded and are being transferred to the Idaho National Laboratory for disposition in 2008.

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 2009 the following activities are planned:

- Keep the Fast Flux Test Facility and support facilities in a long-term surveillance and maintenance mode.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	0	0	0	31	0%
Nuclear Facility Completions (Number of Facilities)	0	0	0	4	0%
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	400	400	400	400	100%
Radioactive Facility Completions (Number of Facilities)	0	0	0	9	0%
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	7	7	7	7	100%

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)

- Submitted Hanford Sodium Disposition Evaluation Report to Ecology. (FY 2007)
- Transition Fast Flux Test Facility to long-term surveillance and maintenance. (September 2008)
- Complete sodium bonded fuel transfer to the Idaho National Laboratory. (September 2008)
- Complete operating systems deactivation to enable low cost surveillance and maintenance. (August 2009)

**Total, Richland**

**870,159**

**896,746**

**862,542**

**Explanation of Funding Changes**

FY 2009 vs.  
FY 2008  
(\$000)

**Defense Environmental Cleanup**

**Hanford Site**

**2012 Completion Projects**

**RL-0011 / NM Stabilization and Disposition-PFP**

- The increase is primarily due to the procurement of additional casks to support the shipping of special nuclear materials from the Plutonium Finishing Plant to the Savannah River Site and increased costs for minimum safety operations of Plutonium Finishing Plant complex in support of shipping special nuclear materials. 16,373

**RL-0012 / SNF Stabilization and Disposition**

- The increase is due to conceptual design of the sludge treatment project and K-East Basin demolition. 23,264

**RL-0041 / Nuclear Facility D&D-River Corridor Closure Project**

- The decrease is due to deferral of 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. -57,924

## 2035 Completion Projects

### RL-0013C / Solid Waste Stabilization and Disposition- 2035

- The decrease is due to reduced retrieval of suspect transuranic waste; deferred design completion for the remote-handled waste processing capability; and deferral of mixed low-level waste treatment and disposition. Also, Canister Storage Building facility upgrades are completed in FY 2008 for receipt of Category I material. This decrease is offset by the transfer of workscope from PBS RL-0080. -66,194

### RL-0030 / Soil and Water Remediation-Groundwater/Vadose Zone - 2035

- The increase is primarily due to construction of a pump and treatment facility in the 100-D Area, increased in-situ remediation activities within the HR-3 Operable Unit, and increased characterization drilling along the Columbia River 65,091

### RL-0040 / Nuclear Facility D&D-Remainder of Hanford - 2035

- The decrease is primarily due to the transfer of Central Plateau Decision Document work scope to PBS RL-0030; offset by an increase in essential infrastructure upgrades for the Central Plateau water system and Hanford site electrical system; and the addition of activities for the Project Hanford Management Contract closeout. -12,201

### RL-0080 / Operate Waste Disposal Facility

- The decrease is due to the transfer of work scope within this PBS to PBS RL-0013C. -3,299

### RL-0100 / Richland Community and Regulatory Support

- No significant changes in this PBS. Hanford Advisory Board activities transferred from PBS ORP-0100 to PBS RL-0100. 179

## Non-Defense Environmental Cleanup

### Fast Flux Test Reactor Facility D&D

#### RL-0042 / Nuclear Facility D&D-Fast Flux Test Facility Project

- No significant change. 507

## Total, Richland

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-34,204



## River Protection

### Funding by Site

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
River Protection	967,127	969,540	978,443
Total, River Protection	967,127	969,540	978,443

### Site Overview

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.

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.

### 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 was 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, was 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, which are primarily 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 first on those contamination sources that are the greatest contributors to risk. Significant cleanup progress has already occurred, for instance:

- Interim stabilization in which transfer of three million gallons 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.
- Completed retrieval of remaining solids and sludges from seven single-shell tanks, initiated the retrieval process on three single-shell tanks, and initiated the design of two retrieval systems. 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. Overall, it is approximately 74 percent complete with design and approximately 32 percent complete with construction.
- Completed Demonstration Bulk Vitrification System Full Scale Dryer Test and Integrated Dryer/Melter Test. 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.

### **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. Based on the approved baseline, the lifecycle planning estimate is 2042 to 2050. This date reflects the new Waste Treatment and Immobilization Plant and Tank Farm baselines. 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 shipment to the Federal repository. Prior to shipment, all high-level waste forms will be stored in the interim on-site;
- Low-activity wastes will be stabilized and disposed 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 the Comprehensive Environmental Response, Compensation, and Liability Act.

The significant Tri-Party Agreement milestones listed below as well as other interim milestones and target dates which are not listed are subject to ongoing negotiations:

- M-45-00 - Complete Closure of all Single Shell Tank Farms by September 30, 2024.
- M-45-05 - Single-shell tank retrievals complete by September 30, 2018.
- M-45-06 - Complete closure of all single-shell tank farms by September 30, 2024.
- M-50-00 - Complete pretreatment processing of Hanford tank waste by December 31, 2028.
- M-51-00 - Complete vitrification of Hanford high-level waste by December 31, 2028.
- M-61-00 - Complete pretreatment and immobilization of the Hanford low activity waste by December 31, 2028.
- M-62-00 - Complete Pretreatment processing and vitrification of Hanford high-level and low-activity tank wastes by December 31, 2028.
- M-62-00A - Complete WTP 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-62-08 - Submitted Hanford Tank Waste Supplemental Treatment Technologies Report by June 30, 2006. (Milestone missed; pending renegotiation.)
- M-62-09 - Start cold commissioning of the WTP by February 28, 2009.
- M-62-10 - Complete hot commissioning of the WTP by January 31, 2010.

## **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 the availability of the Federal repository, which will delay project completion and increase storage costs of 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 ORP tank closures, costs, and schedules because alternative approaches for tank closure may need to be developed.
- The retrieval, treatment, and disposal of any 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 the Federal repository for disposal of high-level waste.

### **Contract Synopsis**

At the end of FY 2006, the Tank Farm Management Contract was extended through FY 2008. EM is developing an acquisition strategy for a new contract. A draft Request for Proposal was issued in November 2006. The Final Request for Proposal was issued on July 2, 2007, and proposals were received by September 24, 2007. Proposal evaluations are ongoing.

The Office of River Protection currently has two major prime contracts to implement its cleanup strategy. The Tank Farm Management contract with CH2M HILL Hanford, Inc. 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-type site facilities management 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 with cost, schedule, and operational incentives. DOE will be 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 supplemental treatment technologies.
- Complete the Tank Closure and Waste Management Environmental Impact Statement and continue development of retrieval technologies to remove hard-heel tank waste.

### 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 \$27,794,000.

## Funding Schedule by Activity

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Defense Environmental Cleanup			
Office of River Protection			
Tank Farm Activities			
ORP-0014 / Radioactive Liquid Tank Waste Stabilization and Disposition	276,656	285,351	288,443
ORP-0100 / River Protection Community and Regulatory Support	471	467	0
Subtotal, Tank Farm Activities	277,127	285,818	288,443
Waste Treatment and Immobilization Plant			
ORP-0060 / Major Construction-Waste Treatment Plant	690,000	683,722	690,000
Total, Office of River Protection	967,127	969,540	978,443
Total, River Protection	967,127	969,540	978,443

### Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life- Cycle	FY 2009 % Complete
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#### River Protection

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	4,410	0%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	6,211	9,189	11,843	197,832	6%
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%

### Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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#### ORP-0014 / Radioactive Liquid Tank Waste

##### Stabilization and Disposition

**276,656      285,351      288,443**

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 at a Federal repository, 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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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.

The River Protection Project life-cycle cost and completion date were re-evaluated due to: 1) delays in the Waste Treatment and Immobilization Plant project; 2) scope deferrals; and 3) single-shell tank retrieval technical issues. A baseline change was developed and formally approved by the DOE Secretarial Acquisition Executive in May 2007.

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 prior to shipment to a geologic repository;
- Construction of a shipping facility;
- Development of a supplemental pretreatment and immobilization treatment technologies for low-activity waste;
- 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;

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Conduct independent expert reviews and evaluations, baseline, and Environmental, Safety, Health, and Quality activities.

Currently, tank farm activities completed under this PBS 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 have been 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 for review in November and was transmitted to ORP in December 2007. Laboratory analyses of samples from this test were completed and the results incorporated in the final report confirming a successful melt and resolution of the molten ionic salt issue. Critical Decision-2, *Approve Performance Baseline*, is expected in January 2008 after issuance of the final report. An updated Tank Farms project performance baseline was developed due to lessons learned, programmatic uncertainties, and schedule delays associated with the Tank Farms Project and the Waste Treatment and Immobilization Plant at the Hanford site. The updated Tank Farms baseline was approved by the Secretarial Acquisition Executive on May 14, 2007.

The FY 2009 strategy is to continue managing the Tank Farms safely. Retrieval of tank waste will continue along with the development of retrieval technologies. In addition, single-shell tank integrity performance evaluations will continue to be implemented.

DOE is developing a strategy to accomplish the tank cleanup mission within a 23 to 35 year timeframe. The WTP 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 cold testing as needed to preserve future options for low activity waste treatment. These activities will focus on cold testing of supplemental immobilization technology testing, conceptual planning of the interim pretreatment system, feasibility of installing a third melter in the Low-Activity Waste Facility, and viability of an early startup of the Low-Activity Waste Facility. These activities will support a DOE decision on a strategy for pretreating and immobilizing the low activity waste.

In FY 2009, the following activities are planned:

- Complete three double-shell tank core samples and analysis to support tank integrity.
- Replace evaporator heating, ventilation and air-conditioning (exhaust side) to protect against confinement loss.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Perform three double-shell tank and two cross-site transfers.
- Complete two Evaporator Campaigns for space management.
- Complete AP Tank Farm Level Rise for double-shell tank space management.
- Replace double-shell tank sampling truck (1980's vintage).
- Complete retrieval of one C-Farm Single-Shell Tank.
- Continue to perform additional single-shell tank integrity evaluations.
- Continue conceptual planning and technology development and Critical Decision - 1 (Approve Alternative Selection and Cost Range) activities for an interim pretreatment system that will supply waste feed for an early startup of the WTP Low-Activity Waste Facility and/or a supplemental immobilization system.
- Continue bulk vitrification cold testing for supplemental immobilization treatment.
- Complete the Tank Closure and Waste Management Environmental Impact Statement and issue Record of Decision.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
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)	6,211	9,189	11,843	197,832	6%
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	2%

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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%
<b>Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)</b> <ul style="list-style-type: none"><li>Completed retrieval of single-shell Tanks C-103, C-204, and S-112. (FY 2007)</li><li>Completed two back-to-back Evaporator Campaigns. (FY 2007)</li><li>Completed Demonstration Bulk Vitrification System Full Scale Dryer Test. (FY 2007)</li><li>Completed double-shell tank integrity assessment. (FY 2007)</li><li>Completed Demonstration Bulk Vitrification System Integrated Dryer/Melter Test. (FY 2007)</li><li>Completed construction of single-shell Tank C-109 and initiated retrieval activities. (FY 2007)</li><li>Complete retrieval of one C-Farm single-shell tank. (September 2008)</li><li>Complete two Evaporator Campaign for space management. (September 2008)</li><li>Complete T-Farm Interim Surface Barrier. (September 2008)</li><li>Complete 242-A Evaporator Integrity Assessment. (September 2008)</li><li>Complete double-shell tank integrity activities. (September 2008)</li><li>Perform additional single-shell tank integrity evaluations. (September 2008)</li><li>Complete Demonstration Bulk Vitrification System design. (September 2008)</li><li>Initiate conceptual design for the interim pre-treatment system. (September 2008)</li><li>Complete three double-shell tank core samples and analysis to support tank integrity. (September 2009)</li><li>Replace evaporating heating, ventilation, and air-conditioning (exhaust side) to protect against confinement loss. (September 2009)</li><li>Perform three double-shell tank and two cross-site transfers. (September 2009)</li><li>Complete two evaporator campaigns for space management. (September 2009)</li><li>Complete AP Tank Farm Level Rise for double-shell tank space management. (September 2009)</li><li>Replace double-shell tank sampling truck (1980's vintage). (September 2009)</li><li>Continue to perform additional single-shell tank integrity evaluations. (September 2009)</li><li>Continue conceptual planning and technology development and Critical Decision - 1 (Approve Alternative Selection and Cost Range) activities for an interim pretreatment system that will supply waste feed for an early startup of the Waste Treatment and Immobilization Plant Low-Activity Waste Facility and/or a supplemental immobilization system. (September 2009)</li><li>Continue bulk vitrification system cold testing for supplemental immobilization treatment. (September 2009)</li><li>Complete the Tank Closure and Waste Management Environmental Impact Statement and issue record of decision. (September 2009)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**ORP-0100 / River Protection Community and  
Regulatory Support**

**471                      467                      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 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

**ORP-0060 / Major Construction-Waste Treatment  
Plant**

**690,000                      683,722                      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 Waste Treatment and Immobilization Plant. In FY 2006, funds were appropriated at the line-item subproject level. 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 a Federal geologic repository. 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 to support the main facilities.

In early FY 2006, DOE curtailed construction of the High-Level Waste and Pretreatment facilities primarily due to concerns over seismic design criteria. The main concern was the lack of data on geophysical properties of the subsurface beneath the WTP site. In February 2006, the DOE responded by increasing the ground motion requirement for seismic design to bound the site response uncertainties in ground motions, and by incorporating this requirement into the WTP Structural Design Criteria. In

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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addition, the FY 2007 National Defense Authorization Act restricted funds for High-Level Waste and Pretreatment facility critical equipment procurements impacted by final seismic criteria and construction until Congress could be assured that the final seismic and ground motion criteria for the plant had been approved by the Secretary of Energy, and the contractor had been formally directed to use the criteria for final design. To more accurately assess the margin of conservatism these revised criteria provided, the Department initiated the drilling of several deep boreholes to confirm the geophysical properties of the layers of bedrock beneath the WTP site. In June 2007, an analytical report of geophysical data from the boreholes was issued, which confirmed that the revised ground motion criteria were bounding. In August 2007 the Secretary of Energy certified the seismic design criteria, allowing construction to resume on the Pretreatment and High-Level Waste facilities.

The WTP contractor is required to implement an Earned Value Management System that fully complies with the American National Standards Institute 748-A-1998. In November 2006 the Defense Contract Management Agency evaluated the contractor's system and issued three major and five minor corrective action requests. The contractor responded to the requests and implemented the responses into its project control tools. In May 2007, a follow-up review was conducted by a nationally recognized independent earned value assessment firm and a report was submitted to DOE in July 2007. The report indicated that each of the eight findings has been successfully resolved and the Earned Value Management System meets the intent of the American National Standards Institute standard. DOE is prepared to certify the Earned Value Management System is compliant with the American National Standards Institute standard.

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.

As of September, 2007, progress on the Waste Treatment and Immobilization Plant project is as follows:

- Overall approximately 74 percent complete with design and approximately 32 percent complete with construction.
- Low-Activity Waste Facility – Ninety-four percent complete with design and 53 percent complete with construction. Ninety-six percent of the concrete and 78 percent of the structural steel has been installed, as well as approximately 44 percent of piping, and 26 percent of electrical commodities have been installed. All major process vessels have been installed. The building exterior has been completed, the exhaust stack installed, and work has begun on the control room annex.
- Analytical Laboratory Facility – 88 percent complete with design and 48 percent complete with construction. Ninety-one percent of the concrete and 41 percent of the piping has been installed. The structural steel for the Analytical Laboratory Facility has been completed.



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Balance of Facilities – Construction is 73 percent complete on the main switchgear building, 66 percent on the Balance of Facilities switchgear building, 95 percent on the cooling tower, 98 percent on the steam plant facility, 95 percent on the fire water pump house facility and associate tanks, 63 percent on the water treatment building, 99 percent on the tanks associated with the water treatment facility, and 82 percent on the Chiller Compressor Plant. In addition, 84 percent of the underground piping and 94 percent of the underground conduit has been installed.
- The High-Level Waste Facility is 82 percent complete with design and 22 percent complete with construction. Thirty-eight percent of the concrete and 8 percent of the structural steel had been installed at the time of construction cessation in January 2006. While construction work on the High-Level Waste Facility was suspended due to seismic concerns, the High-Level Waste Facility engineering group focused on verification of the current design to the revised ground motion criteria, and on obtaining engineering design releases about a year ahead of construction need.
- Pretreatment Facility – 68 percent complete with design and 25 percent complete with construction. Fifty-five percent of the concrete and 14 percent of the structural steel had been installed, as well as 39 of 42 major process vessels, at the time of construction cessation in January 2006. While construction work on the Pretreatment Facility was suspended due to seismic concerns, the Pretreatment engineering group has focused on verification of the current design to the revised ground motion criteria, and on getting engineering design releases about a year ahead of construction need.

The end-state of this construction project will be the completion of the Waste Treatment and Immobilization Plant 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.

In FY 2009, the following activities are planned:

#### Low-Activity Waste Facility

- Complete production design across all disciplines.
- Continue bulk heating, ventilation, and air conditioning and pipe installation, and begin the transition to systems completion later in the year.
- Continue equipment installation activities, focusing on melter electrical power supplies, pour cave and finishing line canister mechanical handling systems, operator shield windows, and miscellaneous melter off gas equipment.
- Achieve significant progress on the electrical bulk raceway installation.
- Complete subcontractor installation of the glass container storage area insulated liner plate.
- Complete remaining equipment procurements with the receipt of the melters, thermal catalytic oxidizer, canister export bogie systems, shield windows, and various instrumentation components.
- Begin site assembly activities following receipt of the melter hardware.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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#### Analytical Laboratory Facility

- Complete installation of epoxy coatings.
- Complete installation of heating, ventilation, and air conditioning fans and high efficiency particulate air filter housings.
- Complete heating, ventilation, and air conditioning bulk installations.
- Install approximately 20,000 linear feet of process piping.
- Continue installation of the architectural partition walls.
- Initiate piping thermal insulation and penetration seal installations.
- Progress electrical raceway installation to a point where cable pulling can be initiated.
- Initiate installation of analysis area fume hoods and casework.
- Complete fabrication of the auto sampling system and deliver system to the site.

#### Balance of Facilities

- Complete the concrete placement for the ammonia system slab and initiate excavation and concrete preparation for the emergency diesel generator slabs.
- Complete the glass former storage facility control building.
- Initiate excavation activities to tie-in the radioactive transfer piping to the site DOE interface point.
- Complete the final phase of pipe rack steel installation.
- Complete the installation of the glass former facility silo's support equipment and interconnecting pipe.
- Continue bulk installation of instrumentation and electrical in the chiller-compressor, cooling tower, and glass former storage facilities.
- Initiate installation of Low-Activity Waste operator consoles at the off-site simulator training facility.
- Complete partial installation and energizing of the cathodic protection system to provide added corrosion protection for underground piping systems.
- Complete construction and initiate the startup turnover process in the steam plant, water treatment, and electrical switchgear facilities.

#### High-Level Waste Facility

- Complete confirmation of the mechanical design for all High-Level Waste systems.
- Complete civil design for the main facility concrete and steel structures.
- Continue piping design.
- Continue electrical power cable releases.
- Continue electrical layouts, instrumentation location drawings, and heating, ventilation, and air conditioning design for the upper elevations.
- Receive major vessels, facility cranes, and shield doors.
- Continue concrete placements.
- Continue structural steel installation in support of the concrete placements.
- Continue piping installation in the basement corridors.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Set numerous items of facility equipment, with the installation of massive melter shield doors of particular note.

Pretreatment Facility

- Continue work at upper elevations of the building.
- Complete final design release for construction of the walls between the third and fourth floor.
- Begin releases for the fourth floor elevated slabs.
- Begin releases for the fourth floor walls.
- Issue for fabrication the design for the third floor control racks for the vessel sparging system; and bring the design process to a point where the mechanical system design will be frozen.
- Complete the design of the structural steel roof framing.
- Issue for construction the concrete calculation and drawings for the control building.
- Procure two process vessels for the ultrafilter system from the fabricator.
- Place concrete in the walls between the third and fourth floors
- Continue placement of heavily reinforced concrete.
- Begin erecting the building main frame steel with the lifting into position of the main building columns.
- Begin installation of the high integrity, fully welded stainless steel pipe systems.
- Install the vertical and horizontal shield doors for the hot cell bridge cranes.
- Begin installation of the operating area heating, ventilation, and air conditioning ductwork systems.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	546	0%
<b>Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)</b> <ul style="list-style-type: none"><li>• Certified the final seismic and ground motion criteria. (FY 2007)</li><li>• Resumed construction of the high-level waste facility. (FY 2007)</li><li>• Completed topping-out of the structural steel for the Analytical Laboratory facility. (FY 2007)</li><li>• Continue Waste Treatment and Immobilization Plant facility construction for the Low Activity Waste Facility, Analytical Laboratory, and Balance of Facilities; Pretreatment and High-Level Waste Facilities. (September 2008)</li><li>• Certify contractor's Earned Value Management System. (September 2008)</li><li>• Complete construction for the following support systems at the Balance of Facilities: Tank for Process, Portable Water Supply, and Fire Water Pump House Facility. (September 2008)</li><li>• Resume construction of the Pretreatment Facility. (September 2008)</li><li>• Commence assembly of melters at the Low-Activity Waste Facility. (September 2009)</li><li>• Complete design for the Low-Activity Waste Facility. (September 2009)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Complete construction for the following support systems at the Balance of Facilities: Steam Plant Facility; Non-Dangerous, Non-Radioactive Effluent Facility; and Water Treatment Facility. (September 2009)
- Install Hot Cell cranes and shield doors in the Pretreatment Facility. (September 2009)

**Total, River Protection**

**967,127**

**969,540**

**978,443**

**Explanation of Funding Changes**

FY 2009 vs.  
FY 2008  
(\$000)

**Defense Environmental Cleanup**

**Office of River Protection**

**Tank Farm Activities**

**ORP-0014 / Radioactive Liquid Tank Waste Stabilization and Disposition**

- No significant change. 3,092

**ORP-0100 / River Protection Community and Regulatory Support**

- The decrease is due to the transfer of activities to the Richland Operations Office to support the Hanford Advisory Board for public involvement related to the cleanup mission at the Hanford Site. -467

**Waste Treatment and Immobilization Plant**

**ORP-0060 / Major Construction-Waste Treatment Plant**

- No significant change. 6,278

**Total, River Protection**

**8,903**

## **01-D-416 Waste Treatment and Immobilization Plant, Hanford, WA Construction Project Data Sheet**

### **1. Significant Changes**

The estimated cost and schedule dates included with this Construction Project Data Sheet are based on the latest earned value performance numbers and schedule as of September 2007 for the Waste Treatment and Immobilization Plant (WTP) Project, which has a Total Project Cost of \$12,263,000,000 and a completion date of November 2019.

The Federal Project Director in charge of the WTP 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.

In April 2003 the WTP Project attained a Critical Decision – 3C, Full Construction Authorization, in accordance with DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*. The Critical Decision – 3C approved a Total Project Cost of \$5,781,000,000. In December 22, 2006, a Baseline Change Proposal was approved by DOE with a Total Project Cost of \$12,263,000,000. The WTP Project is being designed, constructed, and commissioned using only line-item construction funding.

The table below outlines approved and pending changes for the use of contingency for the Performance Measurement Baseline in the amount of \$652,000,000. There is no change in the Total Project Cost of \$12,263,000,000 from the FY 2008 Construction Project Data Sheet. The pending changes are a result of the contractor implementing Baseline Change Proposals (June 2007 Execution Revision) associated with resolution of issues resulting from the External Flowsheet Review completed in March 2006 and the Technology Readiness Assessments completed in late 2007. The focus of the issues raised principally affected Pretreatment Facility systems for filtering radioactive heavy metals, leaching aluminum and chromium, and removing soluble radionuclides. The necessary revisions resulted in changes to the Pretreatment Facility Process Flowsheet, facility capacity modifications, facility construction resequencing, and other miscellaneous changes. The Pretreatment Facility capacity modifications will allow a higher rate of waste treatment and immobilization, reducing the life-cycle operations costs for the facility. Early completion, start-up and commissioning of the Low-Activity Waste Facility, Analytical Laboratory, and Balance of Facilities would allow waste immobilization of Hanford tank waste to start several years earlier than planned. Early operation of these facilities was anticipated through contingency allowances included in the revised baseline approved in December 2006.

(dollars in millions)

Description of Changes	Approved BCPs	Pending BCPs	Total
Capacity Improvement Modifications to High-Level Waste and Pretreatment Facilities	284	0	284
Low-Activity Waste Facility Startup and Operations	75	0	75
Plant Wide Impacts from External Flowsheet Review Team Recommendations	59	8	67
Miscellaneous Other <sup>(1)</sup>	22	50	72
Additional Pulse Jet Mixer and Hydrogen in Pipes and Ancillary Vessels Testing	53	0	53
Procurement Pricing and Overruns	44	49	93
Earned Value Management System	8	0	8
<b>Estimate of Total Changes</b>	<b>545</b>	<b>107</b>	<b>652</b>

- (1) Miscellaneous Other includes items such as increased engineering efforts to accomplish design, training, implementation of additional DOE Order requirements, and activities necessary for turnover to startup.

The following table reflects the distribution of approved Baseline Change Proposals in the amount of \$545,000,000 to the Performance Measurement Baseline. The source of funds for these Baseline Change Proposals is from the project Management Reserve (\$196,000,000) and Project Contingency (\$349,000,000). Note that there is no change in the Total Project Cost of \$12,263,000,000 from the FY 2008 Construction Project Data Sheet.

(dollars in thousands)

Description	December 2006 Baseline	September 2007 Status
Performance Measurement Baseline	\$8,786,000	\$9,331,000
Management Reserve/Contract Contingency/Fee	2,278,000	2,082,000
Subtotal, Contract Scope Costs	\$11,064,000	\$11,413,000
Project Contingency	1,014,000	665,000
Other Project Costs	135,000	135,000
Transition Cost (from Privatization Contract)	50,000	50,000
Subtotal, Other Scope Costs	\$1,199,000	850,000
<b>Total Project Cost</b>	<b>\$12,263,000</b>	<b>\$12,263,000</b>

## Certification of Seismic Design Criteria

In early FY 2006, DOE curtailed construction of the High-Level Waste and Pretreatment Facilities primarily due to concerns over seismic design criteria. The main concern was the lack of data on geophysical properties of the subsurface beneath the WTP site.

In February 2006, the DOE responded by increasing the ground motion requirement for seismic design to bound the site response uncertainties in ground motions, and by incorporating this requirement into the WTP Structural Design Criteria. In addition, the FY 2007 National Defense Authorization Act restricted funds for High-Level Waste and Pretreatment Facility critical equipment procurements impacted by final seismic criteria and construction until Congress could be assured that the final seismic and ground motion criteria for the plant had been approved by the Secretary of Energy, and the contractor had been formally directed to use the criteria for final design.

To more accurately assess the margin of conservatism these revised criteria provided, the DOE initiated the drilling of several deep boreholes to confirm the geophysical properties of the layers of bedrock beneath the WTP site. In June 2007, an analytical report of geophysical data from the boreholes was issued, which confirmed that the revised ground motion criteria were bounding. The Secretary of Energy certified the seismic design criteria in August 2007, allowing construction to resume on the High-Level Waste and Pretreatment Facilities.

### **Completion of Low-Activity Waste Facility**

As part of the December 2006 Baseline, the WTP Project schedule was modified to maintain the pace for construction of the Low-Activity Waste Facility and support facilities - Analytical Laboratory and Balance of Facilities. A revised construction completion date was established for FY 2012. In addition, a report completed in March 2007 entitled, *Evaluation of Starting the Waste Treatment and Immobilization Plant Low-Activity Waste Facility First*, concludes there is the potential to operate the Low-Activity Waste Facility prior to completion of the High-Level Waste and Pretreatment Facilities. A few highlights of the report include: low-activity waste immobilization could begin as early as June 2014; interim operations could run for nearly five years in advance of the entire WTP complex; and more than 32,000 metric tons of low-activity immobilized waste glass could be produced from 5,000 metric tons of sodium tank waste. As a next step, DOE is conducting a systems engineering evaluation to determine the feasibility of deploying a simple means of tank-side pretreatment to enable the early startup and hot operation of the Low-Activity Waste Facility by the 2014 timeframe.

### **Earned Value Management System Certification**

The WTP contractor is required to implement an Earned Value Management System that fully complies with the American National Standards Institute 748-A-1998. The Defense Contract Management Agency evaluated the contractor's system in November 2006 and issued three major and five minor corrective action requests. The contractor responded to the requests and implemented the responses into its project control tools.

In May 2007, a follow-up review was conducted by a nationally recognized independent earned value assessment firm and a report was submitted to DOE in July 2007. The report indicated that each of the eight findings has been successfully resolved and the Earned Value Management System meets the intent of the American National Standards Institute standard.

The FY 2007 National Defense Authorization Act was specific in requiring the Defense Contract Management Agency to recommend acceptance of the WTP Earned Value Management System. With an independent contractor other than the Defense Contract Management Agency now conducting DOE Earned Value Management System certifications, language in the FY 2008 National Defense Authorization Act, if enacted, would allow DOE acceptance of these recommendations in lieu of the Defense Contract Management Agency. Once the FY 2008 National Defense Authorization Act is passed the DOE will certify the Earned Value Management System and notify Congress. The DOE expects to complete this action in FY 2008.

## **Technology Readiness Assessment**

In November 2006, the Department initiated a Technology Readiness Assessment of the WTP to guide further maturation of technologies and drive technological risk below the threshold used by the 2006 External Flowsheet Review Team.

The Technology Readiness Assessment is a process to determine the technical maturity (Readiness Level) of evolving technologies prior to incorporating them into systems or subsystems. The U.S. Department of Defense has instituted the assessment process as part of its acquisition for all new major systems, using a standard measurement scale developed by National Aeronautics and Space Administration. This scale ranges from 1 to 9, with 1 corresponding to the pre-conceptual paper stage, and 9 indicating full-scale operation in the actual operating environment. Readiness Level 6 is the minimum for transitioning a technology to system design and acquisition.

The Technology Readiness Assessment of the WTP was divided into three parts: 1) Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory; 2) High-Level Waste Facility; and 3) Pretreatment Facility. The assessments for Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory were conducted from December 2006 through February 2007, and a report was issued in March 2007. The High-Level Waste and Pretreatment Facility assessments were completed in late 2007.

Seventy systems in the Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory were evaluated as potential critical technology elements, that is, technologies essential to successful operation of the facility that are new or are being applied in new ways or environments. There were five Low-Activity Waste Facility systems and two Analytical Laboratory systems that were determined to be critical technology elements. Of these seven, four systems were classified as Level 6, two as Level 5, and one as Level 4. These included:

- Low-Activity Waste Facility container sealing system (Level 5) and container decontamination system (Level 4), since the designs are based on existing technologies but have not been demonstrated as integrated prototypical systems in a relevant operating environment.
- Analytical Laboratory system to verify High-Level Waste Facility melter feed and Low-Activity Waste Facility waste compositions, classified as Level 5 because it uses new or novel instrumentation or methods.

Additional development and testing are being performed, but will not impact the design completion and construction schedule for the Low-Activity Waste Facility or Analytical Laboratory. These actions, as well as those that will result from the Technology Readiness Assessment for the High-Level Waste and Pretreatment Facilities, are being implemented consistent with the overall project schedule, and will increase DOE's confidence in eventual plant performance.

## **Defense Nuclear Facilities Safety Board Assessments**

The Defense Nuclear Facilities Safety Board provides continuous assessment of the WTP Project. There are three open issues: 1) the structural analysis and the structure's predicted response to the revised ground motion criteria; 2) the adequacy of fireproofing material coatings to protect the structural



steel against potential fires; and 3) the potential build-up of hydrogen in piping and ancillary vessels during power outages. The Department is working diligently to resolve these issues in FY 2008:

- 1) Structural analysis - In response to the revised ground motion criteria, the WTP contractor has completed dynamic (and static) structural analysis for all WTP facilities. These analyses used the refined modeling techniques agreed to by the Defense Nuclear Facilities Safety Board and DOE peer reviewers. Final closure of this item will be achieved after the summary structural reports are updated to reflect the results of these new analyses. The detailed design of the structures is progressing according to the integrated project schedule, and using the approved final structural design criteria. The Defense Nuclear Facilities Safety Board expects this review to be reasonably straightforward.
- 2) Fireproofing - The WTP Structural Design Criteria contains the criteria and methodology for determination of the requirements for fire protection material on structural steel. The methodology includes analysis to ensure that the primary load-carrying structural members comply with all design requirements for normal service loads, assuming that some members that are not fire-protected may not carry load during and after a postulated fire. Defense Nuclear Facilities Safety Board staff reviewed and concurred with this methodology in March 2007. The Defense Nuclear Facilities Safety Board will continue to do in-process reviews during implementation, in accordance with the project design completion plan.
- 3) Hydrogen - To address the potential build-up of hydrogen in piping and ancillary vessels during an extended loss of power, the contractor has identified several solutions, including new and revised engineered controls, design features, and administrative controls to prevent the accumulation of hydrogen concentrations that could lead to the loss of the piping or ancillary vessel containment. These solutions are being implemented in the design as needed to mitigate the impact; the hydrogen issue is expected to be resolved in FY 2008.

## **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 WTP 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 (Construction Complete)	D&D Start	D&D Complete
FY 2001 Budget Request	4Q FY 1995	4Q FY 1996	2Q FY 2005	4Q FY 1998	1Q FY 2001	1Q FY 2007	N/A	N/A
FY 2002 Budget Request	4Q FY 1995	4Q FY 1996	2Q FY 2005	4Q FY 1998	3Q FY 2002	1Q FY 2007	N/A	N/A
FY 2003 Budget Request	4Q FY 1995	4Q FY 1996	2Q FY 2005	4Q FY 1998	3Q FY 2002	1Q FY 2007	N/A	N/A
FY 2004 Budget Request	4Q FY 1995	4Q FY 1996	2Q FY 2005	4Q FY 1998	4Q FY 2002	1Q FY 2007	N/A	N/A
FY 2003 Congressional Notification	4Q FY 1995	4Q FY 1996	2Q FY 2005	3Q FY 2003	4Q FY 2002	3Q FY 2008	N/A	N/A
FY 2005 Budget Request	4Q FY 1995	4Q FY 1996	2Q FY 2005	3Q FY 2003	4Q FY 2002	3Q FY 2008	N/A	N/A
FY 2004 Reprogramming	4Q FY 1995	4Q FY 1996	4Q FY 2005	3Q FY 2003	4Q FY 2002	3Q FY 2008	N/A	N/A
FY 2006 Budget Request	4Q FY 1995	4Q FY 1996	4Q FY 2007	3Q FY 2003	4Q FY 2002	3Q FY 2008	N/A	N/A
FY 2007 Budget Request	4Q FY 1995	4Q FY 1996	4Q FY 2007	3Q FY 2003	4Q FY 2002	3Q FY 2008	N/A	N/A
FY 2008 Budget Request	4Q FY 1995	4Q FY 1996	4Q FY 2010	3Q FY 2003	4Q FY 2002	2Q FY 2017	N/A	N/A
FY 2009 Budget Request	4Q FY 1995	4Q FY 1996	2Q FY 2013 <sup>1</sup>	3Q FY 2003	3Q FY 2003 <sup>2</sup>	1Q FY 2020 <sup>3</sup>	N/A	N/A

### Notes:

- 1) The FY 2009 Budget Request Design/Project Engineering and Design Complete date is based on the June 2007 Execution Revision schedule.
- 2) The previous FY 2008 Budget Request date of 4Q FY 2002 represented the start of physical construction of the WTP. The FY 2009 Budget Request's Critical Decision - 3C status represents the date approval was granted to begin full construction.
- 3) The previous FY 2008 Budget Request date of 2Q FY 2017 represented the completion of physical construction of the WTP facilities. The FY 2009 Budget Request's Critical Decision - 4 completion date represents the completion of construction, start-up, commissioning and transfer of the WTP to the operations contractor.

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
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 Congressional 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

The FY 2001 Budget Request presented the privatization approach for this project which included design, construction, commissioning (Total Estimated Cost of \$5,466,000,000) and ten years of operations for a facility that 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. This plant was expected to have a 40 year life, which would process 40 percent of the waste by volume. A second plant was necessary to treat and immobilize the balance of the 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 WTP. In April 2003, a contract modification was negotiated with the principal change of increasing the through-put capacity of the High-Level Waste and Pretreatment 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 for the WTP Project of \$5,781,000,000. In December 2006, due to overly optimistic cost estimates, seismic, and technical issues, the Department approved a new Performance Measurement Baseline with a cost estimate of \$12,263,000,000.

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

The U.S. Department of Energy (DOE) 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. The 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. As of September 2007, waste from seven single-shell tanks has been retrieved. 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 WTP and its subsequent operations will treat and stabilize these waste-forms.

The WTP, 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 and build the WTP. The WTP is an unprecedented engineering and construction challenge equivalent to simultaneously building two nuclear power plants. Through a process known as *vitrification*, the WTP will turn most of Hanford's tank waste volume 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 Farm 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. This contract expires in September 2008 and a request for proposals has been issued for the replacement contract. The scope of work for this replacement contract includes the operation of the WTP, once hot commissioning has been completed by the Waste Treatment Plant Contractor.
- The Waste Treatment Plant Contractor is to design, construct, and commission the WTP and support transition of the plant into full operation.

The WTP 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 WTP contractor is the design authority responsible for the design of the plant.

The concept for the operation of the WTP is to 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 disposed in the national geologic repository for spent fuel and high-level waste. The immobilized low-activity fraction will be placed in a disposal facility on the Hanford site. The WTP is composed of five facilities which are integrated to accomplish the mission for the WTP 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. A supplemental technology—bulk vitrification (under a separate contract)—is being evaluated as an alternative for immobilization of the remaining low-activity waste. An Analytical Laboratory will provide the necessary sample analyses required to support operations 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 pathway 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. Major milestones included completing hot commissioning of the WTP by 2011, to treat approximately 10 percent of the tank waste (by mass) and 25 percent of the tank waste (by radioactivity) by 2018, and to complete treatment of all tank waste by 2028. The signatories to the Tri-Party Agreement have had preliminary discussions of the impact of the delay in the completion of the WTP on the completion dates for the above major regulatory milestones.

FY 2007 Activities: The Department implemented a strategy in FY 2007 to continue construction of the Low-Activity Waste Facility, Analytical Laboratory, and Balance of Facilities infrastructure pending the resolution of seismic criteria-related issues and the eventual restart of construction on the Pretreatment and High-Level Waste Facilities. This sustained the construction pace on Low-Activity Waste, Analytical Laboratory, and Balance of Facilities, while allowing increased efforts and continued momentum on detailed design of the High-Level Waste and Pretreatment Facilities.

The WTP contractor focused engineering efforts on developing and maintaining about a one-year gap between design completion and resumption of High-Level Waste and Pretreatment Facilities construction. Delivery of equipment for the High-Level Waste and Pretreatment Facilities continued for items that were in fabrication prior to the FY 2006 construction curtailment. The Low-Activity Waste Facility, Analytical Laboratory, and Balance of Facilities' efforts were concentrated on finalizing engineering design, advancing facility construction, and initiating procurement of long-lead equipment items.

The 130-foot-high, 125-ton Low-Activity Waste Facility environmental emissions stack assembly was lifted and set in place early. By year-end, installation of the facility's primary siding and roofing was completed. Installation of internal facility ducting was also initiated, and mechanical and electrical construction activities continued to progress. All structural concrete has been substantially placed. Structural steel for the annex and container import bay have been erected. For the Analytical Laboratory, the complete substantial structural steel framework (1,600 tons) of the building was erected, taking the facility from a concrete slab at ground elevation the size of a football field in December 2006 to finishing the four-story building structure by June 2007. Installation began on Analytical Laboratory fireproofing and special protective coating applications, mechanical process and handling systems, and architectural finishes. Installation of the siding and roof decking was initiated and completed. For the Balance of Facilities progress continued to be made installing underground piping, installation of major equipment in the Chiller Compressor Facility, and fabrication of the Glass Former Storage Facility silos.

Planned FY 2008 Activities: Construction activities will continue for the Low-Activity Waste Facility, Analytical Laboratory, and Balance of Facilities. The design of these facilities will be essentially completed, and acquisitions will continue for major equipment items and basic construction commodities. For the Low-Activity Waste Facility, piping, cable tray and heating, ventilation and air-conditioning ducting will proceed at the upper levels of the facility, sub-basement bulk piping will be completed and drywall installation will begin. Siding and roofing installation will be completed for the annex and container import bay. For the Analytical Laboratory, fire protection systems and application of fireproofing and other special coatings will be completed. Hot cell liner plate and partition walls will be installed. Substantial progress on heating, ventilation, and air-conditioning system installation will be

made, and bulk commodity installations will begin for electrical and piping. For the Balance of Facilities, installations will continue on piping, utilities, and the pipe rack structural steel.

In August 2007, the Secretary of Energy certified the final seismic design criteria for WTP, allowing activities for both the High-Level Waste and Pretreatment Facilities, to begin ramping up for construction. The WTP contractor will complete civil design of the Pretreatment Facility third elevation walls (56 to 77 foot level) and fourth elevation floor slabs (77 foot level), and continue with Pretreatment Facility's complex piping design for the black cells and the 406-foot-long hot cell. Among major equipment procured in FY 2008 will be mechanical handling equipment, including a 30-ton crane; shield doors weighing from 80 to over 91 tons; vessels ranging from 70 to 250 tons, to be placed in the black cells; and seismic upgrade kits (additional steel supports) for field-fabricated and delivered vessels. Construction activities will focus on placing concrete walls from elevation 56 feet to 77 feet, and third elevation concrete slabs (56 feet); installing piping in the black cells and hot cell; fabricating heating, ventilation, and air conditioning ducting; installing fire protection piping; setting of miscellaneous equipment; and initiating installation of seismic upgrade kits in the vessels.

For the High-Level Waste Facility, the contractor will complete civil design of the second level elevated slab and structural steel for the facility roof, continue piping design, and complete electrical and instrumentation cable layouts for areas on the fourth level. Major equipment procured will include mechanical handling cranes; shield doors; electrical transformers; switchgear and motor control centers; and heating, ventilation, and air-conditioning air handling units and fans. Construction activities will be focused on concrete walls from the main to second level, and on initiating elevated slab placements and structural steel installation at the second level, piping installation in the basement corridors, and setting of various items of equipment.

Proposed FY 2009 Activities: For the Low-Activity Waste Facility complete production design across all disciplines. Construction activities will proceed with the installation of piping, pipe hangers, heating, ventilation, and air-conditioning duct, cable trays, conduit, cable and wire, and terminations. Major equipment installations will include the melter pour cave cooling panels, pour cave and finishing line canister mechanical handling systems, glass former mixers, operator shield windows, miscellaneous melter off gas equipment, and thermal catalytic oxidizers. Assembly of the two 200-ton melters (each 21 feet-by-30 feet and 16 feet high) will also commence.

For the Analytical Laboratory, construction activities will continue with the installation of pipe, hangers, conduit, cable tray, ventilation duct, cable and wire, and terminations. Installation of analysis area fume hoods and process and handling systems will continue along with major electrical equipment. Fabrication of the auto-sampling system will be completed, and the system will be delivered to the site.

For the Balance of Facilities, design and minor change order work will be completed for multiple facilities in the Balance of Facilities. Construction will be completed on the Steam Plant, Water Treatment, and Non-Dangerous/Non-Radioactive Effluent Facilities. Installation of commodity racks, piping, and electrical systems for various facilities will continue to progress. Complete the glass former storage facility control building. Initiate excavation activities for Phase I tie-ins for radioactive transfer piping to the DOE interface point. Continue bulk installation of instrumentation and electrical equipment in the chiller-compressor, cooling tower, and glass former storage facilities.

For the High-Level Waste Facility, the WTP contractor will complete civil design for the main facility concrete and structural steel; complete mechanical design confirmation; continue design for piping,

electrical layouts, instrumentation location drawings and heating, ventilation and air-conditioning; continue concrete placement, structural steel installation, and piping installation in basement corridor; install the melter shield doors; and receive major vessels and facility cranes.

For the Pretreatment Facility, complete designs for structural steel roof framing, the top elevation concrete slabs (98 foot level), third and fourth floor walls, and the control building. Issue design for the third floor vessel sparging system control racks. Erect concrete walls above the third level; and install hot cell cranes, shield doors, and the remaining vessels on the facility's ground. Begin installation of the high integrity field-welded stainless steel pipe systems and continue placement of high reinforced concrete and structural steel. Continue procurement activities for ultra-filter system process vessels and evaporators.

Estimated Design Status through FY 2009. The following table provides the estimated design status for each of the five WTP subprojects at fiscal year end for FY 2006 through FY 2009.

<b>Design Complete <sup>a</sup></b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008 <sup>b</sup></b>	<b>FY 2009</b>
Low-Activity Waste	87%	94%	98%	100%
Analytical Laboratory	82%	88%	97%	98%
Balance of Facilities <sup>c</sup>	69%	75%	94%	99%
High-Level Waste <sup>d</sup>	76%	82%	89%	97%
Pretreatment <sup>d</sup>	63%	68%	77%	89%

<sup>a</sup> The percentages of completion for FY 2006 through FY 2008 have been adjusted to reflect changes in total cost estimates. For some facilities, the revisions have resulted in lower percentages of completion than previously reported.

<sup>b</sup> By the end of FY 2008, Low-Activity Waste Facility, Analytical Laboratory, and Balance of Facilities designs will be essentially complete; however, some design hours remain to accommodate any needed changes during construction completion and startup.

<sup>c</sup> Based on the additional work called for in the June 2007 Execution Revision.

<sup>d</sup> A one-year gap between engineering and construction for heavy civil/structural work will be maintained until 90 percent design is achieved.

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

The WTP Project is being funded entirely by ‘Construction’ line-item dollars. There are no Project Engineering and Design dollars, thus the Total Estimated Cost is equal to the Construction dollars. In addition, as there are no Other Project Costs, the Total Estimated Cost equals the Total Project Cost.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Total, PED	0	0	0
Construction			
FY 2001	401,171	401,171	226,311
FY 2002	665,000	665,000	488,469
FY 2003	671,898	671,898	621,574
FY 2004	697,530	682,402	725,246
FY 2005	684,480	695,552	811,862
FY 2006	520,759	524,815	516,002
FY 2007	690,000	621,000	550,991
FY 2008	683,721	752,721	753,141
FY 2009	690,000	690,000	844,500
FY 2010	690,000	690,000	799,200
FY 2011	690,000	690,000	721,000
FY 2012	690,000	690,000	648,500
FY 2013	690,000	690,000	701,392
FY 2014	690,000	690,000	709,863
FY 2015	690,000	690,000	697,062
FY 2016	690,000	690,000	659,946
FY 2017	690,000	690,000	675,000
FY 2018	640,000	640,000	636,682
FY 2019	398,441	398,441	379,108
FY 2020	0	0	97,151
Total, Construction = TEC = TPC	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 the 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 the 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. It is anticipated that the certification will be received in FY 2008, at which time the \$69,000,000 will be obligated to the projects. The chart above assumes that funding is received in FY 2008 and obligated accordingly.

(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:

WTP Project	Prior	FY08	FY09	FY10	FY11	FY12	FY13	Outyears	Total
Low-Activity	1,015,500	141,699	160,000	100,000	55,000	85,000	45,000	145,801	1,748,000
Analytical Lab	229,500	44,591	65,000	60,000	30,000	45,000	20,000	181,909	676,000
Bal of Facilities	451,500	71,345	75,000	110,000	65,000	60,000	50,000	254,155	1,137,000
High-Level	1,101,500	175,389	125,000	120,000	140,000	180,000	210,000	1,256,111	3,308,000
Pretreatment	1,532,838	250,697	265,000	300,000	400,000	320,000	365,000	1,960,465	5,394,000
Total Project Appropriations	4,330,838	683,721	690,000	690,000	690,000	690,000	690,000	3,798,441	12,263,000

## 6. Details of Project Cost Estimate

(dollars in thousands)

Current Total Estimate	Previous Total Estimate	Original Validated Baseline
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### Total Estimated Cost

Preliminary & Final Design	2,013,350	1,758,240	1,475,000
Construction			
Site Preparation	n/a	n/a	n/a
Equipment/Procurements	2,409,024	1,846,370	1,125,000
Other Construction/Facilities	3,686,664	3,973,160	2,155,000
Commissioning	1,221,962	1,208,230	876,000
Technical Support/Transition	185,000	185,000	50,000
Contingency/Fee	2,747,000	3,292,000	100,000
Total, Construction	10,249,650	10,504,760	4,306,000
Total, TEC	12,263,000	12,263,000	5,781,000
Contingency, TEC	[2,747,000]	[2,747,000]	[100,000]
Other Project Cost	0	0	0
Total, TPC	12,263,000	12,263,000	5,781,000
Total, Contingency	[2,747,000]	[2,747,000]	[100,000]

The following table provides a comparison of the total costs by facility for the Current Estimate and the Previous Estimate.

	(dollars in thousands)	
WTP Total Project by Facility	Current Estimate	Previous Estimate
Low-Activity Waste Facility	1,748,000	1,748,000
Analytical Laboratory Facility	676,000	676,000
Balance of Facilities	1,137,000	1,137,000
High-Level Waste Facility	3,308,000	3,308,000
Pretreatment Facility	5,394,000	5,394,000
Total Project Cost	12,263,000	12,263,000

The Total Project Costs for each facility have not changed from the December 2006 Performance Baseline.

## 7. Schedule of Project Costs

The following table breaks out estimated costs by Subproject:

WTP Project	Prior	FY08	FY09	FY10	FY11	FY12	FY13	Outyears	Total
Low-Activity	945,516	188,712	156,500	115,000	66,000	77,000	44,892	154,380	1,748,000
Analytical Lab	205,731	55,826	66,500	65,500	29,500	37,500	24,000	191,443	676,000
Bal of Facilities	426,263	66,044	78,500	113,500	69,000	58,000	51,000	274,693	1,137,000
High-Level	941,815	175,458	237,500	155,000	152,000	171,000	210,500	1,264,727	3,308,000
Pretreatment	1,421,130	267,101	305,500	350,200	404,500	305,000	371,000	1,969,569	5,394,000
Total Project Costs	3,940,455	753,141	844,500	799,200	721,000	648,500	701,392	3,854,812	12,263,000

The following tables provide a breakdown of planned spending for engineering, procurement, construction, and commissioning for each facility for FY 2008 and FY 2009.

### Planned Spending for FY 2008 (dollars in thousands)

Facility	Engineering	Procurement	Construction	Commissioning	Total
Low-Activity Waste	19,206	98,892	62,850	7,764	188,712
Analytical Laboratory	6,543	24,356	21,264	3,663	55,826
Balance of Facilities	17,799	24,237	19,518	4,490	66,044
High-Level Waste	37,773	102,333	35,352	0	175,458
Pretreatment	105,005	111,079	50,738	279	267,101
Total	186,326	360,897	189,722	16,196	753,141

Planned Spending for FY 2009 (dollars in thousands)

Facility	Engineering	Procurement	Construction	Commissioning	Total
Low-Activity Waste	9,097	45,448	83,212	18,743	156,500
Analytical Laboratory	4,158	17,602	34,977	9,763	66,500
Balance of Facilities	9,138	25,665	29,734	13,963	78,500
High-Level Waste	32,953	157,847	46,350	350	237,500
Pretreatment	98,503	123,581	82,838	578	305,500
Total	153,849	370,143	277,111	43,397	844,500

## 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

Operations will start after the project is completed in November 2019. The annual facility operating costs for the WTP (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.

### (Related Funding requirements)

(Dollars in Thousands)

	Annual Costs		Life Cycle Costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
N/A	N/A	N/A	N/A	N/A

## 9. Required D&D Information

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) BNFL, Inc., a subsidiary of BNFL plc, with Bechtel National, Incorporated as a subcontractor and 2) Lockheed-Martin. In May 1998, BNFL, Inc. 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 life, which would process 40 percent of the waste by volume. A second plant was necessary to treat and immobilize the balance of the waste. Planning associated with this privatization contract completed the following Critical Decision milestones:

- Critical Decision - 0: Approved Mission Need - September 1995
- Critical Decision - 1: Approved Preliminary Baseline Range - September 1996
- 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:

- Critical Decision - 3A: Approved Limited Construction - October 2001
- Critical Decision - 3B: Approved Preliminary Construction - May 2002
- Critical Decision - 3C: Approved Full Construction - April 2003
- Approval of Revised Cost and Schedule Baseline - December 2006

The following critical decision is planned for the future:

- Critical Decision - 4: Approved Start of Operation - 1Q FY 2020  
(Based on only one Operational Readiness Review for the WTP Project, prior to hot commissioning of the Pretreatment Facility.)

The following facility milestone dates are based on the June 2007 Execution Revision (facility resequencing) by the contractor at the direction of DOE. The milestone date changes are a result of the contractor implementing Baseline Change Proposals associated with resolution of issues resulting from an external review of the Pretreatment process flowsheet, facility capacity modifications, WTP facility construction resequencing and other miscellaneous changes.

### **Waste Treatment and Immobilization Plant Milestones**

Milestone Title	December 2006 Performance Baseline	June 2007 Execution Revision
Start of Construction	July 2002 A	July 2002 A
Completion of Hot Commissioning	May 2019	February 2019
Completion of Contract Requirements	November 2019	November 2019

A = Actual Date

Note: The planned dates represent the contractor start and completion dates and include schedule contingency needed for the overall project to achieve an 80 percent confidence level. As such, these dates 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 dollars and schedule dates included with this sub-project Construction Project Data Sheet, are based on the latest earned value performance numbers and schedule as of September 2007 for the overall Waste Treatment and Immobilization Plant (WTP) Project, which has a Total Project Cost of \$12,263,000,000, and a completion date of November 2019.

A Federal Project Director with certification level IV has been assigned to the WTP Project, and a Federal Sub-Project Director with a current level III certification has been assigned to the Low-Activity Waste Facility per the DOE Project Management Career Development Program.

In April 2003 the WTP Project attained a Critical Decision – 3C, Full Construction Authorization, in accordance with DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*. The Critical Decision – 3C approved a Total Project Cost of \$5,781,000,000. In December 22, 2006, a Baseline Change Proposal was approved by DOE with a Total Project Cost of \$12,263,000,000. The WTP Project is being designed, constructed, and commissioned using only line-item construction funding.

This Construction Project Data Sheet is an update of the FY 2008 Low-Activity Waste Facility sub-project Construction Project Data Sheet. There are no changes in the total sub-project cost from the prior Construction Project Data Sheet. However, the schedule dates for the Low-Activity Waste Facility have been accelerated by about one year, as part of the June 2007 Execution Revision strategy, from the prior Construction Project Data Sheet dates, which has also resulted in changes to the fiscal year funding and cost profiles.

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

	(fiscal quarter or date)							
	CD-0	CD-1 (Design Start)	(Design Complete)	CD-2	CD-3 (Construction Start)	CD-4 (Construction Complete)	D&D Start	D&D Complete
FY 2007	4Q FY 1995	4Q FY 1996	4Q FY 2007	3Q FY 2003	3Q FY 2002	3Q FY 2008	N/A	N/A
FY 2008	4Q FY 1995	4Q FY 1996	4Q FY 2008	3Q FY 2003	3Q FY 2002	2Q FY 2012	N/A	N/A
FY 2009	4Q FY 1995	4Q FY 1996	3Q FY 2009 <sup>1</sup>	3Q FY 2003	3Q FY 2003	1Q FY 2014 <sup>2</sup>	N/A	N/A

Notes:

- 4) The FY 2009 Budget Request Design/Program Engineering and Design Complete date is based on the June 2007 Execution Revision schedule.
- 5) The previous FY 2008 Budget Request date for 'Critical Decision -4 (Construction Complete)' of 2Q FY 2012 represented the completion of physical construction of the facility. In this FY 2009 budget request, the Critical Decision completion date of 1Q FY 2014 represents the completion of construction, start-up, commissioning and the transfer of the facility to the operations contractor.

The Mission Need (Critical Decision - 0) for the WTP Project was approved in September 1995, followed by Critical Decision - 1 in September 1996, and Critical Decision - 2 in August 1998. The WTP 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 WTP Project. The current Critical Decision - 4 schedule date is tied to the completion of hot commissioning of the Low-Activity Waste Facility. Upon completion of hot commissioning, it is planned the Low-Activity Waste Facility will be turned over to the operations contractor.

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
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

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.

The Performance Measurement Baseline for the overall WTP 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 \$1,748,000,000.

### 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 containers (height 7 feet, diameter 4 feet), which will be disposed in the on-site Integrated Disposal Facility. The Low-Activity Waste Facility utilizes two melters that will produce 33 metric tons 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 2007 Accomplishments**

### **Design Activities:**

- By the end of the fiscal year, design for the Low-Activity Waste Facility was 94 percent complete (1.475 million of 1.57 million hours). Significant accomplishments included completion of production pipe layout designs and significant progress on remaining electrical designs. In addition, coordination of subcontract design for the melter pour cave insulated liner plate scope of work was completed.

### **Construction Activities:**

- Placed over 2,800 cubic yards of structural concrete (96 percent complete of 28,500 cubic yards total scope), with a focus on the container import and export bay and the annex facility.
- Installed over 530 tons of structural steel (78 percent complete of 6,200 tons total scope), also focusing on the container import bay and the annex facility.
- Installed all the primary building siding and roofing (approximately 100,000 square feet), creating a more controlled work environment to support interior facility installations.
- Preassembled and installed the 125 ton, 130-foot-long Low-Activity Waste Facility stack and internal ducting. The Low-Activity Waste Facility stack pre-assembly was performed in a safer, horizontal orientation on the ground and rigged into place as a single stack assembly.
- Installed over 19,000 linear feet of process pipe (44 percent complete of 101,000 linear feet total). Bulk installation was completed in the basement (elevation - 21 feet) to support the start of bulk electrical raceway installation, and installation completed for the facility fire protection piping systems.
- Continued activities on 144,000 pounds of heating, ventilation, and air conditioning ducting (57 percent complete of 933,000 pounds total), and initiated bulk installation on the top elevation (elevation 48 feet) of the facility, where the largest scope of work exists (258,000 pounds).
- Continued equipment installation activities, focusing on the melter electrical bus duct, container finishing line shield doors, two process area bridge cranes, and the primary facility heating, ventilation, and air-conditioning air handling units.
- Initiated installation for bulk electrical raceway in the lower elevations of the facility. Over 3,550 linear feet of tray (76 percent complete of 15,600 linear feet total) and 9,775 linear feet of conduit (17 percent complete of 165,000 linear feet total) were installed.

### **Procurement Activities:**

- Awarded the field subcontract for the installation of the process area partition walls, supporting the start of scope installation early next year (total scope to install 255,000 square feet).
- Received major deliveries including the container import conveyor system, upper elevation non-ITS electrical motor control centers, and melter refractory.
- Continued vendor fabrication on the melter.

## **Planned FY 2008 Activities**

### **Design Activities:**

- By the end of FY 2008, design will be 98 percent complete.

### **Construction activities will include:**

- Bulk pipe installation will continue, with the highest annual installation target of 28,000 linear feet (over five miles of piping, 28 percent of the facility total). Emphasis during the year will be bulk installation at elevations 3 feet and 28 feet. Significant progress will be made in the process vessel cells at elevation 3 feet. These areas include the most complex pipe installation in the facility (7,400 linear feet of pipe in two cells, 48 feet long by 40 feet wide by 23 feet high, each containing six process vessels).
- Continue heating, ventilation, and air-conditioning and electrical installations, with significant progress on bulk installation at elevation 48 feet to initiate succeeding bulk installation for piping and electrical raceway.
- Complete subcontractor installation of architectural partition walls at elevations - 21 feet and 3 feet to support key electrical equipment and raceway installations.
- Substantially complete structural steel fireproofing (over 1,000 tons of steel fireproofed), epoxy floor coatings (over 260,000 square feet of total scope), and annex siding and roofing.
- Complete installation of the melter pour cave insulation liner plate.
- Continue equipment installation activities, focusing on the remaining process area cranes and hoists, electrical distribution equipment, glass former mixers, container finishing line mechanical handling systems and the upper elevation heating, ventilation, and air-conditioning fans and high efficiency particulate air filter housings.

### **Procurement Activities:**

- Award the subcontract and mobilize field subcontractors for the installation of the process piping thermal insulation (total scope 43,000 linear feet) and architectural penetration seals (estimated over 30,000 openings to seal).
- Significant deliveries will include process vessel control panels, electrical melter power supplies, glass former mixers, melter off gas mercury bed absorbers, miscellaneous glass container finishing line equipment, and melter off gas piping.

## **Proposed FY 2009 Activities**

### **Design Activities:**

- Throughout FY 2009, production design across all disciplines will be completed (e.g., civil/structural, electrical, mechanical), with design being 100 percent complete by year end.



#### Construction Activities:

- Continue bulk heating, ventilation, and air-conditioning and pipe installation, and begin the transition to systems completion later in the year.
- Continue equipment installation activities, focusing on melter electrical power supplies, pour cave and finishing line container mechanical handling systems, operator shield windows, and miscellaneous melter off gas equipment (high efficiency particulate air filters, pre-heaters, mercury carbon absorbers, thermal catalytic oxidizers).
- Achieve significant progress on the electrical bulk raceway installation (over 200,000 linear feet to date) to support the start of cable pulling.
- Complete subcontractor installation of the glass container storage area insulated liner plate.

#### Procurement Activities:

- Complete remaining equipment procurements with the receipt of the melters, thermal catalytic oxidizer, container export bogie systems, shield windows, and various instrumentation components.
- Begin site assembly activities following receipt of the melter hardware.

The following table provides the status for each phase by the end of each fiscal year: accomplished for FY 2007, planned for FY 2008, and proposed for FY 2009.

Phase	FY 2007	FY 2008	FY 2009
Design	94%	98%	100%
Procurement	64%	77%	86%
Construction	53%	70%	87%
Commissioning	4%	9%	20%
Overall	64%	76%	87%

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

The WTP Project is being funded entirely by ‘Construction’ line-item dollars. There are no Project Engineering and Design (PED) dollars or Other Project Cost (OPC) dollars. Thus, the Total Estimated Cost equals the Total Project Cost (TPC).

(dollars in thousands)			
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Total, PED	0	0	0
Construction			
Prior Years <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 <sup>b</sup>	141,699	141,699	188,712
FY 2009	160,000	160,000	156,500
FY 2010	100,000	100,000	115,000
FY 2011	55,000	55,000	66,000
FY 2012	85,000	85,000	77,000
FY 2013	45,000	45,000	44,892
FY 2014	30,000	30,000	32,700
FY 2015	25,000	25,000	26,500
FY 2016	84,500	84,500	43,946
FY 2017	6,301	6,301	11,000
FY 2018	0	0	11,000
FY 2019	0	0	11,234
FY 2020	0	0	18,000
Total, Construction = TEC = TPC	1,748,000	1,748,000	1,748,000

(a) The prior year appropriations and obligations have been updated to reflect a more current estimate of the anticipated utilization of the non-facility specific carryover funding remaining in WTP line item 01-D-416.

(b) FY 2008 Enacted Appropriations reflect a reduction of \$1,301,000 due to the FY 2008 Government-wide Rescission of 0.91 percent.

## 6. Details of Project Cost Estimate

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost			
Preliminary & Final Design	465,875	410,720	n/a
Construction			
Site Preparation	n/a	n/a	n/a
Equipment	438,662	348,650	n/a
Other Construction	572,203	642,590	n/a
Commissioning	126,060	251,040	n/a
Contingency	145,200	95,000	n/a
Total, Construction	1,282,125	1,337,280	1,175,000
Total, TEC	1,748,000	1,748,000	1,175,000
Contingency, TEC	[145,200]	[95,000]	n/a
Other Project Cost			
	0	0	0
Total, TPC	1,748,000	1,748,000	1,175,000
Total, Contingency	[145,200]	[95,000]	n/a

## 7. Schedule of Project Costs

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 2007	FY 2008	FY 2009
Design	45,802	19,206	9,097
Procurement	72,044	98,892	45,448
Construction	68,838	62,850	83,212
Commissioning	1,065	7,764	18,743
Total	187,749	188,712	156,500

## 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 June 2007 Execution Revision (facility resequencing) by the contractor at the direction of DOE. The milestone date changes are a result of the contractor implementing Baseline Change Proposals associated with resolution of issues resulting from an external review of the Pretreatment process flowsheet, facility capacity modifications, WTP facility construction resequencing and other miscellaneous changes.

### Low-Activity Waste Facility Milestones

Milestone Title	December 2006 Baseline	June 2007 Execution Revision
Start Construction	July 10, 2002 A	July 10, 2002 A
Complete Design	August 2008	April 2009
Complete Construction	February 2012	May 2011
Initiate Cold Commissioning	May 2013	November 2012
Complete Cold Commissioning	March 2014	March 2013
Initiate Hot Commissioning	June 2014	June 2013
Complete Hot Commissioning	September 2014	October 2013
A = Actual date construction started which followed approval of CD-3B.		

Note: The above milestone dates support an early start-up of the Low-Activity Waste Facility in FY 2014.

## 01-D-16B, Analytical Laboratory, Hanford, WA Project Data Sheet is for Construction

### 1. Significant Changes

The estimated dollars and schedule dates included with this sub-project Construction Project Data Sheet, are based on the latest earned value performance numbers and schedule as of September 2007 for the overall Waste Treatment and Immobilization Plant (WTP) Project, which has a Total Project Cost of \$12,263,000,000, and a completion date of November 2019.

A Federal Project Director with certification level IV has been assigned to the WTP Project, and a Federal Sub-Project Director with a current level III certification has been assigned to the Analytical Laboratory per the DOE Project Management Career Development Program.

In April 2003 the WTP Project attained a Critical Decision – 3C, Full Construction Authorization, in accordance with DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*. The Critical Decision – 3C approved a Total Project Cost of \$5,781,000,000. In December 22, 2006, a Baseline Change Proposal was approved by DOE with a Total Project Cost of \$12,263,000,000. The WTP Project is being designed, constructed, and commissioned using only line-item construction funding.

This Construction Project Data Sheet is an update of the FY 2008 Analytical Laboratory sub-project Construction Project Data Sheet. There are no changes in the total sub-project cost from the prior Construction Project Data Sheet. However, the schedule dates for the Analytical Laboratory have been accelerated by about one year, as part the June 2007 Execution Revision strategy, from the prior Construction Project Data Sheet dates, which has also resulted in changes to the fiscal year funding and cost profiles.

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

(fiscal quarter or date)								
	CD-0	CD-1 (Design Start)	(Design Complete)	CD-2	CD-3 (Construction Start)	CD-4 (Construction Complete)	D&D Start	D&D Complete
FY 2007	4Q FY 1995	4Q FY 1996	4Q FY 2007	3Q FY 2003	3Q FY 2003	3Q FY 2008	N/A	N/A
FY 2008	4Q FY 1995	4Q FY 1996	4Q FY 2009	3Q FY 2003	3Q FY 2003	1Q FY 2011	N/A	N/A
FY 2009	4Q FY 1995	4Q FY 1996	1Q FY 2010 <sup>1</sup>	3Q FY 2003	3Q FY 2003	1Q FY 2014 <sup>2</sup>	N/A	N/A

Notes:

- 1) The FY 2009 Budget Request Design/Program Engineering and Design Complete date is based on the June 2007 Execution Revision schedule.
- 2) The previous FY 2008 Budget Request date for Critical Decision - 4 (Construction Complete) of 1Q FY 2011 represented the completion of physical construction of the facility. In this FY 2009 budget request, the Critical Decision - 4 completion date of 1Q FY 2014 represents the completion of construction, start-up, commissioning and the transfer of the facility to the operations contractor.

The Mission Need (Critical Decision - 0) for the WTP Project was approved in September 1995, followed by Critical Decision - 1 in September 1996, and Critical Decision - 2 in August 1998. The WTP 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 WTP Project. The first concrete placement for the Analytical Laboratory was in July 2004. The Critical Decision - 4 date is the DOE approval date to transfer the facility over to the operating contractor following completion of construction and successful startup and commissioning activities (cold and hot) by the design-build contractor. Note that Analytical Laboratory Critical Decision - 4 date is now tied to the completion of the Low-Activity Waste Facility.

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
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

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.

The Performance Measurement 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 Analytical Laboratory portion of the current Total Project Cost is \$676,000,000.

### 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 Analytical Laboratory'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 Analytical 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 Analytical 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 2007 Accomplishments**

### **Design Activities:**

- Analytical Laboratory design was 88 percent complete by the end of FY 2007 (421,000 hours of design completed of 477,000 hours total). The emphasis this year was on civil/structural design and piping and heating, ventilation, and air-conditioning layout design.

### **Construction Activities**

- Completed substantial erection of Analytical Laboratory structural steel above grade (1,600 tons) and placed concrete for the second story elevation (+17 foot slab, 890 cubic yards). (Note: facility size is two stories above grade, 320 feet x by 180 feet by, 45 feet tall).
- Initiated and completed subcontractor installation of the siding and roof decking (total scope 98,000 square feet) to support weather enclosure for other planned activities this winter.
- Mobilized subcontracts for application of interior structural steel fireproofing and epoxy floor coatings (117,000 square feet).
- Installed epoxy coatings and the overhead monorail in the facility's hot cell areas. Started installation of heating, ventilation, and air-conditioning ducts and fire protection piping.
- Continued pipe installations in the below grade effluent tank pits and initiated above grade pipe support installation on the structural steel framework.

## **Planned FY 2008 Activities**

### **Design Activities:**

- By the end of FY 2008, Analytical Laboratory design will be 97 percent complete. The following activities are planned for the year:

### **Construction Activities:**

- Complete siding and roofing installations and application of structural steel fireproofing.
- Complete preassembly and setting of the facility stack with internal ducting.
- Continue application of epoxy floor coatings.
- Complete installation of fire protection piping.
- Initiate bulk heating, ventilation, and air-conditioning duct installation. Install over 200,000 pounds of duct and supports (63 percent of the facility total of 315,000 pounds).
- Complete installation of the hot cell fire protection piping. Initiate installation of the steel partition walls and floor liner plate.
- Initiate installation of the architectural partition walls (126,000 square feet total scope).
- Begin bulk piping and electrical raceway commodity installations.

#### Procurement Activities:

- Award design, procurement, and installation subcontract for the analysis area fume hoods and casework.
- Receive procurement deliveries for hot cell manipulators, miscellaneous heating, and various electrical and instrumentation components.

#### Proposed FY 2009 Activities

The Analytical Laboratory design will be essentially complete by the end FY 2009. The following activities are proposed for the year:

- Complete installation of epoxy coatings.
- Complete installation of heating, ventilation, and air-conditioning fans and high efficiency particulate air filter housings.
- Complete heating, ventilation, and air-conditioning bulk installations.
- Install approximately 20,000 linear feet of process piping (to complete 88 percent of the total 37,000 linear feet).
- Continue installation of the architectural partition walls.
- Receive procurement deliveries for ventilation, and air-conditioning fan and filter housings.
- Initiate piping thermal insulation and penetration seal installations.
- Progress electrical raceway installation to a point where cable pulling can be initiated.
- Initiate installation of analysis area fume hoods and casework.
- Complete fabrication of the auto sampling system and deliver system to the site.

The following table provides the status for each phase by the end of each fiscal year: accomplished for FY 2007, planned for FY 2008, and proposed for FY 2009.

Phase	FY 2007	FY 2008	FY 2009
Design <sup>a</sup>	88%	97%	98%
Procurement	42%	55%	69%
Construction	48%	55%	81%
Commissioning	6%	8%	11%
Overall	35%	44%	55%

<sup>a</sup> The percentages of completion for FY 2007 and FY 2008 have been adjusted to reflect changes in total cost estimates. For some facilities, the revisions have resulted in lower percentages of completion than previously reported.

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

The WTP Project is being funded entirely by ‘Construction’ line-item dollars. There are no Project Engineering and Design (PED) dollars or Other Project Cost (OPC) dollars. Thus, the Total Estimated Cost equals the Total Project Cost (TPC).

(dollars in thousands)			
	Appropriations	Obligations	Costs
Total Estimated Cost			
Total, PED	0	0	0
Construction			
Prior Years <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 <sup>b</sup>	44,591	44,591	55,826
FY 2009	65,000	65,000	66,500
FY 2010	60,000	60,000	65,500
FY 2011	30,000	30,000	29,500
FY 2012	45,000	45,000	37,500
FY 2013	20,000	20,000	24,000
FY 2014	20,000	20,000	24,000
FY 2015	25,000	25,000	26,500
FY 2016	45,500	45,500	49,500
FY 2017	54,499	54,499	47,500
FY 2018	36,500	36,500	31,543
FY 2019	410	410	12,400
FY 2020	0	0	0
Total, Construction = TEC = TPC	676,000	676,000	676,000

(a) 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.

(b) FY 2008 Enacted Appropriations reflect a reduction of \$409,000 due to the FY 2008 Government-wide Rescission of 0.91 percent.

## 6. Details of Project Cost Estimate

(dollars in thousands)

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

### Total Estimated Cost

Preliminary & Final Design	92,745	105,350	n/a
Construction			
Site Preparation	n/a	n/a	n/a
Equipment	108,752	101,450	n/a
Other Construction	166,386	197,040	n/a
Commissioning	265,917	234,160	n/a
Contingency	42,200	38,000	n/a
Total, Construction	583,255	570,650	426,000
Total, TEC	676,000	676,000	426,000
Contingency, TEC	[42,200]	[38,000]	n/a
Other Project Cost			
Total, OPC	0	0	0
Total, TPC	676,000	676,000	426,000
Total, Contingency	[42,200]	[38,000]	n/a

## 7. Schedule of Project Costs

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 2007	FY 2008	FY 2009
Design	10,678	6,543	4,158
Procurement	19,422	24,356	17,602
Construction	25,034	21,264	34,977
Commissioning	7,841	3,663	9,763
Total	62,975	55,826	66,500

## 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 June 2007 Execution Revision (facility resequencing) by the contractor at the direction of DOE. The milestone date changes are a result of the contractor implementing Baseline Change Proposals associated with resolution of issues resulting from an external review of the Pretreatment process flowsheet, facility capacity modifications, WTP facility construction resequencing and other miscellaneous changes.

### Analytical Laboratory Facility Milestones

Milestone Title	December 2006 Baseline	June 2007 Execution Revision
Start Construction	July 2003 A	August 2004 A
Complete Design	August 2009	December 2009
Complete Construction	October 2011	December 2010
Initiate Equipment Setting & Cold Methods Evaluation (Phase I - LAW)	May 2012	November 2011
Complete Equipment Setting & Cold Methods Evaluation (Phase I - LAW)	April 2013	July 2012
Initiate Equipment Setting & Cold Methods Evaluation (Phase II - PT/HLW)	September 2016	March 2016
Complete Equipment Setting & Cold Methods Evaluation (Phase II - PT/HLW)	November 2017	May 2017
A = Actual date construction started which followed approval of CD-3C.		

Note: The Phase-I completion date will support early Low-Activity Waste Facility operations in FY 2014. The Phase-II completion date will support the High-Level Waste and Pretreatment Facilities operations in FY 2020.



## 01-D-16C, Balance of Facilities, Hanford, WA Project Data Sheet is for Construction

### 1. Significant Changes

The estimated dollars and schedule dates included with this sub-project Construction Project Data Sheet, are based on the latest earned value performance numbers and schedule as of September 2007 for the overall Waste Treatment and Immobilization Plant (WTP) Project, which has a Total Project Cost of \$12,263,000,000 and a completion date of November 2019.

A Federal Project Director with certification level IV has been assigned to the WTP Project, and a Federal Sub-Project Director with a current level III certification has been assigned to the Balance of Facilities per the DOE Project Management Career Development Program.

In April 2003 the WTP Project attained a Critical Decision – 3C, Full Construction Authorization, in accordance with DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*. The Critical Decision – 3C approved a Total Project Cost of \$5,781,000,000. In December 22, 2006, a Baseline Change Proposal was approved by DOE with a Total Project Cost of \$12,263,000,000. The WTP Project is being designed, constructed, and commissioned using only line-item construction funding.

This Construction Project Data Sheet is an update of the FY 2008 Balance of Facilities sub-project Construction Project Data Sheet. There are no significant changes in the sub-project from the prior Construction Project Data Sheet. However, due to the June 2007 Execution Revision, which added significant scope to the Balance of Facilities baseline, there are changes to the fiscal year funding, cost profiles, and percentages complete.

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

(fiscal quarter or date)							
	CD-0	CD-1 (Design Start)	(Design Complete)	CD-2	CD-3 (Construction Start)	CD-4 (Construction Complete)	D&D Start D&D Complete
FY 2007	4Q FY 1995	4Q FY 1996	4Q FY 2007	3Q FY 2003	3Q FY 2002	3Q FY 2008	N/A N/A
FY 2008	4Q FY 1995	4Q FY 1996	4Q FY 2009	3Q FY 2003	3Q FY 2002	2Q FY 2012	N/A N/A
FY 2009	4Q FY 1995	4Q FY 1996	4Q FY 2011 <sup>1</sup>	3Q FY 2003	3Q FY 2002	1Q FY 2014 <sup>2</sup>	N/A N/A

Notes:

- 1) The FY 2009 Budget Request date for Design Complete is based on the June 2007 Execution Revision schedule.
- 2) The previous FY 2008 Budget Request date for Critical Decision - 4 (Construction Complete) of 2Q FY 2012 represented the completion of physical construction of the facility. In this FY 2009 Budget Request, the Critical Decision - 4 completion date of 1Q FY 2014 represents the completion of construction, start-up, commissioning and the transfer of the facility to the operations contractor.

The Mission Need (Critical Decision - 0) for the WTP Project was approved in September 1995, followed by Critical Decision - 1 in September 1996, and Critical Decision - 2 in August 1998. The WTP 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 WTP Project. The Critical Decision - 4 date is the DOE approval date to transfer the facility over to the operating contractor following completion of construction and successful startup and commissioning activities (cold and hot) by the design-build contractor. Note that the Balance of Facilities Critical Decision - 4 date is tied to the completion of the Low-Activity Waste Facility.

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
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

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.

The Performance Measurement Baseline for the overall WTP 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 \$1,137,000,000.

### 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 1,600 tons of structural steel, 18,400 cubic yards of concrete, 10 miles of piping, 128 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.).

Status as of the end of FY 2007:

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 WTP construction site and between facilities, and is not associated with a particular facility.

<b>Design and Construction Status of Balance of Facilities</b>				
<b>Facility</b>	<b>Phase</b>	<b>Design % Complete</b>	<b>Construction % Complete</b>	<b>Scheduled 100% Construction Completion Date</b>
Guard house facility <sup>b</sup>	II	100%	100%	Jul 2002 A <sup>a</sup>
Maintenance shop <sup>b</sup>	II	100%	100%	Oct 2002 A <sup>a</sup>
Warehouse building <sup>b</sup>	II	100%	100%	Nov 2002 A <sup>a</sup>
Erected tanks - process/potable	I	100%	99%	Jun 2008
Fire water pump house facility	I	98%	95%	Jul 2008
Steam plant facility	I	100%	98%	Jul 2009
Water treatment building	I	99%	63%	Aug 2009
Non-dangerous, non-radioactive effluent facility	I	96%	73%	Sep 2009
Cooling tower facility	I	99%	95%	Oct 2009
Fuel oil facility	I	100%	92%	Oct 2009
Balance of Facilities switchgear building	I	92%	66%	Dec 2009
Switchgear building	I	93%	73%	Dec 2009
Chiller-compressor plant	I	98%	82%	May 2010
Anhydrous ammonia	I	22%	0%	Jan 2011
Glass former storage facility	I	91%	11%	Mar 2011
Simulator facility	I	100%	86%	Mar 2011
ITS switchgear building	II	95%	83%	Nov 2011
Balance of Facilities common scope	II	55%	26%	Dec 2011
Diesel generators facility	II	52%	0%	Jan 2012
Failed melter storage	II	14%	2%	Feb 2012

<b>Design and Construction Status of Balance of Facilities</b>				
Administration building (convert from temporary facility) <sup>b</sup>	II	11%	0%	Nov 2014
Site work	II	91%	49%	Jun 2016
Wet chemical storage facility	II	63%	0%	Jan 2016

Notes:

<sup>a</sup> A = actual date completed.

<sup>b</sup> Temporary facilities to be converted to permanent after site construction completion.

Phase I = Permanent direct facilities required for Low-Activity Waste Facility and the Analytical Laboratory startup and commissioning (early Low-Activity Waste Facility operation).

Phase II = All other permanent direct facilities required for the High-Level Waste and Pretreatment Facilities startup and commissioning.

Note: The percent complete reporting approach has been revised to ensure consistency on a month-to-month basis. The revised approach has resulted in reductions in percent completes for some facilities.

## **Planned FY 2008 Activities**

### **Design Activities:**

- By the end of FY 2008, Balance of Facilities design will be 94 percent complete.

### **Construction Activities:**

- Complete concrete placement for the Low-Activity Waste Facility melter slab (260 cubic yards).
- Substantially complete all underground installations around the High-Level Waste and Pretreatment Facilities to support their construction restart plans.
- Complete the final phase of pipe rack pier drilling (140 piers) in north site areas, and initiate follow-on installation of the rack steel and piping.
- Complete setting of the glass former facility silos and initiate installation of interconnecting pipe and electrical systems.
- Complete chiller-compressor facility equipment and bulk pipe installations, and continue electrical and instrumentation installations.
- Complete the high voltage cable pulls to the Low-Activity Waste Facility.
- Complete installation of electrical distribution equipment in the switchgear building.
- Continue bulk installation of instrumentation and electrical commodities in the water treatment, chiller-compressor, switchgear, cooling tower, glass former storage facilities.
- Complete installation of the fire water system, and place into operation other completed portions of the system to provide a higher level of fire protection on the site. This activity will signify the WTP's first construction system turnover, startup, component checkout and operations milestone.

### **Procurement Activities:**

- Award the purchase order for the important-to-safety emergency diesel generators.



## Proposed FY 2009 Activities

### Design Activities:

- By the end of FY 2009, Balance of Facilities design will reach 99 percent complete.

### Construction Activities:

- Complete the concrete placement for the ammonia system slab (260 cubic yards). Initiate excavation and concrete preparation for the emergency diesel generator slabs (1,200 cubic yards).
- Complete the glass former storage facility control building.
- Initiate excavation activities to tie-in of the radioactive transfer piping to the site DOE interface point.
- Complete the final phase of pipe rack steel installation (north site areas). Continue pipe installations on the rack.
- Complete the installation of the glass former facility silo's support equipment and interconnecting pipe.
- Continue bulk installation of instrumentation and electrical in the chiller-compressor, cooling tower, and glass former storage facilities.
- Initiate installation of Low-Activity Waste Facility operator consoles at the off-site simulator training facility.
- Complete construction and initiate the startup turnover process in the steam plant, water treatment, and electrical switchgear facilities.
- Complete installation and energizing of the cathodic protection system to provide added corrosion protection for underground piping systems.

The following table provides the status for each phase by the end of each fiscal year: accomplished for FY 2007, planned for FY 2008, and proposed for FY 2009.

Phase	FY 2007	FY 2008	FY 2009
Design	75%	94%	99%
Procurement	46%	54%	62%
Construction	57%	62%	71%
Commissioning	2%	4%	9%
Overall	42%	51%	58%

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

The WTP Project is being funded entirely by ‘Construction’ line-item dollars. There are no Project Engineering and Design (PED) dollars or Other Project Cost (OPC) dollars. Thus, the Total Estimated Cost equals the Total Project Cost (TPC).

(dollars in thousands)			
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Total, PED	0	0	0
Construction			
Prior Years <sup>a</sup>	330,148	330,148	330,080
FY 2006	64,352	64,352	41,610
FY 2007	57,000	51,300	54,573
FY 2008 <sup>b</sup>	71,345	77,045	66,044
FY 2009	75,000	75,000	78,500
FY 2010	110,000	110,000	113,500
FY 2011	65,000	65,000	69,000
FY 2012	60,000	60,000	58,000
FY 2013	50,000	50,000	51,000
FY 2014	45,000	45,000	46,000
FY 2015	35,000	35,000	36,000
FY 2016	39,000	39,000	43,500
FY 2017	60,500	60,500	57,500
FY 2018	55,000	55,000	68,693
FY 2019	19,655	19,655	10,758
FY 2020	0	0	12,242
Total, Construction = TEC = TPC	1,137,000	1,137,000	1,137,000

(a) 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.

(b) FY 2008 Enacted Appropriations reflect a reduction of \$655,000 due to the FY 2008 Government-wide Rescission of 0.91 percent.

## 6. Details of Project Cost Estimate

(dollars in thousands)

Current Total Estimate	Previous Total Estimate	Original Validated Baseline
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### Total Estimated Cost (TEC)

Preliminary & Final Design	146,034	130,930	n/a
Construction			
Site Preparation	n/a	n/a	n/a
Equipment	158,068	122,640	n/a
Other Construction	447,557	478,600	n/a
Commissioning	304,041	345,830	n/a
Contingency	81,300	59,000	n/a
Total, Construction	990,966	1,006,070	610,000
Total, TEC	1,137,000	1,137,000	610,000
Contingency, TEC	[81,300]	[59,000]	n/a
Other Project Cost (OPC)			
Total, OPC	0	0	0
Total, TPC	1,137,000	1,137,000	610,000
Total, Contingency	[81,300]	[59,000]	n/a

## 7. Schedule of Project Costs

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 2007	FY 2008	FY 2009
Design	18,757	17,799	9,138
Procurement	10,398	24,237	25,665
Construction	24,647	19,518	29,734
Commissioning	771	4,490	13,963
Total	54,573	66,044	78,500

## 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 Balance of Facilities design and construction supports two phases of WTP completion (Phase I includes the Low-Activity Waste Facility and Analytical Laboratory; and Phase II includes the High-Level Waste and Pretreatment Facilities). Those portions of the Balance of Facilities that support Low-Activity Waste and Analytical Lab operations will be completed earlier than those portions that support High-Level Waste and Pretreatment Facilities.

The following facility milestone dates are based on the June 2007 Execution Revision (facility resequencing) by the contractor at the direction of DOE. The milestone date changes are a result of the contractor implementing Baseline Change Proposals associated with resolution of issues resulting from an external review of the Pretreatment process flowsheet, facility capacity modifications, WTP facility construction resequencing and other miscellaneous changes.

### Balance of Facilities Milestones

Milestone Title	December 2006 Baseline	June 2007 Execution Revision
Start Construction (Site Work)	July 2002 A	November 2001 A
Complete Design	July 2009	August 2011
Start of Component/System Testing	December 2009	July 2010
Complete Construction	March 2012	October 2016
Complete Component/System Testing (Phase I – Low-Activity Waste)	February 2013	April 2012
Complete Component/System Testing (Phase II – Pretreatment/High-Level Waste)	September 2016	May 2016
A = Actual date construction started which followed approval of CD-3B.		

Note: The Phase-I completion date will support early Low-Activity Waste Facility operations in FY 2014. The Phase-II completion date will support the High-Level Waste and Pretreatment Facilities operations in FY 2020.

# 01-D-16D, High-Level Waste Facility, Hanford, WA

## Project Data Sheet is for Construction

### 1. Significant Changes

The estimated cost and schedule dates included with this sub-project Construction Project Data Sheet, are based on the earned value performance numbers and schedule as of September 2007 for the overall Waste Treatment and Immobilization Plant (WTP) Project, which has a Total Project Cost of \$12,263,000,000, and a completion date of November 2019.

A Federal Project Director with certification level IV has been assigned to the WTP Project, and a Federal Sub-Project Director with a current level II certification has been assigned to the High-Level Waste Facility per the DOE Project Management Career Development Program.

In April 2003 the WTP Project attained a Critical Decision – 3C, Full Construction Authorization, in accordance with DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*. The Critical Decision – 3C approved a Total Project Cost of \$5,781,000,000. On December 22, 2006, a Baseline Change Proposal was approved by DOE with a Total Project Cost of \$12,263,000,000. The WTP Project is being designed, constructed, and commissioned using only line-item construction funding.

This Construction Project Data Sheet is an update of the FY 2008 High-Level Waste Facility sub-project Construction Project Data Sheet. There are no changes in the sub-project Total Project Cost from the prior Construction Project Data Sheet. However, the Performance Measurement Baseline has a planned increase of about \$100,000,000, as a result of the contractor implementing Baseline Change Proposals (June 2007 Execution Revision) associated with resolution of technical issues, and changes to the WTP Project priorities, known as “facility resequencing”, to allow early completion of the Low-Activity Waste Facility, Analytical Laboratory, and Balance of Facilities. This change was partly necessitated by the suspension of construction in FY 2006 by Congressional restriction due to issues with the final seismic criteria. The final seismic criteria was certified by the Secretary of Energy in August 2007 and the contractor has been directed to resume construction on the High-Level Waste facility. The estimated cost of these changes was anticipated through contingency allowances in the revised baseline approved in December 2006.

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

	(fiscal quarter or date)							
	CD-0	CD-1 (Design Start)	(Design Complete)	CD-2	CD-3 (Construction Start)	CD-4 (Construction Complete)	D&D Start	D&D Complete
FY 2007	4Q FY 1995	4Q FY 1996	4Q FY 2007	3Q FY 2003	3Q FY 2002	3Q FY 2008	N/A	N/A
FY 2008	4Q FY 1995	4Q FY 1996	4Q FY 2010	3Q FY 2003	3Q FY 2002 <sup>2</sup>	2Q FY 2017 <sup>3</sup>	N/A	N/A
FY 2009	4Q FY 1995	4Q FY 1996	2Q FY 2013 <sup>1</sup>	3Q FY 2003	3Q FY 2003 <sup>2</sup>	1Q FY 2020 <sup>3</sup>	N/A	N/A

#### Notes:

- 1) The FY 2009 Budget Request date for Design Complete is based on the June 2007 Execution Revision schedule for substantial design completion.
- 2) The previous FY 2008 Budget Request Construction Start date of 3Q FY 2002 represented the start of physical construction of the facility. The FY 2009 Budget Request 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 previous 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 this FY 2009 budget request, 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.

The Mission Need (Critical Decision - 0) for the WTP Project was approved in September 1995, followed by Critical Decision - 1 in September 1996, and Critical Decision - 2 in August 1998. The WTP Project was initiated as a privatization contract in 1998, and then was re-bid to a conventional cost reimbursable type contract awarded 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 WTP Project. The current Critical Decision - 4 schedule date is based on the completion of construction, startup, commissioning, and turnover to the operations contractor.

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
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

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.

The Performance Measurement 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 \$3,308,000,000.

### 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, 30 miles of piping, and 293 miles of electrical cable.

The High-Level Waste Facility will receive the high-level waste fraction from the Pretreatment Facility. This facility contains two, three metric ton per day melters for vitrifying the high-level waste fraction into glass. 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 Site before eventually being shipped to a federal geological repository for disposal.

### **FY 2007 Accomplishments:**

The High-Level Waste Facility design was approximately 82 percent complete and procurement was 41 percent complete. Congressional restrictions had halted construction of the High-Level Waste Facility while revised seismic criteria were analyzed. Following completion of soil analysis from deep boreholes and reanalysis of the seismic criteria, the new seismic ground motion criteria was certified by the Secretary of Energy in August 2007, allowing construction to resume.

The WTP contractor immediately began remobilizing for construction upon receiving notice of the criteria certification. During the curtailment period, the contractor had continued advancing High-Level Waste Facility design activities with the design of facility concrete and steel structures, cable trays and power distribution systems, and piping systems for fabrication. Specific activities included:

#### **Design Activities:**

- Previously placed concrete designs were verified to the new seismic criteria.
- Previously released designs for concrete (not yet placed) were reissued based on the new seismic criteria, including the elevation 0 ft slab, the walls from elevation 0 ft to 14 ft (7,340 cubic yards), and the elevation 14 foot slab (3,892 cubic yards). The total length of the walls at elevations 0 to 14 feet is approximately 3/4 of a mile, with each pour about 75 feet long (50 to 60 pours per elevation are required due to the complexity of the building).
- Previously released designs for fabricated structural steel for elevations 14 feet (893 tons) and 37 feet (1,218 tons) were verified and reissued based on the new seismic criteria.
- Piping and instrumentation diagrams for all but one facility system were issued as committed.

#### **Procurement Activities:**

Previously awarded procurements that had been suspended due to Congressional restrictions were released, including vessels, decontamination equipment, motor control and load centers, air handling units, and fan coil units.

Major new awards were made for melter power supplies, canister racks, and melter cave shield doors that shield facility workers from high-level radiation sources in the melter cave during plant operation. The largest of these doors is approximately 19 feet by 17 feet, weighs approximately 50 tons, and has a minimum shielding thickness of 8 inches of structural steel.

Previously procured major facility components arrived on site, including crane maintenance shield doors, wet electrostatic precipitators, and canister swabbing equipment. The crane maintenance shield doors separate the remote operation areas in the hot cells from the maintenance areas. The largest of these doors is 22 feet by 12 feet, weighs 45 tons, and has a minimum shielding thickness of 9.5 inches of structural steel. The wet electrostatic precipitators units, each weighing over 13 tons, remove particulate

from the offgas stream before it reaches the high efficiency particulate air filter units. The canister swabbing equipment uses a 500-pound telerobotic manipulator arm to swab the surface of individual High-Level Waste canisters as they rotate on the canister turntable.

### **Planned FY 2008 Activities**

Construction and design of the High-Level Waste Facility will continue to ramp-up in FY 2008, with design at 89 percent complete by the end of the year. Approximately 1.3 percent of the High-Level Waste Facility's 88,000 cubic yards of concrete will be placed, bringing the cumulative total to 54 percent by year's end. Placement of concrete slabs will continue at elevation 0 feet, and walls from elevation 0 feet. to 14 feet., and placement will begin on the facility's second floor at elevation 14 feet. and for walls to elevation 37 feet.

Design activities include:

- Complete design of the second floor walls and structural steel framing for the facility roof.
- Complete piping design to over 70 percent.
- Issue electrical cable layouts for areas on the fourth floor.
- Begin electrical power cable releases for construction.
- Issue instrument datasheets.

Major equipment procurements will include:

- Mechanical handling cranes, shield doors, electrical transformers, switchgear and motor control centers, and heating, ventilation, and air conditioning air handling units and fans.
- High-Level Waste melters, which convert the slurry of high-level nuclear waste to a stable glass for long-term storage. The melters produce 6 metric tons of glass per day and have a glass capacity of 1,050 gallons.
- Melter startup heater power supplies and the wall module templates, which are integral for the completion of the construction of the critical melter cell areas.

Construction activities will include:

- Install 200 tons of structural steel to support work for the second floor. By the end of the year, 8.8 percent of the total structural steel for the facility will be installed.
- Restart piping installation in the basement corridors, with 1,000 linear feet planned, bringing the cumulative total to ~ 4,400 linear feet (2.7 percent of overall building total of 163,000 linear feet).
- Set miscellaneous equipment in the facility.

### **Planned FY 2009 Activities**

By the end of FY 2009, design will be 97 percent complete.

Design activities will include:

- Complete design confirmation of the mechanical design for all High-Level Waste systems.
- Complete civil design for the main facility concrete and steel structures, including the roof (1,800 tons) and emissions stack assembly.



- Complete piping design to over 94 percent, with a cumulative total of over 154,000 linear feet (29 miles) of piping released.
- Complete electrical power cable releases to over 32 percent, with a cumulative total of over 559,000 linear feet (105 miles) of cable released.
- Continue electrical layouts, instrumentation location drawings, and heating, ventilation, and air conditioning design for the upper elevations.

Major equipment deliveries will include:

- Major vessels, facility cranes, and shield doors.

Construction activities will include:

- Continue concrete placements for the elevation 0 feet to 14 feet walls, the 14 feet slab, the 14 feet to 37 feet walls (~11,000 cubic yards), and elevation 37 feet slabs (~4,400 cubic yards).
- Continue structural steel installation in support of the concrete placements, with 529 tons (6 percent of overall building total) planned for installation in FY 2009. By the end of the year, 14 percent of the overall building structural steel will be installed.
- Continue piping installation in the basement corridors, with 5,300 linear feet (3 percent of overall building total) planned to be completed during FY 2009; 6 percent of the overall building piping will be installed by year's end.
- Set numerous items of facility equipment, with the installation of massive melter shield doors of particular note.

The following table provides the status for each phase by the end of each fiscal year: accomplished for FY 2007, planned for FY 2008, and proposed for FY 2009.

Phase	FY 2007	FY 2008	FY 2009
Design	82%	89%	97%
Procurement	41%	48%	61%
Construction	22%	26%	33%
Commissioning	2%	2%	2%
Overall	36%	42%	51%

Note: Some of the percent completes may have gone down slightly from previously reported values. This results from the incorporation of the Baseline Change Proposals which included additional hours for design and construction, and dollars for procurements, associated with technical design and schedule changes incorporated into the June 2007 Execution Revision [see overall Construction Project Data Sheet for the WTP Project (01-D-416) for a more thorough explanation].

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

The WTP Project is being funded entirely by 'Construction' line-item dollars. There are no Project Engineering and Design (PED) dollars or Other Project Cost (OPC) dollars. Thus, the Total Estimated Cost equals the Total Project Cost (TPC).

(dollars in thousands)			
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Total, PED	0	0	0
Construction			
Prior Years <sup>a</sup>	821,536	821,536	704,700
FY 2006	102,964	102,964	121,991
FY 2007	177,000	154,300	115,124
FY 2008	175,389	198,089	175,458
FY 2009	125,000	125,000	237,500
FY 2010	120,000	120,000	155,000
FY 2011	140,000	140,000	152,000
FY 2012	180,000	180,000	171,000
FY 2013	210,000	210,000	210,500
FY 2014	260,500	260,500	265,000
FY 2015	280,000	280,000	282,062
FY 2016	220,000	220,000	222,000
FY 2017	215,000	215,000	214,000
FY 2018	149,500	149,500	118,165
FY 2019	131,111	131,111	125,400
FY 2020	-	-	38,100
Total, Construction = TEC = TPC	3,308,000	3,308,000	3,308,000

(a) The prior year appropriations and obligations have been updated to reflect a more current estimate of the anticipated utilization of the non-facility specific carryover funding remaining in WTP line-item 01-D-416.

## 6. Details of Project Cost Estimate

(dollars in thousands)

Current Total Estimate	Previous Total Estimate	Original Validated Baseline
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### Total Estimated Cost (TEC)

Design			
Preliminary & Final Design	666,825	534,770	n/a
Construction			
Site Preparation	n/a	n/a	n/a
Equipment	836,597	781,830	n/a
Other Construction	1,286,837	1,423,900	n/a
Commissioning	303,641	266,500	n/a
Contingency	214,100	301,000	n/a
Total, Construction	2,641,175	2,773,230	1,650,000
Total, TEC	3,308,000	3,308,000	1,650,000
Contingency, TEC	[214,100]	[301,000]	n/a
Other Project Cost (OPC)			
Total, OPC	0	0	0
Total, TPC	3,308,000	3,308,000	1,650,000
Total, Contingency	[214,100]	[301,000]	n/a

## 7. Schedule of Project Costs

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 2007	FY 2008	FY 2009
Design	56,119	37,773	32,953
Procurement	54,343	102,333	157,847
Construction	4,662	35,352	46,350
Commissioning	0	0	350
Total	115,124	175,458	237,500

## 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 June 2007 Execution Revision (facility resequencing) by the contractor at the direction of DOE. The milestone date changes are a result of the contractor implementing Baseline Change Proposals associated with resolution of issues resulting from an external review of the Pretreatment process flowsheet, facility capacity modifications, WTP facility construction resequencing and other miscellaneous changes.

### High-Level Waste Facility Milestones

Milestone Title	December 2006 Baseline	June 2007 Execution Revision
Start Construction	July 10, 2002 A	July 10, 2002 A
Complete Design	August 2010	January 2013
Complete Construction	March 2017	April 2016
Initiate Cold Commissioning	June 2018	February 2018
Complete Cold Commissioning	October 2018	June 2018
Initiate Hot Commissioning	March 2019	November 2018
Complete Hot Commissioning	May 2019	February 2019
A = Actual date construction started which followed approval of CD-3B.		

Note: The planned dates represent the contractor start and completion dates and include schedule contingency estimated to be needed for the facility to achieve an 80 percent confidence level. As such, these dates may differ from dates displayed in Section 2, which are the DOE Critical Decision approval dates.

**01-D-16E, Pretreatment Facility, Hanford, WA**  
**Project Data Sheet is for Construction**

**1. Significant Changes**

The estimated dollars and schedule dates included with this sub-project Construction Project Data Sheet are based on the latest earned value performance numbers and schedule as of September 2007 for the overall Waste Treatment and Immobilization Plant (WTP) Project, which has a Total Project Cost of \$12,263,000,000, and a completion date of November 2019.

A Federal Project Director with certification level IV, per the DOE Project Management Career Development Program, has been assigned to the WTP Project; an action is underway to fill the open Pretreatment Facility Federal Sub-Project Director position.

In April 2003 the WTP Project attained a Critical Decision – 3C, Full Construction Authorization, in accordance with DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*. The Critical Decision – 3C approved a Total Project Cost of \$5,781,000,000. In December 22, 2006, a Baseline Change Proposal was approved by DOE with a Total Project Cost of \$12,263,000,000. The WTP Project is being designed, constructed, and commissioned using only line-item construction funding.

This Construction Project Data Sheet is an update of the FY 2008 Pretreatment Facility sub-project Construction Project Data Sheet. There is no change in the sub-project Total Project Cost from the prior Construction Project Data Sheet. However, the Performance Measurement Baseline has a planned increase of about \$445,000,000 as a result of the contractor implementing Baseline Change Proposals (June 2007 Execution Revision) associated with resolution of issues resulting from an external review of the Pretreatment process flowsheet, facility capacity modifications, and WTP Project facility resequencing, to allow early completion of the Low-Activity Waste Facility, Analytical Laboratory, and Balance of Facilities. This change was partly necessitated by the suspension of construction in FY 2006 by Congressional restriction due to issues with the final seismic criteria for the WTP. Note that the final seismic criteria was certified by the Secretary of Energy in August 2007 and the contractor has been directed to resume construction on the Pretreatment Facility. The estimated cost of these changes was anticipated through contingency allowances in the revised baseline approved in December 2006.

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

	(fiscal quarter or date)							
	CD-0	CD-1 (Design Start)	(Design Complete)	CD-2	CD-3 (Construction Start)	CD-4 (Construction Complete)	D&D Start	D&D Complete
FY 2007	4Q FY 1995	4Q FY 1996	4Q FY 2007	3Q FY 2003	3Q FY 2002	3Q FY 2008	N/A	N/A
FY 2008	4Q FY 1995	4Q FY 1996	3Q FY 2013	3Q FY 2003	3Q FY 2002	2Q FY 2017	N/A	N/A
FY 2009	4Q FY 1995	4Q FY 1996	1Q FY 2013 <sup>1</sup>	3Q FY 2003	3Q FY 2003	1Q FY 2020 <sup>2</sup>	N/A	N/A

Notes:

- 1) The FY 2009 Budget Request date for Design Complete is based on the June 2007 Execution Revision schedule.
- 2) The previous 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 (CD-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 previous 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 this FY 2009 budget request, 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.

The Mission Need (Critical Decision - 0) for the WTP Project was approved in September 1995, followed by Critical Decision - 1 in September 1996, and Critical Decision - 2 in August 1998. The WTP 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 WTP Project. The current Critical Decision - 4 schedule date is based on Project Closeout and turnover to the operations contractor.

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
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

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.

The Performance Measurement 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 current Total Project Cost is \$5,394,000,000.

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

The largest of all WTP 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 113,400 cubic yards of concrete and 16,600 tons of structural steel, and contains 536,000 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 Pretreatment Facility has the capacity to process an average daily rate of six metric tons of high-level waste and 80 metric tons of low-activity waste. 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 and a hot cell 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 2007 Accomplishments**

Congressional restrictions halted construction of the Pretreatment Facility during FY 2006 and 2007 while revised seismic criteria were analyzed. Following completion of soil analysis from deep boreholes and reanalysis of the seismic criteria, the new seismic ground motion criteria was certified by the Secretary of Energy in August 2007, allowing the resumption of construction.

During the curtailment period, the WTP contractor continued design activities, with priority placed on resolving issues identified by the External Flowsheet Review Team and other technical issues. The process design emphasis was on the process piping. Preparation for construction installation activities continued with focus on key activities to support construction resumption. By the end of FY 2007, design of piping was 63 percent complete, with 339,000 ft of piping released for fabrication out of the total of 536,000 linear feet of pipe in the facility.

#### **FY 2007 Accomplishments:**

- Continued verification of piping, vessel, and structural design against the revised seismic design criteria, with analysis of the completed part of the facility.
- Continued selective fabrication of the vessels that are not currently on site. Modifications required as a result of the reanalysis may include strengthening the piping and components inside the vessels by adding stiffening sections, adding or upgrading supports, and strengthening welds to the vessel piping connections. The vessels range in size from 14 feet to 38 feet in diameter and 25 feet to 30 feet tall, and weigh 70 to 250 tons.
- Received the largest fabricated steel door in the facility. The complete door is a two-piece shield door; the first part slides horizontally and the second part rises vertically. The door will provide shielding to the operations teams during plant maintenance and operations. The first section of the door is 52 feet wide, 6 feet tall, and 9.5 inches thick, and weighs 102 tons. It was delivered to site by road using a 270-foot-long specialized tractor-trailer transport system. The second section is 15 feet wide, 26 feet tall, and 9.5 inches thick, and weighs 84 tons.
- Completed the design, fabrication, and load testing for a specialized lifting frame capable of lifting equipment weighing up to 160 tons into the building over walls up to 56 feet high. This will be used to lift and lower piping modules, measuring up to 52 feet by 75 feet and 35 feet high, directly into their final location. The piping modules to be lifted range in weight from 27 to 170 tons.

### **Planned FY 2008 Activities**

The WTP contractor will continue to progress Pretreatment Facility design across all disciplines in FY 2008, emphasizing civil/structural design and piping to further build on the backlog of work that is available for construction forces. The focus of this effort will be on completing civil design of the third floor walls (elevations 56 feet to 77 feet).

Design activities will include:

- Release design for construction of reinforced concrete walls 21 feet high, ranging in thickness from 3 feet to 6 feet. This will release 6,500 cubic yards of concrete, 1,400 tons of reinforcing steel, and 700,000 pounds of embedded items for construction forces to install. The floor slabs at the 56 foot elevation are concrete reinforced with steel, and range in thickness from 1 foot to 4 feet. They cover a 120,000 square foot area, and when completed will consist of 8,800 cubic yards of concrete and 2,100 tons of reinforcing steel, and will contain 250,000 pounds of embedded items.
- Confirm design releases to revised ground motion analysis, allowing construction to develop a significant backlog of work. Overall concrete design will be 76 percent complete, which represents 86,000 cubic yards of concrete out of a total of 113,400 cubic yards. Structural steel design will be 86 percent complete, representing 14,300 tons out of a total of 16,600 tons. Piping will be 67 percent released, representing 360,000 linear feet out of a total of 535,000 linear feet.
- Complete testing programs and resolve technical issues, including those identified by the External Flowsheet Review Team.

Major procurement activities will include:

- Specialist mechanical handling equipment and process equipment for the hot cell, shield doors, and stainless steel fabricated high-integrity vessels used in radioactive waste processing. There will be a total of 45 major vessels, ranging in diameter from 5 feet to 48 feet with heights up to 35 feet, and weighing up to 290 tons. Of these vessels, 32 have been delivered and set into the building. The 4 largest vessels, the feed receipt vessels, were fabricated on site due to transport considerations and lifted over 56 foot walls into their final location.
- Special cranes, manipulators, and other equipment for the hot cell area of the building. This equipment is designed for remote operation and maintenance without direct personnel involvement, due to the radiation levels. The hot cell is completely enclosed in 3-foot-thick reinforced concrete walls and roof. The cell is 420 feet long, 54 feet wide, and 53 feet high, with the controlled access provided by a two-section shield door. The doors open remotely to allow access for equipment and maintenance, with workers using cameras and 3-foot-thick shield windows to observe operations.

Construction activities will include:

- Begin to ramp-up during the first quarter. Emphasis will be on placement of concrete walls from the third to fourth floors (elevations 56 feet to 77 feet) and elevated slabs on the third floor. The 56 foot level will be completed. The remaining 300 cubic yards of the 12-inches-thick reinforced concrete will be placed to complete the final section of the entire floor at the 28 foot level. This will complete the placement of 1,800 cubic yards of concrete at this floor elevation and installation of 500 tons of reinforcing steel.
- Complete structural steel erection up to elevation 56 feet, which will complete installation of approximately 6,000 tons of structural steel out of the total of 16,600 tons. The 56 foot elevation reinforced concrete floors provide walkway and operator access routes; they range in thickness from 1 foot to 4 feet. The total concrete placed will be 6,000 cubic yards out of a total of 8,800 of concrete at this elevation, bringing the overall for the facility to 88,000 cubic yards.



- Install crane rails on both walls of the hot cell, running the length of the cell (420 feet), and supported by 48 steel fabricated supports welded to steel plates embedded into the wall concrete. The completed crane rails are fully welded and installed 48 feet above the floor. The rails sit on 3-foot-deep support beams and carry a bridge crane capable of lifting 30 tons and remotely handling equipment and performing maintenance in the hot cell.
- Begin installation of small bore stainless steel piping in the upper elevations of the hot cell.
- Continue heating, ventilation, and air-conditioning ducting design and fabrication.
- Install fire protection sprinkler system piping.
- Begin any upgrades required for the vessels currently installed on site as a result of the seismic analysis, using components supplied by vessel fabricators. This could include adding additional supports to strengthen internal components and additional welding to the vessel piping connection points to strengthen the connections. The first vessels to be upgraded will be the 425,000 gallon feed receipt vessels (48 feet in diameter and 43 feet high, and manufactured from stainless steel 1.5 inches thick) which are located in their final position in the building.
- Continue progress on vessel supports and liner protective plate in the process areas. The process vessels are fixed into position by fully welding their bases (skirt) to a circular “I” beam, fabricated from 2 inch stainless steel. The supports are approx 18 inches high and range in diameter from 5 feet to 38 feet to match the vessels.

### **Proposed FY 2009 Activities**

Design activities will include:

- Continue to work at upper elevations of the building.
- Complete final design release for construction of the walls between the third and fourth floor (elevations 56 feet to 77 feet).
- Begin releases for the fourth floor elevated slabs (elevation 77 feet), providing an additional 4,700 cubic yards of concrete, 750 tons of reinforcing steel, and 500,000 pounds of embedded items for construction to install.
- Begin releases for the fourth floor walls (elevations 77 feet to 98 feet), providing an additional 5,000 cubic yards of concrete, 700 tons of reinforcing steel, and 300,000 pounds of embedded items for construction forces to install.
- Issue for fabrication the design for the third floor (elevation 56 feet) control racks for the vessel sparging system; and bring the design process to a point where the mechanical system design will be frozen. The control racks are prefabricated structures containing valves, instrumentation, and piping, which are designed to introduce air through a piping system into the process vessels to condition the highly active liquids. The racks range in size up to approximately 20 feet long and 15 feet high, and weigh up to 10 tons, they will be delivered to the site complete so they can be lifted into position through the roof and fixed into position.
- Complete the design of the structural steel roof framing. The building roof is a steel fabricated frame system with approximately 35 roof beams, which span the full width of the building and overall weigh 2,300 tons. The roof, which will be 119 feet above the surrounding land when constructed, will be completed and issued for fabrication.
- Issue for construction the concrete calculation and drawings for the control building. Wire and cable release will be 20 percent complete, representing 285,000 linear feet of the total of 1,430,000 linear feet. The tray to support the cable will be 60 percent complete, with 23,000

linear feet released out of a total of 38,000 linear feet, and conduit that the cable runs in will be 18 percent complete, with 50,000 liner feet released out of the total of 279,000 linear feet.

Major procurement activities will include:

- Two process vessels for the ultrafilter system from the fabricator. One of these will be set in a black cell, completing installation of vessels in over 75 percent of the black cells.
- Initiate delivery of evaporators to the job site.

Construction activities will include:

- Place concrete in the walls between the third and fourth floors; placement of heavily reinforced concrete in the walls between 56 feet and 77 feet will be 95 percent complete, with 6,000 cubic yards of concrete placed, 1,500 tons of reinforcing bar, and 700,000 pounds of embedded items in the area. The remaining 400 cubic yards will be placed early in the subsequent fiscal year.
- Continue placement of heavily reinforced concrete on the 56 feet floor level; placement will be 90 percent complete, with 8,500 cubic yards of concrete placed out of a total of 8,800 cubic yards, 1,700 tons of rebar, and 208,000 pounds of embedded items.
- Begin erecting the building main frame steel with the lifting into position of the main building columns running from elevation 57 feet to 81 feet. When complete, this will add an additional 4,500 tons of steel to the building.
- Begin installation of the high integrity, fully welded stainless steel pipe systems with erection, alignment, and welding of the 250,000 linear feet of black cell piping, ranging in size from 0.5 inches to 48 inches in diameter.
- Install the vertical and horizontal shield doors for the hot cell bridge cranes.
- Begin installation by specialty heating, ventilation, and air-conditioning subcontractor of the operating areas' heating, ventilation, and air-conditioning ductwork systems with installation of the galvanized steel ductwork sections on the ground floor areas of the building.

The following table provides the status for each phase by the end of each fiscal year: accomplished for FY 2007, planned for FY 2008, and proposed for FY 2009.

Phase	FY 2007	FY 2008	FY 2009
Design	68%	77%	89%
Procurement	39%	47%	55%
Construction	25%	29%	34%
Commissioning	2%	2%	2%
Overall	35%	42%	49%

Note: Some of the percent completes may have gone down slightly from previously reported values. This results from the incorporation of the Baseline Change Proposals which included additional hours for design and construction, and dollars for procurements, associated with technical design and schedule changes incorporated into the June 2007 Execution Revision [see overall Construction Project Data Sheet for the WTP Project (01-D-416) for a more thorough explanation].

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

The WTP Project is being funded entirely by ‘Construction’ line-item dollars. There are no Project Engineering and Design (PED) dollars or Other Project Cost (OPC) dollars. Thus, the Total Estimated Cost equals the Total Project Cost (TPC).

(dollars in thousands)			
	Appropriations	Obligations	Costs
Total Estimated Cost			
Total, PED	0	0	0
Construction			
Prior Years <sup>a</sup>	1,174,323	1,170,267	1,136,272
FY 2006	147,515	151,571	154,288
FY 2007	211,000	170,400	130,570
FY 2008 <sup>b</sup>	250,697	291,297	267,101
FY 2009	265,000	265,000	305,500
FY 2010	300,000	300,000	350,200
FY 2011	400,000	400,000	404,500
FY 2012	320,000	320,000	305,000
FY 2013	365,000	365,000	371,000
FY 2014	334,500	334,500	342,163
FY 2015	325,000	325,000	326,000
FY 2016	301,000	301,000	301,000
FY 2017	353,700	353,700	345,000
FY 2018	399,000	399,000	407,281
FY 2019	247,265	247,265	219,316
FY 2020	0	0	28,809
Total, Construction = TEC = TPC	5,394,000	5,394,000	5,394,000

(a) 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.

(b) FY 2008 Enacted Appropriations reflect a reduction of \$2,302,000 due to the FY 2008 Government-wide Rescission of 0.91 percent.

## 6. Details of Project Cost Estimate

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost			
Design			
Preliminary & Final Design	1,142,445	761,470	n/a
Construction			
Site Preparation	n/a	n/a	n/a
Equipment	1,470,820	1,367,300	n/a
Other Construction	2,116,631	2,370,030	n/a
Commissioning	481,904	374,200	n/a
Contingency	182,200	521,000	n/a
Total, Construction	4,251,555	4,632,530	1,920,000
Total, TEC	5,394,000	5,394,000	1,920,000
Contingency, TEC	[182,200]	[521,000]	n/a
Other Project Cost	0	0	0
Total, TPC	5,394,000	5,394,000	1,920,000
Total, Contingency	[182,200]	[521,000]	n/a

The changes between the 'Current' and 'Previous' estimates represent the implementation of Baseline Change Proposals through the June 2007 Execution Revision, as described in Section 1 of the overall WTP Construction Project Data Sheet (01-D-416).

## 7. Schedule of Project Costs

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 2007	FY 2008	FY 2009
Design	96,894	105,005	98,503
Procurement	31,604	111,079	123,581
Construction	1,512	50,738	82,838
Commissioning	560	279	578
Total	130,570	267,101	305,500

## 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 June 2007 Execution Revision (facility resequencing) by the contractor at the direction of DOE. The milestone date changes are a result of the contractor implementing Baseline Change Proposals associated with resolution of issues resulting from an external review of the Pretreatment process flowsheet, facility capacity modifications, WTP facility construction resequencing and other miscellaneous changes.

### Pretreatment Facility Milestones

Milestone Title	December 2006 Baseline	June 2007 Execution Revision
Start Construction	July 2002 A	November 2002 A
Complete Design	June 2013	December 2012
Complete Construction	March 2017	April 2016
Initiate Cold Commissioning	December 2017	October 2017
Complete Cold Commissioning	May 2018	February 2018
Initiate Hot Commissioning	December 2018	August 2018
Complete Hot Commissioning	March 2019	November 2018
A = Actual date construction started which followed approval of CD-3B.		

Note: The planned dates represent the contractor start and completion dates and include schedule contingency estimated to be needed for the facility to achieve an 80 percent confidence level. As such, these dates may differ from dates displayed in Section 2, which are the DOE Critical Decision approval dates.



## Savannah River

### Funding by Site

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Savannah River National Laboratory	71,192	71,500	66,000
Savannah River Operations Office	12,542	12,386	12,500
Savannah River Site	1,058,456	1,047,316	1,127,925
Total, Savannah River	1,142,190	1,131,202	1,206,425

### 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, and waste. Activities include a National Nuclear Security Administration program that supports the DOE national security and non-proliferation programs, and an Environmental Management EM program that addresses the reduction of risks through safe stabilization, treatment, and disposition of legacy nuclear materials, spent nuclear fuel, and waste.

### Site Description

The Savannah River Site encompasses over 310 square miles with 1,000 facilities concentrated within only 10 percent of the total land area. As cleanup activities are completed, operations will be concentrated to the site's central core area. The land surrounding the central core area provides a protective buffer. All EM facilities and inactive waste units are being deactivated, decommissioned, and remediated. Facility decommissioning alternatives include demolition and in-situ disposal.

The Savannah River Site is divided into 18 site areas, according to the types of mission activities that occurred at each. All nuclear material will be stabilized and safely dispositioned. Groundwater will be addressed such that the Federal Safe Drinking Water Act maximum contaminant levels or alternate concentration levels will be achieved over time through source control, natural attenuation, and active cleanup (as needed).

### Site Cleanup Strategy/Scope of Cleanup

Work scope is planned and executed at the Savannah River Site by treating each discrete cleanup program scope of work, as well as the total scope of work, as a project. Specifically, 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 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; decommission all EM facilities not required for continuing missions; remediate all waste sites; 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 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, using an Area completion approach.

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

Based on the approved baseline, the lifecycle planning estimate range is 2038 to 2040. 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 area completion, all EM facilities will be decommissioned.

### **Regulatory Framework**

The Savannah River Site works closely with various 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, 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 action, several key settlement agreements were entered into with the State of South Carolina, including Settlement Agreements 87-52-SW, 91-51-SW, 85-70-SW, 87-27-SW, as well as a Consent Decree through Federal Court. These enforceable agreements required Savannah River Site to submit closure plans and groundwater corrective action plans for several major land disposal units that operated after the effective date of the Resource Conservation and Recovery Act. The State of South Carolina is an Environmental Protection Agency authorized state allowing it to administer the Resource Conservation and Recovery Act for the Environmental Protection Agency. 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 sites, i.e., Solid Waste Management Units and Areas of Concern, be investigated and remedial actions taken as needed.

In addition, the State of South Carolina has formally expressed its position that compliance with the requirements of the Federal Facility Agreement, including commitments and schedules within, constitutes compliance with the requirements of Resource Conservation and Recovery Act and the 1984 Hazardous and Solid Waste Amendments of the Solid Waste Disposal Act, as embodied in the Resource Conservation and Recovery Act Permit for corrective action of Solid Waste Management Units and Areas of Concern. Further, the State of South Carolina views Resource Conservation and Recovery Act Permit requirements for corrective action of Solid Waste Management Units and Areas of Concern, as



always applicable and enforceable under the terms of the permit, but these are fulfilled by implementing the terms of the Federal Facility Agreement. Thus, the permit contains standing provisions requiring cleanup of Solid Waste Management Units and Areas of Concern. Under the Federal Facility Agreement, remedial decisions are reached for these 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, Environmental Protection Agency, and the South Carolina Department of Health and Environmental Control, referred to as “the parties,” reached agreement on the cleanup of Savannah River Site and began execution of cleanup in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act integrated through the Federal Facility Agreement. 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 the environmental impacts associated with past and present activities are investigated and appropriate action is taken to protect human health and the environment. Individual waste units are able to be adjusted each year. 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.

The Savannah River Site Area Completion Strategy incorporates all of the known or potential sites of contaminant releases to the environment operable units, site evaluation areas, and remnants of decommissioned facilities requiring further evaluation into a single investigation and cleanup assessment. Any needed remedial actions may be performed early or may be done in one mobilization. Combining the investigations, assessments, and cleanup actions for several units saves time, reduces documentation, lowers costs, and facilitates the EM completion of entire industrial areas, each contributing to the stepwise EM completion of the Savannah River Site.

Key compliance milestones for the next couple of years are listed below:

- Issue M-Area operable unit record of decision by 3/31/2009.
- Issue C-Area Burning/Rubble Pit and Old C-Area Burning/Rubble Pit Record of Decision by 3/7/2008.
- Complete Remedial Action Construction and Submit the D Area Expanded Operable Unit Post Construction Report/Remedial Action Complete Report by 5/20/2008.
- Complete Construction and Submit the R Area Reactor Seepage Basins and 108-4R Overflow Basin Post-Construction Report by 11/21/2008.
- Submit the Record of Decision for the Potential Release from P Area Reactor Cooling Water System in support of the P Area Operable Unit – 2/19/2009

- Issue Cooling Water Effluent Sump (107-R) Record of Decision in support of R Area Operable unit by 10/1/2010.
- Initiate Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Field Start for K-Area Process Sewer Lines as Abandoned in support of K-Area Operable Unit by 9/30/2011.
- Issue D Area Coal Pile Runoff Basin (489-D) Record of Decision in support of D Area Operable Unit – 10/17/2011. Issue Building 231-H, Consolidated Incineration Facility Interim Remedial Action of Decision in support of H-Area Operable Unit by 12/31/2012.
- Issue Building 231-H, Consolidated Incineration Facility Interim Remedial Action of Decision in support of H-Area Operable Unit by 12/31/2012.
- Initiate Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation Field Support Start for Low Level Radioactive Drain Lines from F-Area Laboratory in support of F-Area Operable Unit by 9/30/2013.

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.

A key compliance milestone is listed below:

- Remove remote-handled transuranic waste from Savannah River Site by 1/1/2009

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 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). 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 order 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. In addition to the Nuclear Regulatory Commission consultation, the Savannah River Site must obtain South Carolina Department of Health and Environmental Control and Environmental Protection Agency Region 4 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.

Some of the key compliance milestones that drive cleanup work are listed below:

- Begin operations of the Salt Waste Processing Facility by 9/30/2012
- Close 24 non-compliant tanks by 10/1/2022
- Maintain Defense Waste Processing Facility canister production sufficient to remove all high-level waste from tanks by 1/1/2028

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 the availability of the proposed mined geologic repository at Yucca Mountain would delay site completion and increase storage costs for high-level waste and spent nuclear fuel;
- Controlling sources of soil/groundwater contamination through sustained area-by-area cleanup/completion is critical to aquifer/stream protection and risk reduction and will allow for 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 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 Part B Permit and Federal Facility Agreement commitments 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 2008 Federal Facility Agreement, Appendix E Update.
- The Salt Waste Processing Facility will be operational by September 30, 2012 processing approximately 3.75 million gallons of salt waste during the first year of operations and 5.5 million gallons per year thereafter.
- DOE will continue to consolidate nuclear materials at the Savannah River Site.

- H-Area nuclear material processing facilities will operate through September 30, 2019.

## **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 and the Office of Nuclear Energy. 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 2031, at which time landlord and interface responsibilities will transition to the National Nuclear Security Administration.

### National Nuclear Security Administration and the Office of Nuclear Energy – 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 (Duke, Cogema, and Stone & Webster companies). 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 and the Office of Nuclear Energy will decommission the facilities and be responsible for soil and groundwater remediation 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 reactors. Of the 174.3 metric tons of highly enriched uranium, approximately 85 percent will be converted to commercial or research reactor fuel. The remaining highly enriched uranium will be disposed of as waste. Through December 2007, Savannah River Site has processed and blended approximately 15.3 metric tons of highly enriched uranium fuel and other material to low enriched uranium for shipment to a Tennessee Valley Authority vendor for processing and fabrication into commercial reactor fuel assemblies. Three

more metric tons will be processed, blended and shipped in FY 2008. In addition, through the end of FY 2007, Savannah River Site shipped approximately 5 metric tons of highly enriched uranium aluminum alloy to a Tennessee Valley Authority vendor for processing and fabrication into commercial reactor fuel assemblies. The H-Canyon facility will be used to blend down an additional 26 metric tons for transfer to the Tennessee Valley Authority through FY 2019.

#### 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 and the National Nuclear Security Administration for specific work assignments in support of program missions. EM provided \$71,192,000 for project work and estimates in FY 2007, and is projected to be \$71,500,000 in FY 2008 and \$66,000,000 in FY 2009.

#### 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 wildland 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 personnel at Savannah River Site who package material for shipment and provide 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 at the proposed mined geologic repository at Yucca Mountain. 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.

#### Low-Level Waste Disposal

Low-level waste is radioactive waste that is not classified as radioactive liquid 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 Hanford) 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.

#### Tennessee Valley Authority

As previously mentioned, excess highly enriched uranium at Savannah River Site is being dispositioned by both dilution and shipment to the Tennessee Valley Authority vendors, Areva, and by direct shipment to Nuclear Fuel Services, respectively. Areva also provides natural uranium for blending. To deinventory H, L, and K Areas, Savannah River Site depends on Tennessee Valley Authority to provide and accept these materials to enable deinventory of H, L, and K Areas.

#### 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 in progress). 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.

### 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**

The majority of cleanup scope falls within the management and operating contract (currently Washington Savannah River Company) which expires June 30, 2008. Savannah River Site is employing new strategies to achieve Departmental missions. The current approved acquisition strategy is to award two separate contracts. One contract will be for the management and operations of the Site and the other will be for the tank liquid waste project. On January 11, 2008, DOE announced the award of a management and operating contract to Savannah River Nuclear Solutions, LLC. The tank liquid waste Request for Proposal was issued. Those proposals have been received and are currently being evaluated by DOE.

## **Cleanup Benefits**

Savannah River Site is implementing a cleanup strategy that focuses on using 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. For example, 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. These decontamination and decommissioning and environmental closure activities constitute additional work scope. 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, all Mk-16/Mk-22 fuel (approximately 16 metric tons) have been dissolved and are nearing disposition (at the end of FY 2007). The remaining material (approximately 0.1 metric tons) will be shipped in January 2008. 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 \$107,250,000.

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Defense Environmental Cleanup			
Savannah River Site			
2012 Completion Projects			
SR-0011B / NM Stabilization and Disposition-2012	243,733	10,900	2,032
SR-0040B / Nuclear Facility D&D - 2012	778	0	0
Subtotal, 2012 Completion Projects	244,511	10,900	2,032
2035 Completion Projects			
SR-0011C / NM Stabilization and Disposition-2035	86,641	315,910	339,311
SR-0012 / SNF Stabilization and Disposition	25,177	30,850	24,108
SR-0013 / Solid Waste Stabilization and Disposition	77,257	72,859	53,559
SR-0030 / Soil and Water Remediation	72,587	74,507	67,121
SR-0040C / Nuclear Facility D&D - 2035	6,370	2,882	2,052
SR-0100 / Non-Closure Mission Support	5,000	4,954	5,000
SR-0101 / Savannah River Community and Regulatory Support	7,542	7,432	7,500
Subtotal, 2035 Completion Projects	280,574	509,394	498,651
Tank Farm Activities			
SR-0014C / Radioactive Liquid Tank Waste Stabilization and Disposition-2035	617,105	610,908	705,742
Total, Savannah River Site	1,142,190	1,131,202	1,206,425
Total, Savannah River	1,142,190	1,131,202	1,206,425



### Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life- Cycle	FY 2009 % Complete
<b>Savannah River</b>					
Geographic Sites Eliminated (number of sites)	0	0	0	1	0%
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	919	919	919	919	100%
Enriched Uranium packaged for disposition (Number of Containers)	2,717	2,809	2,809	2,809	100%
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	490	490	490	490	100%
Depleted and Other Uranium packaged for disposition (Metric Tons)	8,760	8,760	10,896	23,182	47%
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	700	1,400	33,100	4%
Liquid Waste Tanks closed (Number of Tanks)	2	2	2	51	4%
High-Level Waste packaged for final disposition (Number of Containers)	2,374	2,560	2,746	5,862	47%
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	3	3	3	40	8%
Transuranic Waste shipped for disposal (Cubic meters) - CH	5,031	5,681	5,841	15,553	38%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	28	28	68	41%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	94,179	103,039	107,483	137,579	78%
Material Access Areas eliminated (Number of Material Access Areas)	2	2	2	3	67%
Nuclear Facility Completions (Number of Facilities)	11	11	11	191	6%
Radioactive Facility Completions (Number of Facilities)	8	8	8	40	20%
Industrial Facility Completions (Number of Facilities)	232	232	232	759	31%
Remediation Complete (Number of Release Sites)	339	352	363	515	70%

### Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**SR-0011B / NM Stabilization and Disposition-2012**

**243,733**

**10,900**

**2,032**

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

This PBS scope includes the design, installation, and construction of the 3013 Container Surveillance and

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Storage Capability in K-Area. Plutonium has been packaged in accordance with DOE-STD 3013, Stabilization, Packaging and Storage of Plutonium Bearing Materials standard. The standard requires that non-destructive and destructive surveillance of the 3013 containers be performed. The Container Surveillance and Storage Capability project includes re-stabilization and re-packaging of containers following surveillance activities, including any off-normal containers that are detected. The project would provide capabilities to safely and cost effectively continues the plutonium storage mission at the Savannah River Site. The modifications would include the installation of additional container storage, glove-boxes, furnaces, and radio-graphic and welding equipment in an existing Savannah River Site facility. Ventilation, dry air, and inert gases will be added as required. However, DOE is evaluating the plutonium disposition mission from a holistic approach in FY 2008, and as part of the evaluation, is reviewing an alternative that provides this capability in K-Area without this full project. Accordingly, in FY 2009, DOE's request is limited to minimal design funds to support the evaluation and maintain some project progress that would be useful for the alternative, if selected.

This PBS includes an appropriation in FY 2007 of \$2,935,000 and FY 2009 request of \$2,032,000 for line item 04-D-414 for Project Engineering and Design, to continue design of the facility. In FY 2008 \$10,900,000 was appropriated for line item 04-D-423.

The end-state for this project is the 3013 Container Surveillance and Storage Capability transfer to PBS SR-0011C at the time of construction completion.

In FY 2009, the following activities are planned:

- Continue limited design of the 3013 Surveillance Capability project to meet the Defense Nuclear Facilities Safety Board concerns.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	919	919	919	919	100%
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	490	490	490	490	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Completed design and initiate construction for 3013 Container Surveillance and Storage Capability Project. (FY 2007)</li><li>• Continue progress on 3013 Surveillance Capability Line-Item. (September 2008)</li></ul>					

**SR-0040B / Nuclear Facility D&D - 2012**

**778**

**0**

**0**

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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2008 EM transferred the scope of the remaining decontamination and decommissioning to PBS SR-0040C.

In FY 2009, no activities are planned.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

**SR-0011C / NM Stabilization and Disposition-2035** **86,641** **315,910** **339,311**

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 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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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. This project is part of the scope and funding requirements for PBS SR-0011B, Nuclear Material Stabilization and Disposition-2012. 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.

As announced on September 5, 2007, 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 beginning in October 2007 for up to three years. 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 is evaluating plutonium disposition mission from a holistic approach in FY 2008, and as part of this evaluation, is reviewing alternatives to this project, including elimination of the vitrification capability, while ensuring a disposition path out of South Carolina is maintained for this material. Accordingly, in FY 2009, DOE's request supports further conceptual design and technology studies, rather than Project Engineering and Design.

The end-state for this project includes deactivation of the F and H Area facilities and the Receiving Basin for Off-site Fuel and transfer to PBS SR-0040C, Nuclear Facility Decontamination and Decommissioning, for decommissioning. After decommissioning, these facilities will be transitioned to PBS SR-0030, Soil and Water Remediation, for area closures.

In FY 2009, the following activities are planned:

- Continue to receive weapons grade surplus non-pit plutonium from the Hanford Site, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory.
- Continue Plutonium Disposition Project design and technology studies to explore more cost effective, feasible alternatives.
- Perform surveillance of materials in storage in accordance with DOE-STD-3013 and the surveillance and monitoring plan.
- Support International Atomic Energy Agency inspections of materials in storage.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Continue H Canyon and HB-Line processing of legacy materials.
- Continue H Canyon operations to support blending highly enriched uranium solutions to low enriched uranium, and package and ship the low enriched uranium to the Tennessee Valley Authority.
- Continue to disposition depleted uranium oxide from the Savannah River Site.
- Continue surveillance and maintenance of F-Canyon Complex facilities.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Depleted and Other Uranium packaged for disposition (Metric Tons)	8,760	8,760	10,896	23,182	47%
Enriched Uranium packaged for disposition (Number of Containers)	2,717	2,809	2,809	2,809	100%
<b>Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)</b> <ul style="list-style-type: none"><li>• Completed 235-F deinventory and transfer to PBS SR-0040 for decontamination and decommissioning. (FY 2007)</li><li>• Completed F-Area Materials Storage deinventory and transfer to PBS SR-0040 for deactivation and decommissioning. (FY 2007)</li><li>• Complete disposition of depleted uranium oxide. (September 2008)</li><li>• Complete startup preparations and declare operational readiness for the HB-Line Phase I South line . (September 2009)</li><li>• Complete Superkukla processing pending DOE GFSI release of material for processing. (September 2009)</li><li>• Continue operations of the K Area Material Storage Facility. (September 2009)</li><li>• Continue surveillance capability of 3013 cans in compliance with DOE-STD-3013. (September 2009)</li><li>• Prepare to receive spent nuclear fuel shipments in H Canyon. (September 2009)</li><li>• Remove Depleted Uranium Oxidation from F Area balance of shipments. (September 2009)</li></ul>					

**SR-0012 / SNF Stabilization and Disposition**

**25,177**

**30,850**

**24,108**

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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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consolidated for storage in a single basin.

Preparations will be initiated in FY 2009 for the spent nuclear fuel exchange with Idaho National Laboratory. Aluminum-clad spent nuclear fuel will be shipped from Idaho National Laboratory to Savannah River Site and non-aluminum clad spent nuclear fuel will be shipped from Savannah River Site to the Idaho National Laboratory. In this way, all the aluminum-clad fuel can be processed through H-Canyon for final disposition at Savannah River Site and the non-aluminum-clad fuel can be packaged at Idaho National Laboratory for final disposition.

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 nuclear fuel have been dispositioned, and the spent nuclear fuel facilities have been deactivated and turned over for final disposition. Activities include: receipt of legacy spent nuclear fuel in L-Disassembly Basin cask unloading and preparation for underwater storage, cask loading and shipments of irradiated and non-irradiated spent nuclear fuel and miscellaneous legacy materials to H-Canyon for stabilization and surveillance and maintenance of legacy spent nuclear fuel. A basin de-ionization system will be operated in support of fuel storage and water chemistry control requirements. These activities fully support the dispositioning of spent nuclear fuel and deactivation of the spent nuclear fuel facilities by 2019.

This PBS also includes 1,600 metric tons of heavy water stored in various locations that will be dispositioned by the end of FY 2020. Some of the heavy water is significantly tritiated. Disposition alternatives are being explored. All deactivation activities under this PBS are scheduled to be completed by FY 2022 and the facilities transferred to PBS SR-0040C, Nuclear Facility Decontamination and Decommissioning.

In FY 2009, the following activities are planned:

- Facility surveillance and maintenance activities, including sampling, radiation monitoring and nuclear safety systems maintenance to ensure compliance with Federal regulations and the facilities authorization basis.
- Spent Nuclear Fuel/Basin Operation Activities – continue operation of de-ionization systems and fuel handling (loading and unloading capability), spent nuclear fuel receipt scheduling and transportation coordination, safe storage of existing inventories, and maintaining the capability to receive fuel at a rate capable of supporting program requirements.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Begin spent nuclear fuel shipments to H-Canyon for processing.
- Maintain the spent nuclear fuel facility infrastructure.
- Continue preparation and startup activities for the spent nuclear fuel transfer with Idaho. Aluminum-clad spent nuclear fuel will be shipped from Idaho National Laboratory to Savannah River and non-aluminum clad spent nuclear fuel will be shipped from Savannah River to the Idaho National Laboratory.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	3	3	3	40	8%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Maintain L Area spent nuclear fuel receipt, storage, and shipping facilities in an operable condition capable of supporting planned program requirements. (FY 2007/September 2008)</li><li>• Spent Nuclear Fuel Receipts - Receive Foreign and Domestic Research Reactor Fuel. (FY 2007/September 2008)</li><li>• Begin preparation for the spent nuclear fuel exchange with Idaho National Laboratory. (September 2008)</li><li>• Provide safe storage and disposition of heavy water in L and K Areas. (September 2008)</li><li>• Complete preparations for spent nuclear fuel shipments to H Canyon. (September 2009)</li></ul>					

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

**77,257**

**72,859**

**53,559**

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

This PBS scope covers the storage, treatment and disposal functions for transuranic, low-level, mixed 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 will be eliminated by the end of FY 2008. Drummed transuranic legacy waste will be eliminated by the end of FY 2009. In addition, boxed/bulk transuranic legacy waste will be eliminated by

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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FY 2013. Alternative disposal options for PUREX (i.e., Plutonium Uranium Extraction) waste have been developed with treatment scheduled for FY 2008 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 PUREX waste; and the elimination of all legacy inventories.

In FY 2009, the following activities are planned:

- Disposal of transuranic waste re-characterized as mixed low-level waste.
- Disposal of newly generated low-level waste.
- Disposal of mixed low-level waste inventory.
- Disposal of hazardous waste inventory.
- Disposal of sanitary waste.
- Support infrastructure needs and the cold war artifacts program.
- Complete shipments of Battelle Columbus Remote Handled Transuranic waste to the Waste Isolation Pilot Plant.
- Begin Resource Conservation and Recovery Act closure of transuranic waste pads 7-13.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	94,179	103,039	107,483	137,579	78%
Transuranic Waste shipped for disposal (Cubic meters) - CH	5,031	5,681	5,841	15,553	38%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	28	28	68	41%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Submitted permit modification for transuranic waste Pads 1 and 2. (FY 2007)</li><li>• Completed Site Treatment Plan milestones for transuranic waste. (FY 2007)</li><li>• Commence closure of transuranic waste pads 7-13. (March 2008)</li><li>• Bring three additional transuranic waste storage facilities into Resource Conservation and Recovery Act compliance. (September 2008)</li></ul>					



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Complete shipments of 3,000 Low Activity Transuranic Waste Drums to the Waste Isolation Pilot Plant. (September 2008)
- Continue disposal of newly generated low-level waste within one year of generation date per DOE Order 435.1. (September 2008)
- Continue treatment of newly generated hazardous/mixed waste within one year of generation date per Resource Conservation and Recovery Act regulations. (September 2008)
- Remove all Battelle-Columbus remote-handled transuranic waste. (January 2009)
- Begin Resource Conservation and Recovery Act closure for transuranic waste pads 7-13. (March 2009)

#### **SR-0030 / Soil and Water Remediation**

**72,587**

**74,507**

**67,121**

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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, the following activities are planned:

- Continue area completion and source control remediation activities in Areas P, R, C and A/M to reduce risk to workers/the public and eliminate/mitigate further migration of contaminants.
- Continue to operate a Dynamic Underground Stripping steam system in M-Area, 3 air strippers, 2 recirculation well systems, a 40-acre expansion of the phytoremediation system in Area E; 3 Soil Vapor Extraction Systems, 3 Baroball systems, an Electrical Resistance Heating system, a phytoremediation system, 3 micro blower systems; injection of base chemicals and microbial edible oils into the subsurface, and construction of a 5-acre soil cover and an extensive cap drainage system in H-Area.
- Continue groundwater corrective actions in Areas A/M, F, H, T, C, D, E, and L (Mixed Waste Management Facility) for aquifer and stream protection to reduce risk to workers and the public and protect and restore water resources.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	339	352	363	515	70%
<p>Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)</p> <ul style="list-style-type: none"> <li>• Issued M Area Inactive Process Sewer Lines Record of Decision and Start Remedial Actions. (FY 2007)</li> <li>• Continued Investigation of Nature and Extent of Contamination in P-Area and evaluate need for Early Action(s) at P-Area (including P-Reactor and surrounding waste units and soil contamination). (FY 2007)</li> <li>• Continue groundwater corrective actions in Areas A/M, F, H, T, C, D, E, and L (Mixed Waste Management Facility) for aquifer/stream protection to reduce to workers/public and protect/restore water resources. (FY 2007/September 2008)</li> <li>• Defined Nature and Extent of Contamination and Start Remedial Investigation and Evaluate need for Early Action(s) at R Area (including B-reactor and surrounding waste units and soil contamination). (FY 2007)</li> <li>• Began R Area Field Investigation. (FY 2007)</li> <li>• Submitted Phase II Corrective Action Plan for F/H Areas to address groundwater contamination and outcropping to a nearby stream. (FY 2007)</li> <li>• Complete Periodic Monitoring for the Four mile Branch Integrator Operable Unit and Submit Periodic Report #3. (February 2008)</li> <li>• Complete Remedial Action Construction and Submit the D Area Expanded Operable Unit Post Construction Report / Remedial Action Complete Report. (May 2008)</li> <li>• Complete Periodic Monitoring for the Savannah River Floodplain Swamp Integrator Operable Unit and Submit Periodic Report #2. (May 2008)</li> <li>• Initiate Upper Three Runs Integrator Operable Unit Phase II Field Start. (June 2008)</li> </ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Continue defining nature and extent of contamination and evaluating need for Early Action(s) in Savannah River Flood Plain Swamp (a large area which all five site streams drain to and which contains contaminated sediments) Integrator Operable Unit (includes evaluation of hunter risk from game animal ingestion and potential early actions). (September 2008)
- Start Remedial Actions for L-Area Southern Groundwater Operable Unit to address groundwater contamination and outcropping to surface water body. (September 2008)
- Federal Facility Compliance Agreement Site Treatment Plan Annual Update. (November 2008)
- Complete Construction and Submit the R-Area Reactor Seepage Basins and 108-4R Overflow Basin Post Construction Report. (November 2008)
- Initiate Four Mile Branch Integrator Operable Unit Third Phase II Field Start. (December 2008)
- Start the C-Area Burning/Rubble Pit and Old C-Area Burning/Rubble Pit Remedial Action. (February 2009)
- Initiate the Savannah River Floodplain Swamp Integrator Operable Unit Second Phase II Field Start. (March 2009)
- Start the Remedial Action for Building 305-A, Test Pile Facility, in Support of the M Area Operable Unit. (July 2009)
- Initiate the Field Start for Building 717-C, Contaminated Maintenance Facility in Support of the C Area Operable Unit. (September 2009)

#### **SR-0040C / Nuclear Facility D&D - 2035**

**6,370**

**2,882**

**2,052**

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 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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 2009, the following activity is planned:

- Conduct surveillance and maintenance of reactor area and other facilities included within the scope of this project.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Completed D&amp;D of D Area Heavy Water Plant Facilities. (November 2007)</li><li>• Completed D&amp;D of M Area Facilities. (November 2007)</li><li>• Conduct surveillance and maintenance of reactor area and other facilities included within the scope of the project. (September 2008)</li></ul>					

#### **SR-0100 / Non-Closure Mission Support**

**5,000**

**4,954**

**5,000**

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.

In FY 2009, the following activities are planned:

- Sustainment of the Savannah River Sites natural resources, a forest fire protection program, secondary road system maintenance, erosion control, soil restoration and exterior boundary maintenance.
- Technical expertise for cultural resource management regulatory requirements, review of the National Environmental Policy Act and Comprehensive Environmental Response, Compensation and Liabilities Act documents for National Historic Preservation Act negotiations.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Technical expertise to obtain State grading permits, site specific soil survey and mapping information and animal control permits and provide game management/enforcement activities for the Savannah River Site.
- Execute grant programs with Historically Black Colleges and Universities focusing on scientific research related to environmental issues.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"><li>• Conduct atmospheric, water, terrestrial, and biological monitoring and provided independent oversight of the sampling activities. (FY 2007/September 2008/September 2009)</li><li>• Maintain Savannah River Site secondary roads/bridges and perform site boundary maintenance. (FY 2007/September 2008/September 2009)</li><li>• Manage a comprehensive fire management program that successfully protects the Savannah River Site from both on-site and off-site wildland fires. (FY 2007/September 2008/September 2009)</li><li>• Successfully manage Savannah River Site lands and natural resources in compliance with Federal and state regulatory requirements. (FY 2007/September 2008/September 2009)</li></ul>					

**SR-0101 / Savannah River Community and Regulatory Support**

**7,542                      7,432                      7,500**

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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, the following activities are planned:

- Continue grants to regulatory agencies under the Federal Facility Agreement and Agreement in Principle (including emergency management activities).
- Continue Payments-in-Lieu-of-Taxes to Aiken, Allendale, and Barnwell counties.
- Continue support for the Citizens Advisory Board for advice and recommendations.
- Continue the operation and maintenance of a public reading room for Savannah River documents to support communication and stakeholder involvement.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"><li>• Continue emergency planning and preparedness for the State of South Carolina from simulated or actual release of hazardous substances. (FY 2007/September 2008/September 2009)</li><li>• Continue grants to regulatory agencies under the Federal Facility Agreement and Agreement-in-Principle (including emergency management activities). (FY 2007/September 2008/September 2009)</li></ul>					

**SR-0014C / Radioactive Liquid Tank Waste  
Stabilization and Disposition-2035**

**617,105      610,908      705,742**

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 and ship the canisters to the Federal Repository for final disposal; 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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 will be started up in the third quarter of FY 2008. This will provide 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. The Department has selected caustic-side solvent extraction as the technology for separation of high-level 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 absorption onto granular monosodium titanate followed by filtration. Processing salt waste through the Salt Waste Processing Facility is planned to begin as early as September 2012 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.

The end-state for this project is the permanent disposal of all the liquid tank waste currently stored at the Savannah River Site as well as all legacy tank waste from planned nuclear materials stabilization activities. It will also result in the permanent closure of the remaining 49 underground storage tanks (two of the original 51 tanks were closed in place in FY 1998 using grout).

For the Salt Waste Processing Facility, a total of \$104,296,000 was appropriated in FY 2007, and \$9,910,000 for Project Engineering and Design (03-D-414) and 87,199,000 for construction was appropriated in FY 2008 and \$127,524,000 is requested in FY 2009 to continue construction (05-D-405). On September 24, 2007, a total project baseline cost of \$899,337,000 was approved. 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 response to Defense Nuclear Facilities Safety Board concerns, the Department has increased the safety level of the Salt Waste Processing Facility confinement system from a Performance Category 2 to Performance Category 3. This confinement system change added 26 months to the project schedule, and required re-design and additional engineering and construction efforts. Because of this delay, Savannah River has been developing an interim processing capability to ensure that waste tank space will be available to continue Defense Waste Processing Facility operations. This capability includes another modular caustic-side solvent extraction unit and an actinide removal process step. An expense funded data sheet can be found in the PBS Sub-project Appendix. In FY 2008, the request for the Interim Salt Waste

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Processing System was \$3,550,000, and \$15,291,000 is requested in FY 2009 for this project.

In FY 2009, the following activities are planned:

- Submit Waste Determination to the Nuclear Regulatory Commission for the planned closure of Tanks 1 through 8, Tanks 18 and 19.
- Continue H-Area Tank Farm Performance Assessment modeling.
- Prepare sludge batches in support of continued High Level Waste vitrification.
- Continue operation of Defense Waste Processing Facility and vitrify 186 High Level Waste canisters.
- Continue operation of the Modular Caustic-Side Solvent Extraction Unit and the Actinide Removal Process.
- Continue construction of decontaminated salt solution lag storage.
- Continue destruction of organics in Tank 48 so the waste can be safely removed and the tank returned to service.
- Continue design and construction of the Salt Waste Processing Facility.
- Continue operations for feed preparation activities for eventual closure of liquid waste tanks.
- Design and construct the Saltstone feed capability, the H-Area blend/hub tank and the transfer lines in support of the Salt Waste Processing Facility.
- Begin construction of the Defense Waste Processing Facility recycle alternative system to reduce the amount of recycle waste returning to the tank farms.
- Accelerate project design and construction to enable sludge preparation, including modifications for sludge staging and aluminum mitigation in Tank 42.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
High-Level Waste packaged for final disposition (Number of Containers)	2,374	2,560	2,746	5,862	47%
Liquid Waste in Inventory eliminated (Thousands of Gallons)	0	700	1,400	33,100	4%
Liquid Waste Tanks closed (Number of Tanks)	2	2	2	51	4%



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)

- Prepared Sludge Batch 4. (FY 2007)
- Commenced operations of the Modular Caustic Side Solvent Extraction Unit. (FY 2007)
- Continue design and construction of the Salt Waste Processing Facility. (FY 2007/September 2008/September 2009)
- Report on status of High-Level Waste Tanks. (March 2008/March 2009)
- Operate Actinide Removal Facility. (September 2008)
- Produce 186 canisters of vitrified high-level waste. (September 2008/September 2009)
- Actinide Removal Process/Modular Caustic-Side Solvent Extraction Unit will be available for integrated runs with feed available for full operations. (October 2008)

**Total, Savannah River**

**1,142,190**

**1,131,202**

**1,206,425**

**Explanation of Funding Changes**

FY 2009 vs.  
FY 2008  
(\$000)

**Defense Environmental Cleanup**

**Savannah River Site**

**2012 Completion Projects**

**SR-0011B / NM Stabilization and Disposition-2012**

- The decrease is due to a re-evaluation of the project as part of the overall strategy of plutonium disposition at Savannah River providing only for minimal design. The project is being reviewed in conjunction with the Plutonium Disposition project.

-8,868

**2035 Completion Projects**

**SR-0011C / NM Stabilization and Disposition-2035**

- Increase is attributable to preparation, startup, and processing of spent nuclear fuel in H Canyon, and startup preparations for HB-Line Phase I South Line, which is required to support processing of plutonium-bearing materials.

23,401

**SR-0012 / SNF Stabilization and Disposition**

- |   |        |
|---|--------|
| ▪ Decrease is due to anticipated increased receipts from foreign spent nuclear fuel shipments. These receipts will offset directly related operating costs. | -6,742 |
|---|--------|

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

- |  |         |
|--|---------|
| ▪ Decrease is the result of a reduction in the number of shipments of drummed legacy transuranic waste to the Waste Isolation Pilot Plant as well as offsite disposal of hazardous and mixed wastes. | -19,300 |
|--|---------|

**SR-0030 / Soil and Water Remediation**

- |  |        |
|--|--------|
| ▪ Decrease is due to the completion of source control remediation activities in Areas P, R, C and A/M. | -7,386 |
|--|--------|

**SR-0040C / Nuclear Facility D&D - 2035**

- |  |      |
|--|------|
| ▪ Decrease is attributable to C-Area outfall national pollutant discharge elimination system compliance upgrades that will be accomplished in FY 2008. | -830 |
|--|------|

**SR-0100 / Non-Closure Mission Support**

- |                          |    |
|--------------------------|----|
| ▪ No significant change. | 46 |
|--------------------------|----|

**SR-0101 / Savannah River Community and Regulatory Support**

- |                          |    |
|--------------------------|----|
| ▪ No significant change. | 68 |
|--------------------------|----|

**Tank Farm Activities**

**SR-0014C / Radioactive Liquid Tank Waste Stabilization and Disposition-2035**

Increases in funding are due to:

- |  |        |
|--|--------|
| ▪ Increases in construction of the Salt Waste Processing facility; tank bulk waste removal (Tanks 2, 3, 13, and 37) and cleaning and closure activities (Tanks 4, 5, 6, 8, 16, 18, and 19), allowing the site to meet the Federal Facility Agreement requirements for the Savannah River Site; acceleration of design and procurement for Tank 48 waste disposition to return it to service by September 2012 (to support Defense Waste Processing Facility and Salt Waste Processing Facility feed batch preparation); acceleration of design and construction of projects to enable the start of operations at the Salt Waste Processing Facility, including the Saltstone Feed Facility, Saltstone vaults, H- Area blend/hub tanks, Saltstone Feed Tanks and waste transfer lines, and acceleration of project design and construction to enable sludge preparation, including modifications for sludge staging and aluminum mitigation in Tank 42. | 94,834 |
|--|--------|

**Total, Savannah River**

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**75,223**

**Salt Waste Processing Facility, Savannah River Site, Aiken, South Carolina  
(Construction 05-D-405) - (SR-0014C)**

**1. Significant Changes**

The most recent approved Critical Decision, pursuant to Department of Energy Order 413.3A is Critical Decision 2, approved on September 24, 2007, with a total project cost of \$899,337,000. A Federal Project Director has been assigned to this project. This project data sheet is an update of the fiscal year 2008 project data sheet.

In May 2007, a bottoms-up cost estimate was completed to support the Critical Decision 2 package, and further adjusted based on comments 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 previous \$680 million estimate were resolution of structural/geotechnical issues associated with the Defense Nuclear Facilities Safety Board letter of January 10, 2007, the implementation of more stringent quality assurance standards (Nuclear Quality Assurance Standard NQA-1 in lieu of International Standards Organization Standard ISO-9001), changes in labor rates for professional and support staff, and additional Performance Category 3 requirements not identified in initial estimates. In addition, approximately \$53 million in operating costs were determined to be part of project costs and are now included in the Total Project Cost.

The hot operations startup date for the facility is November 2013, which includes 60 weeks of schedule contingency. (The early start date is September 2012).

**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 (Constructi on Complete)	D&D Start	D&D Complete
FY 2005	06/25/2001	08/12/2004	4Q2005	4Q2005	4Q2005	4Q2008	N/A	N/A
FY 2006	06/25/2001	08/12/2004	3Q2006	3Q2006	3Q2006	4Q2009	N/A	N/A
FY 2007	06/25/2001	08/12/2004	1Q2008	3Q2007	3Q2007	1Q2011	N/A	N/A
FY 2008	06/25/2001	08/12/2004	1Q2008	3Q2007	3Q2007	1Q2011	N/A	N/A
FY 2007 Notification	06/25/2001	08/12/2004	4Q2008	4Q2007*	4Q2008	1Q2014**	N/A	N/A
FY 2009	06/25/2001	08/12/2004	4Q2008	4Q2007*	4Q2008	1Q2014**	N/A	N/A

\* CD-2 was approved on September 24, 2007.

\*\*This date reflects 60 weeks of schedule contingency.

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 (D&D) work; D&D Complete – Completion of D&D work

	(fiscal quarter or date)							
	Performance Baseline Validation	CD-2/3A	CD-3B					
FY 2005	N/A	N/A	N/A					
FY 2006	N/A	N/A	N/A					
FY 2007	N/A	N/A	N/A					
FY 2008	N/A	N/A	N/A					
FY 2007 Notification	4Q2007	4Q2007	2Q2008					
FY 2009	4Q2007	4Q2007	2Q2008					

CD-3A – Site Preparation, Early Construction and Long Lead Procurement

CD-3B – Early Construction and Long Lead Procurement

### 3. Baseline and Validation Status

	(dollars in thousands)							
	TEC, PED	TEC, Constructi on	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC	
FY 2005	TBD	TBD	370,000	TBD	N/A	TBD	TBD	
FY 2006	TBD	TBD	336,882	103,960	N/A	103,960	440,842	
FY 2007	228,600	331,000	559,600	120,400	N/A	120,400	680,000	
FY 2008	228,705	497,199	725,904	173,433	N/A	173,433	899,337	
FY 2007 Notification	228,796	497,199	725,996	173,341	N/A	173,341	899,337	
FY 2009	228,705	497,199	725,904	173,433	N/A	173,433	899,337	

No construction funds, except for approved site preparation, early construction and long lead procurements (Critical Decision 3A/3B), 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 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 high-level 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 supernatant 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 high-level 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 high-level waste stored in underground storage tanks at the Savannah River Site is a crucial prerequisite for completing high-level waste disposal. Without a suitable method for salt management, the Department would not be able to place the high-level waste in a configuration acceptable for safe disposal.

This project scope includes design, construction, and commissioning of the Salt Waste Processing Facility, to safely separate the high-activity fraction from the low-activity fraction of the high-level 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 high-level 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 objectives of the Salt Waste Processing Facility are to demonstrate Caustic-Side Solvent Extraction and actinide removal technologies while meeting production processing rates required for Savannah River Site accelerated cleanup goals. Presently, the waste processing nameplate capacity of the facility is a nominal 5.5 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. In 2003, an independent peer review was performed by American Society of Mechanical Engineers/Institute for Regulatory Science. The resulting report stated: The Caustic-Side Solvent Extraction technology (for cesium removal) and monosodium titanate/filtration technology (for removal of actinides and strontium) have reached the necessary technical maturity required for preliminary design for deployment at the Savannah River Site. Additional technology development needed to support backup technologies may also be conducted in the future if required for risk mitigation. From August to November 2006, an independent technical review was conducted on the Salt Waste Processing Facility 30% design.

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.

The initial Salt Waste Processing Facility radiological confinement design developed by the Salt Waste Processing Facility contractor and validated by the Integrated Project Team was based on accident

scenario assumptions and bounding analyses conducted per Department of Energy Order 420.1A, *Facility Safety*, and its supporting standards.

In an August 27, 2004, letter and in Recommendation 2004-2, the Defense Nuclear Facilities Safety Board raised issues regarding the adequacy of Department of Energy standards for design of the confinement features of the Department of Energy nuclear facilities, including the Salt Waste Processing Facility. Recommendation 2004-2, *Active Confinement Systems*, was accepted by the Department of Energy on March 18, 2005.

In response to Defense Nuclear Facility Safety Board concerns, the Department considered several options for assuring reliable confinement of Salt Waste Processing Facility high-hazards materials in the event of an earthquake or other natural phenomena. From evaluation of these options, the Department has concluded that adopting a local, safety-related Performance Category within a Performance Category 3 building to be the most prudent course of action for Salt Waste Processing Facility. Where safety analysis indicates confinement barriers are necessary for worker protection, the Salt Waste Processing Facility Preliminary Design has been revised to incorporate a Performance Category 3 designation for safety-related piping, process vessels, and other components that would provide a local confinement barrier. Portions of the facility housing safety-related Performance Category 3 local confinement barriers are also designated to resist natural phenomena events. As a defense-in-depth measure, safety related active ventilation systems will be provided to protect workers from process upsets involving a significant release of radioactive material due to non-Natural Phenomenon Hazards events (i.e., tank overflow or spills).

The Department of Energy Savannah River Operations Office directed Parsons to initiate development of an Enhanced Preliminary Design that implemented a Performance Category 3 confinement approach on November 23, 2005. Based on a rough order of magnitude estimate provided per the Department of Energy Savannah River Operations Office's request, Parsons identified as much as a 26 month slip in the Salt Waste Processing Facility project schedule approved at Critical Decision 1, principally due to delays and re-design associated with implementation of Performance Category 3 confinement. In addition, a cost impact of up to \$240 million was also projected based on rough order of magnitude estimates. Initiation of Hot Operations for Salt Waste Processing Facility was forecast for September 2011.

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 \$899.3 million. 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 NQA-1 in lieu of International Standards Organization Standard ISO 9001, resolution of structural/geotechnical issues associated with the Defense Nuclear Facility Safety Board letter of January 10, 2007, 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.

The 80 percent confidence completion date for the start of hot operations is November 2013, which includes 60 weeks of schedule contingency.

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

- 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 - 3: Approve Start of Construction - September 2008
- Critical Decision - 4: Approve Start of Operations - November 2013

## 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	9,910	9,910	63,167
Total, PED (03-D-414)	228,705	228,705	228,705
Construction			
FY 2005	5,792	5,792	0
FY 2006	495	495	0
FY 2007*	0	0	1,907
FY 2008	87,199	87,199	63,640
FY 2009	127,524	127,524	123,915
FY 2010	133,247	133,247	164,795
FY 2011	105,854	105,854	105,854
FY 2012	28,532	28,532	28,532
FY 2013	8,556	8,556	8,556
Total, Construction (05-D-405)	497,199	497,199	497,199
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

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2007*	104,296	104,296	77,507
FY 2008	97,109	97,109	126,807
FY 2009	127,524	127,524	123,915
FY 2010	133,247	133,247	164,795
FY 2011	105,854	105,854	105,854
FY 2012	28,532	28,532	28,532
FY 2013	8,556	8,556	8,556
Total, TEC	725,904	725,904	725,904
Other Project Cost (OPC)			
OPC except D&D			
Thru FY 2006	22,447	22,447	22,447
FY 2007	9,048	9,048	9,048
FY 2008	10,090	10,090	10,090
FY 2009	13,476	13,476	13,476
FY 2010	20,726	20,726	20,726
FY 2011	25,652	25,652	25,652
FY 2012	56,887	56,887	56,887
FY 2013	11,960	11,960	11,960
FY 2014	3,147	3,147	3,147
Total, OPC except D&D	173,433	173,433	173,433
D&D			
Total, D&D	0	0	0
OPC			
Thru FY 2006	22,447	22,447	22,447
FY 2007	9,048	9,048	9,048
FY 2008	10,090	10,090	10,090
FY 2009	13,476	13,476	13,476
FY 2010	20,726	20,726	20,726
FY 2011	25,652	25,652	25,652
FY 2012	56,887	56,887	56,887
FY 2013	11,960	11,960	11,960
FY 2014	3,177	3,147	3,147
Total, OPC	173,433	173,433	173,433
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	107,199	107,199	136,987
FY 2009	141,000	141,000	137,391
FY 2010	153,973	153,973	185,521
FY 2011	131,506	131,506	131,506
FY 2012	85,419	85,419	85,419



	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2013	20,516	20,516	20,516
FY 2014	3,147	3,147	3,147
Total, TPC	899,337	899,337	899,337

\*Includes an operating plan change adding \$52,796,000 in PED, September 27, 2007.

## 6. Total Estimated Costs

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	
Total Estimated Cost (TEC)			
Design (PED)			
Design	206,796		
Contingency	22,000		
Total, PED (03-D-414)	228,796	162,000	
Construction			
Site Preparation	27,263		
Equipment	89,508		
Other Construction	316,428		
Contingency	64,000		
Total, Construction (05-D-405)	497,199	397,600	
Total, TEC	725,996	559,600	
Contingency, TEC	86,000		
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	0		
Conceptual Design	14,445		
Start-Up	96,940		
Contingency	22,000		
Support (DOE/M&O)	39,956		
Total, OPC except D&D	173,341	120,400	
D&D			
D&D			
Contingency			
Total, D&D	0	0	
Total, OPC	173,341	120,400	
Contingency, OPC			
Total, TPC	899,337	680,000	
Total, Contingency			

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	

## 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)	4QFY2012*
Expected Useful Life (number of years)	17
Expected Future Start of D&D	N/A

*\* The operational start date above is based on data used to support the \$899.3 million preliminary project cost estimate and associated preliminary performance measurement baseline (early finish) completion date. Should the projected schedule contingency of 60 weeks be fully realized, then the start of operation milestone would move out to the first quarter of fiscal year 2014.*

	(dollars in thousands)			
	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	61,686	37,400	960,425	
Maintenance	10,686	6,600	184,975	
Total, Operations & Maintenance	72,572	44,000	1,145,400	TBD

Note: This information was based on data used to support the \$899,337,000 preliminary project cost estimate.

## 9. Required D&D Information

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 (formerly Method of Performance)**

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 contractor staff will be involved in areas concerning high level waste system interfaces, feed, and product specifications, etc.



**04-D-414, 3013 Container Surveillance and Storage Capability, Project Engineering and Design,  
Savannah River Site, Aiken, South Carolina (SR-0011B)**

**1. Significant Changes**

- The most recent DOE Order 413.3A Critical Decision-1 was approved on March 9, 2006, with a Total Project Cost range of \$109,745,000 to \$113,000,000.
- The Total Project Cost is estimated to be in the range of \$132,000,000 to \$148,000,000, an increase of \$35,000,000 from previous estimates.
- A Federal Project Director with certification level III has been assigned to this project.
- The original acquisition strategy was to locate the 3013 Container Surveillance and Storage Capability in the F Area Material Storage building. In September 2004, the Department of Energy instituted new policies regarding the Design Basis Threat. Analysis shows that the original strategy to use the F Area Material Storage building is no longer cost effective due to the estimated \$135,000,000 increase required for the Design Basis Threat security upgrades. As a result in April 2005, the 3013 Container Surveillance and Storage Capability were relocated to the K Area Material Storage building. Total Estimated Cost/Total Project Cost has been revised to include the cost of conceptual and definitive design cost incurred for the F Area Material Storage building location. The scheduled completion dates for Final Design Complete and Physical Construction Start have been revised to reflect the delays encountered by shifting project location.
- In October 2006, the DOE revised the project's safety strategy by implementing the Defense Nuclear Facilities Safety Board 2004-2 Recommendation and DOE Order 420.1B. This implementation increased both the Total Project Cost as well as the schedule for this line item due to the inclusion of additional safety systems and analysis.
- Since the Container Surveillance and Storage Capability project Critical Decision-1 was approved, key program assumptions have changed. Specifically, the operational life of H-Canyon has been extended to 2019 and the Mixed Oxide Fuel Fabrication Facility project's proposed through-put has increased necessitating a re-evaluation of mission need for the project. In 2007 DOE began evaluation of an alternative approach that would combine the Container Surveillance and Storage Capability processes with the Plutonium Disposition Project. Due to this uncertainty, the project schedule critical decision milestones have been delayed nine months.

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

	CD-0 Mission Need	CD-1 Design Start	CD-2 Performance Baseline	Final Design Complete	CD-3 Construction Start	CD-4 Physical Construction Complete	D&D Start	D&D Complete
FY 2005 Budget Request	1Q FY 2004	2Q FY2004	2Q FY2005	4Q FY2005	1Q FY2005	2Q FY2007	N/A	N/A
FY 2006 Budget Request	3Q FY2005	TBD	TBD	TBD	TBD	TBD	N/A	N/A
FY 2007 Budget Request	3Q FY2005	2Q FY2006	1Q FY2007	1Q FY2008	4Q FY2006	3Q FY2009	N/A	N/A
FY 2006 Congressional Notification	3Q FY2005	2Q FY2006	1Q FY2007	1Q FY2008	3Q FY2007	4Q FY2010	N/A	N/A
FY 2008 Budget Request	3Q FY 2005	1Q FY2008	1Q FY2007	1Q FY2008	3Q FY2007	4Q FY2010	N/A	N/A
FY 2009 Budget Request	Oct 3, 2003	9 Mar 2006	1Q FY2009	3Q FY2009	3Q FY2009	3Q FY2013	N/A	N/A

Critical Decision-0 – Approve Mission Need

Critical Decision -1 – Approve Alternative Selection and Cost Range

Critical Decision -2 – Approve Performance Baseline

Critical Decision -3 – Approve Start of Construction

Critical Decision -4 – Approve Start of Operations or Project Closeout

Decontamination and Decommissioning Start – Start of Demolition & Decontamination work

Decontamination and Decommissioning Complete –Completion of Decontamination and Decommissioning work

Schedules are to be determined and the preliminary Critical Decision-4 range is 4Q FY 2012 to 4Q FY 2013.

## 3. Baseline and Validation Status

	<b>TEC, PED</b>	<b>TEC, Construction</b>	<b>TEC, Total</b>	<b>OPC, Except D&amp;D</b>	<b>OPC, D&amp;D</b>	<b>TPC</b>
FY 2005 Budget Request	7,141	38,609	45,750	27,870	N/A	73,620
FY 2006 Budget Request	N/A	N/A	N/A	N/A	N/A	TBD or N/A
FY 2007 Budget Request	21,350	64,900	86,250	11,000	0	97,250
FY 2006 Congressional Notification	28,491	66,521	95,012	14,733	0	109,745
FY 2008 Budget Request	28,491	66,521	95,012	14,733	0	109,745
FY 2009 Budget Request	39,306	75,000 to	114,000 to	18,000 to	0	132,000 to

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**3013 Container Surveillance and Storage Capability/**

**Project Engineering and Design/Savannah River Site,  
Aiken, South Carolina**

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**FY 2009 Congressional Budget**

		88,000	127,000	21,000		148,000
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Previous budget requests were preliminary estimates only. The current preliminary cost estimate range is \$132,000K to \$148,000K. No construction funds, excluding approved long lead procurement and dismantle and removal, will be used until the project performance baseline has been validated and CD-3 has been approved.

<sup>1</sup> FY 2005 Budget Request includes the 3013 Container Surveillance and Storage Capability in F-Area only.

<sup>2</sup> FY 2007 Budget Request includes the 3013 Container Surveillance and Storage Capability in K Area Material Storage project only.

<sup>3</sup> FY 2006 Congressional Notification, FY 2008 Budget Request, and FY 2009 Budget Request includes both the F Area Material Storage and K Area Material Storage projects. Total Project Costs includes Preliminary Engineering and Design costs funded by 04-D-414 (\$28,491,000) Total Project Costs does not include any cost for 2004 or 2005 Design Basis Threat upgrades. All costs related to Design Basis Threat are captured in the Safeguards and Security budget.

<sup>4</sup> FY2009 Budget Request includes incorporation of the DOE directed added scope for Defense Nuclear Facilities Safety Board 2004-2 Recommendation and DOE Order 420.1B implementation. These scope changes primarily are the basis for the cost and schedule increases.

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

This project provides for the long-term capability for surveillance of 3013 plutonium storage containers in accordance with the DOE-STD-3013, including the ability to re-stabilize and re-package any off-normal materials detected during surveillance. The storage and non-destructive surveillance capability will be met via installation of the infrastructure necessary for K Area to routinely unload shipping packages and handle the 3013 containers. Additionally, the project will install the capability to perform multiple non-intrusive inspections of the 3013 storage containers and their contents to detect conditions adverse to safe long-term storage, such as excessive pressurization, corrosion, and oxidation.

The scope includes equipment to perform visual inspection and digital photography of the 3013 outer container, digital radiography of the 3013 container and contents; container leak detection, weight check, and impurity analysis. The plutonium stabilization and packaging portion of the project installs a glove box line, with attendant support services, to provide a limited capability (i.e., not production capacity) to open and remove the contents of 3013s, stabilize the material via a furnace, and then repack in a new 3013 container.

The project was originally planned to be located in the F Area Material Storage building. However, the project as previously planned would have incurred extraordinary capital and operating increases for security upgrades in order to comply with the latest Design Basis Threat Criteria. Because modifications to the 105-K building at the Savannah River Site had already been planned to meet the 2004 Design Basis Threat criteria, in April 2005, the Department directed that the facility be relocated to the K Area Material Storage building. The revised project will deliver the same capability planned for the F Area Material Storage, including container surveillance equipment that meets the Department of Energy Standard 3013, as well as additional storage capability for the 3013 containers. The Digital Radiography machine modification completed utilizing F Area Material Storage Container Surveillance and Storage Capability appropriation is being placed in service in the interim non-destructive surveillance program being installed in the K Area Material Storage slug vault room.

The project is subject to DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets. The project received Critical Decision 1 approval in March 2006, and immediately began preliminary design funded by 04-D-414 Project Engineering and Design. In October 2006, the project's safety systems were modified to address implementation of the Defense Nuclear Facilities Safety Board 2004-2 and DOE Order 420.1B.

The Total Estimated Cost estimate range is preliminary and is based on the conceptual design. Accordingly, baselines for Total Estimated Cost will be established at the completion of preliminary design (Critical Decision-2) and after the associated external independent reviews.

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)

		(dollars in thousands)	
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2004 (F Area Mat. Storage)	7,141	7,141	3,371
FY 2005 (F Area Mat. Storage) <sup>1</sup>	0	0	3,563
FY 2006 (F Area Mat. Storage) <sup>1</sup>	0	0	207
FY 2006 (KAMS)	18,415	18,415	2,733
FY 2007 (KAMS)	2,935	2,935	12,532
FY 2008 (KAMS)	0	0	4,201
FY 2009 (KAMS)	2,032	2,032	3,916
Total, PED	30,523	30,523	30,523
Construction			
FY 2004 (F Area Mat. Storage)	4,621	1,621	0
FY 2005 (F Area Mat. Storage) <sup>2</sup>	0	0	1,323
FY 2006 (KAMS) <sup>3</sup>	0	3,000	0
FY 2007 (KAMS)	0	0	1,740
FY 2007 (F Area Mat. Storage) <sup>2</sup>	0	0	0
FY 2008 (KAMS)	10,900	10,900	662
FY 2009 (KAMS)	0	0	11,796
FY 2010 (KAMS)	27,018	27,018	27,018
FY 2011 (KAMS)	18,867	18,867	18,867
FY 2012 (KAMS)	TBD	TBD	TBD
FY 2013 (KAMS)	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2004 (F Area Mat. Storage)	11,762	8,762	3,371
FY 2005 (F Area Mat. Storage)	0	0	4,886



	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2006 (F Area Mat. Storage)	0	0	207
FY 2006 (KAMS)	18,415	21,415	2,733
FY 2007 (KAMS)	2,935	2,935	14,272
FY 2007 (F Area Mat. Storage)	0	0	0
FY 2008 (KAMS)	10,900	10,900	4,863
FY 2009 (KAMS)	2,032	2,032	15,712
FY 2010 (KAMS)	27,017	27,018	27,018
FY 2011 (KAMS)	18,867	18,867	18,867
FY 2012 (KAMS)	TBD	TBD	TBD
FY 2013 (KAMS)	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
FY 2004 (F Area Mat. Storage)	3,332	3,332	3,332
FY 2005 (F Area Mat. Storage)	401	401	401
FY 2005 (KAMS)	1,005	1,005	1,005
FY 2006 (KAMS)	1,407	1,407	1,407
FY 2007 (KAMS)	588	588	588
FY 2008 (KAMS)	1,322	1,322	1,322
FY 2009 (KAMS)	1,322	1,322	1,322
FY 2010 (KAMS)	TBD	TBD	TBD
FY 2011 (KAMS)	TBD	TBD	TBD
FY 2012 (KAMS)	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D			
FY	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
OPC			
FY 2004 F Area Mat. Storage)	3,332	3,332	3,332
FY 2005 (F Area Mat. Storage)	401	401	401
FY 2005 (KAMS)	1,005	1,005	1,005
FY 2006 (KAMS)	1,407	1,407	1,407
FY 2007 (KAMS)	588	588	588
FY 2008 (KAMS)	1,322	1,322	1,322
FY 2009 (KAMS)	1,322	1,322	1,322
FY 2010 (KAMS)	TBD	TBD	TBD
FY 2011 (KAMS)	TBD	TBD	TBD
FY 2012 (KAMS)	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2004 (F Area Mat. Storage)	15,094	12,094	6,703
FY 2005 (F Area Mat. Storage)	401	401	5,287
FY 2005 (KAMS)	1,005	1,005	1,005
FY 2006 (F Area Mat. Storage)	0	0	207
FY 2006 (KAMS)	19,822	22,822	4,140
FY 2007 (KAMS)	3,523	3,523	14,860
FY 2007 (F Area Mat. Storage)	0	0	0

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2008 (KAMS)	12,222	12,222	6,185
FY 2009 (KAMS)	3,354	3,354	17,034
FY 2010 (KAMS)	TBD	TBD	TBD
FY 2011 (KAMS)	TBD	TBD	TBD
FY 2012 (KAMS)	TBD	TBD	TBD
FY 2013 (KAMS)	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Design: The original FY 2005 appropriation was \$3,000,000, which was reduced \$23,985 due to a government-wide rescission. The Project was further reduced \$2,976,015 from FY 2005 appropriation plus \$3,105,000 from the FY 2004 appropriation to provide for Congressional Directed Activities pursuant to the FY 2005 Emergency Supplemental Appropriations Act.

Construction: The original FY 2005 appropriation was \$20,640,000, which was reduced \$165,000 due to a government-wide rescission. The Project was further reduced \$17,475,000 from the FY 2005 appropriation to provide for Congressional Directed Activities pursuant to the FY 2005 Emergency Supplemental Appropriations Act. FY 2006 obligations include \$3,000,000 carryover funds from the 3013 Container Surveillance and Storage Capability in F Area Material Storage Project.

## 6. Details of Project Cost Estimate

### Total Estimated Costs (dollars in thousands)

(dollars in thousands)		
Current Total Estimate	Previous Total Estimate	Original Validated Baseline

#### Total Estimated Cost (TEC)

##### Design (PED)

Design - F Area Mat.			
Storage Actual Costs	7,141	6,934	N/A
Design – KAMS Estimate	18,267	16,442	N/A
Contingency	5,115	5,115	N/A
Total, PED	30,523	28,491	0

##### Construction

Site Preparation	N/A	N/A	N/A
Equipment	TBD	6,043	N/A
Other Construction - F			
Area Mat. Storage	TBD	1,323	N/A
Other Construction –			
KAMS	TBD	41,918	N/A
Contingency	TBD	17,237	N/A
Total, Construction	TBD	66,521	0

Total, TEC	TBD	95,012	TBD
Contingency, TEC	TBD	22,352	TBD

#### Other Project Cost (OPC)

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
OPC except D&D			
Conceptual Planning	0	0	N/A
Conceptual Design <sup>1</sup>	TBD	5,390	N/A
Other OPC - F Area Mat. Storage <sup>1</sup>	733	733	N/A
Other OPC – KAMS	TBD	7,410	N/A
Start-Up	TBD	1,200	N/A
Contingency	TBD	0	N/A
Total, OPC except D&D	TBD	14,733	0
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	0	0	0
Total, OPC	TBD	14,733	0
Contingency, OPC	TBD	0	TBD
Total, TPC	TBD	109,745	TBD
Total, Contingency	TBD	22,352	TBD

The previous total estimate on the FY 2008 Project Data Sheet contained erroneous data. Shown above is the CD-1 estimate.

<sup>1</sup> Conceptual Design of \$3,000,000 plus \$733,000 in Other Project Costs was incurred prior to the decision to relocate the Container Surveillance and Storage Capability to the K-Area Material Storage building. Other Project Costs do not include F Area Material Storage related Safeguards and Security and Design Basis Threat (\$3,500,000) cost funded under the safeguards and security appropriation.

## 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)	TBD
Expected Useful Life (number of years)	9
Expected Future Start of D&D for new construction (fiscal year)	TBD

**(Related Funding Requirements)**

	(Annual) Current Estimate	(Annual) Prior Estimate	(Life Cycle) Current Estimate	(Life Cycle) Prior Estimate
Operations	1,126	TBD	1,205	TBD
Maintenance	0	TBD	0	TBD
Total Related Funding	1,126	TBD	1,205	TBD

**9. Required D&D Information**

D&D Information Being Requested	Square Feet
Area of new construction	N/A
Area of existing facility(ies) being replaced	N/A
Area of any additional space that will require D&D to meet the "one-for-one" requirement	N/A

As part of the Office of Environmental Management's 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 Site's inventory from FY 2003 to FY 2006.

**10. Acquisition Approach (formerly Method of Performance)**

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 2007	FY 2008	FY 2009
Closure Sites			
Ashtabula	1,295	292	0
Closure Sites Administration	56,648	11,726	13,209
Fernald	254,754	0	2,100
Miamisburg	39,869	30,032	30,574
Rocky Flats	115,487	0	0
Total, Closure Sites	468,053	42,050	45,883

Sites included in the Closure Activities (Defense) are: Ashtabula, Fernald, and Mound in Ohio, and Rocky Flats in Colorado.

These sites have or will have completed physical completion by 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 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.

### Ashtabula

#### Site Overview

The mission of the Ashtabula Closure Project was to safely remediate the privately-owned RMI Titanium Company Extrusion Plant (formerly known as Reactive Metals, Inc.) to allow the Ohio Department of Health and Ohio Environmental Protection Agency to release the site back to the RMI Titanium Company.

The site contractor declared physical completion in November 2006, and DOE accepted the declaration in December 2006. The Ashtabula Closure Project consisted of remediation of facilities, disposition of equipment, and remediation of affected land areas and groundwater. Facility decommissioning was primarily accomplished by demolition and disposal of debris in off-site disposal facilities. Contaminated soil, asphalt, and concrete were shipped to a low-level waste disposal site for burial. Groundwater remediation was accomplished through source-term removal to on-site release limits. At the end of the project, 35 facilities were demolished or free-released. Approximately 42,000 m<sup>3</sup> of low-level and mixed low-level waste consisting of soil, concrete, and asphalt was remediated as part of the cleanup effort. All legacy waste and all equipment formerly used during production were shipped for disposal to commercial licensed disposal facilities.

## **Site Description**

The Ashtabula Closure Project was located one mile south of Lake Erie approximately 50 miles northeast of Cleveland, Ohio.

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

The site of the former Reactive Metals, Inc. extrusion plant was remediated per a Nuclear Regulatory Commission approved, Ohio Department of Health adopted, Decommissioning Plan. Completion will allow the Ohio Department of Health to release the site to the owner, the RMI Titanium Company and terminate their radioactive materials license.

The scope of the Ashtabula Closure Project included environmental restoration for three release sites contaminated by Weapons Program activities from 1962 to 1988. The three release sites were: Buildings and Equipment; Solid Waste Management Unit soil and groundwater; Non-Solid Waste Management Unit soil. The Buildings and Equipment release site was accomplished principally by demolition or free-release of 35 site buildings and disposal of remediation waste, including equipment, as low-level waste. The Solid Waste Management Unit release site was accomplished by bioremediation followed by soil excavation, and shipment of the remaining radioactively contaminated soil to a disposal site. Remediation of the non-Solid Waste Management Unit soils, including soil beneath site facilities, was accomplished principally by excavation and shipment to a disposal site. Non-Solid Waste Management Unit soils were estimated at 27,000 tons. Bulk waste shipment of all remediation waste, including contaminated soil, was primarily via railroad gondola cars. Interim support facilities were provided during remediation.

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

With the exception of Area C-West, owned by the City of Ashtabula, all land involved with the Ashtabula Closure Project is owned by the RMI Titanium Company. Upon Ohio Department of Health regulatory release of the site license, following completion of remediation activities, the property will be returned to the site owner. All property was remediated for "Free and Unrestricted Use." The Department of Energy accepted completion of the site in December 2006. The Ohio Department of Health terminated the site license in the January 2007, thus achieving the project end state.

The Records Management function will transition to Legacy Management beginning in FY 2008. Groundwater monitoring and analysis is no longer necessary following project completion and responsibility for the site will be returned to its owner.

## **Regulatory Framework**

The Site Treatment Plan provided information pertaining to treatment and disposal of Ashtabula Closure Project Mixed Waste to meet the requirements of the Federal Facility Compliance Act. The scope and planned actions necessary to remove the Extrusion Plant Site from service, remediate the site, and release the site for unrestricted use (termination of the RMI Titanium Company's Nuclear Regulatory Commission license) was conducted per the requirements of Title 10 Code of Federal Regulations Part 40.

## **Contract Synopsis**

RMI Titanium Company, the site owner, was responsible for performing site cleanup activities through 2003. In December 2003, DOE chose to terminate the contract with the RMI Titanium Company to support comprehensive evaluation of the work to be performed and how it could most efficiently be accomplished. DOE chose to complete Ashtabula Closure Project remediation through a competitively bid cost plus incentive fee task order awarded under the EM Indefinite Delivery/Indefinite Quantity contract (small business). The new closure contract was awarded in September 2005.

## **Cleanup Benefits**

Work associated with final remediation and completion of DOE's responsibilities at the Ashtabula Closure Project was completed in December 2006 and the site was remediated to satisfy provisions of the Ohio Department of Health Decommissioning Plan. The site was released back to the RMI Titanium Company in January 2007.

## **Fernald**

### **Site Overview**

In 1952 Fernald began its uranium production mission as the Feed Materials Production Center in support of the nation's weapons program. During 37 years of operation, 462 million pounds of pure uranium metal products were produced for use in the production reactors at DOE's Hanford and Savannah River facilities. When operations ceased in 1989, there were 31 million pounds of uranium product present on site, 2.5 billion pounds of waste, and 2.75 million cubic yards of contaminated soil and debris. In addition, a 223-acre portion of the underlying Great Miami Aquifer was found to be affected by uranium at levels above drinking water standards.

In 1992 the site was renamed the Fernald Environmental Management Project and the mission was formally changed to environmental restoration under the Comprehensive Environmental Response, Compensation, and Liability Act. To facilitate restoration, the Comprehensive Environmental Response, Compensation, and Liability Act work scope for the 1,050-acre facility was divided into five operable units. Since 1992, Comprehensive Environmental Response, Compensation, and Liability Act remedial investigations and feasibility studies have been completed for each of the operable units, and final Records of Decision to establish cleanup levels and document the cleanup remedies have been signed for each by DOE, United States Environmental Protection Agency, and Ohio Environmental Protection Agency.

The contractor declared physical completion at Fernald in October 2006. The DOE has completed their physical acceptance review, and final acceptance occurred in January 2007. The site transferred to the Office of Legacy in FY 2008.

### **Site Description**

The Fernald Closure Project environmental restoration site encompasses 1,050 acres in southwestern Ohio, which is divided into five operable units: the waste pits (Operable Unit 1); other waste units (Operable Unit 2); the Production Area facilities and legacy waste inventories (Operable Unit 3); Silos 1

through 4 (Operable Unit 4); and contaminated environmental media, including soil, sediment and groundwater (Operable Unit 5).

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

The Fernald wastes included process-generated waste (the most radioactive and/or hazardous waste on-site) from multiple sources. These multiple sources included Silos 1 and 2 containing radium-bearing residues from the uranium extraction of pitchblende ores, Silo 3 that contained radium-bearing metal oxides, the waste pits that contained low-level radioactive waste, and millions of cubic feet of containerized waste material from the uranium metals production. The strategy to remediate these sources included characterization, treatment, packaging, transportation, and final disposition. Following the completion of these activities, all process-generated waste and related structures were dispositioned/demolished.

Approximately 975 acres of the 1,050-acre property were restored to beneficial use as an undeveloped park, and approximately 75 acres will be dedicated to the footprint of the On-Site Disposal Facility. Contaminated portions of the aquifer will be restored to beneficial use as a drinking water supply, and long-term stewardship actions will be put in place consistent with the final land use.

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

The contractor declared physical completion in October 2006, and project end-state was achieved in January 2007. The final remedial actions included: facility decontamination and dismantlement; on-site disposal of the majority of contaminated soil and decontamination and dismantlement debris; off-site disposal of the contents of the two K-65 Silos (Silos 1 and 2), Silo 3, waste pit material, nuclear product inventory, low-level waste, mixed waste, and limited quantities of soil and decontamination and dismantlement debris not meeting on-site waste acceptance criteria; and treatment of contaminated groundwater to restore the Great Miami Aquifer.

### **Regulatory Framework**

In 1986 DOE/U.S. Environmental Protection Agency and the Ohio Environmental Protection Agency signed the Comprehensive Environmental Response, Compensation, and Liability Act Federal Facility Agreement. It was further agreed that DOE would undertake particular activities to bring Fernald Closure Project into compliance with the Clean Air Act and Resource Conservation and Recovery Act. Following the physical completion of the site in 2006, State regulatory staff agreed in 2007 to extend the milestone date for final disposition of Fernald low-level mixed waste (Silo waste) until 2010 to allow time for DOE to resolve unforeseen waste treatment and disposal issues. This action did not adversely impact site physical completion.

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

DOE's plan for Fernald silos residues (wastes) is as follows: Silo 1 and 2 waste is at Waste Control Specialists, LLC, Texas for interim storage pending ultimate final disposal. Waste Control Specialists was granted a draft disposal license in October 2007. This draft license is subject to public comment and review. This process could take up to one year. If the permanent disposal license is not granted, an alternate disposal facility will need to be identified. Waste Control Specialists' existing storage license conditions would require removal of the waste from their facility.



Silo 3 waste was shipped to Energy Solutions (formerly known as Envirocare), Utah for disposal.

There is a pending 1986 Natural Resources Damages lawsuit claiming that DOE damaged the groundwater. The site has completed remediation activities per Comprehensive Environmental Response, Compensation, and Liability Act requirements. A status briefing and settlement conference was held September 20, 2007, with the Federal Judge overseeing the case and representatives of the Ohio Attorney General's Office, the U.S. Department of Justice and DOE. No settlement was reached nor was a trial date set, although some progress was made in discussing settlement. The Judge continues to encourage both parties to continue settlement negotiations prior to filing pretrial motions due by February 1, 2008. Based upon the current status of settlement negotiations, this issue may extend into FY 2009.

### **Interdependencies**

In FY 2008 the site transferred to the Office of Legacy Management for long-term monitoring and maintenance.

### **Contract Synopsis**

Fluor Fernald is the prime contractor comprised of four teaming partners: Fluor Daniel, Inc, Jacobs Engineering, Duratek, and Nuclear Fuel Services. In November 2000, the Department of Energy and Fluor Fernald entered into a closure contract that incentivized Fluor Fernald to reduce the cost and schedule of the Fernald site cleanup.

FY 2007 was the last year of the Fluor Fernald contract. Fluor Fernald declared physical completion on October 29, 2006, with 90 percent of contract fee paid in FY 2007. The final 10 percent contract fee settlement will occur in FY 2008 subsequent to settlement of final contract cost. Management of post-closure pension and benefit liabilities (transferred to Legacy Management in FY 2008), and contract closeout activities are expected for a number of years under the EM Consolidated Business Center.

### **Cleanup Benefits**

Work associated with final remediation and completion of the Fernald site was completed in January 2007. Approximately 975 acres of the 1,050-acre property were restored to beneficial use as an undeveloped park, and approximately 75 acres will be dedicated to the footprint of the On-Site Disposal Facility. Contaminated portions of the aquifer will be restored to beneficial use as a drinking water supply, and long-term stewardship actions will be put in place consistent with the final land use. Upon acceptance of the physical completion by DOE, operational management of the site's long-term stewardship activities were transferred to the Office of Legacy Management in FY 2007.

## **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 new cost plus incentive fee Miamisburg Closure Project contract. The Miamisburg Closure Project contractor declared physical completion July 31, 2006, and DOE accepted completion of that scope in March 2007. Additional remediation of Operable Unit 1 at this site will be completed in FY 2008.

### **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 include 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 Department of Energy 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, and final site remediation is projected in July 2008, 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) meets the requirements under Comprehensive Environmental Response, Compensation, and Liability Act and has been accepted by the U.S. Environmental Protection Agency and Ohio Environmental Protection Agency. However, in FY 2006 Congress directed exhumation of Operable Unit 1 with an appropriation not to exceed \$30,000,000. 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 scope of work is expected to be completed 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 2008.
- Potential Release Site 7 will support 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 is planned to be completed in FY 2008.
- 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.

The approved baseline includes a completion date in FY 2008.

### **Regulatory Framework**

In 1993 DOE/U.S. 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 2008.

### **Interdependencies**

Off-site shipment of Operable Unit 1 waste will continue.

### **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 (ARC) 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 ARC contract revising the expected physical completion date to July 2008.

### **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, recent correspondence

from the Miamisburg Mound Community Improvement Corporation indicates they will not accept the remaining land parcels. When final site cleanup of Operable Unit 1 is completed and the two remaining Records of Decision are finalized, the complete operational management of the long-term stewardship mission at Miamisburg Closure Project will be transferred to DOE's Office of Legacy Management.

## **Rocky Flats**

### **Site Overview**

The mission of the Rocky Flats Field Office is to oversee the cleanup and closure of the Rocky Flats Environmental Technology Site. This mission encompasses the management of the site waste and special nuclear materials and their removal from the site; the deactivation, decommissioning and demolition of the site facilities; and cleanup, closure and conversion of the site to beneficial use in a manner that is safe, environmentally and socially responsible, physically secure, and cost-effective.

### **Site Description**

The Rocky Flats Environmental Technology Site is located about 10 miles northwest of Denver, Colorado, on about 11 square miles at the base of the Rocky Mountains. The Atomic Energy Commission established the Rocky Flats Plant in 1951 with a mission to manufacture nuclear weapons components from materials such as plutonium, beryllium, and uranium. When operations ceased, large amounts of plutonium, plutonium compounds, and metallic residues remained at the various site facilities. Significant volumes of hazardous and radioactive waste generated during production operations were also present throughout numerous buildings and soil was contaminated, resulting in the site being placed on the National Priorities List. In 1991, EM acquired the Rocky Flats Plant and the site transitioned to a new mission: cleaning up the contamination and waste from past production activities. It was at this time that the Rocky Flats Plant became the Rocky Flats Environmental Technology Site. By FY 2006, all site facilities were demolished; all waste removed, and contamination reduced to regulatory agreed-upon levels. In FY 2007, the site transitioned to a National Wildlife Refuge under a Memorandum of Understanding with the U.S. Department of Interior. In FY 2007, the Office of Legacy Management began management of the long-term stewardship mission at the site and assumed full responsibility in FY 2008.

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

All cleanup activities at the Rocky Flats Site were completed in FY 2006. In FY 2007, the final Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision was filed, the site was removed from the National Priority List on May 25, 2007, and the U.S. Environmental Protection Agency certified the site on June 11, 2007, completing the site regulatory activities. The site was transferred to the U.S. Fish and Wildlife Service on July 12, 2007. Contract closeout will be administered by the EM Consolidated Business Center.

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

The final Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision was filed September 29, 2006, completing the regulatory activities at the site. Contract closeout will be addressed on an accelerated pace.

## **Regulatory Framework**

In 1996 DOE, U.S. Environmental Protection Agency and Colorado Department of Public Health and Environment signed the Rocky Flats Cleanup Agreement.

## **Critical Site Uncertainties and Assumptions**

While Rocky Flats project completion occurred in FY 2006 there is still active litigation associated with the site. Responsibility for these cases, as well as the rest of the Closure Sites (Ashtabula, Columbus, Fernald, and Miamisburg) has been transferred to the EM Consolidated Business Center. The largest pending Rocky Flats case was filed in 1990 during the period when the site was still operating in support of then Defense Programs Weapons Production. The case, known as the Cook Case, was filed by a large class of landowners who claim that their property values were harmed by plutonium contamination originating from Rocky Flats. On February 14, 2006, a federal district court jury returned a verdict in favor of the landowners totaling over \$500 million, against DOE contractors Dow Chemical and Rockwell International. The Court has not yet entered judgment on the verdict. However, the Court may enter judgment at any time.

The final judgment may be as high as \$1.1 billion if the Judge allows pre- and post-judgment interest on the \$500 million verdict returned by the jury. Alternatively, the final judgment may be as low as \$370 million if the Judge applies Colorado state law limiting judgments for property damages. There has been no Court action since the filing and briefing of post-trial motions in February 2007.

## **Contract Synopsis**

On February 1, 2000, Kaiser-Hill Company, LLC and the Rocky Flats Field office signed the Rocky Flats Closure Contract. This was a cost plus incentive fee contract which incentivized Kaiser-Hill to reduce the cost and schedule of the Rocky Flats site cleanup.

## **Cleanup Benefits**

The site was successfully transitioned from an environmental liability to a National Wildlife Refuge in FY 2007.

## **Consolidated Business Center**

The EM Consolidated Business Center located in Cincinnati, Ohio, has responsibility for completing final contract closeout, financial support for former contract worker compensation claims, litigation support and closeout, and support for Energy Employees Occupational Illness Compensation Program Act records processing for the former Defense facility closure projects beginning in FY 2007. Activities of this nature previously performed at the Ashtabula, Columbus, Fernald, Mound, and Rocky Flats closure projects transitioned to the Consolidated Business Center in FY 2007. This allows for the complete closure of the EM offices previously managing these sites.

Centralization of support for these activities enhances and focuses the management of these activities and supports the final closure of the Departmental offices at the former sites.

## Funding Schedule by Activity

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Defense Environmental Cleanup			
Closure Sites			
CBC-0100-FN / CBC Post Closure Administration - Fernald	53,448	2,609	2,019
CBC-0100-MD / CBC Post Closure Administration - Mound	359	2,967	1,888
CBC-0100-RF / CBC Post Closure Administration - Rocky Flats	2,841	6,150	9,302
OH-AB-0030 / Soil and Water Remediation-Ashtabula	1,295	292	0
OH-FN-0030 / Soil and Water Remediation-Fernald	254,539	0	2,100
OH-FN-0101 / Fernald Community and Regulatory Support	215	0	0
OH-MB-0030 / Soil and Water Remediation-Miamisburg	9,519	5,108	4,224
OH-MB-0100 / Miamisburg Post-Closure Administration	30,350	24,924	26,350
RF-0030 / Soil and Water Remediation	115,487	0	0
Subtotal, Closure Sites	468,053	42,050	45,883
Total, Defense Environmental Cleanup	468,053	42,050	45,883
Non-Defense Environmental Cleanup			
Small Sites			
Subtotal, Small Sites	0	0	0
Total, Non-Defense Environmental Cleanup	0	0	0
Total, Closure Sites	468,053	42,050	45,883

### Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life- Cycle	FY 2009 % Complete
<b>Closure Sites</b>					
Geographic Sites Eliminated (number of sites)	2	6	6	6	100%
Plutonium Metal or Oxide packaged for long-term storage (Number of Containers)	1,895	1,895	1,895	1,895	100%
Plutonium or Uranium Residues packaged for disposition (Kilograms of Bulk)	103,901	103,901	103,901	103,901	100%
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	100%
Transuranic Waste shipped for disposal (Cubic meters) - CH	15,036	15,036	15,036	15,036	100%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	616,927	616,927	616,927	616,927	100%
Material Access Areas eliminated (Number of Material Access Areas)	7	7	7	7	100%
Nuclear Facility Completions (Number of Facilities)	15	15	15	15	100%
Radioactive Facility Completions (Number of Facilities)	136	136	136	136	100%
Industrial Facility Completions (Number of Facilities)	441	441	441	441	100%
Remediation Complete (Number of Release Sites)	549	549	549	549	100%

### Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**OH-AB-0030 / Soil and Water Remediation-Ashtabula** **1,295** **292** **0**

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

The Ashtabula Soil and Water Remediation Project consists 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.

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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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.

The validated lifecycle Total Project Cost is \$147,054,000.

In FY 2009, the following activities are planned:

- No activity. Regulatory closure was complete in January 2007.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	7	7	7	7	100%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	3,707	3,707	3,707	3,707	100%
Radioactive Facility Completions (Number of Facilities)	28	28	28	28	100%
Remediation Complete (Number of Release Sites)	3	3	3	3	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Obtained the Ohio Environmental Protection Agency and Ohio Department of Health concurrence to cease groundwater sampling and analysis activities. (FY 2007)</li><li>• Completed implementation of the Ashtabula Decommissioning Plan. (FY 2007)</li><li>• Project Completion (FY 2007)</li></ul>					

**CBC-0100-FN / CBC Post Closure Administration -  
Fernald**

**53,448                      2,609                      2,019**

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 2009, the following activities are planned:

- Fund liabilities associated with the end of the Fernald Project prime contract, including contract



(dollars in thousands)

FY 2007	FY 2008	FY 2009
---------	---------	---------

closeout, litigation support and settlements.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

**CBC-0100-MD / CBC Post Closure Administration -**

**Mound**

**359**

**2,967**

**1,888**

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 2009, the following activities are planned:

- Fund liabilities associated with the end of the Mound Project prime contract, including contract closeout, litigation support and settlements.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

**CBC-0100-RF / CBC Post Closure Administration -**

**Rocky Flats**

**2,841**

**6,150**

**9,302**

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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, the following activities are planned:

- Continue support for ongoing litigation and potential workmen's compensation claims.
- Provide for reimbursement to the Treasury Department Judgment Fund for two claims awarded by the US Court of Claims to Boeing (Rockwell successor to Contract Number DP03533) in the amount of \$5,995,517.15 (approximately half will be reimbursed by EM). These claims were legacy claims arising from the events subsequent to the FBI raid at Rocky Flats and the subsequent Rockwell termination. These two specific claims related to a breach of contract complaint filed by Rockwell against DOE while Rocky Flats was under the Defense Programs (now NNSA).

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

**OH-FN-0030 / Soil and Water Remediation-Fernald**                      **254,539**                      **0**                      **2,100**

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 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. Upon EM

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 2009, the following activities are planned:

- Provide for continued storage of Fernald silo waste at Waste Control Specialists, LLC in Texas.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	2	2	2	2	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Project Completion (FY 2007)</li><li>• Transferred operations of the Converted Advanced Waste Water Treatment Facility to the Office of Legacy Management. (FY 2007)</li><li>• Completed remaining release sites. (FY 2007)</li></ul>					

### **OH-FN-0101 / Fernald Community and Regulatory Support**

**215                      0                      0**

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

The scope of work in the Community and Regulatory Support Project includes support for the Fernald Citizens Advisory Board, Ohio Environmental Protection Agency, Payment-in-Lieu-of-Taxes and regulatory compliance for cultural resources. The Fernald Citizens Advisory Board is a group of volunteer Fernald area residents who provide advice and recommendations to EM Management on the remediation activities and future use of the Fernald property. This project provides for a technical facilitator, graphics, administration, and logistical support to operate the Fernald Citizens Advisory Board. It also provides for similar activities to support the oversight role of the Ohio Environmental Protection Agency.

In FY 2009, the following activities are planned:

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Project activities were completed in FY 2007.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Project Completion (FY 2007)</li><li>• Provided support for the Ohio Environmental Protection Agency and Payment in Lieu of Taxes. (FY 2007)</li></ul>					

#### **OH-MB-0030 / Soil and Water Remediation- Miamisburg**

**9,519**

**5,108**

**4,224**

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 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 Phase 1A, Phase 1B, and Phase 1C have not been transferred to the Miamisburg Mound Community Improvement Corporation pending resolution of a Federal Facility Agreement Dispute between the Department of Energy and the Ohio Environmental Protection Agency concerning sewer lines.

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 2010

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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following completion and acceptance of all DOE Office of Environmental Management work scope (Operable Unit 1) in FY 2008.

In FY 2009, the following activities are planned:

- Provide support for long-term stewardship of the site, to include support by the Ohio Environmental Protection Agency and Payment-in-Lieu-of-Tax payments made to Montgomery County, Ohio.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Depleted and Other Uranium packaged for disposition (Metric Tons)	0	0	0	0	100%
Remediation Complete (Number of Release Sites)	178	178	178	178	100%

#### **OH-MB-0100 / Miamisburg Post-Closure**

##### **Administration**

**30,350**

**24,924**

**26,350**

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 will initiate in FY 2007 with the completion of the Miamisburg Closure Project contract.

In FY 2009, the following activities are planned:

- Fund administration of post-closure contract liabilities (pension, retiree medical, and life insurance) that are 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 worker's compensation.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

#### **RF-0030 / Soil and Water Remediation**

**115,487**

**0**

**0**

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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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The scope of this PBS is to complete the environmental characterization, remediation, and restoration of the Rocky Flats site in accordance with the Rocky Flats Cleanup Agreement, and to provide technical support services necessary to achieve site closure. Site closure requires environmental characterization, remediation of contaminated soil and water, and restoration of the site as necessary. Remediation or disposition of all individual hazardous substance sites includes: 1) documentation when individual sites require no further action; 2) removal of pavement and building foundations; 3) conversion of ponds to a post-closure configuration; 4) wetlands mitigation; and 5) recontouring, regrading and revegetation, all of which must be accomplished to achieve the final site closure.

Ongoing closure support activities include: 1) operation of groundwater wells and surface water monitoring systems until decontamination and decommissioning and restoration activities are complete; 2) operation of the ponds; 3) pollutant source controls including actinide migration evaluations; and 4) design, construction, and operation of groundwater containment and treatment systems. Environmental remediation and restoration of all individual hazardous substance sites must support the final comprehensive site remedy pursuant to an approved Corrective Action Decision/Remedial Action Decision and deletion of the Site from the National Priority List.

Technical support services provide the quality assurance, health, safety, environmental stewardship, nuclear safety, and training necessary to support site closure. Payment of contract-conditional target incentive fee, as well as pension and retiree medical/life insurance payments is also included in this PBS. All physical remediation was completed in CY 2006. Final regulatory closeout was completed in FY 2007.

In FY 2009, the following activities are planned:

- Regulatory closeout activities were completed in FY 2007.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	360	360	360	360	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>Project Completion (FY 2007)</li><li>Filed final Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision. (FY 2007)</li></ul>					

**Total, Closure Sites**

**468,053**

**42,050**

**45,883**

## Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$000)
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### Defense Environmental Cleanup

#### Closure Sites

##### Ashtabula

##### **OH-AB-0030 / Soil and Water Remediation-Ashtabula**

- Decrease is due to completion of regulatory closeout activities, and groundwater monitoring in FY 2008. -292

#### Closure Sites Administration

##### **CBC-0100-FN / CBC Post Closure Administration - Fernald**

- Decrease is due to a reduction in planned contract closeout costs, resolution of open litigation, and workers' compensation claims associated with the Fernald closure contract. -590

##### **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. -1,079

##### **CBC-0100-RF / CBC Post Closure Administration - Rocky Flats**

- Increase supports reimbursement to the Treasury Department Judgment Fund for two claims awarded by the US Court of Claims to Boeing (Rockwell successor) in the amount of \$5,995,517.15 (approximately half will be reimbursed by EM). These claims were legacy claims arising from the events subsequent to the FBI raid at Rocky Flats and the subsequent Rockwell termination. These two specific claims related to a breach of contract complaint filed by Rockwell against DOE while Rocky Flats was under the Defense Programs (now NNSA). 3,152

#### Fernald

##### **OH-FN-0030 / Soil and Water Remediation-Fernald**

- Increase supports continued storage of Fernald silo waste at Waste Control Specialists, LLC in Texas. FY 2007 funds were utilized to cover storage costs in FY 2008. 2,100

FY 2009 vs. FY 2008 (\$000)
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**Miamisburg**

**OH-MB-0030 / Soil and Water Remediation-Miamisburg**

- |   |      |
|---|------|
| ▪ Decrease is due to a reduction in projected long-term surveillance and maintenance, and records management support requirements associated with post-closure support. | -884 |
|---|------|

**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. | 1,426 |
|--|-------|

<b>Total, Closure Sites</b>	<hr/> 3,833
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## NNSA Sites

### Funding by Site and Location

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
NNSA Sites			
California Site Support	370	367	0
Kansas City Plant	1,697	0	0
Lawrence Livermore National Laboratory	24,136	8,601	0
Los Alamos National Laboratory	140,925	153,958	164,372
Nevada Off-Sites	5,132	0	0
Nevada	87,768	80,368	65,674
NNSA Service Center/Separations Processing Research Unit (SPRU)	6,222	28,831	16,943
Pantex	23,726	20,027	0
Sandia National Laboratories	10,394	0	0
Total, NNSA Sites	300,370	292,152	246,989

## 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: Kansas City Plant, Lawrence Livermore National Laboratory-Livermore Site and Site 300, Los Alamos National Laboratory, Nevada Test Site Office, Pantex Plant, Sandia National Laboratories, and the Separations Process Research Unit. Kansas City Plant and Lawrence Livermore National Laboratory Main Site were completed in FY 2006. Long-term stewardship for these two sites will be funded by the National Nuclear Security Administration beginning in FY 2008. Two other sites, Lawrence Livermore National Laboratory Site 300 and Pantex Plant, are scheduled for completion in FY 2008. Following are descriptions of the environmental management activities at the National Nuclear Security Administration sites.

### Kansas City Plant

#### Site Overview

Kansas City Plant continues to have a National Nuclear Security Administration mission to manufacture non-nuclear components for defense purposes. In conducting its operations from the 1940s to the 1980s, hazardous materials were released to the environment. Environmental restoration activities, which were complete at the end of FY 2006, were performed at 43 release sites or areas that posed a threat to human health and the environment. The Environmental Restoration program at the Kansas City Plant is regulated by the State of Missouri under a Resource Conservation and Recovery Act Post Closure Permit. The level of cleanup was risk-based, depending on the end state of the site. The cleanup addressed both contaminated soil and groundwater. Areas where limited risks still remain are managed through institutional controls. Contaminated groundwater is remediated through the institution of pump and treat facilities, which will be maintained indefinitely.

## **Site Description**

The Kansas City Plant facility occupies 136 acres of the 300-acre Bannister federal complex in Kansas City, Missouri. This reservation is bounded on the east by the Blue River, on the south by Bannister Road and the Indian Creek, on the west by Troost Avenue, and on the north by federal and city property. The area around the facility is primarily residential with some light industry, giving the facility predominance in the immediate community.

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

The mission of the environmental restoration program at Kansas City Plant is to evaluate and remediate contaminated areas found to be a potential threat to human health and the environment. Using a risk-based approach, sites with limited risks are managed through institutional controls, selected areas of contaminated soil have been excavated and disposed, and contaminated groundwater is treated prior to being discharged to the sanitary sewer. Monitoring and treatment of the contaminated groundwater will continue in order to meet Post Closure Permit requirements.

The remaining environmental restoration scope at the site includes treating approximately 28 million gallons of contaminated groundwater annually, reducing infiltration of legacy polychlorinated biphenyl/solvent contamination in the storm sewers, and continuing/maintaining monitoring programs for surface water and groundwater.

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

The Kansas City Plant completed all EM cleanup project activities by September 2006. The Resource Conservation and Recovery Act Post Closure permit lists 43 release sites, all of which have been addressed and have either undergone remediation, been deemed suitable for institutional controls, or require no further action.

### **Short Term Projects:**

Obtain final regulatory approval for the 95th Terrace Corrective Measures Implementation Work Plan. Limit the infiltration of legacy polychlorinated biphenyls contamination into storm sewers. The effluent discharge limit for polychlorinated biphenyls was lowered from 1.0 parts per billion to 0.5 parts per billion in November 2002. A Consent Judgment is being negotiated between the Kansas City Plant and the State to address permit violations that have occurred since the limit was lowered. Corrective actions will be a part of the finalized judgment.

Continued oversight and management of various institutional controls are required under the Post Closure Permit.

### **Longer Term Projects:**

Long Term Stewardship – All environmental restoration work was completed in FY 2006 at the Kansas City Plant. Long-term Stewardship activities transferred to the National Nuclear Security Administration beginning in FY 2008.

## **Regulatory Framework**

The Kansas City Plant was issued a Resource Conservation and Recovery Act Part B Post Closure Permit in October 1999. This permit addresses the post closure care of three closed Resource Conservation and Recovery Act regulated land disposal units. It also addresses continuing Resource Conservation and Recovery Act corrective action requirements including site-wide groundwater monitoring and remediation. Surface water is also monitored for volatile organics and polychlorinated biphenyls.

### **Consent Judgment**

The Sierra Club filed a citizen suit notification letter on February 17, 2003, regarding polychlorinated biphenyl discharges from the Kansas City Plant. The Missouri Department of Natural Resources and the Kansas City Plant initiated discussions for a settlement agreement to address this issue. The Consent Judgment addresses efforts to achieve compliance with the polychlorinated biphenyls discharge limit of 0.5 parts per billion. The Consent Judgment, to be issued in 2008, will require a Fate and Transport Study.

## **Critical Project Uncertainties and Assumptions**

There were no adverse public comments arising from issuance of the Resource Conservation and Recovery Act Statement of Basis for the 95th Terrace Site. A final remedy decision from the Missouri Department of Natural Resources was issued on September 29, 2006. Approval of the 95<sup>th</sup> Terrace Corrective Measures Implementation Work Plan and the Long Term Operations Maintenance and Monitoring Plan is pending.

## **Interdependencies**

The National Nuclear Security Administration began funding them in FY 2008.

## **Contract Synopsis**

The Kansas City Plant is operated by Honeywell Federal Manufacturing and Technologies, a Management and Operating contractor.

## **Cleanup Benefits**

### **Near Term**

Achieving cleanup by the end of FY 2006 was made possible by changing the remediation strategy for the 95<sup>th</sup> Terrace project. The regulator, Missouri Department of Natural Resources, approved the recommended remedy with the addition of bioaccumulation study requirements in 2008 and 2013.

## **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 includes the completion of disposition of legacy waste by the end of calendar year 2005, transfer of the Newly Generated Waste Program to National Nuclear Security Administration in FY 2006, completion of the Lawrence Livermore National Laboratory Main Site remedial activity build-out in FY 2006 and transition to long-term stewardship in FY 2007, and completion of the Lawrence Livermore National Laboratory Site 300 remedial activity build-out in FY 2008 and transition to long-term stewardship in FY 2009. Starting in FY 2008, the National Nuclear Security Administration is responsible for long-term stewardship of the Lawrence Livermore National Laboratory Main Site.

The only Environmental Management program remaining at Lawrence Livermore National Laboratory is the completion of the Site 300 Environmental Restoration Project. In FY 2008, the cleanup activities at Site 300 consist of the build-out of treatment systems and implementation of all other selected remedial actions in the approved baseline associated with the completion of the Environmental Management program. Starting in FY 2009, the National Nuclear Security Administration will be responsible for long-term stewardship of the Lawrence Livermore National Laboratory Site 300.

### **Site Description**

#### **Lawrence Livermore National Laboratory Main Site**

Lawrence Livermore National Laboratory Main Site is an 800-acre, highly developed area of industrial facilities, laboratories, and office buildings in the eastern part of Alameda County, adjacent to Livermore, California. Both nuclear and non-nuclear research and development are conducted on the site. The surrounding area is a combination of suburban development and rural land usage. There is soil and groundwater contamination on-site and limited groundwater contamination off-site.

#### **Lawrence Livermore National Laboratory Site 300**

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 be 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 has been 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 in FY 2008 and transition to Long-Term Stewardship in FY 2009.

### **Near-Term Projects:**

Legacy Waste Project - The project was initiated in FY 2003 to focus efforts on the elimination of the legacy low-level waste, mixed low-level waste, transuranic waste, and mixed transuranic waste inventory having disposition pathways at Lawrence Livermore National Laboratory. The project scope was completed in November 2005 and all legacy waste has been disposed in federal and/or commercial facilities.

Lawrence Livermore National Laboratory Main Site Completion - Past operations at the Lawrence Livermore National Laboratory Main Site resulted in the release and subsequent migration of contaminants into the soil and groundwater. The major contaminants are volatile organic compounds, primarily trichloroethylene. The project scope was completed in FY 2006.

Site 300 Completion - Soil and groundwater contamination will be characterized and cleanup levels for these contaminants will be codified in a Record of Decision in FY 2008. The treatment systems and monitoring network will be completed and operational by the end of FY 2008. Remediation of depleted uranium contaminated surface soil at the Building 812 firing table could be required based on recent area characterization. Remediation costs for this area are not included in the baseline. A Remedial Investigation/Feasibility Study is currently under development to define scope and cost of remediation potentially needed in this area.

## **Regulatory Framework**

The Environmental restoration activities at Lawrence Livermore National Laboratory are governed by two site-specific Comprehensive Environmental Response, Compensation and Liability Act Federal Facility Agreements for the Lawrence Livermore National Laboratory Main Site and Site 300. Both the Main Site and Site 300 are on the Environmental Protection Agency's National Priority List. The Livermore Site Federal Facility Agreement was signed in 1988. Subsequently, a Record of Decision was signed in 1992 mandating the cleanup of the site groundwater to Safe Drinking Water Act maximum contaminant levels.

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. Subsequently, an interim Record of Decision was signed in 2001 to evaluate the practicality of applying the State "Non-degradation Policy" to the cleanup of soil

and groundwater at Site 300. Based on this evaluation of cleanup efficacy, a final Record of Decision will be entered into in 2008.

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

At Site 300, the major uncertainty is the final negotiation of groundwater cleanup standards. The project baseline assumes that the State and Environmental Protection Agency will agree to similar groundwater cleanup standards negotiated for the Lawrence Livermore National Laboratory Main Site, as well as accept monitored natural attenuation for the cleanup of several on-site plumes. These ground water cleanup standards will be codified in the Site-Wide Final Record of Decision scheduled for FY 2008.

### **Interdependencies**

For the duration of the legacy waste project and the ongoing newly generated waste program, Lawrence Livermore National Laboratory is dependent on Government Furnished Services and Items support from the National Nuclear Security Administration Service Center for business services in developing and implementing contract mechanisms for complex-wide disposal contracts to access commercial treatment, storage, and disposal facilities for treatment and disposal services. Lawrence Livermore National Laboratory does not have onsite waste disposal capability and relies on both commercial facilities and the Nevada Test Site for low-level waste disposition.

### **Contract Synopsis**

The cleanup work is currently managed by the Lawrence Livermore National Laboratory Management and Operating contractor (the University of California). Both cleanup and waste disposition performance are measured in the contract.

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. Both waste disposition and cleanup work are 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.

Site 300 final ground water cleanup levels will be negotiated and included in the Site-Wide Final Record of Decision scheduled for FY 2008. The required groundwater and soil vapor extraction and treatment facilities will be constructed and operational by the end of FY 2008.

## **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 potential release sites 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 Watersheds. There are eight watersheds across the Laboratory that collectively drain all run-off 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 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 760 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 Waste Isolation Pilot Plant.

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

The end state for Environmental Management work is: (1) protection and monitoring of the regional aquifer; (2) cleanup of sites at Los Alamos National Laboratory and surrounding areas to levels appropriate for the intended land use; (3) disposal of all legacy transuranic waste and mixed low-level waste from Los Alamos National Laboratory; and (4) installation of all long-term surveillance and monitoring systems. Based on approved baseline, the lifecycle planning estimate for end date for cleanup is 2015.

### **Near-Term Projects:**

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.

Airport Remediation – There are two ongoing projects at the Los Alamos County Airport (former Technical Area 73). The Airport Landfill consists of a historic sanitary landfill covering approximately 11 acres. An asphalt cover was constructed and finished in 2007. The Ash Pile project is for removal and disposal of ash and ash-like waste deposited on the steep side slope of Pueblo Canyon and characterization of surrounding Solid Waste Management Units. This project was completed in FY 2007.

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 was given by New Mexico Environment Department in October 2006. Construction of corrective measures is scheduled to begin in FY 2008.

Mixed Low-Level Waste - Five legacy 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. Other mixed low-level waste including shock-sensitive items were disposed of in FY 2005.

#### Longer-Term Projects:

Technical Area-21 - This project will characterize and remediate, if necessary, all Solid Waste Management Units and Areas of Concern in the vicinity of Technical Area-21, including characterization and probable capping of three material disposal areas and likely remediation of two additional material disposal areas just outside of the fence of Technical Area-21. This work has infrastructure issues associated with Los Alamos National Laboratory unoccupied buildings in Delta Prime East. The Consent Order completion milestone is FY 2012 for this project.

Corrective Actions - This project includes all investigations and subsequent remediation of potential release sites 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 Material Disposal Area C by October 31, 2009, and investigation and remediation of all other Solid Waste Management Units in the aggregate by 2015.

Watershed Integration - The watershed integration work includes investigation and cleanup of the Canyons, the Facility-Wide Groundwater Monitoring Project, and the Federal Facilities Compliance Agreement and Administrative Order. 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.

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 in drums and standard waste boxes at the Los Alamos National Laboratory must be characterized, certified, and shipped in accordance with the Carlsbad Field Office procedures. 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 the transuranic waste from 33 lined shafts, canisters and torpedoes and place it 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, and the Clean Air Act.

## **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 plan. Some of the material disposal areas are on or near land transfer parcels. Their proximity to the town site increases the risk that the presumptive remedy will not be selected, potentially increasing cost and schedule for completion of some of the 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 Project 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 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.



## **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. Other locations (known as the “Nevada Offsites”) within the continental United States were used for testing based on the purpose of the test or geologic formation. These sites were transferred to the Office of Legacy Management in FY 2008. For most of these sites, no work remains other than that associated with long-term stewardship. Where additional cleanup is needed, it is minor in scope and within the capabilities of Legacy Management to complete.

### **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 878 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. Additionally, the waste management project is responsible for the storage, treatment, and disposition of legacy on-site transuranic and mixed transuranic waste.

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 ordinance. 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. Based on the approved baseline, the lifecycle planning estimate range for end date for 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, monitoring well network(s), and successful five year “proof of concept” monitoring.

For the end state for surface and shallow subsurface radiological contamination associated with the soils sub-project, 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 2012.

The end state for the Nevada Site Office transuranic and mixed transuranic waste activities will be the elimination of the legacy transuranic and mixed transuranic waste and material from the Nevada Test Site by FY 2008. Disposition of the transuranic and mixed transuranic waste and material will reduce the risk to the Nevada Test Site workers and the environment resulting from continued storage. The Nevada Test Site transuranic and mixed transuranic waste-related facilities will be decontaminated and decommissioned, or will be transitioned to other uses.

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. Additionally, the June 1992 Settlement Agreement for mixed transuranic waste requires the National Nuclear Security Administration Nevada Site Office to operate the Area 5 Radioactive Waste Management Site Transuranic Pad in accordance with 40 C.F.R. Subpart I.

## **Critical Site Uncertainties and Assumptions**

The major uncertainty is delays in shipments of transuranic waste resulting from unavailability or loss of authorization to ship to Waste Isolation Pilot Plant.

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 responsible sites. National Security Technology, LLC, 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). Stoller-Navarro Joint Venture, the architect engineer for EM work at Nevada Test Site, is contracted to perform site investigation and characterization activities on the Nevada Test Site (including Nevada Test and Training Range). In addition, the Desert Research Institute is contracted to perform subsurface characterization and modeling tasks, preliminary surface surveys, and re-vegetation.

## **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 benefit of the legacy transuranic and mixed transuranic waste cleanup at the Nevada Test Site is to eliminate the need for maintaining storage configurations, thereby eliminating human health risk from continuous compliance inspections, and to properly disposition the waste at an appropriate disposal location.

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 in the Nation's stockpile. The primary mission of the Pantex Plant is 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 the soils and the upper Perched Aquifer. High explosives, metals, and solvents exist in the 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. The lower Ogallala Aquifer is the primary water supply for Pantex and the area landowners. 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 leech 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 controlled per the final Compliance Plan to be negotiated prior to the end of FY 2008. With the identification of perchlorate as a contaminate of potential concern in 2007, new corrective measures (including in-situ bioremediation) and monitoring wells are needed, which will likely push the closure date into FY 2009. A baseline change to realign scope, schedule, and funding is pending. Land use is expected to remain constant, with continued cooperation with Texas Tech University through the 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 continuing into FY 2008. Since some of these decontaminated and decommissioned facilities may have been a source term and/or co-located with other contaminated sites. These areas will be 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 will be 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 the current solid and hazardous waste permit issued by the State of Texas. Also, the Environmental Protection Agency has listed the Pantex Plant on the National Priority List as a Superfund Site. Through a Memorandum of Agreement between the EPA and the State, the Texas Commission on Environmental Quality has authority for investigations conducted under the Resource Conservation and Recovery Act process. However, the Environmental Protection Agency has retained the authority to regulate radionuclides. 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:

- The nature and extent of contamination has been fully defined and no additional investigations and risk modeling will be required.
- The Corrective Measure Study and subsequent corrective measure selection process will be successful.

- 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 baseline.

### **Contract Synopsis**

The Pantex Plant is operated by BWXT Pantex under a cost-plus-award-fee Management and Operating contract. The Pantex Site Office is developing annual incentives for baseline acceleration and critical milestone accomplishment for the remainder of the project.

### **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 bio remediation, permeable reactive barrier, ozone injection, and Playa 1 dewatering study. Stakeholder and regulatory confidence will be gained through “core” team meetings with the Texas Commission on Environmental Quality and the EPA. Document approvals will 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: Costs of approximately \$60 million will be avoided by carrying out interim corrective measures that have been identified in the Corrective Measures Study. Offsite and onsite concerns regarding perched aquifer contamination have been mitigated with the early implementation of interim corrective measures.

## **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) sites were subject to investigation and potential corrective action. Three of these 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 (264 of 265) of the sites. Remaining remediation fieldwork includes installing a cover and rock bio-barrier at the Mixed Waste Landfill, and groundwater characterization sampling for obtaining the final remedy at the Burn Site groundwater area as prescribed by the Corrective Measures Evaluation process. Major regulatory administrative closure activities that remain include obtaining the Chemical Waste Landfill closure and post-closure care permit, three Class III permit modifications, and the final remedies for two 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) when the site is placed under institutional controls with long-term monitoring in accordance with State and Federal requirements. The Sandia National Laboratories Environmental Restoration Project mission has completed all necessary corrective actions at 264 of 265 environmental restoration release sites by the end of FY 2007. FY 2007 was the final year of funding within the EM program. The remaining fieldwork activities, Mixed Waste Landfill cover and groundwater characterization sampling at Burn Site GW area, and the regulatory closeout of the project in FY 2009 will be completed with use of carryover funding (a baseline change is pending which could require some additional funding and result in the project end date being delayed). The baseline 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 and completing the remaining regulatory administrative closure activities.

## **Regulatory Framework**

The regulatory driver for completing this work is the April 2004 New Mexico Environment Department Compliance Order on Consent. As of September 2007, 204 of 265 sites have been approved for No Further Action through the entire regulatory process. The remaining 61 sites are in various stages of completion, 60 are waiting for final regulatory approval and one site 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 baseline exit strategy is received.

The Mixed Waste Landfill received a Final Order (remedy) from the New Mexico Environment Department Secretary that requires additional scope beyond the soil cover and bio-barrier. The additional scope includes a fate and transport model and formal public review of the Soil-gas Work Plan and post-remediation closure documents. As of September 2007, the regulator has not approved the Corrective Measure Implementation Plan for the soil cover due to public opposition and litigation. This extends the corrective measure study process and is jeopardizing the project closure schedule of FY 2009.

## **Interdependencies**

The National Nuclear Security Administration assumed long-term stewardship responsibilities in FY 2008.

## **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 2007 to assist with the completion of administrative regulatory closure requirements.

## **Cleanup Benefits**

At the end of FY 2007, 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 site is expected to pass industrial risk standards and 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**

Separations Process Research Unit is located within the currently operating 170-acre Schenectady Naval Reactor's 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 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 Reactor's 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 applied for a simplified Resource Conservation and Recovery Act permit for investigation and cleanup of residual chemicals in several solid waste management units contained within the Separations Process Research Unit Project areas. It is anticipated that this permit, once approved, will contain enforceable milestones 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. One unresolved uncertainty involved the categorization of sludge wastes (approximately 10 cubic yards) found in certain of the tanks associated with Building H2. These are assumed to be transuranic wastes, although there is a low probability that they would be categorized as high-level waste. While judged to be low in probability, this uncertainty could have moderate impacts on project cost and schedule. To mitigate this risk, the DOE Field Office staff has contracted to have an evaluation of historic documents performed to verify that the nature of the original material sent to the Separations Process Research Unit was such that it would not be considered to be high-level waste. The material itself is of sufficiently low radioactive content to allow it to be processed as contact-handled transuranic waste. In performing this evaluation, the DOE Field Office staff is coordinating with EM Headquarters and the Waste Isolation Pilot Plant to ensure that the proper documentation is obtained to support correct categorization of this material

### **Interdependencies**

The major interdependency related to Separations Process Research Unit is the ongoing relationship with Naval Reactors and Knolls Atomic Power Laboratory. 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 the Separations Process Research Unit Project and the 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, Nevada Test Site, Savannah River Site, and Hanford Site. 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 will be 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.

An acquisition strategy for the removal of the nuclear facilities and environmental restoration of land areas has been developed. 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 are awarded. Field work will be in progress 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 occupied by the Separations Process Research Unit Project by the Naval Reactors program.

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Defense Environmental Cleanup			
NNSA Sites			
NV-0030 / Soil and Water Remediation-Nevada Offsites	5,132	0	0
VL-FAO-0101 / Miscellaneous Programs and Agreements in Principle	2,722	1,497	1,443
VL-FOO-0013B-D / Solid Waste Stabilization and Disposition Support - Lawrence Livermore National Laboratory (Defense)	90	90	0
VL-FOO-0100-D / LLNL Community and Regulatory Support (Defense)	280	277	0
VL-KCP-0030 / Soil and Water Remediation-Kansas City Plant	1,697	0	0
VL-LANL-0013 / Solid Waste Stabilization and Disposition-LANL Legacy	44,592	41,823	40,523
VL-LANL-0030 / Soil and Water Remediation-LANL	95,308	110,247	116,269
VL-LANL-0040-D / Nuclear Facility D&D-LANL (Defense)	0	0	5,675
VL-LLNL-0030 / Soil and Water Remediation-Lawrence Livermore National Laboratory - Main Site	12,556	0	0
VL-LLNL-0031 / Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300	11,580	8,601	0
VL-NV-0013 / Solid Waste Stabilization and Disposition-Nevada Test Site	12,530	0	0
VL-NV-0030 / Soil and Water Remediation-Nevada Test Site	67,812	56,056	50,157
VL-NV-0080 / Operate Waste Disposal Facility-Nevada	5,258	21,767	12,848
VL-NV-0100 / Nevada Community and Regulatory Support	2,168	2,545	2,669
VL-PX-0030 / Soil and Water Remediation-Pantex	19,394	20,027	0
VL-PX-0040 / Nuclear Facility D&D-Pantex	4,332	0	0
VL-SN-0030 / Soil and Water Remediation-Sandia	10,394	0	0
VL-SPRU-0040 / Nuclear Facility D&D-Separations Process Research Unit	3,500	27,334	15,500
Subtotal, NNSA Sites	299,345	290,264	245,084
Total, Defense Environmental Cleanup	299,345	290,264	245,084
Non-Defense Environmental Cleanup			
Small Sites			
VL-LANL-0040-N / Nuclear Facility D&D-LANL (Non-Defense)	1,025	1,888	1,905

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Subtotal, Small Sites	1,025	1,888	1,905
Total, Non-Defense Environmental Cleanup	1,025	1,888	1,905
Total, NNSA Sites	300,370	292,152	246,989

### Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life- Cycle	FY 2009 % Complete
<b>NNSA Sites</b>					
Geographic Sites Eliminated (number of sites)	6	8	9	12	75%
Transuranic Waste shipped for disposal (Cubic meters) - CH	2,199	3,292	5,089	10,864	47%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	17	17	95	18%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	10,063	10,063	10,063	10,063	100%
Nuclear Facility Completions (Number of Facilities)	0	0	0	4	0%
Radioactive Facility Completions (Number of Facilities)	1	1	1	2	50%
Industrial Facility Completions (Number of Facilities)	4	4	4	4	100%
Remediation Complete (Number of Release Sites)	3,271	3,417	3,508	5,118	69%

### Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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#### **VL-FOO-0013B-D / Solid Waste Stabilization and Disposition Support - Lawrence Livermore National Laboratory (Defense)**

**90 90 0**

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

The legacy waste and environmental restoration projects at the Lawrence Livermore National Laboratory are planned for EM completion and transfer to National Nuclear Security Administration by the end of FY 2008 and no FY 2009 funding from EM is being requested. Activities performed in this project are directed at achieving efficiencies through supporting multiple waste management and environmental restoration activities at the Lawrence Livermore National Laboratory. Support for site investigations, hydrogeologic studies, regulatory review, and stakeholder liaisons are also managed within this project through wide applicability of these restoration activities to multiple projects/sites. This project will end when the projects supported by the waste management and environmental restoration activities achieve their end-state.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, no activities are planned.

- None – project completed in FY 2008.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Project Completion (September 2008)</li></ul>					

**VL-FOO-0100-D / LLNL Community and Regulatory  
Support (Defense)**

**280                      277                      0**

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

The legacy waste and environmental restoration projects at the Lawrence Livermore National Laboratory are planned for EM completion and transfer to National Nuclear Security Administration by the end of FY 2008 and no FY 2009 funding from EM is being requested. This project provides 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 Main-Site and Site 300. This funding is mandated by the Federal Facilities Agreement signed by DOE, Environmental Protection Agency, and the State of California.

In FY 2009, no activities are planned:

- Legacy waste and environmental restoration projects at the Lawrence Livermore National Laboratory are planned for EM completion and transfer to National Nuclear Security Administration by the end of FY 2008.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Grants paid to the State of California regulatory agencies for participation in and oversight of the cleanup programs. (FY 2007/September 2008)</li><li>• Provide state regulatory oversight of legacy waste management and environmental restoration activities at two Lawrence Livermore National Laboratory sites. (FY 2007/September 2008)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Project Completion (September 2008)

#### **VL-KCP-0030 / Soil and Water Remediation-Kansas**

##### **City Plant**

**1,697**

**0**

**0**

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

Through FY 2006, this PBS could be found within the Defense Environmental Cleanup appropriation. The Kansas City Plant manufactured non-nuclear components for defense purposes. Legacy contamination resulted from hazardous wastes that were released to the environment from the 1940's through the 1980's. The Environmental Remediation project at the Kansas City Plant is regulated by a Resource Conservation and Recovery Act Post Closure Permit with the State of Missouri. Remediation of the known 43 Resource Conservation and Recovery Act Solid Waste Management Units began in FY 1992 and was completed by the end of FY 2006 to the satisfaction of Missouri Department of Natural Resources and Environmental Protection Agency Region 7.

All deliverables associated with completing the Environmental Remediation Project at the Kansas City Plant including the Corrective Measure Study Workplan, Public Relations plan, Construction Completion Report and Long Term Operations Maintenance and Monitoring Plan have been completed.

A final Critical Decision-4 (CD-4) package was signed by the Acquisition Executive on April 13, 2007.

In FY 2009, no activities are planned.

- This project was completed in FY 2006.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	43	43	43	43	100%

#### **VL-LLNL-0030 / Soil and Water Remediation-**

##### **Lawrence Livermore National Laboratory - Main Site**

**12,556**

**0**

**0**

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

Past operations at the Lawrence Livermore National Laboratory Main Site, which involved the handling and storage of hazardous materials, resulted in the release and subsequent migration of contaminants into the soil and groundwater. The major contaminants are volatile organic compounds, primarily trichloroethylene. The Lawrence Livermore National Laboratory Main Site restoration project consists of activities associated with existing contamination from past operations, controlling contaminated

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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groundwater migration, and effectively remediating soil and groundwater where contaminants exceed regulatory limits to protect human health, the environment, and beneficial uses of natural resources. This PBS scope includes one operable unit and 120 release sites, for which all work was completed as of September 2006.

The approved remedial actions required by the Record of Decision, and identified in the Performance Management Plan (August 2002) strategic initiatives, were implemented by the end of FY 2006. Acceleration of these remedial actions reduced the risks, overall liability, and mortgage at the Livermore Site associated with 39 distinct groundwater plumes contaminated with volatile organic compounds, nitrate, tritium, and/or metals. Activities within the scope of the project focused on the build-out of required remediation systems.

The project end state is the transfer to the National Nuclear Security Administration all long-term operation and maintenance and associated environmental monitoring of the remediation systems. Through the end of FY 2007, the project has completed build-out of 21 groundwater treatment systems and 9 soil vapor treatment systems was completed.

In FY 2009, no activities are planned.

- This project was completed in FY 2006.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	120	120	120	120	100%

#### **VL-LLNL-0031 / Soil and Water Remediation-**

#### **Lawrence Livermore National Laboratory - Site 300**

**11,580**

**8,601**

**0**

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

Past operations at the Lawrence Livermore National Laboratory - Site 300 have resulted in the release of hazardous and radioactive materials, primarily from surface spills, leaching from unlined landfills and pits, high explosive test detonations, and previous disposal of waste fluids in lagoons and dry wells. The remedial actions required by regulatory decision documents will reduce the risks, overall liability, and mortgage at 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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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This project is planned for completion and transfer to the National Nuclear Security Administration at the end of FY 2008. No EM funding for FY 2009 is being requested for this project.

In FY 2009, no activities are planned.

- Project is planned for EM completion and transfer to the National Nuclear Security Administration at the end of FY 2008.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	73	74	74	74	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Completed the Pit 7 Complex Final Interim Remedial Design Document. (FY 2007)</li><li>• Conducted Public Workshop for the Site-Wide Proposed Plan. (FY 2007)</li><li>• Completed the Site-Wide Final Record of Decision. (FY 2007)</li><li>• Completed the Building 834 Final 5-Year Review. (FY 2007)</li><li>• Conducted Public Meeting for the Site-Wide Proposed Plan. (FY 2007)</li><li>• Modified Building 830 distal south ground water treatment facility in the Building 832 Canyon Operable Unit. (FY 2007)</li><li>• Expanded Building 817 proximal ground water extraction and treatment facility in the former High Explosive Lagoon Area. (FY 2007)</li><li>• Completed the High Explosive Process Area (HEPA) Five-Year Review. (FY 2007)</li><li>• Expanded Building 854 proximal ground water extraction well field in the Building 854 Operable Unit. (FY 2007)</li><li>• Complete the Site-Wide Final Revised Remedial Design Work Plan. (September 2008)</li><li>• Install enhanced monitoring systems at Pit 2,8, and 9 landfills. (September 2008)</li><li>• Project Completion (September 2008)</li></ul>					

**VL-LANL-0013 / Solid Waste Stabilization and  
Disposition-LANL Legacy**

**44,592                      41,823                      40,523**

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

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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 included disposition of legacy, mixed, low-level waste and was completed in FY 2005. 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.

As of September 2007, the following has been accomplished:

- Shipped a total of 323 m<sup>3</sup> of legacy transuranic waste to WIPP for disposal.
- Completed seismic upgrades for Waste Characterization Reduction and Repackaging Facility and completed the DOE Operational Readiness Review in August 2007. The facility began processing hazardous category II drums on September 13, 2007.
- The Radioassay and Non-destructive Testing Facility began shipping high activity drums in October 2007.
- Completed characterization and visual examination of 16 Remote-Handled Canisters in preparation for their shipment to the Waste Isolation Pilot Plant .
- 33 Shafts of Remote-Handled Transuranic Waste Field work began on June 20, 2007.
- Approximately 10,000 (all remaining above-grade drums) were prescreened to facilitate the central characterization project certification process.
- Developed the capability to process high-activity drums in the Waste Characterization, Reduction and Repackaging Facility. This alternative strategy was the primary focus of the FY 2007 Work Plan.

In FY 2009, the following activities are planned:

- Continue services and safety related activities to maintain the waste inventories in a safe configuration and within allowable Material at Risk limits established for the site.
- Continue characterization and certification of transuranic waste for shipment to the Waste Isolation Pilot Plant, including disposition of prohibited items and repackaging of containers at the Waste Characterization, Reduction, and Repacking Facility and the Dome 231 Permacon.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Continue shipment of contact-handled transuranic waste to the Waste Isolation Pilot Plant from the Radioassay and Non-destructive Testing facility, using the Mobile Loading Device at the Radioassay and Non-destructive Testing facility and in Technical Area-54 Area G.
- Start engineering analyses and field work to support pre-retrieval and disposition activities for the 33 shafts of remote handled waste.
- Start retrieval and processing of the below grade-stored high activity contact-handled transuranic waste in Trenches A-D in Technical Area-54.
- Continue disposition of low-level waste and mixed low-level waste.
- Continue examination, size reduction, and repackaging of radioactive wastes stored in oversized Fiberglass Reinforced Plywood Boxes in the Decontamination Volume Reduction System Facility at Technical Area-54.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	552	552	552	552	100%
Transuranic Waste shipped for disposal (Cubic meters) - CH	1,682	2,480	4,226	10,001	42%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	17	17	95	18%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"> <li>• Completed 1st of 16 Remote-Handled Canister Shipment. (December 2007)</li> <li>• Complete OSTR Building 54-412 HC-3 Upgrades. (June 2008)</li> </ul>					

**VL-LANL-0030 / Soil and Water Remediation-LANL**                      **95,308**                      **110,247**                      **116,269**

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

The Los Alamos National Laboratory Soil and Water Remediation Project scope includes identification, investigation and remediation of chemical and or radiological contamination attributable to past Laboratory operations and practices. The original remediation scope was for investigation and/or cleanup of 2,124 Potential Release Sites in eight watersheds spread over the 39 square miles of the Laboratory. Sites include town sites, industrial sites, firing sites, High Explosive corridor and Material Disposal Areas. The remaining scope of the Project includes characterization, monitoring, and protection of the surface and groundwater at the Laboratory and 762 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 762 sites



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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remaining to be addressed are: 1) characterization and capping of eight priority material disposal areas which are to follow the 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 potential release sites.

Through FY 2007, 1,367 sites have been completed, and 762 remain; 34 regional groundwater wells were installed; 2,254.97 acres out of a total 4,181.24 acres of land were transferred to Los Alamos County and adjacent Pueblo. Since the Consent Order was signed in March of 2005, 35 documents have been submitted to the New Mexico Environment Department. Of these, 27 were subject to stipulated penalties if the delivery date was missed. Currently, the Los Alamos National Laboratory has performed characterization activities at Technical Area-16 and generated 40 yds<sup>3</sup> of waste (pending disposal) and performed remediation and characterization activities at the Airport Ash-pile and Technical Area-21 (4,589 yds<sup>3</sup> of contaminated media - removed/disposed) confirming cleanup to residential standards; completed the Airport Landfill cover construction; obtained regulator approval on 12 documents; and received certificates of completion for 6 sites.

In FY 2009, the following activities are planned:

- Complete Resource Conservation and Recovery Act Facility Investigation Work Plans for Lower Sandia Canyon Aggregate Area, Lower Mortandad/Canada del Buey Aggregate Area and Portillo/Fence Canyon Aggregate Area.
- Complete Facility Investigation Reports for Upper Los Alamos Canyon Aggregate Area, North Canyons (Guaje/Barrancas/Rendija/Bayo), Sandia Canyon, and Canyon del Buey.
- Complete required groundwater monitoring of 8 watersheds.
- Complete required periodic monitoring 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.
- Complete 4 soil cleanups, including Material Disposal Area R in Technical Area-16.
- 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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Complete field work at S-site Aggregate Area, Delta Prime Site Aggregate, Middle Canyon del Buey Aggregate, Material Disposal Area AB, and sediments investigations at Potrillo/Fence Canyon.
- Complete required storm water sampling of 294 sites for compliance with the Federal Facilities Compliance Act .
- Complete installation of monitor well networks specified identified by the regulator as necessary to support remedy selection for CME/Corrective Measures Implementation.
- Conduct Water/Valle Canyons surface & alluvial groundwater investigation .
- Conduct the Resource Conservation and Recovery Act Remedial Facility Investigation for Material Disposal Area F.
- Complete the Resource Conservation and Recovery Act Facility Investigation Work Plans for the Twomile Canyon Aggregate Area, Lower Mortandad/Cedro Canyon, and Chaquehui Canyon.
- Conduct Resource Conservation and Recovery Act Facility Investigation fieldwork and prepare reports per the New Mexico Environment Department Consent Order at Upper Sandia Canyon, Threemile Canyon, Upper Mortandad Canyon, Upper Mortandad/Canyon del Buey, North Ancho Canyon, and Technical Area-16 Cañon De Valle.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	5,426	5,426	5,426	5,426	100%
Remediation Complete (Number of Release Sites)	1,417	1,472	1,537	2,129	72%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Completed site investigations at Material Disposition Areas L, G, and A. (FY 2007)</li><li>• Submit Federal Facility Compliance Agreement Quarterly Status Report. (FY 2007/FY 2007/November 2007/August 2008/November 2008/March 2009/May 2009)</li><li>• Corrective Measures Evaluations Report for Material Disposition Areas L. (FY 2007)</li><li>• Corrective Measures Evaluations Report for Ground Water 260 Outfall. (FY 2007)</li><li>• Corrective Measures Evaluations Report for Intermediate and Regional Groundwater for sites 16-021(c) and 16-003(k). (FY 2007)</li><li>• Investigation Work Plan for North Ancho Canyon Aggregate Area. (FY 2007)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Complete final engineered cover for Material Disposition Area H (Technical Area-54). (FY 2007)
- Submit Remedy Completion Report for Materials Disposition Area H (Technical Area-54). (FY 2007)
- Submit Investigation Report, Materials Disposition Area C. (October 2007)
- Investigation Work Plan for Middle Canada del Buey Aggregate Area (October 2007)
- Investigation Work Plan for SWMUs 49-005(a), 49-006, AOCs C-49-002, C-49-005(b), C-49-008(a-b), Areas 5,6,and 10). (October 2007)
- Submit Investigation Work Plan for Lower Los Alamos Canyon Aggregate Area. (October 2007)
- Submit Investigation Work Plan for Middle Canada del Buey Aggregate Area. (October 2007)
- Submit Investigation Work Plan for Solid Waste Management Units 49-001(a-g), 49-003,AOC C-49-008(d), (Material Disposition Area AB, Areas 1,3,4,11 and 12). (October 2007)
- Submit Investigation Report, DP Site Aggregate Area. (November 2007/November 2007)
- Materials Disposition Area T Phase 2 Investigation Report. (November 2007)
- Submit Investigation Work Plan for Upper Mortandad Canyon Aggregate Area. (November 2007)
- Investigation Report for site 16-008(a) (December 2007)
- Investigation Report, Middle Los Alamos Canyon Aggregate Area (January 2008)
- Submit Investigation Report, Middle Los Alamos Canyon Aggregate Area. (January 2008)
- Submit Investigation Report for Solid Waste Management Units 10-002(a,b), 10-003(a-o), 10-004(b), 10-007 (Bayo Canyon). (March 2008)
- Investigation Report, Pueblo Canyon Aggregate Area (March 2008)
- Submit Investigation Report for Pueblo Canyon Aggregate Area. (March 2008)
- Materials Disposition Area C Phase 2 Investigation Report. (March 2008)
- Annual update of Storm water Pollution Prevention Plan (March 2008)
- Submit Investigation Work Plan for Upper Canada del Buey Aggregate Area. (June 2008)
- Chromium Isotope Data Report. (July 2008)
- Investigation Work Plan for Three mile Canyon Aggregate Area. (July 2008)
- Corrective Measures Evaluations Report for Materials Disposition Area G. (September 2008)
- 16-003(o) Phase 2 Investigation Report (September 2008)
- Characterization the 22 remaining sites in the Pueblo Canyon aggregate area and the 44 remaining sites within Middle Los Alamos Aggregate area, and prepare two reports for submittal to New Mexico Environment Department (one for each aggregate area). The site will also be able to perform additional work associated with cleanup at Material Disposition Area B. (September 2008)
- Complete construction of 260 Outfall Corrective Measures for alluvial/surface water treatment system. (September 2008)

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Completion of Pajarito watershed sediment, surface, and groundwater investigation. (September 2008)
- Construct material disposal area H landfill cap. (September 2008)
- Continue characterization and complete cleanup of more than 12 sites in Technical Area-21. (September 2008)
- Initiate the Corrective Measures Evaluations for material disposition areas A, C, T. (September 2008)
- Install and monitor four wells in Pajarito and Bayo canyons. (September 2008)
- Investigation Report for Pajarito Canyon. (September 2008)
- Prepare and submit plan for the characterization of material disposition of AB. (September 2008)
- Start cleanup of the groundwater in Los Alamos Watershed. (September 2008)
- Periodic Monitoring Report (October 2008/October 2008)
- CMI Plan for Intermediate and Regional Groundwater for Solid Waste Management Units 16-021(c) and 16-003(k). (November 2008)
- Investigation Report for Sandia Canyon (December 2008)
- Investigation Work Plan for Lower Sandia Canyon Aggregate Area (April 2009/April 2009)
- Investigation Work Plan for Portillo/Fence Canyon Aggregate Area (April 2009/April 2009)
- Investigation Work Plan for Lower Mortandad/Canada del Buey Aggregate Area (April 2009)
- Lower Mortandad/Canada del Buey Aggregate Area Investigation Work Plan (April 2009)
- Upper Los Alamos Canyon Aggregate Area Investigation Report (May 2009)
- Investigation Report for North Canyons (Guaje/Barrancas/Rendija/Bayo). (June 2009)
- Investigation Report for Canada del Buey. (August 2009)

**VL-LANL-0040-D / Nuclear Facility D&D-LANL  
(Defense)**

0

0

5,675

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 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. The Consent Order contains an 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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 2009, 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.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

**VL-LANL-0040-N / Nuclear Facility D&D-LANL  
(Non-Defense)**

**1,025**

**1,888**

**1,905**

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. The shutdown mode is documented in an end point transition report. Several glove boxes, molecular sieves and other equipment which contain small amounts of radioactive tritium residue were left in place as approved and documented in the safety authorization basis. As a result, the facility emissions stack system will continue to operate. 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, and molecular sieves, have been removed from the Tritium System Test Assembly Facility. As a result of these removals, the material balance account was eliminated. The facility is being maintained as a radiological facility. All combustible materials have been removed and safe shutdown of the fire protection system is pending. This will greatly reduce maintenance costs. The savings in maintenance costs will be directed to other equipment removals and the start of the facility characterization activities.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, the following activities are planned:

- Complete equipment removals and start decontamination in support of demolition.
- Continue surveillance and maintenance of the Tritium System Test and Assembly facility.
- Remove/dispose of the Isotope Separation System from Tritium System Test Assembly Facility.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Radioactive Facility Completions (Number of Facilities)	0	0	0	1	0%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Continue surveillance and maintenance activities at the Tritium Systems Test Assembly to ensure safe and environmentally compliant conditions until final demolition. (FY 2007/September 2008)</li><li>• Continue surveillance and maintenance activities at the Tritium Systems Test Assembly facility and remove/dispose of the Isotope Separation System from the Tritium Systems Test Assembly. (September 2009)</li></ul>					

#### **NV-0030 / Soil and Water Remediation-Nevada Offsites**

**5,132                      0                      0**

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

This PBS was created to allow tracking of funds for transfer of the Nevada Offsites to the Office of Legacy Management after FY 2006. Historic atmospheric and underground nuclear tests at eight sites in Alaska, Colorado, Mississippi, Nevada, and New Mexico resulted in contaminated support facilities, soils and groundwater. Cleanup is complex, due to the number of sites, nature/extent of contamination, site size/location and numerous state regulators. Risk is associated with these contaminated sites because institutional controls are outside of DOE control.

Remediation activities to support regulatory closures at eight former underground nuclear testing sites in Alaska, Colorado, Mississippi, Nevada, and New Mexico are included in this PBS scope. Off-site surface closure eliminates potential access to contamination by removal and clean closure or closure in place, capping and establishing appropriate use restrictions. The focus for most off-site surface closures will be clean closure to allow unrestricted use by site landlords. Subsurface closure includes completing predictive flow models and establishing monitoring networks where necessary to ensure that contaminated groundwater remains within expected boundaries. Associated use restrictions and institutional controls will be in place within the predicted contaminant boundaries to preclude inadvertent contact with subsurface contaminants.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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In FY 2009, no activities are planned.

- Project transferred to the Office of Legacy Management.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	53	53	53	53	100%

**VL-NV-0013 / Solid Waste Stabilization and  
Disposition-Nevada Test Site**

**12,530                      0                      0**

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

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 lifecycle 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.

Inspections of mixed transuranic waste will be conducted according to hazardous waste requirements, as mandated by the Resource Conservation and Recovery Act, until final disposition. Transuranic and mixed transuranic waste in legacy drums will be shipped to the Waste Isolation Pilot Plant for disposal. The mixed transuranic waste in oversized boxes will be reduced to fit standard waste packages and/or will be decontaminated to low-level waste or mixed low-level waste and disposed of at the Waste Isolation Pilot Plant or the Nevada Test Site as appropriate. The classified material will be declared waste and will be disposed of at the Waste Isolation Pilot Plant. The removal of the transuranic and mixed transuranic from the Nevada Test Site for disposal will reduce the risk to the Nevada Test Site workers and the environment resulting from continued storage. The Nevada Test Site transuranic and mixed transuranic related facilities will be decontaminated and decommissioned, or will be transitioned to other uses. All the transuranic and mixed transuranic waste covered under this PBS will be dispositioned by the end of FY 2008. A revised project baseline has been developed and items in the plan were completed to close out this PBS in FY 2008.

In FY 2009, no activities are planned.

- Activities completed in FY 2008.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Transuranic Waste shipped for disposal (Cubic meters) - CH	392	687	688	688	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"> <li>Final transuranic waste disposition. (FY 2007)</li> <li>Project Completion (FY 2007)</li> </ul>					

### **VL-NV-0030 / Soil and Water Remediation-Nevada Test Site**

**67,812                      56,056                      50,157**

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 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/transportation related tests, nuclear reactor development and experimentation, nuclear rocket engine tests, and hydronuclear experiments. The industrial-type site restoration 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 sub-project 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.

The overall objective of the Nevada Site Office Environmental Restoration Project is to provide for appropriate risk-based remediation of surface and subsurface contamination on 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 approximately 1,000 industrial-type sites and approximately 100 soil contamination sites on the Nevada Test Site and Nevada Test and Training Range. The industrial release sites mainly support facilities and structures that were left after conducting aboveground and underground nuclear tests and surface nuclear engine and reactor experiments. The industrial release sites cleanup goal is to eliminate access to contamination by removal and clean closure or closure in place, capping, and establishing appropriate use restrictions. For 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).



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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The 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; procure materials, equipment, and subcontracts as required; excavating (for clean closure) to an approved action level/volume with standard construction equipment (front-end loaders, backhoes, scrapers); 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; characterize, store, transport, and dispose waste in accordance with applicable regulations and requirements; demobilize equipment and labor; performing site inspections to include moisture monitoring (time domain 'reflectrometry' or neutron), settlement monitoring (land survey or borehole survey), sample collection analysis data evaluation, and photo documentation as required by the State in approved closure requirements; 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 837 sites have been completed, and activities at approximately 1,000 sites are in progress. Activities at an estimated 100 environmental sites have not yet started.

In FY 2009, the following activities are planned:

- Develop monitoring network criteria, design, and report and complete Phase II Transport Model peer review, verification report, and risk evaluation for the Frenchman Flat Corrective Action Unit.
- Complete Corrective Action Plan Addendum, prepare drill pads/roads for 2 wells, and begin drilling and Phase II studies for Western and Central Pahute Mesa Corrective Action Units.
- Complete Phase II Contaminant Source Term and Flow Model reviews for the Yucca Flat Corrective Action Unit.
- Complete Phase I contaminant source term analysis, evaluation, and report and begin Phase I Flow Model analysis and evaluation for the Rainier Mesa/Shoshone Mountain Corrective Action Unit (CAU).
- Complete closure of 20 industrial release sites associated with aboveground storage tanks, oil/fuel spills, radiological contamination areas, waste disposal sites, burn pit, magazine/bunker, and conditional release storage areas.
- Conduct field closure activities on 31 additional contaminated soil and industrial release sites associated with mud pits, injection wells, radiological contamination areas, sump/cellars, underground storage tanks, waste disposal sites, hazardous waste sites, and facilities.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	935	995	1,020	2,035	50%
<p>Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)</p> <ul style="list-style-type: none"> <li>• Industrial Sites Closures of storage yards, mud pits, cellars and polychlorinated biphenyl contamination - closure of 45 release sites. (FY 2007)</li> <li>• Underground Test Area Yucca Flat Phase 1 - submit Phase I package to state. (FY 2007)</li> <li>• Submitted CAU 224 CR. (October 2007)</li> <li>• Submitted CAU 300 CR. (October 2007)</li> <li>• Industrial Sites Closure Area 25 and 26 Storage Tanks - closure report for approval by the State. (November 2007)</li> <li>• Industrial Sites Closures Super Kukla - closure report for approval by the State. (November 2007)</li> <li>• Industrial Sites Closures Decon Pad and Septic Systems - closure report for approval by the State. (December 2007)</li> <li>• Submit CAU 543 CR (January 2008)</li> <li>• Submit CAU 124 CR (February 2008)</li> <li>• Underground Test Area - complete Pahute Mesa Phase I Transport Model. (February 2008)</li> <li>• Submit CAU 127 CR (February 2008)</li> <li>• Submit CAU 151 CR (April 2008)</li> <li>• Underground Test Area - complete Frenchman Flat Phase II Transport Mode documentation package. (May 2008)</li> <li>• Submit CAU 145 CR (June 2008)</li> <li>• Submit CAU 408 CR (June 2008)</li> <li>• Submit CAU 121 CR (September 2008)</li> <li>• Submit CAU 547 CR (January 2009)</li> <li>• Submit CAU 413 CADD Rev (April 2009)</li> <li>• Submit CAU 101 Phase I Transport Model (May 2009)</li> <li>• Submit CAU 102 Phase I Transport Model (May 2009)</li> <li>• Submit CAU 98 Phase II Peer Review (June 2009)</li> <li>• Submit CAU 134 CR (June 2009)</li> <li>• Submit CAU 97 Phase I Source Term (June 2009)</li> <li>• Submit CAU 190 CR (July 2009)</li> <li>• Submit CAU 97 Phase I Flow Model (August 2009)</li> <li>• Submit CAU 117 CR (August 2009)</li> <li>• Submit CAU 139 CR (August 2009)</li> <li>• Submit CAU 166 CR (September 2009)</li> </ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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<b>VL-NV-0080 / Operate Waste Disposal Facility-Nevada</b>	<b>5,258</b>	<b>21,767</b>	<b>12,848</b>
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This PBS can be found within the Defense Environmental Cleanup appropriation.

The Nevada Site Office Environmental Management waste management project provides indispensable, efficient, cost-effective low-level waste and mixed low-level waste disposal capability to meet the needs of other DOE sites. Also under the Nevada Site Office waste management project, the scope for legacy on-site transuranic and mixed transuranic waste and material includes storage, treatment (as needed), and disposal/disposition.

In FY 2006, the State of Nevada authorized the receipt of off-site mixed low-level waste for disposal. Acceptance of low-level waste and classified material will continue in support of the DOE complex until FY 2027. Acceptance of mixed low-level waste for disposal will only be available until December 2010, or when a disposal capacity (20,000 cubic meters from December, 2005) is reached, in accordance with State of Nevada regulatory authorization. Individual disposal low-level waste cells will be operationally closed as they reach capacity. 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 store (in a disposal configuration) classified material from approved generators throughout the DOE complex. The total Nevada Test Site low-level waste, mixed low-level waste and classified material 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, 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.

The Office of Engineering and Construction Management has reviewed the project baseline and issued its report. This project has been recommended for validation through FY 2009. A corrective action plan was developed to address the actions from the review of the project baseline. The actions have been completed and are being considered by OECM for completeness which will result in this project attaining full lifecycle validation. As of September 30, 2007, approximately 1,006,761 cubic meters of low-level/mixed low-level waste and classified material have been disposed at the Nevada Test Site. In 2007, approximately 26,731 cubic meters of low-level/mixed low-level waste and classified material have been disposed.

In FY 2009, the following activities are planned:

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Continue supporting cleanup activities of approximately 30 off-site generators from across the DOE complex by disposing an estimated 18,281 cubic meters of low-level and mixed low-level waste and classified material 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 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"><li>• Dispose of low-level and mixed low-level wastes. (FY 2007/September 2008/September 2009)</li></ul>					

#### **VL-NV-0100 / Nevada Community and Regulatory Support**

**2,168                      2,545                      2,669**

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 to accelerate project activities, and stakeholder involvement efforts.

This PBS has provided 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 has also included funding for the annual Federal Facilities Agreement and Consent Order fee and a grant with the University of Nevada, Las Vegas.

In FY 2009, 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 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
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(dollars in thousands)

FY 2007	FY 2008	FY 2009
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No metrics associated with this PBS
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"><li>Continue regulator and stakeholder funding. (FY 2007/September 2008/September 2008)</li></ul>

**VL-FAO-0101 / Miscellaneous Programs and Agreements in Principle**

**2,722**

**1,497**

**1,443**

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") and such other DOE sites in New Mexico as the parties may subsequently identify and mutually agree to incorporate under the auspices of the program. 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 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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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. It is made up of divisions that deal with remediation, field operations, air monitoring, toxicology and risk assessment, legal, and industrial and hazardous waste. The Texas Agreement in Principle activities for FY 2006 were completed within budget and on schedule.

The New Mexico Agreement-in-Principle work for FY 2006, with the exception of perchlorate monitoring which was slowed by an issue with Kirtland Air Force Base, was completed within budget and on schedule. Fiscal Years 2007-08 Agreement in Principle independent environmental oversight and monitoring will be done on both Pantex cleanup and New Mexico cleanup and waste management. FY 2009 Agreement in Principle work will be limited to Los Alamos independent environmental oversight and monitoring.

In FY 2009, the following activities are planned:

- Support the New Mexico Agreement in Principle and the Texas Agreement in Principle.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Fulfill New Mexico and Texas Agreements-in-Principle. (FY 2007/September 2008)</li><li>• Fulfill New Mexico Agreement-in-Principle. (September 2009)</li></ul>					

#### **VL-SPRU-0040 / Nuclear Facility D&D-Separations**

##### **Process Research Unit**

**3,500**

**27,334**

**15,500**

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 2009, the following activities are planned:

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Conduct surveillance and maintenance to allow the facilities to remain in minimum safe and secure configuration.
- Secure the remediation areas and maintain them in a minimum safe and secure configuration.
- Remove or stabilize chemical and radiological contaminants in land and groundwater.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Nuclear Facility Completions (Number of Facilities)	0	0	0	4	0%
Remediation Complete (Number of Release Sites)	0	4	4	6	67%
Transuranic Waste shipped for disposal (Cubic meters) - CH	0	0	50	50	100%
Transuranic Waste shipped for disposal (Cubic meters) - RH	0	0	0	0	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"> <li>• Completed removal of 50,000 cubic feet of radiologically contaminated soil/debris. (FY 2007)</li> <li>• Awarded Contract for the cleanup of five release sites. (FY 2007)</li> <li>• Submit Interim Corrective Action Work Plan. (March 2008)</li> <li>• Initiate work on the nuclear facilities and environmental restoration of the land areas. (September 2008)</li> <li>• Conduct surveillance and maintenance to allow the facilities to remain in minimum safe and secure configuration. (September 2009)</li> <li>• Secure the remediation areas and maintain them in a minimum safe and secure configuration. (September 2009)</li> <li>• Remove or stabilize chemical and radiological contaminants in land and groundwater. (September 2009)</li> </ul>					

**VL-PX-0030 / Soil and Water Remediation-Pantex****19,394****20,027****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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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, if feasible, 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.

Through a Memorandum of Agreement between the Environmental Protection Agency and the State of Texas, the Texas Commission on Environmental Quality has authority for investigations conducted under the Resource Conservation and Recovery Act process. However, the Environmental Protection Agency has retained the authority to manage radionuclide contamination and Comprehensive Environmental Response, Compensation, and Liability Act issues. Both the Environmental Protection Agency and the Texas Commission on Environmental Quality support the DOE EM Accelerated Cleanup Initiative, as shown by letters included in the Pantex Final Performance Management Plan, July 2003. Efficient satisfaction of Resource Conservation and Recovery Act/Comprehensive Environmental Response, Compensation, and Liability Act requirements and timely regulator approval are key factors for Pantex Environmental Remediation project completion. Pantex is currently working closely with the Environmental Protection Agency Region 6 and the Texas Commission on Environmental Quality through the Core Team that collectively reviews site data, to expedite integration of Resource Conservation and Recovery Act; and Comprehensive Environmental Response, Compensation, and Liability Act statutory requirements.

As of the end of FY 2007, the Texas Commission on Environmental Quality approved closure of 211 release sites, leaving 26 release sites to be completed in Fiscal Year 2008, with an additional 15 active release sites remaining in operation after project completion in FY 2008.

In FY 2009, the following activities are planned:

- None - the Long-Term Stewardship responsibility for Pantex will be transferred to the National Nuclear Security Administration beginning in FY 2009.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	211	237	237	237	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Commenced Corrective Measures Construction. (FY 2007)</li><li>• Complete Corrective Measures Construction. (September 2008)</li><li>• Project Completion (September 2008)</li></ul>					



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**VL-PX-0040 / Nuclear Facility D&D-Pantex**

**4,332**

**0**

**0**

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

Included in the scope are decontamination and decommissioning of the Building 12-24 Complex (multiple buildings/structures), Zone 10 Ruins (multiple buildings/structures), Building 8-008, and Building 11-44. These facilities represent approximately 1 million square feet, are 50 to 60 years old, and, in some cases, are a contributing source of legacy contaminants into the environment. Project activities include hazard characterization and controls; termination of existing utilities; decontamination; and removal and recycling/disposal of plant equipment and structures (e.g., piping, concrete pads, roofs, underground concrete walls). Remediation of underlying soil and groundwater may be required for some facilities. Status through 2006: 1) Building 8-008 - completed in FY 2001; 2) Building 11-44 - completed in FY 2004; 3) Zone 10 Ruins – completed in FY 2005; 4) Building 12-24 Complex – demolition is complete, waste disposal and transportation of construction debris continued through the remainder of FY 2006.

Building 12-24 Complex was demolished in the first part of 2006 and the rubble generated was staged for transport offsite at a later date. This complex was located in the Material Access Area of the plant, which is very difficult for contractors to access. Therefore, hauling of the remaining demolition rubble has continued into 2008. The concrete, steel, and excess dirt are loaded into articulated dump trucks and hauled to a remote area of the plant where it is crushed and segregated. The crushed materials are then hauled to an offsite landfill approved for Class I waste.

In FY 2009, no activities are planned.

- Project completed in FY 2008.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	4	4	4	4	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
• Project Completion (September 2008)					

**VL-SN-0030 / Soil and Water Remediation-Sandia**

**10,394**

**0**

**0**

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. 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) when the sites are placed under institutional controls and long-term stewardship in accordance with State and Federal requirements. The

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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New Mexico Environment Department's approval is required for final determination of Corrective Action Complete either without controls or with institutional controls managed through the long-term stewardship program.

Although FY 2006 was to be the last year of requested funding and for field work to be complete, the baseline schedule was extended through FY 2009 due to regulatory delays on the Mixed Waste Landfill rock biobarrier and soil cover field work, obtaining final remedies for the three groundwater areas, and completing remaining regulatory and administrative closure activities. These delays and new regulatory requirements in FY 2007 necessitated a change to the FY 2007 Operating Plan that increased the funding in FY 2007. Originally, carryover funding from FY 2006 was expected to be sufficient to complete the remaining project scope. However, formal requests from the New Mexico Environment Department requesting additional response actions related to the Mixed Waste Landfill and other release sites resulted in EM allocating funds in FY 2007 to accommodate the added scope and cost. Also, long-term stewardship of 259 of 265 release sites is expected to be the responsibility of National Nuclear Security Administration in FY 2008.

Currently, 263 of 265 remediation sites are complete. Also, 204 of 265 final site closure approvals have been received from the State, 54 sites currently pending final approval by the New Mexico Environment Department, and 5 sites are scheduled to be submitted for final approval in late FY 2007. Final regulatory approval for the Mixed Waste Landfill is expected in FY 2009. The Sandia National Laboratories Environmental Restoration project has completed all field work, except for the Mixed Waste Landfill cover and has submitted 2 of 3 corrective measures evaluation groundwater reports but is required to monitor the Burn Site groundwater area for eight quarters ending in December 2007 prior to submitting the Corrective Measure Evaluations report in FY 2008.

In FY 2009, the following activities are planned using prior year balances:

- Finalize the Corrective Measures Implementation Report for the Mixed Waste Landfill and submit to the New Mexico Environment Department.
- Finalize the Long-term Maintenance and Monitoring Plan for the Mixed Waste Landfill and submit to the New Mexico Environment Department.
- Receive final regulatory approval for the Mixed Waste Landfill and finalize administrative and regulatory project closure activities.
- Receive and implement final remedies for the three groundwater areas of concern.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Radioactive Facility Completions (Number of Facilities)	1	1	1	1	100%
Remediation Complete (Number of Release Sites)	263	263	264	265	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"> <li>Submitted Long-Term Maintenance and Monitoring Plan for the Mixed Waste Landfill to New Mexico Environment Department. (FY 2007)</li> <li>Submitted final Corrective Measures Implementation (Resource Conservation and Recovery Act) Report to the New Mexico Environment Department for Chemical Waste Landfill. (FY 2007)</li> <li>Receive regulatory approval of the Burn-site Groundwater Corrective Measure Implementation. (January 2009)</li> <li>Receive final regulatory approval for the mixed waste landfill. (May 2009)</li> <li>Project Completion (September 2009)</li> </ul>					

<b>Total, NNSA Sites</b>	<b>300,370</b>	<b>292,152</b>	<b>246,989</b>
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### Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$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)

- Decrease due to completion of soil and groundwater remediation disposal activities at the Lawrence Livermore National Laboratory Site 300 in FY 2008. -90

#### VL-FOO-0100-D / LLNL Community and Regulatory Support (Defense)

- Decrease due to completion of all community and regulatory activities at the Lawrence Livermore National Laboratory Site 300 in FY 2008. -277

## **Lawrence Livermore National Laboratory**

### **VL-LLNL-0031 / Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300**

- Decrease due to project completion at Lawrence Livermore National Laboratory - Site 300 at the end of FY 2008. -8,601

## **Los Alamos National Laboratory**

### **VL-LANL-0013 / Solid Waste Stabilization and Disposition-LANL Legacy**

- The decrease reflects the completion of preparatory work for below-grade stored transuranic waste retrieval in FY 2008. -1,300

### **VL-LANL-0030 / Soil and Water Remediation-LANL**

- The funding increase is for development of the Resource Conservation and Recovery Act Facility investigations, tied to compliance with the legally enforceable requirements of the New Mexico Environmental Department Consent Order. 6,022

### **VL-LANL-0040-D / Nuclear Facility D&D-LANL (Defense)**

- The funding increase is to begin decontamination and decommissioning of three facilities at Technical Area-21 and Material Disposal Area T, per the New Mexico Environmental Department Consent Order. 5,675

## **Nevada**

### **VL-NV-0030 / Soil and Water Remediation-Nevada Test Site**

- The decrease defers the planned decontamination and decommissioning of two facilities on the Nevada Test Site, due to higher priority cleanup work. -5,899

### **VL-NV-0080 / Operate Waste Disposal Facility-Nevada**

- The decrease is due to non-Environmental Management waste generators paying for their low-level waste and mixed-low-level waste disposal services in FY 2009. -8,919

### **VL-NV-0100 / Nevada Community and Regulatory Support**

- The increase supports State of Nevada regulatory oversight for the Nevada Test Site, Community Advisory Board activities, and agreements and grants to organizations in the State of Nevada. 124

FY 2009 vs. FY 2008 (\$000)
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**NNSA Service Center/Separations Processing Research Unit (SPRU)**

**VL-FAO-0101 / Miscellaneous Programs and Agreements in Principle**

- |                          |     |
|--------------------------|-----|
| ▪ No significant change. | -54 |
|--------------------------|-----|

**VL-SPRU-0040 / Nuclear Facility D&D-Separations Process Research Unit**

- |   |         |
|---|---------|
| ▪ The decrease reflects the deferral of cleanup work here due to higher priority cleanup. | -11,834 |
|---|---------|

**Pantex**

**VL-PX-0030 / Soil and Water Remediation-Pantex**

- |   |         |
|---|---------|
| ▪ Decrease due to completion of environmental cleanup activities in Pantex at the end of FY 2008. | -20,027 |
|---|---------|

**Non-Defense Environmental Cleanup**

**Small Sites**

**VL-LANL-0040-N / Nuclear Facility D&D-LANL (Non-Defense)**

- |                          |    |
|--------------------------|----|
| ▪ No significant change. | 17 |
|--------------------------|----|

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**Total, NNSA Sites**

**-45,163**



## West Valley Demonstration Project

### Funding by Site

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
West Valley Demonstration Project	87,591	53,900	57,600
Total, West Valley Demonstration Project	87,591	53,900	57,600

### 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 federal repository for permanent disposal;
- 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 in accordance with federal repository requirements 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 to a federal repository; (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 March 2010. 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 September 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.

Activities to be initiated once transport of the high-level waste canisters to a federal repository can be facilitated include:

- 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 (Class B and C) 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 Project transuranic disposition will be integrated into the Greater Than Class C 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. In addition, the State holds title to the high-level waste per the Act, and therefore is responsible for payment of the repository disposal fee.

### 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

Work planned for performance through FY 2008 includes significant progress toward off-site shipment of legacy low-level waste and initiating disposition of the West Valley Demonstration Project transuranic waste. Additionally, the former spent nuclear fuel reprocessing facility will be in the process of being decontaminated, reducing overall risks.

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 planned for issuance in 2009.

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Non-Defense Environmental Cleanup			
West Valley Demonstration Project			
OH-WV-0013 / Solid Waste Stabilization and Disposition-			
West Valley	43,395	12,755	33,239
OH-WV-0040 / Nuclear Facility D&D-West Valley	44,196	41,145	24,361
Subtotal, West Valley Demonstration Project	87,591	53,900	57,600
Total, West Valley Demonstration Project	87,591	53,900	57,600

### Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life- Cycle	FY 2009 % Complete
<b>West Valley Demonstration Project</b>					
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%
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%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	26,025	27,498	27,707	27,786	100%

### Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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#### **OH-WV-0013 / Solid Waste Stabilization and Disposition-West Valley**

**43,395                      12,755                      33,239**

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, 2007, more than 29,026 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 2009, the following activities are planned:

- Continued processing and disposal of waste generated from the decontamination of the Main Plant Process Building.
- Continued processing of high activity low-level waste and transuranic waste through the Remote-Handled Waste Facility. These are critical path activities to the completion of Interim End State.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Start disposition packaging and interim storage of contact- and remote-handled transuranic waste.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
High-Level Waste packaged for final disposition (Number of Containers)	275	275	275	275	100%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	26,025	27,498	27,707	27,786	100%
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%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"> <li>Initiate off-site disposition of legacy remote-handled transuranic waste. (June 2008/December 2008)</li> <li>Initiate disposition of the West Valley Demonstration Project Transuranic Waste. (January 2009)</li> <li>Continue waste disposition operations for remediation low-level and transuranic waste. (September 2009)</li> </ul>					

**OH-WV-0040 / Nuclear Facility D&D-West Valley****44,196****41,145****24,361**

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

The decontamination and decommissioning program at the West Valley Demonstration Project involves those activities required to decontaminate and decommission the facilities, tanks and hardware used during high-level waste solidification efforts. Decommissioning criteria for the West Valley Demonstration Project was established by the Nuclear Regulatory Commission in 2002. As of September 2005, decontamination operations in the Head-End Cells (General Purpose and Process Mechanical Cells) and Extraction Cell #2 were completed. In November 2005 the dismantlement and decontamination of the vitrification facility in-cell area was completed. In 2007, the Hot cells in the Analytical Laboratory, the Water Treatment Area of the Fuel Receiving and Storage Facility, and the valve aisle in the Supernatant Treatment System were decontaminated. Work continues by both DOE and New York State (the West Valley site owner) on the Decommissioning and Long Term Stewardship Environmental Impact Statement, which is currently scheduled for completion in September 2009.

DOE is currently engaged in the Core Team Process with representatives from the New York State Energy Research and Development Authority, the Nuclear Regulatory Commission, the Environmental Protection Agency, the New York State Department of Health and the New York State Department of Environmental Conservation, to identify an Environmental Impact Statement Preferred Alternative. In advance of a final

(dollars in thousands)

FY 2007	FY 2008	FY 2009
---------	---------	---------

Environmental Impact Statement decision, DOE has awarded the Interim End State contract to West Valley Environmental Services to decontaminate the Main Plant Process Building to make it demolition-ready and remove ancillary facilities not needed for managing the High Level Waste. Once an Environmental Impact Statement Record of Decision is issued, the decontamination and decommissioning will be performed consistent with the Nuclear Regulatory Commission criteria and Record of Decision to most effectively reduce worker, public, and environmental risks. To support 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 Dry 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. An Internal Project Review was performed in October 2007.

In FY 2009, the following activities are planned:

- Support the West Valley Demonstration Project Interim End State completion goal by decontamination and removal of excess components from the Main Process Plant Building (the former Spent Nuclear Reprocessing Facility) and preparing the Main Plant Process Building for final decommissioning.
- Design a new storage facility for the high-level waste canisters. The high-level waste canisters will remain in the new storage facility until they can be removed and shipped to a federal repository.
- Decontamination of unneeded rooms, cells or ancillary facilities in preparation for demolition.
- Preparation of the Draft Environmental Impact Statement for the Decommissioning and/or Long Term Stewardship of the West Valley Demonstration Project, scheduled to be completed in October 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.
- Conduct groundwater characterization based on Core Team Process discussions.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	10	16	18	29	62%

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Nuclear Facility Completions (Number of Facilities)	3	4	4	14	29%
Radioactive Facility Completions (Number of Facilities)	3	4	4	13	31%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>Continue dismantlement/removal of facilities and structures no longer necessary to support safe site operations. (FY 2007/September 2008/September 2009)</li><li>Complete preparation of the environmental impact statement for decommission and long-term stewardship. (September 2008)</li><li>Continue disposition/decontamination of former spent nuclear fuel processing facility. (September 2009)</li></ul>					

**Total, West Valley Demonstration Project**

**87,591**

**53,900**

**57,600**

**Explanation of Funding Changes**

FY 2009 vs.  
FY 2008  
(\$000)

**Non-Defense Environmental Cleanup**

**West Valley Demonstration Project**

**OH-WV-0013 / Solid Waste Stabilization and Disposition-West Valley**

- Increase supports additional processing and disposal of low-level waste, and mixed low-level waste and the initiation of disposition of transuranic waste that has been or will be generated through decontamination of site facilities.

20,484

**OH-WV-0040 / Nuclear Facility D&D-West Valley**

- The decrease in funding reflects a reduction of decontamination and decommissioning work scope due to higher-priority cleanup work.

-16,784

**Total, West Valley Demonstration Project**

**3,700**





## All Other Sites

### Funding by Site and Location

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
All Other Sites			
Argonne National Laboratory	10,726	433	459
Brookhaven National Laboratory	30,860	28,438	8,433
California Site Support	160	158	187
Completed Sites/Program Support	599	1,189	1,100
Energy Technology Engineering Center	16,000	12,882	12,533
Inhalation Toxicology Laboratory	3,358	423	0
Lawrence Berkeley National Laboratory	1,710	0	0
Moab	28,056	23,734	30,513
Stanford Linear Accelerator Center	5,720	5,846	4,883
Total, All Other Sites	97,189	73,103	58,108

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 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 is planned when all EM work at the site is completed at the end of FY 2009.

### **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 2007, twelve nuclear facilities were decontaminated and decommissioned, and one facility (Building 301) remained for completion.

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

EM site cleanup work will be complete in FY 2009, along with required regulatory actions. One facility is still undergoing decontamination and demolition - 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 the Argonne National Laboratory site. The End State 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.

## **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.

## **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 is required by 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 will be considered complete when all required groundwater treatment plants are built and operating, cleanup of soil and the Peconic River are complete, decontamination and decommissioning of the Brookhaven Graphite Research Reactor and the High Flux Beam Reactor is 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 is 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. All systems have been drained and the reactor vessel and primary and secondary cooling systems are in dry lay-up. The reactor fuel was sent to the DOE Savannah River Site in 1996-97. Decision-making with the regulatory agencies and the community is currently underway for the High Flux Beam Reactor.

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

In summary, 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 and were completed in FY 2005. High priority activities at the Brookhaven Graphite Research Reactor related to addressing environmental releases were also completed in FY 2005. Removal of the reactor internals, graphite moderator (pile), and radiation biological shield (bioshield) are planned for completion in FY 2009. 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 near term 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. The remainder of the High Flux Beam Reactor Project has been deferred to complete in FY 2020.

## **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. Based on the approved baseline, lifecycle planning estimate range for end date for cleanup is 2018 to 2020. Upon completion, 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**

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 is using the Core Team process with the regulatory agencies to facilitate this decision.

## **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 has been extended for one year through January 4, 2009. 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. Peconic River sediment has been remediated. 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 is being 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 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.

When opened in the late 1950s, the site was ideally remote from population centers to enable development of highly sensitive projects. These projects supported nuclear research and energy development for DOE and its predecessor agencies. The site includes buildings that housed test apparatus for large-scale heat transfer and fluid mechanics experiments, mechanical and chemical test facilities, office buildings, and auxiliary support facilities.

## **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.

Historically, the site had 27 radiological facilities, although only two now remain. At one time there were seven non-radioactive sodium facilities (used to test reactor components because sodium is an efficient medium for heat transfer) however, only two now remain.

## **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. It is awaiting regulatory authorization to proceed with demolition. In addition, there is an ongoing Resource Conservation and Recovery Act Corrective Action for chemical contamination 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 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 a new Consent Order, a recent court order to complete an Environmental Impact Statement, and based on the approved baseline, the lifecycle planning estimate range is 2018 to 2020. 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, pending completion 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 (EPA). However, demolition of the facilities has been delayed pending the outcome of the court-ordered Environmental Impact Statement. The California Department of Health Services does not have regulatory authority over DOE for radiological contamination. However, if it was determined that the site had not been adequately cleaned up to State standards, they would license the site and require additional survey and remediation before it could be released. Therefore, as a risk mitigation measure, DOE obtains the Department of Health Services concurrence before former radioactively contaminated facilities are released. The Energy Technology Engineering Center site is not on the National Priority List and therefore the EPA currently has no regulatory authority. However, EPA has 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. A decision is expected by early Spring 2008.

The Resource Conservation and Recovery Act chemical cleanup is regulated by the California Department of Toxics Substance Control and is being performed consistent with a recently signed Consent Order issued by the California Department of Toxic Substances Control. The Closure Plan for the Hazardous Waste Management Facility was approved December 2006, but the implementation of the plan has been postponed until the Environmental Impact Statement has been completed. Likewise, the California Department of Toxics Substance Control approval of the Closure Plan for the Radioactive Material Handling Facility has been placed on hold pending the outcome of the Environmental Impact Statement. DOE will face fines and penalties if the closure schedule is not maintained or can be renegotiated. This is because the closure schedule includes regulatory milestones. Failure to maintain

progress towards completion of the Resource Conservation and Recovery Act Corrective Action will result in receipt of stipulated fines and penalties as defined in the Consent Order.

### **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.

### **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 post-September 2008.

### **Cleanup Benefits**

The cleanup is protective of human health and the environment using a residential land use scenario. Activities in FY 2008 and FY 2009 will primarily include the preparation of the Environmental Impact Statement and continue 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.

## **Inhalation Toxicology Laboratory**

### **Site Overview**

The Inhalation Toxicology Laboratory is a research facility operated by the non-profit Lovelace Biomedical and Environmental Research Institute. It is located in Albuquerque, New Mexico on Kirtland Air Force Base. 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.

As a result of operations conducted for DOE, groundwater and soil areas were contaminated, laboratories and buildings were contaminated and legacy waste has accumulated.

### **Site Description**

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, which has been withdrawn from the Bureau of Land Management by the Air Force and permitted to DOE.

### **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.

### **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. 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 decontaminated, the EM mission at Inhalation Toxicology Laboratory will be complete. EM completion is scheduled for 2008. Remaining projects through FY 2008 include the Radioactive Source Collection and Disposal and cleanup of the Beta Gamma Wing, and final legacy waste disposition of 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 at Inhalation Toxicology Laboratory. 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, 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 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**

It is assumed that no more TRU waste will be generated during the remainder of the Inhalation Toxicology Laboratory cleanup and that there will not be waste items identified for which there is no disposal path. The discovery of additional TRU 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 Inhalation Toxicology Laboratory to the Nevada Test Site or to a commercial vendor. The relatively small volume of transuranic waste resulting from Inhalation Toxicology Laboratory operations thus far has been transported to Sandia National Laboratory 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 and will be renewed through FY 2008. 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.

## **Cleanup Benefits**

Completion of the Inhalation Toxicology Laboratory EM Project in FY 2008 will represent elimination of radiological and hazardous chemical waste risk due to DOE activities in the Inhalation Toxicology Laboratory areas, thus enabling Inhalation Toxicology Laboratory to use these areas as a private entity.

## **Lawrence Berkeley National Laboratory**

### **Site Overview**

The primary mission of the EM Project at Lawrence Berkeley National Laboratory was to identify, assess, and remediate (if necessary) contaminated areas. This mission was accomplished in compliance with the Lawrence Berkeley National Laboratory Resource Conservation and Recovery Act Permit and applicable regulations, and was conducted in a manner that maintained human health and safety and protection of the environment.

### **Site Description**

Lawrence Berkeley National Laboratory is a multipurpose research facility operated by the DOE Office of Science and managed by the University of California. It is located in Berkeley/Oakland Hills in Alameda County, California and encompasses approximately 200 acres adjacent to the northeast side of the UC Berkeley campus. The western three-quarters of the Laboratory are in the city of Berkeley and the eastern quarter is in the city of Oakland.

Lawrence Berkeley National Laboratory's Hazardous Waste Handling Facility operates under a Resource Conservation and Recovery Act Hazardous Waste Facility Permit issued by the California Environmental Protection Agency Department of Toxic Substances Control on May 4, 1993. The Hazardous Waste Handling Facility Permit conditions require that Lawrence Berkeley National Laboratory investigate and address historic releases of hazardous waste and constituents that may have occurred both at the Hazardous Waste Handling Facility and throughout the Lawrence Berkeley National Laboratory site, as part of the Resource Conservation and Recovery Act Corrective Action Program.

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

EM completed construction of remedial measures in January 2007 and submitted the Corrective Measures Implementation Report to the regulatory agencies. Approval of the Corrective Measures Implementation Report was received on July 13, 2007. EM and the Office of Science have proceeded with the transition of these facilities to the Office of Science along with the implementation of long-term stewardship in FY 2007.

The Lawrence Berkeley National Laboratory risk-based cleanup strategy emphasized:

- A continued focus on implementing interim corrective measures to eliminate/reduce the highest risk areas.
- Completing construction of the corrective measures to be outlined in the Resource Conservation and Recovery Act Corrective Measures Study Report.
- Turning over operation of the final corrective measures to the Office of Science for long-term stewardship in FY 2007.

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

Lawrence Berkeley National Laboratory will continue to operate as an Office of Science DOE sponsored laboratory. Soil will be remediated to meet the risk associated with industrial land use. Groundwater remedial systems have been constructed to prevent off-site migration and discharge to surface water and additional systems will be constructed to address the long-term response action goal of meeting Maximum Contaminant Levels for drinking water.

EM completed construction of remedial systems identified in the Resource Conservation and Recovery Act corrective measures study in January 2007, including disposal of all remediation derived waste. EM obtained regulatory approval of the Corrective Measures Implementation Report in July 2007. EM transferred long term stewardship responsibility for operation and maintenance of groundwater treatment systems to the Office of Science in FY 2007. EM transferred funding responsibility in FY 2008. The Critical Decision 4 was approved November 2007. Remaining business closure activities include activities outlined in the Site Transition Plan, which will be completed in FY 2008.

## **Critical Project Uncertainties and Assumptions**

Risk to project completion associated with the Lawrence Berkeley National Laboratory environmental restoration project can be categorized into seven distinct areas: risks to soil corrective action, groundwater corrective action, waste disposition, regulatory and public acceptance, government-furnished services, long-term response action transfer, and contracts. The most significant risks are those associated with regulatory and public acceptance, long-term response action transfer, and scope growth and/or changes. The basic elements constituting each area and mitigation strategies have been detailed in a project Risk Management Plan.

## **Interdependencies**

Dependencies include other State and Federal agencies, provision of Government-Furnished Services and Items, and scope and funding transfers.

## **Contract Synopsis**

A Management and Operations contract with the University of California was awarded in May 31, 2005 with the period of performance through May 31, 2010, and provisions to extend it to 2025.

## **Cleanup Benefits**

The cleanup plan that has been developed will result in rapid, cost effective solutions that drive performance and reduce risks to human health and the environment.

## **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 date will be established once Critical Decision-2 is in place and the performance baseline finalized. Based on the project technical approach and the pre Critical Decision 2 estimate, 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**

- Full cost of remediation will not be known until a performance baseline is validated.
- 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.
- Nuclear Regulatory Commission will concur on the Final Remedial Action Plan with no major revisions or additions.

## **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.

## **Stanford Linear Accelerator Center**

### **Site Overview**

The objectives of EM's Stanford Linear Accelerator Center 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 2010. 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 Stanford Linear Accelerator Center Environmental Remediation Project. In addition, completing this project in the shortest possible time results in mortgage reduction as annual site monitoring costs are reduced and most of the support staff can be reassigned or eliminated.



Historically, EM's mission at the Stanford Linear Accelerator Center has been the remediation of contamination resulting largely from the Stanford Linear Accelerator Center's 2-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 Stanford Linear Accelerator Center is a national research facility operated by Stanford University under contract with DOE. The term of Stanford University's current contract with DOE (then the Atomic Energy Commission) began in 1962 and is being extended beyond its basic 2007 end-date. The current lease expires in 2012.

The Stanford Linear Accelerator Center 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, the Stanford Linear Accelerator Center is devoted to theoretical and experimental research in elementary particle physics, developing new accelerator and particle detection techniques, and the utilization of synchrotron radiation in biology, chemistry, physics, materials science, medical science, and other disciplines.

As a result of Stanford Linear Accelerator Center'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, and metals, most notably lead. Additionally, radionuclides, notably tritium, have also been generated as a result of Stanford Linear Accelerator Center 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 Stanford Linear Accelerator Center. The release sites at issue are grouped into four operating 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 Stanford Linear Accelerator Center's research operations, and the Office of Science /Stanford Site Office has accepted responsibility for them as deferred actions.

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

The EM approved baseline calls for completing removal actions and construction of remedial measures by the end of FY 2010 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.
- 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.

- Installing or upgrading two 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/ Feasibility Study for two of the Operable Units and a Remedial Investigation 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.
- Stanford 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 Stanford Linear Accelerator Center 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 Stanford Linear Accelerator Center to investigate past operational areas. As a result of groundwater investigation and monitoring performed since the 1980s, four areas of Stanford Linear Accelerator Center 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 Stanford Linear Accelerator Center's storm water drainage system.

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

Once site completion is achieved, and responsibility for all operation and maintenance of remedial systems will be transferred from EM to the Office of Science. It is anticipated that Stanford Linear Accelerator Center 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 construction and startup of remedial systems and transfer them to the Office of Science, 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 accepted responsibility for 24 cleanup actions and related regulatory documents (this includes closure of clean sites), and the site closure date was extended to 2010.

### **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 Stanford Linear Accelerator Center 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 15280 to conduct removal actions. The Stanford

Linear Accelerator Center 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 Stanford Linear Accelerator Center. Per the Order, a Remedial Investigation/ Feasibility Study Work Plan was prepared and approved that details cleanup and regulatory work scope.

### **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 Stanford Linear Accelerator Center does not qualify as potable drinking water due to naturally poor water quality and low well yields. Stanford Linear Accelerator Center, in conjunction with the landowner, Stanford University, has proposed that the California Regional Water Quality Control Board exempt groundwater at Stanford Linear Accelerator Center from all potential uses except freshwater replenishment, agricultural supply, irrigation supply and industrial process supply.

Although the future land use at Stanford Linear Accelerator Center has been classified as residential, the cleanup standards have not been determined. The National Contingency Plan recognizes an allowable risk range of  $10^{-4}$  to  $10^{-6}$  and the state regulator also recognizes this same risk range for unrestricted use. Stanford University has requested all cleanup standards be based on  $1 \times 10^{-6}$  risk. The cost of meeting this more conservative cleanup standard has not been determined but could be substantial, especially when the facility is finally shut down by the Office of Science and full site cleanup is performed before returning the land to Stanford University. Negotiations between the Office of Science, EM and Stanford University have been reached to establish cleanup standards for the site.

### **Interdependencies**

Transition to the Office of Science - the intent is to transfer responsibility for environmental management of Stanford Linear Accelerator Center 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 Stanford Linear Accelerator Center 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, 2007 expiration. An Environmental Restoration Indefinite Delivery/Indefinite Quantity (ID/IQ) contractor was hired at the end of FY 2007 to perform most of the Environmental Cleanup activities. Both the ID/IQ and Managing and Operating contractors will be preparing lifecycle Performance Measurement Baselines during early FY 2008. The CD-2/3 package will be submitted later in FY 2008. EM's Project Management Oversight Office will utilize an Independent Project Review to validate the baseline as a component of CD-2.

## Cleanup Benefits

Stanford Linear Accelerator Center's location on the densely populated San Francisco peninsula with Stanford University as the Stanford Linear Accelerator Center property owner produces significant visibility and public awareness of EM's cleanup performance. In addition, the land on which Stanford Linear Accelerator Center 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.

## 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 2007	FY 2008	FY 2009
Non-Defense Environmental Cleanup			
Small Sites			
BRNL-0030 / Soil and Water Remediation-Brookhaven National Laboratory	6,643	6,784	7,015
BRNL-0040 / Nuclear Facility D&D-Brookhaven Graphite Research Reactor	14,291	11,956	868
BRNL-0041 / Nuclear Facility D&D-High Flux Beam Reactor	9,776	9,548	550
BRNL-0100 / Brookhaven Community and Regulatory Support	150	150	0
CBC-CA-0013B-N / Solid Waste Stabilization and Disposition-California Sites-2012 (Non-Defense)	60	59	72
CBC-CA-0100-N / Oakland Community and Regulatory Support (Non-Defense)	100	99	115
CBC-ETEC-0040 / Nuclear Facility D&D-Energy Technology Engineering Center	16,000	12,882	12,533
CBC-ITL-0030 / Soil and Water Remediation-Inhalation Toxicology Laboratory	3,358	423	0
CBC-LBNL-0030 / Soil and Water Remediation-Lawrence Berkeley National Laboratory	1,710	0	0
CBC-MOAB-0031 / Soil and Water Remediation-Moab	28,056	23,734	30,513
CBC-ND-0100 / CBC - Non-Defense Post Closure Administration and Program Support	599	1,189	1,100
CBC-SLAC-0030 / Soil and Water Remediation-Stanford Linear Accelerator Center	5,720	5,846	4,883

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
CH-ANLE-0030 / Soil and Water Remediation-Argonne National Laboratory-East	426	433	459
CH-ANLE-0040 / Nuclear Facility D&D-Argonne National Laboratory-East	10,300	0	0
Subtotal, Small Sites	97,189	73,103	58,108
Total, Non-Defense Environmental Cleanup	97,189	73,103	58,108
Total, All Other Sites	97,189	73,103	58,108

### Performance Measure Summary

	Complete through FY 2007	Complete through FY 2008	Complete through FY 2009	Life-Cycle	FY 2009 % Complete
<b>All Other Sites</b>					
Geographic Sites Eliminated (number of sites)	41	43	44	50	88%
Spent Nuclear Fuel packaged for final disposition (Metric Tons of Heavy Metal)	1	1	1	1	100%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	4,731	4,827	4,827	4,827	100%
Nuclear Facility Completions (Number of Facilities)	3	4	5	15	33%
Radioactive Facility Completions (Number of Facilities)	86	87	96	107	90%
Industrial Facility Completions (Number of Facilities)	35	41	43	55	78%
Remediation Complete (Number of Release Sites)	781	782	785	795	99%

### Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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#### CH-ANLE-0030 / Soil and Water Remediation-Argonne National Laboratory-East

**426                      433                      459**

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 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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 2009, the following activities are planned:

- Continuation of Long-Term Stewardship/Long-Term Response Actions covering operation, monitoring, and maintenance of soil and water treatment systems.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	443	443	443	443	100%

**CH-ANLE-0040 / Nuclear Facility D&D-Argonne  
National Laboratory-East**

**10,300**

**0**

**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 2009, the following activities are planned:

- No planned activities.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Nuclear Facility Completions (Number of Facilities)	0	0	0	0	100%

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Radioactive Facility Completions (Number of Facilities)	69	69	78	78	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>Completed Zero Power Reactor 6 D&amp;D Project. (FY 2007)</li><li>Completed decontamination and decommissioning of Zero Power Reactor 6. (FY 2007)</li><li>Continued decontamination and decommissioning of Building 301, a former Hot Cell facility at the Argonne National Laboratory Site. (FY 2007)</li><li>Continue D&amp;D of 301 Hot Cell. (September 2008)</li></ul>					

**BRNL-0030 / Soil and Water Remediation-Brookhaven  
National Laboratory**

**6,643**

**6,784**

**7,015**

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 Laboratory's 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 2009, the following activities are planned:

- Maintenance and monitoring of three capped landfills as well as the operation, maintenance and

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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performance monitoring of sixteen groundwater treatment systems.

- Environmental monitoring activities including sample collection, sample analysis, and data management and reporting.
- Records management, reporting, and continuation of land use controls.
- Community outreach and continued interaction with the regulatory agencies.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Radioactive Facility Completions (Number of Facilities)	3	3	3	3	100%
Remediation Complete (Number of Release Sites)	75	75	75	75	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Continue on-going long-term soil and groundwater operations and environmental stewardship. (FY 2007/September 2008/September 2009)</li><li>• Complete all contract project closeout and transition activities and achieve site completion. (September 2009)</li></ul>					

#### **BRNL-0040 / Nuclear Facility D&D-Brookhaven**

##### **Graphite Research Reactor**

**14,291**

**11,956**

**868**

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 underwent



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 2009, the following activities are planned:

- Building and grounds surveillance and maintenance activities.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Nuclear Facility Completions (Number of Facilities)	0	0	1	1	100%
Radioactive Facility Completions (Number of Facilities)	7	7	7	8	88%
Remediation Complete (Number of Release Sites)	1	1	1	1	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"> <li>• Completed removal of over 60,000 graphite pile blocks. (FY 2007)</li> <li>• Continue packaging, shipping, and disposal of waste generated by the demolition of the reactor bioshield. (September 2008)</li> <li>• Install groundwater monitoring wells. (September 2008)</li> <li>• Regulatory approval of Brookhaven Graphite Research Reactor D&amp;D Project Closeout Report. (May 2009)</li> </ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**BRNL-0041 / Nuclear Facility D&D-High Flux Beam Reactor**
**9,776****9,548****550**

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.

The facility is now fully characterized and is currently in a safe and stable configuration waiting final decommissioning. Remaining activities include: demolition and removal of Building 704 (Fan House) and Building 802 (Tritiated Water Evaporator Building/Fan House); demolition and removal of Building 705 (Stack); and removal of all contaminated underground lines. In addition, the scope includes interim and long-term surveillance and maintenance. The final decommissioning of the High Flux Beam Reactor will be conducted as a response action under the Comprehensive Environmental Response, Compensation and Liability Act and in accordance with the Interagency Agreement, which serves as the Federal Facility Agreement among the DOE, the United States Environmental Protection Agency and New York State Department of Environmental Conservation. Alternatives for final decommissioning are currently being evaluated. The Proposed Remedial Action Plan, which will present the preferred alternative, will undergo public review and comment in FY 2008. The Record of Decision will follow.

In FY 2009, the following activities are planned:

- Building and grounds surveillance and maintenance activities.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	0	1	1	1	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"> <li>• Complete High Flux Beam Reactor BOP D&amp;D. (FY 2007)</li> <li>• Complete underground Utilities D&amp;D. (January 2008)</li> </ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Submit Draft Record of Decision with responsiveness summary. (February 2008)
- Complete Fan House D&D. (August 2008)
- Begin to place confinement dome. (September 2008)
- Demolish and remove ancillary buildings and structures. (September 2008)
- Complete Stack D&D. (December 2008)
- High Flux Beam Reactor, WLA surveillance and maintenance and transition to LEOSS. (June 2009)
- Isolation of Systems to Building 750 and WLA complete. (August 2009)
- Complete decontamination and submit closeout report. (September 2009)

**BRNL-0100 / Brookhaven Community and Regulatory Support**

**150                      150                      0**

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 2009, the following activities are planned, using prior year funds:

- The New York State Department of Environmental Conservation will continue oversight of the decontamination and decommissioning of the Brookhaven Graphite Research Reactor and the High Flux Beam Reactor.
- Progress in groundwater cleanup with continued operation of the groundwater treatment systems.
- Continued monitoring of the Peconic River.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- 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. (September 2008/September 2008/September 2009)

**CBC-CA-0013B-N / Solid Waste Stabilization and Disposition-California Sites-2012 (Non-Defense)**

**60                      59                      72**

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 2009, the following activities are planned:

- Support ongoing environmental/safety activities and disposal activities related to all forms of waste.
- Continue to transport packaged remediation wastes and materials to designated facilities.
- Perform assessment and cleanup tasks involving work plan preparation, site assessments, Resource Conservation and Recovery Act closures, environmental analysis, and other technical activities that pertain to environmental support.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	83	83	83	83	100%

**CBC-CA-0100-N / Oakland Community and Regulatory Support (Non-Defense)**

**100                      99                      115**

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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Water Quality Control Board oversight of Stanford Linear Accelerator Center, Lawrence Berkeley National Laboratory and Energy Technology Engineering Center.

In FY 2009, the following activities are planned:

- The Water Quality Control Board oversight of Stanford Linear Accelerator Center and Energy Technology Engineering Center.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<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 2007/September 2008/September 2009)</li></ul>					

#### **CBC-ND-0100 / CBC - Non-Defense Post Closure**

##### **Administration and Program Support**

**599**

**1,189**

**1,100**

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, Stanford Linear Accelerator Center, and Moab).

In FY 2009, the following activities are planned:

- Litigation support associated with the determination and extent of Departmental cleanup responsibility for the former General Electric Vallecitos facility in California and the former MK Ferguson contract. Litigation support activities may also be necessary at remaining non-defense sites as they are completed.
- Contract closeout activities for contracts previously managed by the former Oakland and Albuquerque Operations offices.
- Program support activities necessary for potential new remediation projects such as General Electric Vallecitos and program management support for ongoing Non-Defense projects.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

**CBC-ETEC-0040 / Nuclear Facility D&D-Energy  
Technology Engineering Center**

**16,000**

**12,882**

**12,533**

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 2009, the following activities are planned:

- Perform ongoing program support and landlord activities.
- Perform annual groundwater monitoring and site-wide environmental monitoring.
- Perform the Resource Conservation and Recovery Act Facility Investigation and Corrective Measures Study for Resource Conservation and Recovery Act Groups 5-8 and Chatsworth Operable Unit.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Perform radiological groundwater characterization.
- Complete initial radiation survey for Bldg. 4100.
- Perform operations, monitoring, and maintenance on the facilities yet to be decontaminated and decommissioned.
- Complete development, review, and approval of the Final Environmental Impact Statement.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Industrial Facility Completions (Number of Facilities)	24	24	24	25	96%
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	1,055	1,055	1,055	1,055	100%
Radioactive Facility Completions (Number of Facilities)	4	4	4	5	80%
Remediation Complete (Number of Release Sites)	4	4	4	14	29%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"> <li>• Completed decontamination and decommissioning of Space Nuclear Auxiliary Power Reactor Environmental Test Facility (B4024) and the Radioactive Materials Handling Facility. (FY 2007)</li> <li>• Completed demolition of the Sodium Pump Test Facility. (FY 2007)</li> <li>• Continue Resource Conservation and Recovery Act Facility Investigation activity for the solid waste management units. (September 2008)</li> <li>• Continue development of Environmental Impact Statement. (September 2008/September 2009)</li> </ul>					

**CBC-ITL-0030 / Soil and Water Remediation-  
Inhalation Toxicology Laboratory**

**3,358                      423                      0**

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

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 disposal. The groundwater monitoring is at two sites, the Sewage Lagoon Site and the Diesel Spill Site, pursuant to conditions imposed by the State. Monitoring is to continue until no contamination is observed above regulatory standards for four consecutive semiannual sampling events for the Sewage Lagoon Site and four

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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consecutive semiannual sampling events for the Diesel Spill Site. Labs and facilities that are contaminated from DOE projects have been vacated and are in the process of being surveyed, surface 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. When these activities are accomplished in FY 2008, the EM Project will be complete.

In FY 2009, the following activities are planned:

- This project is complete in FY 2009.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Low-Level and Mixed Low-Level Waste disposed (Cubic meters)	207	303	303	303	100%
Remediation Complete (Number of Release Sites)	9	9	9	9	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Groundwater monitoring and reporting. (FY 2007/September 2008)</li><li>• Project Completion (September 2008)</li></ul>					

**CBC-LBNL-0030 / Soil and Water Remediation-  
Lawrence Berkeley National Laboratory**

**1,710                      0                      0**

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

The lifecycle for this PBS is zero because the associated lifecycle costs have been comparably adjusted to their follow-on PBSs.

The activities included in this PBS scope are directed at the investigation and cleanup of past releases of hazardous and radioactive waste in soil and groundwater that may have occurred at Lawrence Berkeley National Laboratory and are under the purview of the Resource Conservation and Recovery Act. The laboratory has completed its Resource Conservation and Recovery Act Facility Investigation for 181 release sites to determine the amount and extent of contamination. Pilot testing to evaluate different



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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remedial systems for use at the Laboratory was completed in FY 2004. The results were used to recommend full-scale remediation systems. Construction of these systems was completed in January 2007. The Laboratory will reduce contaminants to acceptable levels and eliminate contamination in soil to meet groundwater remediation objectives.

The end-state for this project was achieved upon completion of the final remediation systems in January 2007. Long-term surveillance and maintenance responsibilities were transferred to the site landlord, the Office of Science. The site landlord will continue surveillance and monitoring of the site.

In FY 2009, no activities are planned:

- Site transferred to the Office of Science in FY 2008.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	181	181	181	181	100%

**CBC-MOAB-0031 / Soil and Water Remediation-Moab**                      **28,056**                      **23,734**                      **30,513**

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 a 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 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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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.

During FY 2007, transition was completed from one prime contract to a Remedial Action Contract and a Technical Assistance Contract within 45 days; more than 96 million gallons of contaminated ground water was extracted, preventing the contaminants from reaching the Colorado River; remediation and re-vegetation of a 40-acre private property adjacent to the Moab site was completed; a Revised Draft Remedial Action Plan was submitted to the Nuclear Regulatory Commission; crossings at the middle and lower sections of Moab Wash, which traverses the site, were constructed to prevent damage from future storm events; and over 1,460 days were worked without a work-related, lost-time injury or illness.

Activities for 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.

In FY 2009, the following activities are planned:

- Moab and Crescent Junction operations and maintenance.
- Complete rail upgrades between Moab and Crescent Junction.
- Operations and maintenance of the groundwater interim action program at Moab.
- Complete tailings handling infrastructure at Moab.
- Continue disposal cell excavation at Crescent Junction.
- Begin tailings haul to Crescent Junction from Moab.
- Complete tailings handling infrastructure construction (inter-modal container staging area, dedicated haul road, rail loading facility, Crescent Junction rail load-off facility).
- Complete Cane Creek Branch rail upgrades.
- Continue vicinity property assessments and remedial actions.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)

- Began Cane Creek Rail Road upgrade. (FY 2007)
- Complete Crescent Junction - Rail Spur. (July 2008)
- Start Mill Tailings Haul (September 2009)

**CBC-SLAC-0030 / Soil and Water Remediation-  
Stanford Linear Accelerator Center**

**5,720**

**5,846**

**4,883**

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 Stanford Linear Accelerator Center. 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 Stanford Linear Accelerator Center 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 2009, the following activities are planned:

- Finish installing the Plating Shop Area Dual Phase Extraction system.
- Finish the West Stanford Linear Accelerator Center / IR 8 Remedial Investigation Report.
- Finish Group 2 removal actions (5 sites) and prepare Report.
- Operate installed groundwater treatment systems and maintain compliance with Board Order.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Remediation Complete (Number of Release Sites)	17	17	20	20	100%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>Completed construction of Dual Phase Extraction System at Former Solvent Underground Storage Tank. (FY 2007)</li><li>Completed site-wide remedial investigation and finalized the baseline risk assessment report. (FY 2007)</li><li>Complete construction of a groundwater treatment system at the Plating Shop Area. (September 2009)</li><li>Submit West Stanford Linear Accelerator Center / IR-8 Remedial Investigations report. (September 2009)</li><li>Complete Group 2 removal actions. (September 2009)</li><li>Complete Lower Salvage Yard Removal Action. (September 2009)</li></ul>					

<b>Total, All Other Sites</b>	<b>97,189</b>	<b>73,103</b>	<b>58,108</b>
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### Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$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

- |                          |    |
|--------------------------|----|
| ▪ No significant change. | 26 |
|--------------------------|----|

##### Brookhaven National Laboratory

##### BRNL-0030 / Soil and Water Remediation-Brookhaven National Laboratory

- |                          |     |
|--------------------------|-----|
| ▪ No significant change. | 231 |
|--------------------------|-----|

**BRNL-0040 / Nuclear Facility D&D-Brookhaven Graphite Research Reactor**

- The decrease in funding reflects cessation of active demolition & decontamination activities at the Brookhaven Graphite Research Reactor, due to higher priority cleanup activities. -11,088

**BRNL-0041 / Nuclear Facility D&D-High Flux Beam Reactor**

- The decrease in funding reflects cessation of active demolition & decontamination activities at the High Flux Beam Reactor, due to higher priority cleanup activities. -8,998

**BRNL-0100 / Brookhaven Community and Regulatory Support**

- No funding is requested in FY 2009. State expenditures have decreased and sufficient funding is available to cover FY 2009 activities. -150

**California Site Support**

**CBC-CA-0013B-N / Solid Waste Stabilization and Disposition-California Sites-2012 (Non-Defense)**

- No significant change. 13

**CBC-CA-0100-N / Oakland Community and Regulatory Support (Non-Defense)**

- No significant change. 16

**Completed Sites/Program Support**

**CBC-ND-0100 / CBC - Non-Defense Post Closure Administration and Program Support**

- No significant change. -89

**Energy Technology Engineering Center**

**CBC-ETEC-0040 / Nuclear Facility D&D-Energy Technology Engineering Center**

- No significant change as the FY 2009 work plan is being developed consistent with the 2007 Consent Order from the State of California, and the pending Environmental Impact Statement and Record of Decision. -349

FY 2009 vs. FY 2008 (\$000)
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**Inhalation Toxicology Laboratory**

**CBC-ITL-0030 / Soil and Water Remediation-Inhalation Toxicology Laboratory**

- |   |      |
|---|------|
| ▪ Decrease is due to completion of site cleanup in FY 2008. | -423 |
|---|------|

**Moab**

**CBC-MOAB-0031 / Soil and Water Remediation-Moab**

- |  |       |
|--|-------|
| ▪ Increase in funding is for completion of rail upgrades and the tailings handling infrastructure to support initiation of tailings hauling late in the fiscal year. | 6,779 |
|--|-------|

**Stanford Linear Accelerator Center**

**CBC-SLAC-0030 / Soil and Water Remediation-Stanford Linear Accelerator Center**

- |  |      |
|--|------|
| ▪ Decrease is due to the planned completion of the installation of the groundwater treatment system at the plating shop area, completion of several soil remediation projects, and higher priority cleanup activities. | -963 |
|--|------|

<b>Total, All Other Sites</b>	<hr/> <b>-14,995</b>
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## Headquarters Operations

### Funding by Site

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Congressionally Directed Projects	0	17,195	0
Headquarters	47,831	52,662	33,930
Total, Headquarters Operations	47,831	69,857	33,930

### 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.

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Defense Environmental Cleanup			
Program Support			
Headquarters			
HQ-MS-0100 / Policy, Management, and Technical Support	28,031	32,844	33,930
Congressionally Directed Projects			
Headquarters			
HQ-CDP-0100 / Congressionally Directed Projects	0	17,195	0
Total, Defense Environmental Cleanup	28,031	50,039	33,930
Uranium Enrichment Decontamination and Decommissioning Fund			
U/Th Reimbursements			
Headquarters			

(dollars in thousands)			
	FY 2007	FY 2008	FY 2009
HQ-UR-0100 / Reimbursements to Uranium/Thorium Licensees	19,800	19,818	0
Total, Headquarters Operations	47,831	69,857	33,930

### Detailed Justification

(dollars in thousands)		
FY 2007	FY 2008	FY 2009

#### **HQ-MS-0100 / Policy, Management, and Technical Support**

**28,031      32,844      33,930**

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 2009, 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



(dollars in thousands)

FY 2007	FY 2008	FY 2009
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#### 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.
- 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.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>• Administer the EM and DOE-wide transportation and packaging responsibilities and Transportation Emergency Preparedness Program. (FY 2007/September 2008/September 2009)</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 with the National Governors Association. (FY 2007/September 2008/September 2009)</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 2007/September 2008/September 2009)</li><li>• Provide expertise in the areas of safety, health and security, emergency management, package certification, quality assurance, analytical services, and risk management. (FY 2007/September 2008/September 2009)</li><li>• Provide support to various advisory groups to obtain technical assistance/expertise that indirectly support the EM mission objectives. (FY 2007/September 2008/September 2009)</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 2007/September 2008/September 2009)</li><li>• Issue Draft Environmental Impact Statement for Disposal of Greater-than-Class C Radioactive Waste. (September 2008)</li><li>• Complete four to 10 technical solution or technical assistance projects. (September 2008/September 2009)</li><li>• Complete three to five reviews and provide technical experts as needed by the sites to address specific issues impeding site cleanup and closure. (September 2008/September 2009)</li></ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- 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)

<b>HQ-CDP-0100 / Congressionally Directed Projects</b>	<b>0</b>	<b>17,195</b>	<b>0</b>
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This PBS can be found within the Defense Environmental Cleanup appropriation.

The Consolidated Appropriations Act, 2008 included nine congressionally directed projects within the Office of Environmental Management. Funding for these projects was appropriated as a separate funding line although specific projects may relate to ongoing work in a specific programmatic area.

▪ Cellular Bioengineering, Inc. Honolulu, Hawaii, to continue development of polymeric hydrogels for radiation decontamination (HI)	0	1,476	0
▪ Cerematec Incorporated in Salt Lake City, Utah, for remediation of low-level nuclear waste utilizing ceramic ionic transport membranes (UT)	0	1,476	0
▪ International Alternative Cleanup Technology Agreement (PA, SC)	0	4,920	0
▪ Savannah River National Lab in South Carolina for integrated collaborative prototyping environment (SC)	0	984	0
▪ University of Nevada, Reno, Center for Materials Reliability (NV)	0	2,681	0
▪ University of Nevada, Reno, Department of Civil and Environmental Engineering, for continued expansion of the James E. Rogers and Louis Weiner, Jr. large-scale structures laboratory (NV)	0	1,968	0
▪ University of Nevada, Reno, Fire Science Academy at Elko (NV)	0	984	0
▪ University of Nevada, Reno, Technology Transfer Initiative (NV)	0	738	0
▪ Western Environmental Technology Office (MT)	0	1,968	0
Total, Congressionally Direct Projects	0	17,195	0

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

#### **HQ-UR-0100 / Reimbursements to Uranium/Thorium Licensees**

**19,800                      19,818                      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 \$327,000,000. 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 2007, DOE has reimbursed the thirteen uranium licensees \$249,618,000 and the thorium licensee \$304,160,000 for an aggregate reimbursement amount of \$553,778,000.

In FY 2009, the following activities are planned:

- No Activity.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Completed review and approval of Plans for Subsequent Remedial Action.  
(December 2007/December 2008/December 2009)
- 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 2007/May 2008/May 2009)

**Total, Headquarters Operations**

**47,831**

**69,857**

**33,930**

**Title X of the Energy Policy Act of 1992: Uranium/Thorium Reimbursement Program**  
**Status of Payments through Fiscal Year 2007 and Estimated Maximum Program Liability**  
**(\$ Thousands)**

	Total Payments FY 1994- FY 2007	Approved but Unpaid Claim Balances After FY 2007 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
<u>Licensees</u>			
<b>Uranium</b>			
American Nuclear Corp. Site			
American Nuclear Corporation.....	820	0	0
State of Wyoming.....	1,242	3	798
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.....	2,777	549	4,396
Dawn Mining Company.....	6,671	244	12,603
Homestake Mining Company.....	43,579	347	110,465
Pathfinder Mines Corporation.....	10,676	16	370
Petrotomics Company.....	2,815	36	36
Rio Algom Mining LLC <sup>b</sup> .....	25,344	967	22,266
Tennessee Valley Authority.....	14,326	10,804	10,804
Umetco Minerals Corporation-CO.....	50,261	15,835	38,496
Umetco Minerals Corporation-WY.....	18,540	4,045	8,147
Western Nuclear, Incorporated.....	30,565	105	2,743
Subtotal, Uranium.....	249,618	32,952	211,123

<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 2007	Approved but Unpaid Claim Balances After FY 2007 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> .....	304,160	3,405	115,775
Subtotal, Thorium.....	304,160	3,405	115,775
Total, Uranium and Thorium.....	553,778	36,357	326,898

<sup>c</sup> Formerly Kerr-McGee Chemical Corp.

## Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$000)
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### Defense Environmental Cleanup

#### Congressionally Directed Projects

##### Headquarters

##### HQ-CDP-0100 / Congressionally Directed Projects

- No funding requested. -17,195

#### Program Support

##### HQ-MS-0100 / Policy, Management, and Technical Support

- Increase to cover ongoing support for various DOE and EM crosscutting activities such as, transportation and packaging, technical solution projects designed to reduce near-term technical risk, and various advisory groups (e.g., Nuclear Regulatory Commission and National Academy of Science). 1,086

### Uranium Enrichment Decontamination and Decommissioning Fund

#### U/Th Reimbursements

##### HQ-UR-0100 / Reimbursements to Uranium/Thorium Licensees

- Reimbursement will be deferred to support higher-priority cleanup work at DOE sites. -19,818

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### Total, Headquarters Operations

**-35,927**





## Program Direction

### Funding Profile by Category

	(dollars in thousands/whole FTEs)		
	FY 2007	FY 2008	FY 2009
Carlsbad			
Salaries and Benefits	6,362	6,682	7,473
Travel	338	339	359
Other Related Expenses	1,998	111	372
Total, Carlsbad	8,698	7,132	8,204
Full Time Equivalents	42	50	52
Chicago			
Salaries and Benefits	999	0	0
Travel	50	0	0
Support Services	1,063	0	0
Other Related Expenses	240	0	0
Total, Chicago	2,352	0	0
Full Time Equivalents	4	0	0
Idaho			
Salaries and Benefits	8,494	9,060	10,276
Travel	280	300	319
Support Services	85	265	120
Other Related Expenses	142	151	161
Total, Idaho	9,001	9,776	10,876
Full Time Equivalents	59	67	70
Oak Ridge			
Salaries and Benefits	10,225	10,958	11,822
Travel	221	222	229
Support Services	2,898	706	1,567
Other Related Expenses	2,010	2,262	2,334
Total, Oak Ridge	15,354	14,148	15,952
Full Time Equivalents	81	83	84
Portsmouth/Paducah Project Office			
Salaries and Benefits	5,320	6,239	7,179
Travel	240	270	292
Support Services	1,610	1,670	1,703
Other Related Expenses	1,462	1,130	1,225
Total, Portsmouth/Paducah Project Office	8,632	9,309	10,399
Full Time Equivalents	40	47	50

(dollars in thousands/whole FTEs)

	FY 2007	FY 2008	FY 2009
Ohio			
Salaries and Benefits	2,353	0	0
Travel	180	0	0
Support Services	242	0	0
Other Related Expenses	1,545	0	0
Total, Ohio	4,320	0	0
Full Time Equivalents	16	0	0
Richland			
Salaries and Benefits	32,239	35,385	34,504
Travel	675	675	697
Support Services	1,078	918	936
Other Related Expenses	7,036	8,373	6,144
Total, Richland	41,028	45,351	42,281
Full Time Equivalents	235	244	247
River Protection			
Salaries and Benefits	14,820	16,173	16,894
Travel	414	518	542
Support Services	2,745	2,810	2,866
Other Related Expenses	3,046	2,162	2,263
Total, River Protection	21,025	21,663	22,565
Full Time Equivalents	101	112	115
Savannah River			
Salaries and Benefits	37,947	42,799	44,197
Travel	843	856	873
Support Services	3,605	2,241	2,286
Other Related Expenses	3,651	2,525	2,576
Total, Savannah River	46,046	48,421	49,932
Full Time Equivalents	317	339	339
Small Sites			
Salaries and Benefits	2,578	4,829	5,090
Travel	249	452	424
Support Services	1,833	2,202	1,746
Other Related Expenses	661	0	500
Total, Small Sites	5,321	7,483	7,760
Full Time Equivalents	16	37	34
Nevada Site Office			
Salaries and Benefits	3,183	3,440	3,178
Travel	146	75	71
Support Services	532	470	379
Other Related Expenses	64	55	52
Total, Nevada Site Office	3,925	4,040	3,680
Full Time Equivalents	26	25	23

(dollars in thousands/whole FTEs)			
	FY 2007	FY 2008	FY 2009
NNSA Sites			
Salaries and Benefits	4,009	4,192	4,125
Travel	242	250	216
Support Services	550	1,240	965
Other Related Expenses	1,076	787	657
Total, NNSA Sites	5,877	6,469	5,963
Full Time Equivalents	22	35	30
Subtotal, Field			
Salaries and Benefits	128,529	139,757	144,738
Travel	3,878	3,957	4,022
Support Services	16,241	12,522	12,568
Other Related Expenses	22,931	17,556	16,284
Total, Field	171,579	173,792	177,612
Full Time Equivalents	959	1,039	1,044
Headquarters Operations			
Salaries and Benefits	39,804	52,045	53,266
Travel	2,901	4,150	5,734
Support Services	19,521	24,082	22,233
Other Related Expenses	16,840	18,076	17,478
Total, Headquarters Operations	79,066	98,353	98,711
Full Time Equivalents	259	299	299
Consolidated Business Center			
Salaries and Benefits	18,288	22,274	22,304
Travel	988	1,205	1,229
Support Services	1,800	1,992	1,397
Other Related Expenses	10,359	9,325	7,512
Total, Consolidated Business Center	31,435	34,796	32,442
Full Time Equivalents	143	162	162
Total, Environmental Management			
Salaries and Benefits	186,621	214,076	220,308
Travel	7,767	9,312	10,985
Support Services	37,562	38,596	36,198
Other Related Expenses	50,130	44,957	41,274
Total, Environmental Management	282,080	306,941	308,765
Full Time Equivalents	1,361	1,500	1,505

## **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.

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).

## **Environmental Management Professional Development Corps**

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 56 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.

## Contract and Project Management

This request includes, within the Full-Time Equivalents level of 1,505, 10 additional positions within the project management and contract management disciplines. EM, in conjunction with the Army Corps of Engineers, recently completed an assessment of contract and project management capabilities complex-wide during the period April to September 2007. This “best-in-class” assessment showed significant human capital challenges at all EM sites. A lack of qualified professionals in all project management disciplines and a shortage of qualified professionals in several disciplines in contract management exist. In the project management disciplines, all sites need expanded federal capability in project controls, scheduling, and cost estimating. In the contract management area, additional federal resources are needed in the areas of property management, cost and pricing and contracts. Several other factors influence, and exacerbate, the ability of EM to meet its responsibilities in Project and Contract Management. EM’s request to increase its Full-Time Equivalents level in these two areas will provide an overlap so soon-to-be-retired personnel have time to mentor new employees before they retire. Additionally, some outdated skills sets must be replaced with new skills sets.

In addition, funding to be responsive to a large number of corporate requirements is included in this request. As in FY 2008, the requirement to fund E-Government initiatives, such as the Integrated Acquisition Environment, IAE Dunn and Bradstreet, and Grants.gov, continues. Additional funding supports several new requirements to the Working Capital Fund.

### Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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#### Salaries and Benefits

**186,621      214,076      220,308**

Provides funding for 1,505 full-time equivalent employees in FY 2009 with the responsibility for the overall direction and administrative support of the EM program, including Headquarters (299 employees based in Germantown, Maryland and Washington, DC), field personnel (1,044 employees at Operations/Field/Sites Offices located through out the United States) and EM Consolidated Business Center (162 employees) in Cincinnati Ohio. 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. Funding is also provided to support the recruitment associated with the EM Professional Development Corps. In addition, funding is provided for workers’ compensation payments to the Department of Labor, transit subsidies and incentive awards.

#### Travel

**7,767      9,312      10,985**

The FY 2009 estimate reflects a higher amount of travel due to anticipated escalation of the costs of airfare, gasoline, and lodging costs. 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

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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.

<b>Support Services</b>	<b>37,562</b>	<b>38,596</b>	<b>36,198</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.

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.

<b>Other Related Expenses</b>	<b>50,130</b>	<b>44,957</b>	<b>41,274</b>
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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.

At Headquarters, a Working Capital Fund established at Headquarters to which EM contributes, allocates the costs of common administrative services to the recipient Headquarters organizations. Activities

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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.

<b>Total, Program Direction</b>	<b>282,080</b>	<b>306,941</b>	<b>308,765</b>
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### Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$000)
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#### Salaries and Benefits

- |  |       |
|--|-------|
| ▪ Increase reflects government-wide 4.3 percent escalation for pay and personnel-related costs for 1,500 full-time equivalent employees (\$9,751,000) partially offset by a lower average salary and benefit costs (\$-7,888,000) due to more projected entry-level new hires in FY 2009 than in FY 2008.  | 1,863 |
| ▪ Increase associated with the continuation of the EM Professional Development Corps, to include salary and benefits as well as recruitment incentives. The EM Professional Development Corps began in FY 2007 with the hiring of 20 members. Another 35 are planned to be hired in FY 2008. Approximately 56 members are expected to be participating in the Program. | 4,304 |
| ▪ Decrease due to functional transfer of 5 full-time equivalent employees to National Nuclear Security Administration associated with Long-Term Stewardship at the completed Pantex and Lawrence Livermore Site Offices.   | -694  |
| ▪ Increase associated with the addition of 10 full-time equivalent employees to perform project management and contract management functions.  | 759   |

#### Travel

- |   |     |
|---|-----|
| ▪ Increase associated with 2.0 percent escalation for airfare, gasoline, and lodging costs.   | 186 |
| ▪ Decrease reflects costs associated with additional 10 full-time equivalent employees to perform project management and contract management functions, offset by the functional transfer of 5 full-time equivalent employees | -13 |

associated with Long-Term Stewardship at the completed Pantex and Lawrence Livermore Site Offices.

- |   |       |
|---|-------|
| <ul style="list-style-type: none"> <li>▪ Increase associated with the decision to continue the EM Professional Development Corps into FY 2009. Supports travel associated with rotational assignments at EM site offices as well as training travel for 56 members. Also supports participation at university sponsored career fairs, professional conferences and special interest/emphasis conferences for recruitment purposes.</li> </ul> | 1,500 |
|---|-------|

#### Support Services

- |   |        |
|---|--------|
| <ul style="list-style-type: none"> <li>▪ Increase associated with 2.0 percent escalation.</li> </ul>  | 1,618  |
| <ul style="list-style-type: none"> <li>▪ Decrease reflects FY 2009 usage of projected available uncosted carryover resulting from fewer than planned on-board full-time equivalent employees for the past several years.</li> </ul> | -4,016 |

#### Other Related Expenses

- |   |        |
|---|--------|
| <ul style="list-style-type: none"> <li>▪ Increase associated with 2.0 percent escalation.</li> </ul>  | 1,725  |
| <ul style="list-style-type: none"> <li>▪ Increase for physical and administrative support (such as rent, utilities, supplies, printing, building maintenance and renovations, and custodial services) for an additional 10 full-time equivalent employees performing project management and contract management functions, offset by a decrease for the functional transfer of 5 full-time equivalent employees associated with Long-Term Stewardship at the completed Pantex and Lawrence Livermore Site Offices.</li> </ul> | 143    |
| <ul style="list-style-type: none"> <li>▪ Increase associated with recruitment efforts as well as core curriculum formal classroom training for the EM Professional Development Corps.</li> </ul>  | 715    |
| <ul style="list-style-type: none"> <li>▪ Increase associated with new activities added to the Working Capital Fund such as Forrestal Building safe haven construction, shuttle bus services, logistics support services, courier/messenger services, procurement system operating costs, and the on-line learning center.</li> </ul>  | 1,326  |
| <ul style="list-style-type: none"> <li>▪ Decrease reflects FY 2009 usage of projected available uncosted carryover resulting from fewer than planned on-board full-time equivalent employees for the past several years.</li> </ul>   | -7,592 |

#### Total Funding Change, Program Direction

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**1,824**



### Support Services by Category

	FY 2007	FY 2008	FY 2009
Technical Support			
Economic and Environmental Analyses	6,507	6,588	7,087
Test and Evaluation	3,780	1,154	1,010
Total, Technical Support	10,287	7,742	8,097
Management Support			
Directives Management Studies	10	11	64
Training and Education	2,027	2,565	2,258
Automated Data Processing	0	1,083	1,314
Reports and Analyses Management and General Administrative Services	25,238	27,195	24,465
Total, Management Support	27,275	30,854	28,101
Total, Support Services	37,562	38,596	36,198

### Other Related Expenses by Category

	FY 2007	FY 2008	FY 2009
Other Related Expenses			
Training	2,748	2,522	2,292
Working Capital Fund	9,068	9,065	10,387
Printing and Reproduction	1,297	1,238	288
Rent to GSA	7,153	6,524	6,280
Communication, Utilities, Misc.	3,803	3,078	2,877
Other Services	26,061	22,530	19,150
Total, Other Related Expenses	50,130	44,957	41,274



## Safeguards and Security

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Defense Environmental Cleanup			
Safeguards and Security			
CB-0020 / Safeguards and Security	4,232	4,882	5,124
OH-FN-0020 / Safeguards and Security-Fernald	377	0	0
OH-WV-0020 / Safeguards and Security-West Valley	1,600	1,585	1,400
OR-0020 / Safeguards and Security	18,900	18,322	27,020
PA-0020 / Safeguards and Security	11,707	0	8,196
PO-0020 / Safeguards and Security	15,642	0	0
RL-0020 / Safeguards and Security	73,436	86,503	75,265
SR-0020 / Safeguards and Security	146,626	148,040	134,336
Subtotal, Safeguards and Security	272,520	259,332	251,341
Total, Safeguards and Security	272,520	259,332	251,341

#### Description

The 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.

#### Benefits

EM's landlord sites include Savannah River (excludes the tritium facilities), Hanford (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 specifically designed Safeguards and Security Plan, or a facility Master 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 most critical facilities in May 2003. It was increased again 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. Finally, late in 2005, the Design Basis Threat level was lowered for DOE's most critical facilities, but remains higher than established in 2003.

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 materials 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 faces increased safeguards and security costs because of the threat level and protection requirements posed by the 2005 Design Basis Threat.

The following is a brief description of the type of activities performed:

### **Protective Forces**

Protective Forces are the Security Police Officers and other specialized personnel that provide security at EM sites to insure an appropriately sized force exists with adequate materials, supplies, equipment, facilities, training, vehicles and other required equipment to meet site security objectives.

### **Transportation**

All security for intra-site transfers of special nuclear materials (including safe havens), weapons, and other classified material.

### **Physical Security Systems**

Security Systems provide intrusion detection and assessment as required by DOE Orders; physical barriers, secure storage, an armed Protective Force, alarms, and closed-circuit televisions are utilized to protect classified matter and special nuclear material; ingress and egress controls, explosive detection, and other inspection resources are used to ensure proper access authorization; and performance testing of security posture according to the approved site performance testing plan is conducted to ensure the proper level of risk is being accepted.

### **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**

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. Also includes maintaining security education and awareness programs for DOE and DOE 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 by the Office of Security. However, should additional security investigations be required that exceed those appropriated to the Office of Security, EM will provide the necessary funding.

### **Material Control and Accountability**

Material Control and Accountability provides for implementation of systems and procedures needed to address proper material inventory integrity, maintaining effective material access, data and equipment access, and maintaining material accounting policy requirements and assuring inventories are properly located, identified and quantified and appropriately stored.

### **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 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 information resources are identified and protected in a manner consistent with the site's mission and possible threats.

### **Detailed Justification**

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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<b>CB-0020 / Safeguards and Security</b>	<b>4,232</b>	<b>4,882</b>	<b>5,124</b>
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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 2009, 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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"> <li>Maintain Security Posture. (FY 2007/September 2008)</li> <li>Maintain Security Posture (September 2009)</li> </ul>					

**OH-FN-0020 / Safeguards and Security-Fernald****377****0****0**

The Safeguards and Security Program is comprised of three primary activities: Protective Forces and operation of the site Communications Center, Material Control and Accountability, and Cyber Security. A protective force activated 24 hours/7 days a week provides protective force patrols, access controls, searches badge verification, administrative controls, physical barriers, perimeter fence maintenance, employee awareness, tamper protection monitoring, performance testing of security systems, site communication capability for 24/7 monitoring of site-wide alarms. Material Control and Accountability programs provide inventory control and surveillance of uranium materials (product as well as waste) awaiting off-site disposition. Cyber Security includes development and implementation of computer security policies and procedures, random/specific sampling of user files and Internet access, and computer security protection measures in the configurations for hardware and software. As part of facility closure, removal of the perimeter field fence is required and currently underway. However, access restrictions to the site remain in place and "No Trespassing" signs are posted around the perimeter in lieu of the fence. Fernald Security and the Hamilton County Sheriff's Department will continue to patrol the project and perimeter. The Fernald Site was transferred to the Office of Legacy Management in FY 2007 for long-term surveillance and monitoring. EM has agreed to provide the required protection in FY 2007.

In FY 2009, the following activities are planned:

- No safeguards and security activity is planned for this site after FY 2007.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"> <li>Project Completion (FY 2007)</li> <li>Continued to support the site closure by conducting general activities such as cyber security, visitor control, personnel security, and program management. (FY 2007)</li> </ul>					

**OH-WV-0020 / Safeguards and Security-West Valley****1,600****1,585****1,400**

The Safeguards and Security Program at the West Valley Demonstration Project includes those activities

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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 2009, the following activities are planned:

- Provide physical and cyber security for the West Valley Demonstration Project in accordance with all applicable DOE standards, rules, and regulations.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <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 2007/September 2008/September 2009)</li></ul>					

**OR-0020 / Safeguards and Security** **18,900** **18,322** **27,020**

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.

This PBS provides: visitor control, classification, physical security (locks/alarm access control), nuclear materials control and accountability, foreign national access control, security management control system, unclassified computer security, cyber security, and personnel security for the Department of Energy and its contractors at the East Tennessee Technology Park.

Protective Force personnel are employed on various fixed and mobile posts to perform normal and emergency security tasks. Information Security reviews all documents released to the public including Freedom of Information Act and Privacy Act requests, litigation responses, and ongoing environmental health investigations, and classifies/declassifies documents.

Cyber Security develops and reviews security plans and design documents for systems and networks that store classified information, performs system tests to ensure the security configuration and operations are as described in security plans, and investigates security concerns to ensure the containment of the incident, identification of the source of any security breaches, protection of classified data or information, sanitation of media, and security of media and documents.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Personnel Security provides badging support for all employees, contractors, and visitors, and visitor control.

In FY 2009, the following activities are planned:

- Maintain a safeguards and security program at East Tennessee Technology Park to protect against loss or theft of classified matter or Special Nuclear Material.
- Provide extended Protective Force, Physical Security, Information Security and Nuclear Materials Control and Accountability support required at the East Tennessee Technology Park as a result of the current dates for the K-25/K-27 project completion.
- Increase cyber security to comply with DOE Order 205.1, which includes 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.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					

#### **PA-0020 / Safeguards and Security**

**11,707**

**0**

**8,196**

This project provides: visitor control, classification, personnel security, physical security (locks/alarms, access control), information security, implementation of the new Design Basis Threat, nuclear materials 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 materials control and accountability activities are provided. Personnel security provides badging/clearance support for all employees, contractors, and visitors and visitor control.

In FY 2009, 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.



(dollars in thousands)

FY 2007	FY 2008	FY 2009
---------	---------	---------

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<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 2007/September 2008/September 2009)</li></ul>					

### **PO-0020 / Safeguards and Security**

**15,642**

**0**

**0**

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 subtopics 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 2009, the following activities are planned using available prior year carryover:

- 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.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"><li>Fully implement the 2005 Design Basis Threat requirements. (September 2008)</li></ul>					

### **RL-0020 / Safeguards and Security**

**73,436**

**86,503**

**75,265**

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 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 a memorandum signed on April 19, 2006, by the Deputy Secretary of DOE, Richland received an exemption until September 30, 2009, from security upgrades and enhancements for the existing Category I special nuclear material storage protection area (at the Plutonium Finishing Plant) to fully implement threat level and protection strategy requirements outlined in the 2005 Design Basis Threat. This is being done in response to the Department's decision to consolidate plutonium to the Savannah River Site.

In FY 2009, the following activities are planned:

- Protect the Hanford Site against loss or theft of special nuclear material and toxicological sabotage events.
- Conduct vulnerability/risk analyses and force-on-force testing.
- Protect classified and sensitive unclassified information to include personally identifiable information against unauthorized disclosure or compromise.
- Continue support of offsite plutonium shipments from the Plutonium Finishing Plant.
- Maintain site-wide security.
- Continue and complete security upgrades to the Canister Storage Building for the receipt (from the Plutonium Finishing Plant) and storage of Category 1 slightly irradiated spent nuclear fuel in accordance with the 2005 Design Basis Threat.
- Continue Security Configuration Changes at the Canister Storage Building and begin startup reviews for the storage of Category I materials.

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"> <li>Protected the Hanford Site against loss or theft of special nuclear material and toxicological sabotage events. (FY 2007)</li> <li>Implement security upgrades to Canister Storage Building (September 2009)</li> </ul>					

**SR-0020 / Safeguards and Security****146,626****148,040****134,336**

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 those identified below.

The Savannah River Site has two contractors that perform safeguards and security activities. One provides for protective forces and law enforcement. The site management and operations contractor provides security system maintenance, personnel security, material control and accountability, cyber security, information security and vulnerability assessment programs.

EM will fully implement the 2005 Design Basis Threat requirements by the end of FY 2008 at the Savannah River Site.

In FY 2009, the following activities are planned:

- Maintain appropriate uniformed protective force personnel, physical security protection systems including a canine team and an explosive detection capability, information security and operational security, cyber security, personnel security, and program management for overall assessment and performance testing and indirect functions such as accounting, contracts, compensation, and benefits, etc.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
Material Access Areas eliminated (Number of Material Access Areas)	2	2	2	3	67%
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009)					
<ul style="list-style-type: none"> <li>Met all FY 2007 site integrated schedule commitments associated with the Design Basis Threat Implementation. (FY 2007)</li> </ul>					

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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- Ensure no theft of nuclear material takes place at the Savannah River Site. (FY 2007/September 2008/September 2009)
- Ensure that no unauthorized person or persons will gain access to limited areas within the Site perimeter. (FY 2007/September 2008/September 2009)
- Ensure timely and accurate material control and accountability for nuclear materials at the Savannah River Site. (FY 2007/September 2008/September 2009)
- Complete 2005 Design Basis Threat Implementation. (September 2008)

**Total, Safeguards and Security****272,520****259,332****251,341****Funding Schedule by Site and Activity**

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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**Carlsbad**

Protective Forces	3,685	3,976	4,192
Physical Security Systems	150	234	241
Information Security	186	269	277
Personnel Security	22	103	106
Material Control and Accountability	0	145	149
Program Management	149	112	115
Subtotal, Carlsbad	4,192	4,839	5,080
Cyber Security	40	43	44
Total, Carlsbad	4,232	4,882	5,124

**Oak Ridge**

Protective Forces	14,337	12,896	20,189
Physical Security Systems	808	1,569	1,397
Information Security	651	784	1,208
Personnel Security	628	650	849
Material Control and Accountability	1,225	405	1,570
Program Management	664	1,730	1,117
Subtotal, Oak Ridge	18,313	18,034	26,330
Cyber Security	587	288	690
Total, Oak Ridge	18,900	18,322	27,020

**Paducah**

Protective Forces	3,177	0	4,797
Physical Security Systems	726	0	781
Information Security	1,614	0	1,174
Personnel Security	355	0	246

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Material Control and Accountability	425	0	618
Program Management	5,410	0	580
Subtotal, Paducah	11,707	0	8,196
Cyber Security	0	0	0
Total, Paducah	11,707	0	8,196
Portsmouth			
Protective Forces	6,804	0	0
Physical Security Systems	801	0	0
Information Security	1,671	0	0
Personnel Security	409	0	0
Material Control and Accountability	427	0	0
Program Management	5,530	0	0
Subtotal, Portsmouth	15,642	0	0
Cyber Security	0	0	0
Total, Portsmouth	15,642	0	0
Ohio			
Protective Forces	377	0	0
Subtotal, Ohio	377	0	0
Cyber Security	0	0	0
Total, Ohio	377	0	0
Richland			
Protective Forces	45,537	47,948	51,602
Physical Security Systems	7,343	7,322	9,577
Information Security	728	718	793
Personnel Security	2,203	2,239	2,431
Material Control and Accountability	2,203	2,175	2,462
Program Management	13,953	24,221	6,122
Subtotal, Richland	71,967	84,623	72,987
Cyber Security	1,469	1,880	2,278
Total, Richland	73,436	86,503	75,265
Rocky Flats			
Subtotal, Rocky Flats	0	0	0
Cyber Security	0	0	0
Total, Rocky Flats	0	0	0
Savannah River			
Protective Forces	84,366	76,161	90,606
Physical Security Systems	31,440	27,859	11,190
Information Security	2,280	2,180	2,398
Personnel Security	6,316	5,595	6,704
Material Control and Accountability	6,130	5,586	6,457
Program Management	11,798	26,879	12,362
Transportation	627	603	653
Subtotal, Savannah River	142,957	144,863	130,370
Cyber Security	3,669	3,177	3,966

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Total, Savannah River	146,626	148,040	134,336
West Valley Demonstration Project			
Protective Forces	1,260	1,248	1,160
Program Management	340	337	240
Subtotal, West Valley Demonstration Project	1,600	1,585	1,400
Cyber Security	0	0	0
Total, West Valley Demonstration Project	1,600	1,585	1,400
Total, Safeguards and Security	272,520	259,332	251,341

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Protective Forces	159,543	142,229	172,546
Physical Security Systems	41,268	36,984	23,186
Information Security	7,130	3,951	5,850
Personnel Security	9,933	8,587	10,336
Material Control and Accountability	10,410	8,311	11,256
Program Management	37,844	53,279	20,536
Transportation	627	603	653
Subtotal, Safeguards and Security	266,755	253,944	244,363
Cyber Security	5,765	5,388	6,978
Total, Safeguards and Security	272,520	259,332	251,341

### Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$000)
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## Defense Environmental Cleanup

### Safeguards and Security

#### CB-0020 / Safeguards and Security

- Increased costs at Carlsbad are due to security officer wage increases and technology upgrades, such as an access control security system to cover facility changes such as new doors, security cameras, and video monitoring systems to cover a larger protection area.

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**OH-WV-0020 / Safeguards and Security-West Valley**

- Decrease at West Valley reflects the utilization of available prior year carryover balances in FY 2009 to support safeguards and security requirements at the same level of effort. -185

**OR-0020 / Safeguards and Security**

- Increase at Oak Ridge reflects the elimination of available prior year carryover balances in FY 2008. Increase is also due to the extended Protective Force, Physical Security, Information Security and Nuclear Materials Control and Accountability support required at the East Tennessee Technology Park as a result of the revised dates for K-25/K-27 project completion. Increases are required for cyber security to comply with DOE Order 205.1, 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. 8,698

**PA-0020 / Safeguards and Security**

- Increase at Paducah reflects the elimination of available prior year carryover balances in FY 2008. Funding will provide safeguards and security requirements at the same level of effort in FY 2009. 8,196

**PO-0020 / Safeguards and Security**

- Funding at Portsmouth reflects the utilization of available prior year carryover balances in FY 2008 and FY 2009. Funding will provide safeguards and security requirements at the same level of effort in FY 2009. 0

**RL-0020 / Safeguards and Security**

- Decrease at Richland is due to planned baseline requirements for Canister Storage Building security upgrade activities, such as design, procurements, site preparatory work and relocation of existing structures and utilities are less than in FY 2008. -11,238

**SR-0020 / Safeguards and Security**

- Decrease at Savannah River is due to completion of a four year Design Basis Threat facility upgrade in FY 2008 to meet 2005 requirements. -13,704

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**Total, Safeguards and Security** **-7,991**

## Capital Operating Expenses

(dollars in thousands)

	FY 2007	FY 2008	FY 2009
General Plant Projects	7,343	7,322	9,577
Capital Equipment	735	0	0
Total, Capital Operating Expenses	8,078	7,322	9,577



## Technology Development and Deployment

### Funding Schedule by Activity<sup>abc</sup>

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Technology Development and Deployment			
Projects to Reduce Technical Risk	19,215	20,595	31,482
Small Business Innovative Research Program	0	599	907
Technical Assistance / External Technical Review Program	1,500	0	0
Total, Technology Development and Deployment	20,715	21,194	32,389

### 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 new or improving technologies associated with environmental management. The program currently focuses on the highest risk and cost centers for the EM complex: Waste Processing, Groundwater and Soil cleanup, and Deactivation and Decommissioning at the largest EM sites.

The overall goals of the program are to eliminate technical barriers to cleanup by reducing technical uncertainty, improving safety performance by applying improved or new technologies, increasing confidence in achieving long-term cleanup goals, addressing emerging issues, and leveraging investments in scientific research conducted by other parts of the Department. The program is composed of a limited number of critical, high-risk and high-payback activities where significant technical issues need to be addressed and/or where significant improvements can be gained.

### Benefits

These projects provide funding to support innovative technical solutions through applied research and engineering to assure the safe, cost-effective cleanup of the DOE complex, address technology gaps, and reduce technical uncertainty.

### Basic and Applied Research and Development Coordination

EM will use fundamental research on materials and chemical processes sponsored by the Office of Science to understand the underlying physical and chemical processes that occur under the conditions of radioactive waste storage, which include extremes of temperature, pressure, radiation flux, and multiple

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<sup>a</sup> “Projects to Reduce Technical Risk” was formerly titled “Eliminating Technical Barriers to Accelerated Closure/Alternative Projects.”

<sup>b</sup> FY 2007 \$599,000 (\$535,000 for Small Business Innovation 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>c</sup> In FY 2008, the “Technical Assistance/External Technical Review Program” was transferred to “Program Support” activities (HQ-MS-0100).

complex phases. The knowledge gained will in turn enable finding the solutions to nuclear waste disposal. In addition, research on the characterization of radiological waste, such as mobility of radiological waste in the environment, from the Office of Science will help EM to address critical scientific questions to facilitate the stabilization, long-term storage, treatment, and ultimate disposal of radioactive waste.

EM will use breakthrough research from the Office of Science in predicting high level waste performance required to understand the underlying chemical, geochemical, and geophysical processes involved in the highly radioactive environments. Major research priorities were identified 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. The knowledge gained from this research will assist in EM in finding solutions to nuclear waste disposal.

### Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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<b>Projects to Reduce Technical Risk</b>	<b>19,215</b>	<b>20,595</b>	<b>31,482</b>
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The program will focus on three major challenges: 1) eliminating technical uncertainties and gaps in individual site baselines; 2) offering significant cost and schedule reductions to a site's current baseline; and 3) improving worker and public safety. The focus will be on providing innovative technical solutions in response to the highest priority needs of the sites. This portion of the budget will include support for applied engineering and research demonstrating the technical feasibility of higher-risk, high payoff technologies. The ultimate implementation of an innovative technology will be supported separately by site cleanup funding.

Some opportunities will require qualification and delivery of new technologies and processes. Examples include: new ways to separate high activity contaminants from high-level wastes at or near the tanks, thus eliminating the need for large treatment plants to be modified; new and improved understanding of methods to increase waste loading in borosilicate glass, yielding significant cost savings and schedule acceleration; advanced methods for in-tank sludge washing and sludge heel retrieval; minimization of secondary waste generated; and new tools for characterizing and remediating hot spots in high-activity waste burial grounds. Such technologies must be delivered in time for implementation during a site's life-cycle cleanup schedule decision process.

The highest priority needs identified by the sites that will require technical solutions fall into four major problem areas:

- Tank Waste (including High Level Waste)
- Groundwater and Soils
- Deactivation and Decommissioning
- Transuranic Waste

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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## Waste Processing

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, Idaho National Laboratory, and the Savannah River sites, must be treated and immobilized, and prepared for shipment to a waste repository. Efforts will focus on improving: characterization and pre-treatment processes to reduce the amount of waste that must be separated and immobilized for disposal in the high-level waste repository; retrieval technologies; vitrification performance, including particularly enhancing our understanding of and methods to improve waste loading in borosilicate glass; and breakthrough immobilization technologies. Technology development and deployment is needed in each of these areas to accelerate baseline schedules, reduce costs, improve safety, and reduce programmatic risks. Projects that will be continued in FY 2009 from FY 2008 will include:

- Enhanced waste processing at Idaho, Hanford, and Savannah River;
- Low and medium curie waste pretreatment at Hanford;
- Improved in-situ characterization and monitoring methods at Hanford, Idaho, and Savannah River; and sludge heel retrieval at Savannah River;
- Advanced melter technology at Savannah River and other melter studies; and
- Enhanced waste loading in borosilicate glass at Hanford and Savannah River.

In FY 2009, other activities will focus on:

- Continuing to address the 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;
- Options for improved chemical cleaning of tanks;
- Emerging technologies to assist tank-waste removal, including robotic enhancements to current waste retrieval technologies, and waste characterization;
- Near- and long-term performance and monitoring of tank fill materials as they interact with the environment, including predicting post-closure tank waste system performance over extreme time horizons; and
- Continuing to address recommendations for improvements from the Nuclear Regulatory Commission's Technical Evaluation Reports for Savannah River and Idaho waste determinations under Section 3116 of the National Defense Authorization Act for FY 2005.

## Groundwater and Soils

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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As a result of processes used for nuclear weapons production, vast areas of groundwater and soils were contaminated at DOE facilities. 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. Improved methods must be developed which will accurately locate and characterize the source term, as well as remediating or removing the contaminant from the subsurface (groundwater and soils). Critical contaminants include chlorinated solvents, metals, and radionuclides.

Applied research and engineering activities support monitored natural attenuation, in-situ treatment, and characterization and monitoring. An understanding of processes that affect the long-term effectiveness of natural attenuation (in lieu of more intensive and aggressive remediation approaches) is crucial to gaining confidence in planned site closure methods and regulatory acceptance. In-situ methods of treatment may be the only way to address remediation of persistent and toxic metals (mercury principally) and longer-lived radionuclides.

In FY 2009, activities will focus on four high priority technical areas identified by the sites, including:

#### Sampling and Characterization

- Developing improved methods and strategies for sampling and characterizing soil, groundwater environments and contamination to enhance understanding of contaminant transport and fate, improving remediation decision-making, and enhancing long-term monitoring.

#### Advanced Transport and Fate Modeling (Improved Predictive Capabilities)

- Enhancing numerical and conceptual groundwater models to improve understanding of transport, transformation and fate of contaminants in the vadose zone and groundwater.

#### Enhanced Remediation Methods

- Providing improvements in understanding and applying in-situ remediation, monitored natural attenuation, and enhanced attenuation technologies and strategies.
- Deploying technologies to mitigate or reduce contaminant movement toward the Columbia River and other selected high priority sites, focusing on chromium, strontium, uranium, carbon tetrachloride, and technetium.

#### Long-Term Monitoring

- Providing improvements in long-term monitoring technologies and strategies.

### Deactivation and Decommissioning

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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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. Although many technologies currently exist to address various aspects of decontamination, technology development and/or adaptation are needed to address unique contaminated buildings and facilities, as well as, to increase efficiency and worker safety.

In FY 2009, activities will focus on:

- Continuing to develop a “toolbox” of technologies and deactivation and decommissioning approaches applicable to future deactivation and decommissioning work scope at the Oak Ridge site, as well as at other difficult deactivation and decommissioning applications throughout the EM complex. These technologies and deactivation and decommissioning approaches will be demonstrated in a pilot study focusing on the Oak Ridge National Laboratory, Building 3026C.
- Providing technical assistance to the sites to identify emerging technologies, technical approaches, and lessons learned from past and ongoing site closures.
- Providing best practices from the commercial nuclear sector and the international nuclear community that will improve safety and to reduce risk and cost associated with deactivation and decommissioning activities.

### Transuranic Waste

Retrieval, treatment, and assay of transuranic waste are critical to the EM Program. There are several key technologies that need to be improved to achieve efficient cleanup. These technologies will enhance characterization, transportation, and disposal activities at additional DOE sites. Development of improved characterization using Non Destructive Assay/Non-Destructive Examination assay instruments for large transuranic containers is a high priority item at all transuranic waste-handling sites as is the characterization size reduction, repackaging, transportation, and storage of contact-handled and remote-handled transuranic waste. This transformational technology developed by the program is being deployed in FY 2007/FY2008.

In FY 2009, there are no new activities planned.

<b>Small Business Innovative Research Program</b>	<b>0</b>	<b>599</b>	<b>907</b>
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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 2007, \$599,000 (\$535,000 for Small Business Innovation Research and \$64,000 for Small Business

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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Technical Transfer Programs) was transferred to the Office of Science for award and administration of grants to small businesses.

**Technical Assistance / External Technical Review  
Program**

**1,500                      0                      0**

The Technical Assistance Program provides assistance to sites to reduce the technical uncertainty and risks of site cleanup. This activity provides technical expertise, scientific problem-solving and technical solutions to support more precise quantification and confirmation of the technical bases for decision making at sites. The Technical Assistance activities are to provide immediate, short-term engineering and scientific advice and support to reduce technical problems impeding site cleanup. These activities will benchmark site technical baselines to identify the technical risk associated with site closure or completion; provide independent multidisciplinary expertise to resolve technical issues associated with accelerated cleanup; and/or provide technologies or technical alternatives for consideration by the site to reduce technological uncertainty. In addition, this activity also provides engineering and scientific expertise for external technical reviews of projects, programs and/or activities.

In FY 2008, this activity was transferred to Program Support activities (HQ-MS-0100).

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<b>Total, Technology Development and Deployment</b>	<b>20,715</b>	<b>21,194</b>	<b>32,389</b>
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Key Accomplishments (FY 2007) / Planned Milestones (FY 2008/FY 2009)

**Key Accomplishments (FY 2007)**

Projects to Reduce Technical Risk:

Waste Processing

- Developed methods to optimize the removal of non-radioactive components, including chromium, from tank waste sludge thereby reducing the amount of high-level waste glass produced at Hanford and the Savannah River sites.
- Provided technical data for improving operations using small column ion exchange modified monosodium titanate, and rotary microfiltration at Savannah River and Hanford sites.
- To support Supplemental Low Activity Waste treatment, completed pilot plant equipment procurement for Fractional Crystallization alternative technology that will be used to remove medium-to-low curie waste streams.

Groundwater and Soil

- Initiated nine projects to address groundwater contamination and protection of the Columbia River.
  - Initiated five projects targeted to address issues related to protecting the Columbia River from hexavalent chromium in the Hanford 100-D and 100-K Areas.
  - Initiated two projects to address strontium-90 in the Hanford 100-N area to protect the Columbia River.
  - Initiated one project to address uranium in the Hanford 300 Area to protect the Columbia River.
  - Initiated one project to address carbon tetrachloride in the Hanford 200 Area to protect the Columbia River.

- Initiated development of detailed implementation plans for soil and groundwater initiatives, including: development of advanced sampling and characterization technologies and strategies; development of advanced transport and fate models; development and deployment of advanced remediation technologies; and development of long-term monitoring technologies and strategies.
- In collaboration with state regulators and federal agencies, incorporated key technical concepts and results of field research studies into technical regulatory guidance documents on Enhanced Attenuation of Chlorinated Solvents. These documents focus on the use of Enhanced Attenuation as a bridge between active source treatment and Monitored Natural Attenuation (MNA) for Chlorinated organic plumes.

#### Deactivation and Decommissioning

- Conducted Brookhaven Graphite Research Reactor Graphite Removal Technical Exchange Workshop providing lessons learned from international subject matter experts from the deactivation and decommissioning of other graphite reactors.
- Conducted In-Situ Decommissioning Workshop to identify, evaluate, and determine the most effective regulatory requirements and their effective application to in-situ decommissioning. Initiated development of an EM strategy for permanent in-situ decommissioning of radioactively contaminated facilities and for defining DOE position on permanent entombment, and continuous surveillance and monitoring.
- Initiated Experimental Breeder Reactor (EBR-II) Deactivation and Decommissioning Waste sodium-containing Water Treatment External Technical Review Project at Idaho National Laboratory.
- Initiated the Oak Ridge Toolbox Project to develop a suite of Deactivation and Decommissioning technologies that can be readily used across the DOE complex to reduce technical risks, improve safety, and limit uncertainty within D&D operations.
- Established a Deactivation and Decommissioning Hotline project at the Hanford ALARA Center to expand access to a wide-range of Deactivation and Decommissioning related information on topics such as tools, equipment, and materials; techniques and work practices; and disposal options.
- Completed the design, fabrication, factory testing and delivery of a non-destructive examination (NDE) system and a non-destructive assay (NDA) system to the Savannah River Site for installation and deployment of a large container non-destructive characterization system.

#### Technical Assistance/External Technical Review Program:

- Provided technical experts to analyze and make recommendations in response to worker safety concerns and suggestions at EM cleanup sites.
- Completed External Technical reviews for:
  - Office of River Protection Waste Treatment Plant
  - Savannah River Site Tank 48
  - Savannah River Site Salt Waste Processing
  - Hanford Environmental Restoration Disposal Facility (ERDF)
  - Office of River Protection Fractional Crystallization Pilot Plant Design and Testing
  - Paducah Remedial Design Review
  - Richland Remedial Design Review
  - Arrowpak TRU Container Review
- Provided technical expertise to cleanup sites in the decontamination and demolition of facilities.

#### Planned Accomplishments (FY 2008)

## Projects to Reduce Technical Risk:

### Waste Processing

- Develop and deploy methods to improve waste loading in high-level waste glass.
- Provide applied research and engineering, develop and demonstrate (as appropriate), and evaluate and deploy innovative technologies focused on options for chemical cleaning of tanks; in-situ methods to characterize residuals left in high level waste tanks after retrieval, removal of residual sludge heels from tanks, and optimized removal of non-radioactive components from sludge in tanks, removal of residual salt waste heels from sludge in tanks.
- Support applied research and development to improve near- and long-term performance and monitoring of tank fill materials as they interact with the environment, including methods for improved confidence in performance of cementitious materials in tanks and to reduce technical uncertainty associated with performance assessments.
- Support technologies from the private sector that were competitively evaluated and selected for demonstration that will support EM's cleanup mission:
  - Melter technology to accelerate the high level waste vitrification program schedule, reduce life-cycle costs and mitigate technical risks at Savannah River; higher operating temperatures will increase waste loading and result in fewer canisters produced.
  - Technology to complement treatment of Low Activity Waste that is planned for bulk vitrification at Hanford; a monolithic waste form will be produced that meets all waste disposal requirements.
  - Technology to remove cesium from Hanford tank supernates and dissolved saltcake using a portable, modular, shielded, near-tank system.
  - Leaching technology to dissolve aluminum and chromium contained in sludge to remove the metals and reduce the high level waste volume requiring vitrification.
- Provide transuranic waste box assay improvements using Non-Destructive Assay/Non-Destructive Examination Assay instruments for size reduction, repackaging, transportation, and storage of remote-handle transuranic waste at Savannah River, Hanford and Idaho.

### Groundwater and Soil

- Implement nine projects that will address the groundwater contamination from hexavalent chromium, strontium-90, uranium, and carbon tetrachloride.
  - Inject micron-sized iron into deteriorating portions of the existing In-Situ Redox Manipulation (ISRM) Barrier to determine if the deteriorating portions of the chromium barrier in the 100-D and 100-K areas of Hanford can be mended.
  - Field test an electrocoagulation treatment system for accelerated cleanup of chromium in extracted groundwater in the northeastern plume in the Hanford 100-D Area.
  - Investigate in-situ biostimulation amendments for reducing hexavalent chromium to the less mobile and less toxic trivalent chromium at the Hanford Site.
  - Conduct vadose zone characterization and geochemistry studies to better understand the fate, transport, and reduction of chromium at Hanford.
  - Refine the location of chromium sources using innovative drilling and sampling technologies at the Hanford 100-D Area to identify areas for directed remediation.
  - Complete field test of phytoremediation along the 100-N Columbia River riparian zone to extract or isolate strontium-90 from the soil and incorporate it into above ground biomass.
  - Complete the testing of in-situ sequestration of strontium by surface infiltration of an apatite solution in the 100-N area.
  - Continue 300 Area Uranium Plume Treatability Demonstration project that will evaluate uranium stabilization through polyphosphate injection.
  - Continue carbon tetrachloride and chloroform attenuation parameter studies for heterogeneous hydrolytic reaction.
- Support technologies from the private sector that were competitively evaluated and selected for demonstration that will support EM's cleanup mission:
  - In situ bioreductive process to immobilize contaminant metals and radionuclides within the subsurface at



potentially two sites. Injection of a biodegradable substrate into the subsurface to stimulate native microorganisms that will couple the oxidation of the degradable substrate. Metal and radionuclide contaminants will precipitate thereby producing less soluble and therefore less mobile contaminants.

- Develop low-cost equipment and methods for characterization and monitoring of soils contaminated by heavy metals at Hanford.

#### Deactivation and Decommissioning

- Initiate a project to catalog and evaluate fixatives and performance: airborne contamination presents a significant challenge to both personal entries into restricted spaces as well as open air demolition of buildings and structures.
- Complete Phase I activities for Experimental Breeder Reactor (EBR-II) Wash Water Treatment: conduct technical evaluation, alternatives analysis, and technology development and demonstration activities.
- Initiate an evaluation of the current state of laser technology for application to deactivation and decommissioning.
- Evaluate transite panel removal technologies; enhance or develop, design, fabricate, test, and qualify a remotely controlled transite panel removal system.
- Collect and analyze information regarding technology development work at the Hanford U-Plant; followed with a workshop with the Richland, Savannah River, Oak Ridge and selected other sites' deactivation and decommissioning Federal project directors, and technology subject matter experts (including international experts) to identify needs and gaps for in-situ decommissioning; prioritizing needs; and issuing solicitations and award contracts for technology enhancement, development, and/or demonstration projects.
- Implement the Deactivation and Decommissioning Toolbox Project to identify and (if necessary) develop and demonstrate new technologies and approaches to support the deactivation and decommissioning of Oak Ridge National Laboratory's Building 3026; identify, develop and/or demonstrate technologies which can be used to reduce the cost of the project, accelerate the schedule, and improve worker safety.

#### Planned Accomplishments (FY 2009)

##### Projects to Reduce Technical Risk:

##### Waste Processing

- Demonstrate methods to reduce technology to eliminate current operational constraints due to hydrogen gas generation rates in high level waste storage tanks.
- Provide technology to measure sludge characteristics prior transfer to prevent line plugging while also eliminating need for time consuming grab sampling requirement.
- Provide retrieval technology for removal of recalcitrant waste deposits (residual heels) with emphasis on tanks with obstructions.
- Provide technology to characterize residual waste in high level waste tank pipelines and to assure the integrity of the pipes.
- Develop methods for grouting residual tank waste to assure that the performance objectives used in waste determinations for tank closure purposes are met.
- Demonstrate a rapid analysis characterization technology to directly measure average slurry hardness and abrasives to support high level waste feed activities.
- Demonstrate technology to reduce sludge mass to be treated at Savannah River and the Office of River Protection by using selective dissolution to remove limiting chemical constituents such as aluminum and chromium.
- Develop solid/liquid separation methods to support supplemental treatment for low activity tank waste operations.

- Complete demonstration of Fractional Crystallization pretreatment technology to separate low activity waste stream for near term processing of this waste portion which would allow for near term disposal of this inventory.
- Design alternative and improved vitrification technology to be integrated into high level waste operations at the Defense Waste Processing Facility and Waste Treatment Plant for higher waste loading and increased waste throughput to optimize operations processes.
- Conduct developmental studies of calcine stabilization technology, such as hot isostatic pressing technology for consideration as feasible options in stabilization of Calcine waste at Idaho.
- Issue Request for Information for private sector innovative technologies to support EM projects and reduce risks and uncertainties for tank waste processing, groundwater and soils, and decontamination and decommissioning operations.

#### Groundwater and Soil

- Sampling & Characterization
  - Complete guidance for soil characterization to support buried pipes and subsurface excavation under pads.
  - Complete process and guidance for soil and groundwater database at the Center for Soils and Groundwater at the Savannah River National Laboratory.
- Develop Advanced Transport and Fate Models
  - Complete Uranium State of Knowledge Study with the Office of Science.
  - Complete Technetium 99, Strontium 90 and Iodine 129 State of the Knowledge studies with the Office of Science.
  - Improve the ability to predict future plume movement by better understanding the natural abiotic processes of physical decomposition of carbon tetrachloride, with an emphasis on hydrolysis in the Hanford 200 area.
- Remediation
  - Complete report on FY08 quick win case studies for Enhanced Attenuation.
  - Initiate three full scale case studies for Enhanced Attenuation.
  - Complete Interim Remediation and Monitoring Strategy Guidance for chlorinated solvents on the Vadose Zone.
  - Complete characterization of field demonstration at Savannah River Site F Area for Monitoring Natural Attenuation of Metals and Radionuclides in cooperation with Savannah River Site Operations.
  - Investigate in situ stabilization of uranium through polyphosphate injection in the Hanford 300 area.

#### Deactivation & Decommissioning

- Leverage Small Business Innovative Research Phase 2 project to develop portable, real time beryllium detection and monitoring technology for EM-site wide deactivation and decommissioning application.
- Develop criteria/process to determine adequacy of Process Knowledge (PK) for available deactivation and decommissioning planners and to develop guidance for what needs to be done when PK is incomplete or lacking.
- Develop a decision tool to determine the optimum Investment in Surveillance and Maintenance (S&M) for a building/facility in order to enable Federal project directors and other cognizant personnel with the ability to determine what interim condition a building / facility should be maintained in prior to the initiation of the deactivation and decommissioning project.
- Develop a "toolbox" of technologies and approaches for deactivation and decommissioning using a systems approach in developing engineering and technology solutions to reduce technical risks and uncertainty with future deactivation and decommissioning work scope at the Oak Ridge site. Conduct technology demonstrations. Pilot study will focus on the Oak Ridge National Laboratory's Building 3026C&D.
- Develop EM-Complex in-situ deactivation and decommissioning guidance through collection and analysis of data and information associated with permanent in-situ entombment of a radioactively contaminated facility followed by integration of the data and information with related site strategies, and develop the policy strategy.
- Develop and implement deactivation and decommissioning Center of Excellence to provide technical leadership and

solutions for DOE complex-wide deactivation and decommissioning activities.

### Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$000)
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#### Projects to Reduce Technical Risk

- This increase supports applied research and development coordination activities and additional waste characterization, deactivation and decommissioning activities, radioactive liquid tank waste retrieval, separation and immobilization activities, post-closure tank system performance activities, and soil and groundwater advanced remediation research and development to eliminate technical barriers to cleanup.

10,887

#### 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 Innovation Research and Small Business Technology Transfer programs.

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#### Total, Technology Development and Deployment

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11,195



## 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). The Act authorizes annual fund contributions to come from both a special assessment on domestic utilities and annual Congressional appropriations.

### 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 2007	FY 2008	FY 2009
Defense Environmental Cleanup			
Federal Contribution to the Uranium Enrichment D&D Fund			
HQ-DD-0100 / Federal Contribution to the Uranium Enrichment D&D Fund	452,000	458,787	463,000
Total, D&D Fund Deposit	452,000	458,787	463,000

## Detailed Justification

(dollars in thousands)

FY 2007	FY 2008	FY 2009
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### HQ-DD-0100 / Federal Contribution to the Uranium Enrichment D&D Fund

**452,000      458,787      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 2009 Federal Government contribution to the Uranium Enrichment Decontamination and Decommissioning Fund, as required by the Energy Policy Act of 1992.

Metrics	Complete Through FY 2007	Complete Through FY 2008	Complete Through FY 2009	Life-cycle Quantity	FY 2009 % Complete
No metrics associated with this PBS					
Key Accomplishments (FY 2007)/Planned Milestones (FY 2008/FY 2009) <ul style="list-style-type: none"> <li>• Project Completion (FY 2007)</li> <li>• Make annual Federal contributions into the Fund as required by the Act. (September 2008)</li> </ul>					

<b>Total, D&amp;D Fund Deposit</b>	<b>452,000</b>	<b>458,787</b>	<b>463,000</b>
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## PBS Subprojects Summary

(dollars in thousands)

Total Estimated Cost (TEC)	Prior Year Appropriations	FY 2007	FY 2008	FY 2009	Unappropriated Balance
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### Defense Environmental Cleanup

#### Hanford Site

04-EXP-1 A-8 Electrical Substation  
Upgrade, RL PBS RL-0040

14,766	13,566	1,315	0	0	0
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#### Oak Ridge

08-EXP-02 Management of Uranium  
233 Stored at Building 3019, Oak  
Ridge National Laboratory, Oak  
Ridge, Tennessee PBS OR-0011Z

226,643	40,515	35,500	29,727	57,500	63,401
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#### Office of River Protection

08-EXP-01 Bulk Vitrification  
Demonstration, Hanford, WA PBS  
ORP-0014

214,445	0	3,000	6,000	1,000	204,445
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#### Savannah River Site

07-EXP-02 Interim Salt Processing  
System Modifications, Subproject  
Detail, Savannah River PBS SR-  
0014C

144,145	96,737	28,767	3,350	15,291	0
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**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)**

**1. Significant Changes**

The most recent DOE O 413.3A approved Critical Decision (CD) 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 Project Data Sheet has been updated to reflect an additional \$10 million in FY 2008 appropriations.

**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 (Construc tion Start	CD-4 (Project Complete )	D&D Start	D&D Complete
FY 2008	1Q FY 2006	1Q FY 2004	3Q FY 2009	4Q FY 2007	3Q FY 2009	3Q FY 2012		
FY2009	4Q FY03 (reconfir med by EM 1Q FY 2007)	3Q FY04 (approved by EM 1Q FY 2007)		3Q FY 2007	3Q FY07 (CD-3A)	4Q FY 2012 (CD-4A) 4Q FY 2015 (CD-4B )		
					2Q FY09 (CD-3B)			

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, Constructi on	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
FY09 <sup>a</sup>	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 (DNFSB) in a report to the Department of Energy (DOE) (DNFSB 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 (ORNL) 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 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.

<sup>a</sup> 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.

## 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 CD-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 – The Office of Engineering and Construction Management conducted an External Independent Review of the U233 Downblending and Disposition Project in August 2006. The review resulted in 34 findings of which 16 were considered major. The project revised preliminary design documents, cost estimates, and the schedule to address the Office of Engineering and Construction Management’s concerns. In October 2006, the team reviewed the corrective actions and validated the revised baseline and project costs at \$355.3 million. Following the External Independent Review of the corrective actions, additional safety concerns were identified. Plans were developed to address these concerns, which resulted in an increase to the project baseline cost of \$5.6 million and lifecycle costs of \$360.9 million.
- 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. Beginning with the transfer of the U233 Downblending and Disposition Project from the Office of Nuclear Energy to the Office of Environmental Management, weekly Integrated Project Team meetings have been held to track project cost and schedule. Monthly reports are prepared and include project-to-date and year-to-date earned value data. The project schedule indicates that the contractor’s self-certification of the Earned Value Management System will be completed in April 2008.
- The confirmation of existing National Environmental Policy Act (NEPA) 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 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			
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	2,997
FY 09	0	0	5,454
Total, PED	54,221	54,221	54,221
Construction			
FY07	21,794	21,794	0
FY08	29,727	29,727	36,690
FY09	57,500	57,500	52,243
FY10	37,400	37,400	53,209
FY11	25,092	25,092	24,018
FY12	909	909	6,262
Total, Construction	172,422	172,422	172,422
TEC			
Prior Years	22,694	22,694	19,852
FY06	17,821	17,821	11,530
FY07	35,500	35,500	14,388
FY08	29,727	29,727	39,687
FY09	57,500	57,500	57,697
FY10	37,400	37,400	53,209
FY11	25,092	25,092	24,018
FY12	909	909	6,262
Total, TEC	226,643	226,643	226,643
Other Project Cost (OPC)			
OPC except D&D			
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
Total, OPC except D&D	14,178	14,178	14,178
D&D			
FY	0	0	0
Total, D&D	0	0	0
Total OPC			
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
Total, OPC	14,178	14,178	14,178

(dollars in thousands)			
	Appropriations	Obligations	Costs
Total Project Cost (TPC)			
FY05	22,694	22,694	19,852
FY06	17,821	17,821	11,530
FY07	35,500	35,500	14,388
FY08	29,727	29,727	39,687
FY09	58,000	58,000	58,129
FY10	38,900	38,900	54,758
FY11	28,100	28,100	27,026
FY12	10,079	10,079	15,451
Total, TPC <sup>a</sup>	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>			
Design (PED)			
Design	53,880	NA	53,880
Mgt. Reserve	341	NA	341
Total, PED	54,221	NA	54,221
Construction			
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>			
OPC except D&D			
Conceptual Planning	NA	NA	NA
Conceptual Design	NA	NA	NA
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

<sup>a</sup> 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.

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total, OPC	14,178	NA	14,178
Mgt. Reserve, OPC	6,269	NA	6,269
Total, TPC	240,821	NA	240,821
Total, Mgt. Reserve	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 <sup>a</sup>	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	
Total Operations & Maintenance	See footnote 4	N/A	120,028	120,051

## 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.

<sup>a</sup> 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.

## **10. Acquisition Approach**

The DOE Oak Ridge Office (ORO) 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 re-negotiated contract. A dedicated Federal Director at ORO 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.



**ORP-0014 Demonstration Bulk Vitrification System**  
**Office of River Protection, Richland Washington**  
**Operating Expense Data Sheet (08-EXP-01)**

**1. Significant Changes**

The most recent DOE Order 413.3A, *Program and Project Management for the Acquisition of Capital Assets*, approved Critical Decision - 0/1 (Approve Mission Need/Approve Alternative Selection and Cost Range) on July 14, 2006, with a preliminary cost range of \$190,000,000 to \$230,000,000.

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

This Operating Expense Data Sheet is new. The Total Project Cost is preliminary, pending Critical Decision -2 (Performance Baseline Approval). Approval expected in early CY 2008.

With the delay of construction and commissioning of the Waste Treatment and Immobilization Plant from 2011 to 2019, the DOE is evaluating the appropriate schedule for the construction and startup of the Demonstration Bulk Vitrification System.

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

(fiscal quarter or date)

	CD-0	CD-1 (Design Start)	(Design Complete)	CD-2	CD-3 (Construction Start)	CD-4 (Construction Complete)	D&D Start	D&D Complete
FY 2009	4 Q FY 2006	4 Q FY 2006	4 Q FY 2009	TBD	TBD	TBD	TBD	TBD

\* Schedules are to be determined. Proposed Critical Decision – 2, Approve Performance Baseline, was reviewed by DOE’s Office of Engineering and Construction Management and an External Independent Review Team June on 18-22, 2007; and briefed to the Acquisition Executive on January 8, 2008.

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, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC <sup>1</sup>	
FY 2009	TBD	TBD	TBD	TBD	N/A	TBD	TBD	

<sup>(1)</sup> At this time, the Total Project Cost figures are preliminary with a range from \$190,000,000 to \$230,000,000.

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

**Project Description:** The Hanford Site radioactive tank waste resulted from over 40 years of plutonium production operations. Since most of the Hanford tank wastes originated during the reprocessing of spent nuclear fuel, the wastes are currently managed as high-level waste. Nonetheless, the Hanford tank wastes are relatively dilute from a radiological perspective due primarily to:

- The reprocessing wastes were neutralized and conditioned with large volumes of caustic to enable extended storage in carbon steel tanks;
- Roughly 45 percent of the cesium-137 and strontium-90 was extracted<sup>a</sup> from the wastes to reduce the decay heat load as well as to make the materials available for research and commercial purposes.

Rather than vitrify the entire volume of Hanford tank waste for disposal as high-level radioactive waste, in the 1990s DOE developed a strategy in consultation with the U.S. Nuclear Regulatory Commission to separate and concentrate the bulk of the radioactivity into a relatively low volume high-level waste stream, following vitrification, that would be suitable for disposal at the proposed mined geologic repository at Yucca Mountain. The remaining wastes (approximately 90 percent of the waste mass), which will be predominantly chemical waste following radionuclide extraction, would also be immobilized<sup>b</sup>, and given that certain criteria set forth in the 1993 U.S. Nuclear Regulatory letter are met; disposed of on-site as a low-activity waste.

DOE reached a provisional agreement<sup>c</sup> with the U.S. Nuclear Regulatory in 1997 regarding a waste treatment plan that would achieve the required separations and produce low-activity waste that would meet the three “incidental to reprocessing” criteria<sup>d</sup> the U.S. Nuclear Regulatory Commission had earlier recommended to DOE<sup>e</sup>. The U.S. Nuclear Regulatory Commission concluded that if DOE followed that treatment plan, which is described in the Technical Basis Report<sup>f</sup>, the resultant low-activity waste would not be subject to U.S. Nuclear Regulatory Commission licensing and could be disposed of on-site. DOE continues to follow the treatment plan set forth in the Technical Basis Report. A solids/liquids step (e.g., settling and/or filtration) removes insoluble radionuclides (principally actinides and strontium-90), the Waste Treatment and Immobilization Plant Low-Activity Waste vitrification facility produces a waste form that meets Class C concentrations, and the 2001 Low-

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<sup>a</sup> The extracted radionuclides were converted to cesium and strontium salts and sealed within the cesium and strontium capsules which are currently stored in the Waste Encapsulation and Storage Facility at Hanford.

<sup>b</sup> At least 50 percent of the low-activity waste will be glass produced in the Waste Treatment Plant.

<sup>c</sup> A letter from Carl J. Paperiello, Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C., to Jackson Kinzer, Assistant Manager, Office of Tank Waste Remediation System, U.S. Department of Energy, Richland, WA, Classification of Hanford Low-Activity Waste Fraction, July 1997, set forth the parameters governing the provisional agreement.

<sup>d</sup> The three criteria are nearly identical to the Waste Incidental to Reprocessing Evaluation Criteria later set forth in DOE Order 435.1. *DOE Manual 435.1-1: Radioactive Waste Management*, U.S. Department of Energy, July 9, 1999. The criteria require that key radionuclides be removed from the low-activity waste stream to the maximum extent technically and economically practical, waste immobilization in a form that is within 10 Code of Federal Regulations 61.55 Class C concentrations, and disposal in a manner that meets the 10 Code of Federal Regulations Part 61, Subpart C Performance Objectives.

<sup>e</sup> Letter from R.M. Bernero, Director, Office of Nuclear Materials Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C., to J. Lytle, Deputy Assistant Secretary for Waste Operations, Office of Environmental Restoration and Waste Management, U.S. Department of Energy, Washington, D.C., March 2, 1993.

<sup>f</sup> Technical Basis for Classification of Low-Activity Waste Fraction from Hanford Site Tanks, Westinghouse Hanford Company, Los Alamos Technical Associates, Inc., BNFL, Inc. WHC-SD-WM-TI-699, Rev 2, September 1996.

Activity Waste Facility Performance Assessment shows that the land-disposed wastes meet the 10 Code of Federal Regulations Part 61, Subpart C Performance Objectives.

Although the Pretreatment and High-Level Waste vitrification plants are sized to complete their treatment missions within approximately 23 to 35 years following the completion of hot commissioning, the Waste Treatment and Immobilization Plant Low-Activity Waste Facility vitrification plant was only sized to immobilize approximately 50 percent of the low-activity waste stream. As a result, DOE formed a task force in 2003 that included the State of Washington and Environmental Protection Agency Region 10 to evaluate possible supplemental immobilization approaches to treat the remaining low-activity waste. Bulk vitrification was one of three approaches recommended for further study. Extensive laboratory and limited engineering scale testing with surrogate wastes coupled with focused Performance Assessment analyses indicated that, for Hanford's groundwater system characteristics, only bulk vitrification and steam reforming had the potential to meet State groundwater standards. The Office of River Protection continued to study bulk vitrification in engineering scale and full-scale surrogate tests while steam-reforming tests on both Hanford tank waste surrogates and Idaho tank waste surrogates were conducted by DOE-Idaho. The Demonstration Bulk Vitrification System is a continuation of that testing that is designed to provide pilot-scale information necessary to design full production scale facilities and gain integrated operations information that could not be obtained from the surrogate tests, e.g., technetium behavior data at glass formation temperatures in a full-scale melter. Currently, over 100 crucible-scale tests, 13 engineering-scale tests, and 8 large scale tests have been completed.

The Demonstration Bulk Vitrification System testing, including feed pretreatment and waste form characteristics, is fully consistent with the provisional agreement reached with the U.S. Nuclear Regulatory Commission regarding low-activity waste in 1997. Information from the testing will assist DOE in making final decisions regarding what, if any, supplemental low-activity waste treatment will be provided. That decision will be made in accordance with the National Environmental Policy Act requirements; i.e., supplemental low-activity waste treatment alternatives will be evaluated in the Tank Closure and Waste Management Environmental Impact Statement currently in preparation. Once the National Environmental Policy Act process has sufficiently progressed with regard to supplemental low-activity waste treatment, DOE plans to make a final waste determination<sup>a</sup> for the low-activity waste in consultation with the U.S. Nuclear Regulatory Commission with opportunity for public commentary.

### **Justification of Mission Need:**

*Support of Mission Need:* The Radioactive Liquid Tank Waste Stabilization and Disposal Project, PBS ORP-0014, includes activities required to stabilize approximately 53 million gallons of radioactive waste stored in 177 underground tanks. Activities include tank waste retrieval, treatment, disposal, and closure of the facilities. High-level waste will be stored on-site pending final disposal at proposed mined geologic repository at Yucca Mountain. Subject to completion of the Tank Closure and Waste Management Environmental Impact Statement (currently in preparation), DOE will reach decisions regarding (a) whether a portion of the waste sludge should be treated and disposed of as transuranic waste at the Waste Isolation Pilot Plant and (b) whether a portion of the low-activity waste will be treated using a supplemental immobilization technology. Following those decisions, DOE plans to make the necessary waste determinations for the transuranic and low-activity waste streams through public processes. Both the transuranic and low-activity waste treatment decisions are important for the time to reach tank waste treatment mission completion and the associated lifecycle cost for doing so.

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<sup>a</sup> It is envisioned that the waste determination would be made pursuant to DOE Order 435.1.

*Justification of Mission Need:* Bulk vitrification is one of the technologies being assessed as an alternative supplemental immobilization process. To demonstrate its viability, there is a need to perform bulk vitrification at an engineering pilot scale on actual tank waste. The objectives of the Demonstration Bulk Vitrification System Pilot Plant are to:

- Process up to 190,000 gallons of radioactive waste from Tank 241-S-109 waste into approximately 50 boxes of vitrified product;
- Store and dispose of these boxes at Hanford's Integrated Disposal Facility;
- Evaluate the waste form characteristics;
- Gather pilot plant operability data;
- Develop the overall life cycle system performance of Bulk vitrification and produce a comparison of the Bulk vitrification process to building a second Low-Activity Waste Facility or other supplemental treatment alternatives as provided in the Hanford Federal Facility Agreement and Consent Order Milestone M-62-08.

**Project Scope:** Bulk vitrification will be performed by mixing liquid waste with inexpensive glass-forming materials of appropriate chemical composition (e.g., high silica clay or sands) in a low-temperature mixer/dryer and then feeding the resulting mixture into a container. Vitrification is achieved by applying electrical power to the graphite electrodes that are in the container. Following melt completion; the container is moved from the melt station, cooled, sampled and ultimately disposed of in the on-site Integrated Disposal Facility.

The Bulk vitrification pilot plant, or Demonstration Bulk Vitrification System project, will demonstrate Bulk vitrification on actual tank waste from Tank 241-S-109. The Demonstration Bulk Vitrification System consists of a single process line with associated feed preparation and off-gas treatment components. Bulk vitrification is planned to be conducted in 38 cubic meter containers resulting in a durable glass waste form with small surface area to volume ratio, thereby minimizing the potential for waste form leaching. The container is also the melter and waste container and is, therefore, disposed with the waste upon completion of treatment. Approximately 3,800 gallons of waste will be vitrified in each container. The vitrified waste product will weigh approximately 42.6 metric tons. The total weight of the waste package including vitrified waste and container is approximately 100 metric tons. The Demonstration Bulk Vitrification System pilot plant has been designed to operate at the following processing performance parameters:

<b>Demonstration Bulk Vitrification System Performance Parameters</b>	
Bulk Vitrification Containers	Up to 50
241-S-109 Salt cake processed	Up to 190,000 gallons
Sodium processed	Up to 280 MT
Cesium-137 processed	≤ 15,000 curies

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)			
Design			
Prior Years	20,400	20,400	20,400
FY 2007	1,500	1,500	1,500
FY 2008	1,600	1,600	1,600
FY 2009	0	0	0
FY 2010 and Beyond	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
Prior Years	20,210	20,210	20,210
FY 2007	0	0	0
FY 2008	0	0	0
FY 2009	0	0	0
FY 2010 and Beyond	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
Prior Years	40,610	40,610	40,610
FY 2007	1,500	1,500	1,500
FY 2008	1,600	1,600	1,600
FY 2009	0	0	0
FY 2010 and Beyond	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
Prior Years	55,990	55,990	55,990
FY 2007	1,500	1,500	1,500
FY 2008	4,400	4,400	4,400
FY 2009	1,000	1,000	1,000
FY 2010 and Beyond	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D	N/A	N/A	N/A
OPC			
Prior Years	55,990	55,990	55,990
FY 2007	1,500	1,500	1,500
FY 2008	4,400	4,400	4,400
FY 2009	1,000	1,000	1,000
FY 2010 and Beyond	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD

(dollars in thousands)			
	Appropriations	Obligations	Costs
Total Project Cost (TPC)			
Prior Years	96,600	96,600	96,600
FY 2007	3,000	3,000	3,000
FY 2008	6,000	6,000	6,000
FY 2009	1,000	1,000	1,000
FY 2010 and Beyond	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

## 6. Details of Project Cost Estimate

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	TBD	N/A	N/A
Total, Design	TBD	N/A	N/A
Construction			
Site Preparation	TBD	TBD	TBD
Equipment	TBD	TBD	TBD
Other Construction	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	TBD	TBD
Conceptual Design	TBD	TBD	TBD
Start-Up	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
D&D	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

## 7. Schedule of Project Costs

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

## 8. Related Operations and Maintenance Funding Requirements

Not Applicable

## 9. Required D&D Information

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

## 10. Acquisition Approach

The DOE Office of River Protection has an Acquisition Strategy approved by the Acquisition Executive for the Demonstration Bulk Vitrification System project. The Acquisition Strategy utilizes the current contract with CH2M HILL Hanford Group, Inc., the Tank Farm contractor, to plan, manage, and execute operations, projects, and other activities. Within the technical scope of the contract is retrieval and disposal of waste from the Tank Farms. The Office of River Protection has directed and incentivized CH2M HILL to design, procure, construct, and test the Demonstration Bulk Vitrification System within the scope of the contract. CH2M HILL Hanford Group, Inc. has a subcontract with AMEC Nuclear Ltd. to develop the Bulk vitrification technology for application at the Hanford Tank Farms.





## Interim Salt Processing System Modifications Subproject Detail, Savannah River Site, South Carolina (SR-0014C)

### 1. Significant Changes

DOE Order 413.3A Critical Decision Critical Decision-0 was approved July 7, 2006. Appropriately tailored Critical Decision-1 (Approve Alternative Selection and Cost Range), Critical Decision-2 (Approve Performance Baseline) and Critical Decision-3 (Start of Construction) equivalents for Modular Caustic Side Solvent Extraction Unit, Actinide Removal Process and Waste Transfer Lines have been approved in accordance with DOE-Savannah River project management procedures and Washington Savannah River contract provisions under the DOE-Savannah River manager delegated authority.

A Federal Project Director has been assigned to this project and is pursuing the requirements for level IV certification.

### 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 (Construction Complete)	D&D Start	D&D Complete
FY07	1Q2004	1Q2007		3Q2004	2Q2010		
FY08	1Q2004	2Q2009a		3Q2004	2Q2010a		
FY09	1Q2004	2Q2009a		3Q2004	2Q2010a		

a The Waste Transfer Line Project Phase II is a rough order of magnitude estimate which is included in the total of \$160,895. The Waste Transfer Line Phase II Project schedule is currently forecasted to be available in 2Q2012.

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
FY07	25,993	118,152	144,145			16,750	160,895
FY08	25,993	118,152	144,145			16,750	160,895
FY09	25,993	118,152	144,145			16,750	160,895

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

As part of the Savannah River legacy defense waste cleanup mission, the U. S. Department of Energy has developed a strategy to move forward in the short term with the removal, treatment and disposition of waste from the Savannah River Site tank farms to reduce risk to workers, the public, and the environment. The existing waste processing system is being modified to enable the limited removal,

treatment and disposition of salt waste while building the Salt Waste Processing Facility. The Salt Waste Processing Facility is a new Savannah River Site facility designed to utilize monosodium titanate treatment to remove actinides and strontium from the salt waste and caustic side solvent extraction to remove radioactive cesium from the salt waste. The Salt Waste Processing Facility will not be operational until 2013, which is too late to prevent an interruption at the Defense Waste Processing Facility and delays in removing waste from older tanks. There are presently 37 million gallons of liquid radioactive waste stored in underground storage tanks at Savannah River Site. These tanks are nearing capacity for storage and processing of waste. Unless salt solution is soon removed from these tanks, capacity limitations will force DOE to decrease and eventually halt the ongoing activities to remove and stabilize tank waste. These activities are key to reducing risk to workers, the public, and the environment. Chief among the activities in jeopardy are the processing of sludge waste at the Defense Waste Processing Facility, removal of waste from aging tanks which lack full secondary containment, and tank closure.

Modifications to existing waste processing systems will be needed for the following primary system projects:

- Actinide Removal Process,
- Modular Caustic Side Solvent Extraction Unit,
- Waste Transfer Lines.

In addition to the above, there are ancillary projects that deal primarily with individual tank infrastructure modifications necessary to facilitate movement of salt material through the above processing system.

### **1. Actinide Removal Process**

The primary purpose of the Actinide Removal Process is to remove the actinides and strontium-90 from the waste stream utilizing the same technology to be used by the Salt Waste Processing Facility. Two preexisting buildings were modified to support the Actinide Removal Process.

The Actinide Removal Process project installed two monosodium titanate strike tanks, with associated waste transfer pumps, agitators, chilled water cooling coils, and associated jumpers. A chiller unit has been installed to maintain tank temperature for process control while the agitator is running. A process vessel vent system has been installed to provide ventilation for the strike tanks. A new valve box has been installed for transfers between buildings. The project has also provided a new 0.1 micron cross flow filter.

Salt solution is transferred from tank farms to one of the two monosodium titanate strike tanks. Monosodium titanate is added and the material is agitated. The solution is then transferred to where it is filtered to remove the monosodium titanate/actinide solids. The filtration turns the monosodium titanate sludge solution into a sludge feed and a decontaminated salt solution. The sludge feed will be transferred to the Defense Waste Processing Facility for processing, while the decontaminated salt solution is sent to Modular Caustic Side Solvent Extraction Unit for cesium removal prior to transfer to the Saltstone Processing Facility. This process may also be used to bypass the Modular Caustic Side Solvent Extraction Unit step in the process, sending the decontaminated salt solution directly to the Saltstone Processing Facility instead.

The Actinide Removal Process, Modular Caustic Side Solvent Extraction Unit and Waste Transfer Lines Phase 1 have completed construction, testing, and cold runs. Both the Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit met the regulatory commitment of September, 30 2007, for the start of radiological operations (integrated runs). Integrated runs using inhibited water were completed in parallel with operator proficiency runs. This phase of water runs will meet the regulatory commitment for the start of radiological operations. The State of South Carolina considers this testing the start of radiological operations because the facilities are connected using existing contaminated piping, however, this is not the authorized startup of radiological operations. Simulated salt solution and monosodium titanate was introduced in the Actinide Removal Process for additional integrated runs to allow Modular Caustic Side Solvent Extraction Unit proficiency runs to be completed. Hot operations start is scheduled for March 31, 2008.

## **2. Modular Caustic Side Solvent Extraction Unit**

The Modular Caustic Side Solvent Extraction Unit will provide a caustic side solvent extraction based cesium removal capability with a capacity matched to the actinide removal process throughput. Modular Caustic Side Solvent Extraction Unit cesium strip product will be stabilized at the Defense Waste Processing Facility and the decontaminated salt solution will be treated and disposed of in the Saltstone Processing Facility and Saltstone Vaults. This operation will facilitate tank farm storage gain and support continued operation of the Defense Waste Processing Facility. An additional benefit from the operation of the Modular Caustic Side Solvent Extraction Unit will be that the information gained may become useful for optimization of the Salt Waste Processing Facility operations. The project scope includes the design, construction, testing, and successful startup of the unit. The project scope includes performance of the necessary modifications to existing H-Tank Farm utilities, and infrastructure, including tie-ins to the existing waste transfer lines to support operation of the unit, receipt of feed from the actinide removal process, and transfer of product streams to the Defense Waste Processing Facility and to the Saltstone Processing Facility through the H-Tank Farm.

After processing salt waste to remove actinides and strontium, the resulting decontaminated salt solution with no actinides (maximum 1.1 curies per gallon) will be transferred to Modular Caustic Side Solvent Extraction Unit to remove the cesium. This stream is received and fed into the extraction contactor bank of the caustic side solvent extraction process while solvent is fed from the opposite end of the contactor bank. The solvent and aqueous streams flow counter-current across the bank and concurrent in each contactor stage. Upon contact with the waste feed, the solvent extracts the cesium from the aqueous waste increasing the amount extracted in each successive contactor stage until the aqueous waste exiting the banks has undergone cesium decontamination (decontaminated salt solution) and the solvent exiting the contactor bank is laden with cesium. Solvent is stripped of the cesium and washed for reuse. The decontaminated salt solution is transferred to the Saltstone Processing Facility through the H-Tank Farm and the cesium strip is transferred through the Low Point Pump Pit to the Defense Waste Processing Facility. A small amount of solvent carryover is expected in downstream facilities.

This modification can be divided into three major scopes of work: the Modular Caustic Side Solvent Extraction Unit, utilities and infrastructure tie-ins, and waste transfer system tie-ins. In FY 2007 Savannah River completed all construction turnover activities, field work and testing for the Modular Caustic Side Solvent Extraction Unit. Operations are projected to begin March 31, 2008.

The Modular Caustic Side Solvent Extraction unit will be located in the former H-Tank Farm Cold Feeds Area. Some of the existing tanks and related equipment will be utilized in the process. To make space in the area, two major tanks and related equipment were closed out and removed, along with other

support systems. The unit consists of an underground area divided into cells to house process vessels mounted in modular frames for ease of installation. This underground process area will include salt solution receipt and feed systems, solvent systems, cesium strip and decontaminated salt solution hold and transfer systems, contactor drain systems, and cell sump system. An above-grade shielded structure will house equipment and instrumentation required to enable the operation of a frame mounted extraction, strip, wash and scrub contactor banks (18 contactors total), a strip aqueous heater, a strip solvent heater and a caustic wash tank. There will also be a sampler enclosure and a process vessel vent and enclosure ventilation systems. The Modular Caustic Side Solvent Extraction will allow very limited hands-on maintenance; otherwise, certain sections of the unit will not be occupied during normal radiological operations.

**Utilities and infrastructure tie-ins** – Electrical power will be obtained by installing a new transformer and connecting to an existing 13.8 kV distribution feeder. Modular Caustic Side Solvent Extraction Unit will connect to the existing domestic water system for operation of a safety shower in the area. The unit will also utilize the existing instrument air system.

**Waste Transfer System tie-ins** – the Modular Caustic Side Solvent Extraction Unit will tie into existing transfer lines to receive feed from the actinide removal process and to permit transfers to the Saltstone Processing Facility feed tank in H-Tank Farm, and the Defense Waste Processing Facility (through the Low Point Pump Pit). Any modifications in the Low Point Pump Pit to receive the modular caustic side solvent extraction transfer of cesium strip will be performed by the Waste Transfer Lines project.

### **3. Waste Transfer Lines**

Currently there is a critical shortage of storage space in the High Level Waste tank farm system. In addition, transfers are restricted due to the complex chemical compositions of the waste in the tanks and the limited infrastructure in the tank farms. New waste transfer infrastructure is required to provide transfer routes to the Defense Waste Processing Facility for the actinide removal process, and to support the Modular Caustic Side Solvent Extraction Unit operations. New waste transfer infrastructure is also required to support the Salt Waste Processing Facility when it becomes operational. The transfer infrastructure needed to support these processes comprises the scope of the Waste Transfer Line project. Since actinide removal and modular caustic side solvent extraction are planned to become operational in advance of Salt Waste Processing Facility operations, the Waste Transfer Lines scope is defined in two phases. Phase I scope, in general, consists of jumpers and associated appurtenances to be installed in the Low Point Pump Pit and Defense Waste Processing Facility. Cost and schedule baseline was finalized on March 6, 2006. All construction and testing activities are complete. Phase II, in general, consists of jumpers and associated appurtenances to be installed in the Low Point Pump Pit, and Defense Waste Processing Facility. Phase II scope also includes physical tie-ins of transfer lines to support the Salt Waste Processing Facility influent and effluent transfers. Phase II baseline is under development. Cost and schedule baseline will be completed in 2Q FY 2008.

The three projects included in this project data sheet are at different stages of project execution. A Critical Decision -0 package for Modular Caustic Side Extraction Unit was approved on July 7, 2006. The Modular Caustic Side Solvent Extraction, Actinide Removal Process and the Waste Transfer Lines – Phase I, are scheduled to be completed in the 2Q FY 2008. The Waste Transfer Lines – Phase II is forecasted for completion in the 2Q FY 2012.

The project is being conducted in accordance with the project management requirements in DOE Order 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			
FY03	495	495	495
FY04	8,949	8,949	8,949
FY05	12,594	12,594	12,594
FY06	3,221	3,221	3,221
FY07	500	500	500
FY08	3,196	3,196	3,196
FY09			
Total, PED	28,955	28,955	28,955
Construction			
FY03			
FY04			
FY05	13,831	13,831	13,831
FY06	57,647	57,647	57,647
FY07	28,267	28,267	28,267
FY08	154	154	154
FY09	15,291	15,291	15,291
Total, Construction	115,190	115,190	115,190
TEC			
FY03	495	495	495
FY04	8,949	8,949	8,949
FY05	26,425	26,425	26,425
FY06	60,868	60,868	60,868
FY07	28,767	28,767	28,767
FY08	3,350	3,350	3,350
FY09	15,291	15,291	15,291
Total, TEC	144,145	144,145	144,145
Other Project Cost (OPC)			
OPC except D&D			
FY03			
FY04	2,661	2,661	2,661
FY05	10,598	10,598	10,598
FY06	0	0	0
FY07	2,228	2,228	2,228
FY08	200	200	200
FY09	1,063	1,063	1,063
Total, OPC except D&D	16,750	16,750	16,750
D&D			
FY	TBD	TBD	TBD
Total, D&D	TBD	TBD	TBD

(dollars in thousands)			
	Appropriations	Obligations	Costs
OPC			
FY			
FY			
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY03	495	495	495
FY04	11,610	11,610	11,610
FY05	37,023	37,023	37,023
FY06	60,868	60,868	60,868
FY07	30,995	30,995	30,995
FY08	3,550	3,550	3,550
FY09	16,354	16,354	16,354
Total, TPC	160,895	160,895	160,895

## 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	28,955	28,955	28,955
Total, PED	28,955	28,955	28,955
Construction			
Site Preparation			
Equipment			
Other Construction			
Total, Construction	115,190	115,190	115,190
Total, TEC	144,145	144,145	144,145
Contingency, TEC			
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning			
Conceptual Design			
Start-Up			
Total, OPC except D&D	16,750	16,750	16,750
D&D			
D&D			
Total, D&D			
Total, OPC			
Total, TPC	160,895	160,895	160,895

## 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)	2QFY2008*
Expected Useful Life (number of years)	5 years
Expected Future Start of D&D of this capital asset (fiscal quarter)	TBD

\* Excludes Waste Transfer Line Phase II

### (Related Funding requirements)

(dollars in thousands)

Annual Costs		Life Cycle Costs	
Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate

Operations

Maintenance

Total, Operations & Maintenance

## 9. Required D&D Information

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

Name(s) and site location(s) of existing facility(s) to be replaced:

## 10. Acquisition Approach

The Interim Salt Processing System Modifications project is being executed in accordance with Washington Savannah River contract. All engineering equipment has been procured from negotiated fixed price subcontracts for design, fabrication and performance testing. Construction was performed by on site personnel.





# **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 Public Law 97–425, as amended, including the acquisition of real property or facility construction or expansion, [\$201,000,000] \$247,371,000, to remain available until expended. (*Energy and Water Development and Related Agencies Appropriations Act, 2008.*)



**Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Overview  
Appropriation Summary by Program**

( dollars in thousands )

	FY 2007 Appropriation	FY 2008 Original Appropriation	FY 2008 Adjustments <sup>a</sup>	FY 2008 Current Appropriation	FY 2009 Request
Defense Nuclear Waste Disposal Repository Program	346,500	201,000	-1,829	199,171	247,371
Total, Defense Nuclear Waste Disposal	346,500	201,000	-1,829	199,171	247,371

<sup>a</sup> Includes a rescission of \$1,829,000 in accordance with P.L. 110-161, the Consolidated Appropriations Act, 2008.

**Nuclear Waste Disposal and Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Overview  
Appropriation Summary by Program**

( dollars in thousands )

	FY 2007 Appropriation	FY 2008 Original Appropriation	FY 2008 Adjustments	FY 2008 Current Appropriation	FY 2009 Request
Nuclear Waste Disposal					
Repository Program	33,566	119,000	-6,405 <sup>a</sup>	112,595	172,388
Program Direction	65,640	70,000	4,674 <sup>b</sup>	74,674	74,983
Total, Nuclear Waste Disposal	99,206	189,000	-1731 <sup>c</sup>	187,269	247,371
Defense Nuclear Waste Disposal					
Repository Program	346,500	201,000	-1,829 <sup>d</sup>	199,171	247,371
Total, Defense Nuclear Waste Disposal	346,500	201,000	1,829	199,171	247,371
Total, Nuclear Waste Disposal and Defense Nuclear Waste Disposal	445,706	390,000	3,560	386,440	494,742

<sup>a</sup> Includes rescission applied to the Repository Program subaccount of the Nuclear Waste Disposal account (-\$1,093,940), in accordance with P.L. 110-161, the Consolidated Appropriations Act, 2008, and a reallocation (-\$5,311,000) as authorized by the Statement of Managers accompanying P.L. 110-161, to restore the Program Direction subaccount to the original request level.

<sup>b</sup> Includes rescission applied to the Program Direction subaccount of the Nuclear Waste Disposal account (-\$637,000), in accordance with P.L. 110-161, the Consolidated Appropriations Act, 2008, and a reallocation (+\$5,311,000) as authorized by the Statement of Managers accompanying P.L. 110-161, to restore the Program Direction subaccount to the original request level.

<sup>c</sup> Includes rescission applied to the Defense Nuclear Waste Disposal account (-\$1,829,000) in accordance with P.L. 110-161, the Consolidated Appropriations Act, 2008.

**Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

(dollars in thousands)

	FY 2007	FY 2008	FY 2009
Argonne National Laboratory			
Yucca Mountain Project	1,300	1,302	600
Program Management & Integration	350	---	---
Total, Argonne National Laboratory	1,650	1,302	600
Idaho National Engineering & Environmental Laboratory			
Yucca Mountain Project	200	200	200
Transportation	150	---	---
Total, Idaho National Engineering & Environmental Lab	350	200	200
Lawrence Berkeley National Laboratory			
Yucca Mountain Project	3,000	3,500	1,990
Program Management & Integration	1,388	---	---
Total, Lawrence Berkeley National Laboratory	4,388	3,500	1,990
Lawrence Livermore National Laboratory			
Yucca Mountain Project	1,388	1,350	1,350
Program Management & Integration	274	---	---
Total, Lawrence Livermore National Laboratory	1,662	1,350	1,350
Los Alamos National Laboratory			
Program Management & Integration	300	---	---
Nevada Test Site			
Yucca Mountain Project	12,090	10,243	---
Program Management & Integration	332	---	---
Total, Nevada Test Site	12,422	10,243	---
Oak Ridge National Laboratory			
Transportation	233	---	---
Program Management & Integration	1,150	---	---
Total, Oak Ridge National Laboratory	1,383	---	---
Pacific Northwest Laboratory			
Yucca Mountain Project	300	763	300
Program Management & Integration	753	---	---
Total, Pacific Northwest Laboratory	1,053	763	300
Sandia National Laboratory			
Yucca Mountain Project	120,000	19,924	49,900
Transportation	975	---	---
Program Management & Integration	274	---	---
Total, Sandia National Laboratory	121,249	19,924	49,900
Washington Headquarters			
Transportation Project	19,322	---	---
Program Management and Integration	30,141	---	---
Total, Washington Headquarters	49,463	---	---
Yucca Mountain Project Office			
Yucca Mountain Project	138,545	161,889	193,031
Transportation	14,035	---	---
Total, Yucca Mountain Project Office	152,580	161,889	193,031
Total, Defense Nuclear Waste Disposal	346,500	199,171	247,371

**Nuclear Waste Disposal**  
**Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

(dollars in thousands)			
	FY 2007	FY 2008	FY 2009
Argonne National Laboratory			
Yucca Mountain Project	---	---	700
Program Management and Integration	---	398	500
Total, Argonne National Laboratory	---	398	1,200
Lawrence Berkeley National Laboratory			
Yucca Mountain Project	---	---	500
Program Management and Integration	---	1,223	1,310
Total, Lawrence Berkeley National Laboratory	---	1,223	1,810
Lawrence Livermore National Laboratory			
Program Management and Integration	---	274	300
Los Alamos National Laboratory			
Program Management and Integration	---	149	200
Nevada Test Site			
Yucca Mountain Project	---	---	600
Program Management and Integration	---	972	1,000
Total, Nevada Test Site	---	972	1,600
NNSA Service Center			
Program Direction	917	917	917
Oak Ridge National Laboratory			
Program Management and Integration	210	243	300
Pacific Northwest Laboratory			
Yucca Mountain Project	---	---	500
Program Management and Integration	---	280	300
Total, Pacific Northwest Laboratory	---	280	800
Sandia National Laboratory			
Yucca Mountain Project	---	47,576	80,100
Program Management and Integration	75	228	300
Total, Sandia National Laboratory	75	47,804	80,400
Washington Headquarters			
Transportation Project	567	18,300	20,000
Program Management and Integration	11,409	22,645	22,790
Program Direction	31,222	42,775	44,066
Total, Washington Headquarters	43,198	83,720	86,856
Yucca Mountain Project Office			
Yucca Mountain Project	21,305	20,307	42,988
Program Direction	33,501	30,982	30,000
Total, Yucca Mountain Project Office	54,806	51,289	72,988
Total, Nuclear Waste Disposal	99,206	187,269	247,371



**Nuclear Waste Disposal and Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

(dollars in thousands)			
	FY 2007	FY 2008	FY 2009
Argonne National Laboratory			
Yucca Mountain Project	1,300	1,302	1,300
Program Management and Integration	350	398	500
Total, Argonne National Laboratory	1,650	1,700	1,800
Idaho National Laboratory			
Yucca Mountain Project	200	200	200
Transportation	150	---	---
Total, Idaho National Laboratory	350	200	200
Lawrence Berkeley National Laboratory			
Yucca Mountain Project	3,000	3,500	2,490
Program Management and Integration	1,388	1,223	1,310
Total, Lawrence Berkeley National Laboratory	4,388	4,723	3,800
Lawrence Livermore National Laboratory			
Yucca Mountain Project	1,388	1,350	1,350
Program Management and Integration	274	274	300
Total, Lawrence Livermore National Laboratory	1,662	1,624	1,650
Los Alamos National Laboratory			
Program Management and Integration	300	149	200
Total, Los Alamos National Laboratory	300	149	200
Nevada Test Site			
Yucca Mountain Project	12,090	10,243	600
Program Management and Integration	332	972	1,000
Total, Nevada Test Site	12,422	11,215	1,600
NNSA Service Center			
Program Direction	917	917	917
Total, NNSA Service Center	917	917	917
Oak Ridge National Laboratory			
Transportation	233	---	---
Program Management and Integration	1,360	243	300
Total, Oak Ridge National Laboratory	1,593	243	300

(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 2007	FY 2008	FY 2009
Pacific Northwest Laboratory			
Yucca Mountain Project	300	763	800
Program Management and Integration	753	280	300
Total, Pacific Northwest Laboratory	1,053	1,043	1,100
Sandia National Laboratory			
Yucca Mountain Project	120,000	67,500	130,000
Transportation	975	---	---
Program Management and Integration	349	228	300
Total, Sandia National Laboratory	121,324	67,728	130,300
Washington Headquarters			
Transportation System	19,889	18,300	20,000
Program Management and Integration	41,550	22,645	22,790
Program Direction	31,222	42,775	44,066
Total, Washington Headquarters	92,661	83,720	86,856
Yucca Mountain Project Office			
Yucca Mountain Project	159,850	182,196	236,019
Transportation	14,035	---	---
Program Direction	33,501	30,982	30,000
Total, Yucca Mountain Project Office	207,386	213,178	266,019
Total, Nuclear Waste Disposal and Defense Nuclear Waste Disposal	445,706	386,440	494,742

**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 “[Act]NWP”), including the acquisition of real property or facility construction or expansion, [\$189,000,000]\$247,371,000, to remain available until expended, and to be derived from the Nuclear Waste Fund: Provided, That of the funds made available in this Act for Nuclear Waste Disposal, 2.02 percent, but not to exceed \$5,000,000, shall be provided to 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]NWP: Provided further, That notwithstanding the lack of a written agreement with the State of Nevada under section 117(c) of the [Nuclear Waste Policy Act of 1982, Public Law 97–425, as amended] NWP, [not less than]0.4 percent, but not to exceed \$1,000,000, of the amounts provided shall be provided to Nye County, Nevada, for on-site oversight activities under section 117(d) of [that Act]the NWP: Provided further, That 3.64 percent, but not to exceed \$9,000,000, shall be provided [to]for the affected units of local government, as defined in the [Act]NWP, to conduct appropriate activities and participate in licensing activities: Provided further, That of [the \$9,000,000 provided]amounts provided for 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 units of local government[. This funding shall be provided to affected units of government, as defined in the Act,]: Provided further, That 0.2 percent, but not to exceed \$500,000, shall be provided to the Timbisha-Shoshone Tribe 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 NWP: Provided further, That notwithstanding section 116(c)(3) of the NWP, 4.6 percent, but not to exceed \$11,500,000 shall be provided to Nye County, Nevada, as payment equal to taxes under section 116(c)(3) of the NWP: 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 in this or any previous year under this heading: Provided further, That the funds for the State of Nevada shall be made available solely to the Nevada Division of Emergency Management by direct payment and units of local government by direct payment: Provided further, That within 90 days of the completion of each Federal fiscal year, the Nevada Division of Emergency Management and the Governor of the State of Nevada [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 [Act]NWP 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 [Act]NWP, 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].



**Nuclear Waste Disposal and Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Overview  
Appropriation Summary by Program**

( dollars in thousands )					
	FY 2007 Appropriation	FY 2008 Original Appropriation	FY 2008 Adjustments	FY 2008 Current Appropriation	FY 2009 Request
Nuclear Waste Disposal					
Repository Program	33,566	119,000	-6,405 <sup>a</sup>	112,595	172,388
Program Direction	65,640	70,000	4,674 <sup>b</sup>	74,674	74,983
Total, Nuclear Waste Disposal	99,206	189,000	-1731 <sup>c</sup>	187,269	247,371
Defense Nuclear Waste Disposal					
Repository Program	346,500	201,000	-1,829 <sup>d</sup>	199,171	247,371
Total, Defense Nuclear Waste Disposal	346,500	201,000	1,829	199,171	247,371
Total, Nuclear Waste Disposal and Defense Nuclear Waste Disposal	445,706	390,000	3,560	386,440	494,742

<sup>a</sup> Includes rescission applied to the Repository Program subaccount of the Nuclear Waste Disposal account (-\$1,093,940), in accordance with P.L. 110-161, the Consolidated Appropriations Act, 2008, and a reallocation (-\$5,311,000) as authorized by the Statement of Managers accompanying P.L. 110-161, to restore the Program Direction subaccount to the original request level.

<sup>b</sup> Includes rescission applied to the Program Direction subaccount of the Nuclear Waste Disposal account (-\$637,000), in accordance with P.L. 110-161, the Consolidated Appropriations Act, 2008, and a reallocation (+\$5,311,000) as authorized by the Statement of Managers accompanying P.L. 110-161, to restore the Program Direction subaccount to the original request level.

<sup>c</sup> Includes rescission applied to the Defense Nuclear Waste Disposal account (-\$1,829,000) in accordance with P.L. 110-161, the Consolidated Appropriations Act, 2008.

## **Preface**

The Department of Energy's (DOE) Office of Civilian Radioactive Waste Management Program (OCRWM) is funded from both Nuclear Waste Disposal and Defense Nuclear Waste Disposal appropriations. The overview narrative and detailed justifications for the entire program supported by both accounts are provided in the Nuclear Waste Disposal section of this budget request.

Within the Nuclear Waste Disposal Fund and Defense Nuclear Waste Disposal Fund, OCRWM has only one Program: Civilian Radioactive Waste Management. This is sub-divided into four budget categories: Yucca Mountain Project, Transportation, Program Management & Integration, and Program Direction. Program Direction is funded out of only the Nuclear Waste Disposal Fund.

The mission of the OCRWM program is critical to enhancing the national and economic security goals of the nation and is mandated by the Nuclear Waste Policy Act of 1982, as amended. The development of a geologic repository is necessary to protect the health, safety and environment of the United States. It also increases credibility and public confidence in nuclear energy allowing it to remain an important component of the country's array of energy options. The program is also charged with demonstrating progress in the cleanup of our defense sites and advances U.S. international nonproliferation goals, thereby enhancing national security objectives.

Since the 1950's, the international scientific community has generally endorsed geological disposal as the preferred means in disposing of nuclear waste. In FY 2002 the Administration and Congress approved Yucca Mountain for the development of the Nation's geologic disposal repository. The Yucca Mountain Repository will dispose of both commercial and defense Spent Nuclear Fuel (SNF) and High Level Radioactive Waste (HLW).

Over the last 50 years, the U.S. has benefited greatly from nuclear energy and the power of the atom. To ensure a strong and diversified energy mix to fuel our nation's economy nuclear power must continue to be an important component of that mix. Currently more than 56,000 metric tonnes of SNF is located at more than 120 aboveground sites in 39 States, and every year reactors in the United States produce approximately 2,000 metric tonnes more of spent fuel. In order to ensure the future viability of our nuclear generating capacity, the Nation needs a safe and secure, permanent, geologic repository for SNF and HLW at Yucca Mountain.

## **Mission**

The mission of OCRWM is to manage and dispose of SNF and HLW in a manner that protects public health, safety, and the environment; enhances national and energy security; and merits public confidence.

## **Benefits**

The Nation's commercial and defense SNF and HLW must be safely isolated to minimize the risk to human health and the environment. Disposition of these materials in a geologic repository is necessary to 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 consolidation of SNF and HLW currently located at more than 120 aboveground sites within 75 miles of over 160 million Americans and nearly every major waterway.

## Legislative Proposal

To ensure program success it is critical that the Administration's legislative proposal, the Nuclear Fuel Management and Disposal Act, be enacted to provide stability, clarity, and predictability to the Yucca Mountain repository project. The initial operating capability date of 2017 was determined in July 2006 to be the "best-achievable schedule," was predicated upon enactment of this legislation, and was developed without regard to budget constraints. Given the reduced Congressional appropriations in FY 2007 and FY 2008, there is an immediate and strong need to address the funding of the repository construction program now for FY 2009 and beyond. Funding reform is an essential part of the legislative proposal. Without funding reform, development of any credible schedule for the program is not possible.

The Nuclear Waste Fund currently has about \$20.5 billion generated from mandatory fees specifically for financing repository construction and operations. To date the bulk of these funds have not been used. Unless changes are made, either legislatively or administratively, to allow the use of these funds for their intended purpose, repository construction and operation will not be possible at the historical funding levels of this program.

### The Situation:

- Resurgence of the nuclear industry is a high priority of the Administration: The industry and most impartial observers believe the resolution of the spent nuclear fuel issue is critical to that resurgence. Progress on the Yucca Mountain Program and building the repository is the cornerstone to demonstrating to the industry and the investment community that this issue has a path to resolution.
- The Yucca Mountain Program is at a critical juncture: DOE is about to deliver the application for a construction authorization to the NRC as required by the Nuclear Waste Policy Act. It has also developed and delivered to Congress a revised program baseline schedule and cost estimate showing that the best achievable schedule for opening the repository was in 2017. The funding profiles needed to achieve that schedule are significantly higher than the historical funding levels of the Program. The required funding per the new baseline is:

(\$ millions)	FY09	FY10	FY11	FY12	FY13	Total
Required Funding	495	1,140	1,409	1,589	1,967	6,747

- The Nuclear Waste Policy Act provided a funding mechanism to fund this program without competing with other DOE programs: The federal government currently collects approximately \$750 million per year from the nuclear power generators through a 1-mil per-kilowatt-hour fee. The Act also established the Nuclear Waste Fund (NWF) to hold those receipts until needed to construct the repository. The Fund currently has a balance of \$20.5 billion and generates interest at about 5.3% per year, which is credited to the fund balance. The Secretary of Energy can change the fee, if it is found to be either excessive or inadequate.
- The existing funding mechanism has been rendered ineffective by subsequent legislation: Due to Gramm-Rudman-Hollings in 1985, the NWF was made subject to the government-wide budget sequestration process and subsequent amendments placed appropriations from the NWF under discretionary spending caps. As a result, the revenues received are treated as mandatory receipts, and the appropriations for the program are treated as discretionary expenditures. Mandatory receipts cannot be used to offset discretionary expenditures. In addition, the annual receipts and

the interest of the NWF corpus are used as line item offsets for the DOE budget. This has the effect that any expenditure from the NWF must be scored as deficit spending, even though DOE is holding a ladder portfolio of Treasury bonds and notes. To adequately fund the program, DOE must receive the full \$750 million per year from the NWF fee plus additional annually appropriated budget authority from the corpus of, and the interest earned on, the NWF.

- Further delay in resolving this funding issue has significant financial implications for the federal government: The Nuclear Waste Policy Act required all nuclear plant operators to sign a contract with DOE for the removal of their spent nuclear fuel and to pay the above-described fee to the federal government. Those contracts stipulated that DOE would begin accepting and removing fuel in 1998. Federal courts have ruled in lawsuits that the contracts are valid and that the damages incurred by the contract holders cannot be paid from the NWF. Some lawsuits have been settled and 55 are still in litigation. DOE estimates that if the repository was to open in 2017, total taxpayer liability would be approximately \$7 billion. This number is estimated to increase by an average of \$0.5 billion for each year of further delay. Settlement payments to date have totaled \$342 million from the U.S. Treasury's Judgment Fund (through November 2007).
- The opportunity exists now to fix permanently this issue with the submittal of the license application, the new program baseline, and the strong bi-partisan Congressional support for the program demonstrated by the June 2007 House of Representatives vote of 351 to 80 against cutting Yucca Mountain Project funding.

The following section provides detail on many essential tasks to be performed in FY 2009 with the budget request of \$494.7 million.

### **License Application and Defense**

The Department still intends to submit the License Application (LA) in 2008 to the Nuclear Regulatory Commission (NRC). Following a three to six month acceptance review period by the NRC, it is anticipated that the NRC will docket the LA for review. Given a favorable review, FY 2009 will be the first year of a multi-year license defense process.

Once the NRC accepts the LA for review, the Yucca Mountain Project enters the licensing phase. The NRC will begin their review of the LA, and shortly thereafter, the Atomic Safety and Licensing Board hearing process will commence. DOE will then begin responding to issues raised by potential interveners and questions from NRC staff. Potential interveners will identify issues to be litigated during the hearing process, and DOE will have 25 days to oppose these contentions to limit the scope of the licensing hearing. Simultaneously, NRC staff will begin their review and will prepare Requests for Additional Information (RAIs). This NRC licensing proceeding will require significant DOE effort to:

- Respond to potentially multiple rounds of technical RAIs;
- Provide technical, scientific, licensing, and legal support of the NRC hearing process;
- Provide technical, scientific, and legal support for court challenges;
- Maintain and update the LA and supporting documents as issues resulting from contentions or RAIs are resolved; and
- Assist NRC in their review and acceptance of the Supplemental Environmental Impact Statement (SEIS).

## **Repository Design**

Repository design activities during FY 2009 will support license defense including responding to Requests for Additional Information (RAIs) from the NRC, design for mechanical handling equipment, the Initial Handling Facility, Canister Receipt and Closure Facility, Receipt Facility, Aging System, Wet Handling Facility, Balance of Plant facilities, and Subsurface facilities. These activities will simultaneously support the license defense and further development of the Repository design.

## **Site Infrastructure**

With the reduced FY 2008 appropriation, site activities will be reduced to a minimum to maintain ongoing scientific data collection. Remaining site operations will continue to meet all applicable safety, security, and other regulatory requirements.

## **Transportation**

Nevada Rail Project:

The Final Rail Alignment EIS for a 320-mile long rail line will be complete by June 2008, along with submittal of an application for a Right-of-Way to the Bureau of Land Management. Conceptual design and engineering studies, including characterization of the rail bed required for construction of bridges and other rail line features, were deferred from the original FY 2008 schedule due to budget constraints. A portion of this work, to include characterization of soils under major structures, conceptual designs for those structures, and development of detailed contour maps, will be pursued in FY 2009; however, this level of design support is not sufficient to complete the performance baseline for the Nevada Rail Project as planned. These design activities do advance key elements of that project to minimize the negative schedule variance for developing the Nevada Rail Line. FY 2009 activities also include the completion of cultural resource studies, threatened and endangered species reviews, and detailed contour mapping needed to finalize the horizontal layout of the rail line. This will allow continued pursuit of land acquisition and completion of a Right-of-Way application to the Bureau of Land Management for eventual construction of the Nevada Rail Line.

National Transportation Project:

The Department will continue collaborative development of key policies that will affect development and operations of the national transportation system. These policies include developing the criteria and methodology for route selection in collaboration with the railroads, states and tribes. A revised draft policy for implementing Section 180(c) of the NWPA was issued for comment and will be finalized with input from stakeholders. Policies affecting en route inspections, security interactions, and for developing the casks and rolling stock assets will be addressed in FY 2009 and will be captured in the National Transportation Plan as part of the transportation system development. Designs for a security escort rail car will be developed in collaboration with the Naval Nuclear Propulsion Program and additional benchmarking of best practices in transportation operations will be completed. ORCWM will work with emergency responder organizations and members of the public to address transportation issues they are concerned with, including perceptions of the risk associated with spent fuel shipments. This will be done through continued support of key stakeholder organizations including state regional groups, the Commercial Vehicle Safety Alliance, and legislative councils engaged in transportation planning. Requirements for all aspects of the transportation system will be updated and incorporated into the project planning baselines. FY 2009 activities also include support for the sabotage consequence research program for transport casks with members of an international working group. These activities were deferred from FY 2008 due to funding constraints. Planned support for the NRC's Package Performance Study will be deferred at this level of funding.

## **Program Direction and Management**

Significant investment in staffing, training, and qualification will be made in the OCRWM federal workforce. Federal staffing will be increased by about 50 employees to allow for OCRWM to design, license, and manage the construction and operation of the Yucca Mountain Project with safety, quality, and cost effectiveness. This is required to prepare OCRWM to be a Nuclear Regulatory Commission license holder and operator of the repository. Significant investment will be made also in Information Technology to upgrade and protect the \$11 billion government investment in scientific data, currently housed in obsolete systems, which is needed to defend the License Application.

## **Summary of FY 2009 Activities**

FY 2009 represents a critical period for DOE and the Yucca Mountain Project. The work planned in FY 2009 is essential to lay the foundation for a successful repository program by moving forward with the repository design and a robust defense of the License Application (LA). The FY 2009 budget request is adequate to execute the minimum set of critical activities needed to continue to make forward progress on the program.

The FY 2009 budget request of \$494.7 million sets the program on the path to meeting its mission and goals in support of the development of a repository including:

- A robust defense of the License Application (LA) planned to be submitted in 2008;
- Progression of preliminary designs for facilities required for the receipt of spent nuclear fuel (SNF) and high-level radioactive waste (HLW).
- Continued essential interactions with state, local, and tribal governments needed to support national transportation planning;
- Completion of efforts to finalize the horizontal layout and to complete Right-of-Way application for the Nevada Rail Line;
- Designing, staffing, and training the OCRWM organization so that it has the skills and culture to design, license, and manage the construction and operation of the Yucca Mountain Project with safety, quality, and cost effectiveness;
- Addressing the Federal Government's mounting liability associated with unmet contractual obligations to move SNF from commercial nuclear plant sites; and
- Planning for a compliant and well-integrated safeguards and security, safety, and emergency management program for the disposal, transportation, and management of SNF and HLW.

## **Strategic Themes and Goals and GPRA Unit Program Goals**

The Department's Strategic Plan identifies five Strategic Themes (one each for nuclear, energy, science, management, and environmental aspects of the mission) plus 16 Strategic Goals that tie to the Strategic Themes. The Nuclear Waste Disposal Fund and the Defense Nuclear Waste Disposal Fund appropriations support the following goal:

Strategic Theme 4, Environmental Responsibility: Protecting the environment by providing a responsible resolution to the environmental legacy of nuclear weapons production.

Strategic Goal 4.2, Managing the Legacy: Manage the Department's post-closure environmental responsibilities and ensure the future protection of human health and the environment.

The program funded within the Nuclear Waste Disposal Fund and Defense Nuclear Waste Disposal Fund appropriations have one GPRA Unit Program Goal that contributes to the Strategic Goals in the "goal cascade." This goal is Strategic Goal 4.2, Managing the Legacy.

GPRA Unit Program Goal 4.2.54.00, Nuclear Waste Disposal: The Yucca Mountain repository is licensed, constructed, and operating; the National and Nevada waste transportation systems are in place and activities required to support receipt and emplacement of SNF and HLW at the repository are proceeding on schedule.

### Contribution to Strategic Goal

The FY 2009 request of \$494.7 million provides for the Civilian Radioactive Waste Management Program, Yucca Mountain Subprogram to contribute to Strategic Goal 4.2 by providing a robust defense of the License Application to NRC for a repository construction authorization and subsequently constructing and operating the repository. The Transportation subprogram contributes to Strategic Goal 4.2 by developing the transportation network, equipment, and facilities that are required for shipment of waste to the repository.

### Funding by Strategic and GPRA Unit Program Goal

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Strategic Goal 4.2, Managing the Legacy			
GPRA Unit Program Goal 4.2.54.00, Nuclear Waste Disposal	380,066	311,766	419,759
Total, Strategic Goal 4.2	380,066	311,766	419,759
Subtotal, Strategic Goal 4.2 (Nuclear Waste Disposal and Defense Nuclear Waste Disposal)	380,066	311,766	419,759
All Other			
Program Direction	65,640	74,674	74,983
Subtotal, All Other			
Total, Strategic Goal 4.2 (Nuclear Waste Disposal and Defense Nuclear Waste Disposal)	445,706	386,440	494,742

FY 2004 Results	FY 2005 Results	FY 2006 Results	FY 2007 Targets	FY 2008 Targets	FY 2009 Targets
Completed Draft License Application (LA). (MET TARGET)	Completed draft LA documents incorporating improvements in safety analysis and design. (MET TARGET)	Completed conceptual design and other relevant documents to update Conceptual Design (CD) - 1 for a canisterized fuel receipt based system and request CD-1 approval from the acquisition executive. (MET TARGET)	Complete 5 LA sections at 100%; 20 at 90%; and 6 at 50%. Signed memo and availability of data. (PARTIALLY MET TARGET)	Demonstrate progress toward completion of a high-quality License Application (LA) consistent with the established schedule and content requirements.	
		Provided specifications for developing TAD canister. (MET TARGET)			
	Completed processing of documents and emails (dated January 1, 2005 or earlier) to be ready for LSN. (PARTIALLY MET TARGET)		Complete processing of documents and emails (dated June 30, 2007 or earlier) to be ready for LSN. Signed status reports. (MET TARGET)		
Approve the Transportation Project Plan for internal use by the Director of the National Transportation Program. (MET TARGET)	Submit the preliminary draft EIS, prepared by the EIS contractor, for DOE internal review. (MET TARGET)	Publish the Nevada Transportation Draft Rail Alignment Environmental Impact Statement. (NOT MET)	Publish the Nevada Transportation Draft Rail Alignment Environmental Impact Statement. Supporting documentation: Federal Register notice or equivalent and publicly available document. (MET TARGET)	Publish a Rail Alignment Environment Impact Statement (EIS) for public comment.	
		Issue Revision 4 of the Transportation System Requirements Document. (MET IN FY 2007)			
Project management costs for the OCRWM management and operating contractor reduced to 15% of the total budget. (MET TARGET)	Reduced the ratio of total administrative overhead costs to total program costs by 10 percent from the FY 2005 baseline ratio. (MET TARGET)	Reduced the ratio of total administrative overhead costs to total program costs by 10 percent from the FY 2006 baseline ratio. (MET TARGET)	Maintain ratio of total administrative overhead costs to total program costs of 22%. (MET TARGET)	Maintain total administrative overhead costs in relation to total program costs of less than 22%.	Maintain ratio of total administrative overhead costs to total program costs of 22%.



## **Means and Strategies**

OCRWM will use various means and strategies to achieve its GPRA Unit Program Goals; however, various external factors inhibit the ability to achieve these goals.

OCRWM will implement the following strategies to achieve its GPRA Unit Program Goals. Each of these strategic objectives has detailed plans associated with their execution. Objective #1 is expected to be achieved in 2008.

OCRWM has four strategic objectives in place, which are:

1. Submit a high-quality and docketable license application to the NRC;
2. Design, staff, and train the OCRWM organization so that it has the skills and culture to design, license, and manage the construction and operation of the Yucca Mountain Project with safety, quality, and cost effectiveness;
3. Address the Federal Government's mounting liability associated with unmet contractual obligations to move spent fuel from nuclear plant sites; and
4. Develop and begin implementation of a comprehensive national spent fuel transportation plan that accommodates state, local, and tribal concerns and input to the greatest extent practicable.

OCRWM will implement the following means to achieve its GPRA Unit Program Goals:

1. Devote significant FY 2009 funding to Objective #2 as its achievement is a pre-requisite for the Department to be granted a license by the NRC to construct and operate the repository.

The external factor singularly inhibiting OCRWM from achieving its goals is not receiving adequate funding in accordance with the projected budget authority cash flow supplied to Congress in 2007. If those funding streams are not achieved, the program will not have the means to execute its mission or to set an opening date for the repository.

## **Validation and Verification**

The validation and verification of the Program's activities are subject to continuing review by the Congress, the Government Accountability Office, the DOE Inspector General, the NRC, the EPA, the Nuclear Waste Technical Review Board, and the DOE Office of Engineering and Construction Management (OECM). OECM will perform external independent reviews and independent cost estimates prior to critical decisions. The Yucca Mountain Project and Transportation Project Managers conduct monthly reviews of cost, schedule and work progress. The quality of the Program's work is subject to a NRC-approved quality assurance program. Finally, the Program conducts an annual internal controls review under the Federal Managers' Financial Integrity Act. The Program's performance measures and associated quarterly milestones are reviewed and approved by the OCRWM Director and then entered into and tracked in the Department's performance measurement database (JOULE). Final performance results are audited and reported both in OCRWM's Annual Report to Congress and the Department's Agency Financial Report (AFR).

By continuing to strengthen line accountability for self-identification of issues, DOE recognizes the importance of a good Corrective Action Plan (CAP) and is working to fully integrate the CAP in daily work activities. Performance measures on quality improvements are being established and monitored, and a Management Review committee of senior DOE and contractor management meets weekly to verify the timeliness and effectiveness of corrective actions. All of these actions are targeted at improving project performance to that consistent with a stronger nuclear culture.

Independent Auditor's Report: The Program's financial statements are audited annually by an independent public accounting firm and have received an unqualified ("clean") auditors' opinion every year since inception. KPMG LLP audits the OCRWM balance sheets, and the related statements of net costs, changes in net position, budgetary resources and financing. The objective of the audit is to express an opinion on the fair presentation of these financial statements. The auditor has concluded that OCRWM's financial statements each year are presented fairly, in all material respects, and are in conformity with accounting principles generally accepted in the United States of America.

### **Program Assessment and Rating Tool (PART)**

The Department implemented a tool to evaluate selected programs. PART was developed by the Office of Management and Budget (OMB) to provide a standardized way to assess the effectiveness of the Federal Government's portfolio of programs. The structured framework of the PART provides a means through which programs can assess their activities differently than through traditional reviews.

The current focus is to establish outcome- and output-oriented goals, the successful completion of which will lead to benefits to the public, such as increased national security and energy security, and improved environmental conditions. DOE has incorporated feedback from OMB into the FY 2009 Budget Request, and the Department will take the necessary steps to continue to improve performance.

The refocusing of OCRWM's Repository Program (Yucca Mountain Project) was supported by the results of the PART review. OCRWM received an overall rating of "adequate" in the 2007 assessment.

In the PART review, OMB gave very high scores (83) and (80) respectively in the Purpose section and the Strategic Planning section. These scores are attributed to the use of standard management practices. The program did not receive full marks in the Purpose section because of persistent challenges due to the manner in which the program is funded; and in the Strategic Planning section because OMB determined that the number of independent evaluations of the program were insufficient. In the Management Section, OMB gave a fairly high score of (73) and attributed negative scores to the inconsistent collection and use of performance information to improve performance, and the lack of a certified Earned Value Management System (EVMS). In the Program Results and Accountability section OMB gave the program a low score of (33) and attributed the score to inadequate progress in achieving long-term goals, improved effectiveness and efficiencies in achieving program goals each year, and not achieving program goals within budgeted costs and established schedules.

To address the deficiencies identified, the program's Management and Operating (M&O) contractor is currently working on their EVMS certification process with the DOE Office of Engineering and Construction Management (OECM). OECM completed the initial evaluation in November 2006, and the M&O contractor has developed corrective action plans in response to the evaluation findings and has completed many actions to address the OECM recommendations. To address the lack of program progress which is predominantly due to inadequate funding, the Administration recently proposed legislation reclassifying mandatory receipts as discretionary offsetting collections, among other aspects of the legislative proposal. This would allow program appropriations from the Nuclear Waste Fund to increase up to the amount of utility fees collected without being scored against discretionary budget caps. Regarding inadequate independent assessment, the Director sponsored three independent assessments that were completed in late 2007. In addition, to further ensure the program's budget requests are based upon rigorous capital planning, the program will prepare a Capital Asset Plan and Business Case Summary (OMB Exhibit 300) including at least three viable alternatives in addition to the current baseline, i.e. the status quo.

## 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

	(dollars in thousands)		
	FY 2007	FY 2008	FY 2009
Yucca Mountain	6,052	6,052	7,998
Total, Direct-Funded Maintenance and Repair	6,052	6,052	7,998



**Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

(dollars in thousands)			
	FY 2007	FY 2008	FY 2009
Argonne National Laboratory			
Yucca Mountain Project	---	---	700
Program Management and Integration	---	398	500
Total, Argonne National Laboratory	---	398	1,200
Lawrence Berkeley National Laboratory			
Yucca Mountain Project	---	---	500
Program Management and Integration	---	1,223	1,310
Total, Lawrence Berkeley National Laboratory	---	1,223	1,810
Lawrence Livermore National Laboratory			
Program Management and Integration	---	274	300
Los Alamos National Laboratory			
Program Management and Integration	---	149	200
Nevada Test Site			
Yucca Mountain Project	---	---	600
Program Management and Integration	---	972	1,000
Total, Nevada Test Site	---	972	1,600
NNSA Service Center			
Program Direction	917	917	917
Oak Ridge National Laboratory			
Program Management and Integration	210	243	300
Pacific Northwest Laboratory			
Yucca Mountain Project	---	---	500
Program Management and Integration	---	280	300
Total, Pacific Northwest Laboratory	---	280	800
Sandia National Laboratory			
Yucca Mountain Project	---	47,576	80,100
Program Management and Integration	75	228	300
Total, Sandia National Laboratory	75	47,804	80,400
Washington Headquarters			
Transportation Project	567	18,300	20,000
Program Management and Integration	11,409	22,645	22,790
Program Direction	31,222	42,775	44,066
Total, Washington Headquarters	43,198	83,720	86,856
Yucca Mountain Project Office			
Yucca Mountain Project	21,305	20,307	42,988
Program Direction	33,501	30,982	30,000
Total, Yucca Mountain Project Office	54,806	51,289	72,988
Total, Nuclear Waste Disposal	99,206	187,269	247,371

**Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

(dollars in thousands)

	FY 2007	FY 2008	FY 2009
Argonne National Laboratory			
Yucca Mountain Project	1,300	1,302	600
Program Management & Integration	350	---	---
Total, Argonne National Laboratory	1,650	1,302	600
Idaho National Engineering & Environmental Laboratory			
Yucca Mountain Project	200	200	200
Transportation	150	---	---
Total, Idaho National Engineering & Environmental Lab	350	200	200
Lawrence Berkeley National Laboratory			
Yucca Mountain Project	3,000	3,500	1,990
Program Management & Integration	1,388	---	---
Total, Lawrence Berkeley National Laboratory	4,388	3,500	1,990
Lawrence Livermore National Laboratory			
Yucca Mountain Project	1,388	1,350	1,350
Program Management & Integration	274	---	---
Total, Lawrence Livermore National Laboratory	1,662	1,350	1,350
Los Alamos National Laboratory			
Program Management & Integration	300	---	---
Nevada Test Site			
Yucca Mountain Project	12,090	10,243	---
Program Management & Integration	332	---	---
Total, Nevada Test Site	12,422	10,243	---
Oak Ridge National Laboratory			
Transportation	233	---	---
Program Management & Integration	1,150	---	---
Total, Oak Ridge National Laboratory	1,383	---	---
Pacific Northwest Laboratory			
Yucca Mountain Project	300	763	300
Program Management & Integration	753	---	---
Total, Pacific Northwest Laboratory	1,053	763	300
Sandia National Laboratory			
Yucca Mountain Project	120,000	19,924	49,900
Transportation	975	---	---
Program Management & Integration	274	---	---
Total, Sandia National Laboratory	121,249	19,924	49,900
Washington Headquarters			
Transportation Project	19,322	---	---
Program Management and Integration	30,141	---	---
Total, Washington Headquarters	49,463	---	---
Yucca Mountain Project Office			
Yucca Mountain Project	138,545	161,889	193,031
Transportation	14,035	---	---
Total, Yucca Mountain Project Office	152,580	161,889	193,031
Total, Defense Nuclear Waste Disposal	346,500	199,171	247,371

**Nuclear Waste Disposal and Defense Nuclear Waste Disposal  
Office of Civilian Radioactive Waste Management (OCRWM)**

**Funding by Site by Program**

(dollars in thousands)			
	FY 2007	FY 2008	FY 2009
Argonne National Laboratory			
Yucca Mountain Project	1,300	1,302	1,300
Program Management and Integration	350	398	500
Total, Argonne National Laboratory	1,650	1,700	1,800
Idaho National Laboratory			
Yucca Mountain Project	200	200	200
Transportation	150	---	---
Total, Idaho National Laboratory	350	200	200
Lawrence Berkeley National Laboratory			
Yucca Mountain Project	3,000	3,500	2,490
Program Management and Integration	1,388	1,223	1,310
Total, Lawrence Berkeley National Laboratory	4,388	4,723	3,800
Lawrence Livermore National Laboratory			
Yucca Mountain Project	1,388	1,350	1,350
Program Management and Integration	274	274	300
Total, Lawrence Livermore National Laboratory	1,662	1,624	1,650
Los Alamos National Laboratory			
Program Management and Integration	300	149	200
Total, Los Alamos National Laboratory	300	149	200
Nevada Test Site			
Yucca Mountain Project	12,090	10,243	600
Program Management and Integration	332	972	1,000
Total, Nevada Test Site	12,422	11,215	1,600
NNSA Service Center			
Program Direction	917	917	917
Total, NNSA Service Center	917	917	917
Oak Ridge National Laboratory			
Transportation	233	---	---
Program Management and Integration	1,360	243	300
Total, Oak Ridge National Laboratory	1,593	243	300

(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 2007	FY 2008	FY 2009
Pacific Northwest Laboratory			
Yucca Mountain Project	300	763	800
Program Management and Integration	753	280	300
Total, Pacific Northwest Laboratory	1,053	1,043	1,100
Sandia National Laboratory			
Yucca Mountain Project	120,000	67,500	130,000
Transportation	975	---	---
Program Management and Integration	349	228	300
Total, Sandia National Laboratory	121,324	67,728	130,300
Washington Headquarters			
Transportation System	19,889	18,300	20,000
Program Management and Integration	41,550	22,645	22,790
Program Direction	31,222	42,775	44,066
Total, Washington Headquarters	92,661	83,720	86,856
Yucca Mountain Project Office			
Yucca Mountain Project	159,850	182,196	236,019
Transportation	14,035	---	---
Program Direction	33,501	30,982	30,000
Total, Yucca Mountain Project Office	207,386	213,178	266,019
Total, Nuclear Waste Disposal and Defense Nuclear Waste Disposal	445,706	386,440	494,742

**Major Changes or Shifts by Site**

In FY 2009, there are no major changes or shifts in the OCRWM-related mission at any sites



## **Site Description**

### **Argonne National Laboratory**

Argonne National Laboratory-East (ANL-E) is a research laboratory occupying a 700-acre tract of land located approximately 22 miles southwest of downtown Chicago in DuPage County, Illinois. It is a multi-disciplinary research and development laboratory that conducts basic and applied research to support the development of energy-related technologies.

For the Yucca Mountain Project, ANL-E conducts waste form testing and modeling for the preclosure and post-closure safety analysis. ANL-E supports the abstraction activities needed to conduct the Total System Performance Assessment (TSPA) in support of the License Application (LA) defense. These testing activities support performance confirmation and LA defense activities. Appropriate personnel will be available to support the license defense process.

### **Idaho National Laboratory**

The Idaho National Laboratory (INL) is a multi-disciplinary research and development laboratory with a primary mission to ensure the nation's energy security with safe, competitive and sustainable energy systems and unique national and homeland security capabilities. INL works with partners to discover new science and develop technologies that underpin the nation's nuclear and renewable energy, national security and environmental missions

For the Yucca Mountain Project, INL provides design and engineering for the waste package closure system. INL also performs major tasks for support of the License Application including software engineering and modeling for the Total System Performance Assessment, corrosion testing of alloys for the waste package and the Transportation, Aging and Disposal (TAD) canisters, and reviews of water infiltration models.

### **Lawrence Berkeley National Laboratory**

The Lawrence Berkeley National Laboratory (LBNL) is a multi-disciplinary research and development laboratory focused on national defense. The 200-acre LBNL site is located adjacent to the University of California in Berkeley, California.

For the Yucca Mountain Project, LBNL conducts unsaturated zone flow and transport modeling, thermal hydrologic modeling activities, geophysics testing, and supports drift-scale testing for the preclosure and post-closure safety analysis. LBNL also performs the seepage tests in the exploratory studies facility alcoves and niches. LBNL supports the abstraction activities needed to conduct the TSPA in support of the LA defense. These testing activities support performance confirmation and LA defense activities. Appropriate personnel will be available to support the license defense process.

### **Lawrence Livermore National Laboratory**

The Lawrence Livermore National Laboratory (LLNL) is a multi-disciplinary research and development laboratory focused on national defense, which has two locations in northern California. The Livermore Site is approximately one square mile and is located 40 miles east of San Francisco, near the City of Livermore.

For the Yucca Mountain Project, LLNL conducts experiments and modeling activities needed for the repository design and to predict responses of the engineered and natural barrier systems to the heat

generated by radioactive waste, waste package/drip shield, waste form material testing, and modeling for the preclosure and post-closure safety analysis. The experiments include the drift-scale tests in the exploratory studies facility and the heater tests in the cross drift. It also supports the abstraction activities needed to conduct the TSPA in support of the LA defense. These testing activities support performance confirmation and LA defense activities. Appropriate personnel will be available to support the license defense process.

### **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 on the Yucca Mountain Project. SNL conducts 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. The laboratory conducts geoengineering and rock mechanics studies, and backfill analyses. It also supports the development of the TSPA in support of the LA defense. These testing activities support performance confirmation and LA defense activities. Appropriate personnel will be available to support the license defense process.

### **Los Alamos National Laboratory**

The Los Alamos National Laboratory (LANL) encompasses over 43 square miles in northern New Mexico and is divided into 47 technical areas that are used for scientific sites, experimental areas, waste disposal locations, roads and utilities, and safety and security buffers. Major programs include applied research in nuclear and conventional weapons development, nuclear fission and fusion, nuclear safeguards and security, and environmental and energy research.

For the Yucca Mountain Project, LANL conducts geochemistry, mineralogy, colloid transport studies, laboratory and field-scale transport tests, and develops radionuclide transport models for the unsaturated and saturated zone ground waters at the site for the preclosure and post-closure analysis. It collaborates with the United States Geologic Survey on isotopic and groundwater chemistry investigations needed for transport models. It also supports the abstraction activities needed to conduct the TSPA in support of the LA defense. These testing activities support performance confirmation and LA defense activities. Appropriate personnel will be available to support the license defense process.

### **Nevada Test Site**

The Nevada Test Site (NTS) is located 65 miles northwest of the city of Las Vegas and encompasses 1,573 square miles, an area roughly the size of Rhode Island. The activities are widespread, geographically diverse, and are the result of 928 historical aboveground and belowground nuclear tests conducted at the NTS.

For the Yucca Mountain Project, NTS provides common site support such as: logistics, fire protection, security, emergency medical services, Emergency Response, roads/grounds maintenance, environmental operations, vehicle/construction equipment maintenance, facility maintenance, bus transportation, janitorial and refuse services, and power usage.

NTS also provides Quality Affecting instrument calibration services and Material Test Lab services to support Test Coordination Office/Natural System test activities for preclosure and post-closure analysis.

## **NNSA Service Center**

In support of the Yucca Mountain 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 Yucca Mountain Project.

## **Yucca Mountain Project in Nevada**

The Yucca Mountain Project in Las Vegas, Nevada has the primary responsibility for preparing and submitting an LA to the United States Nuclear Regulatory Commission (NRC) for construction of the repository. As the future owner and licensee of the repository, the Department of Energy develops and implements policies and strategies for the work to be completed and oversees the management and operating contractor and the United States Geological Survey in performing this work. The Yucca Mountain Project manages the contracts for the M&O contractor and the support services contractors for work at Yucca Mountain.

**License Application:** Includes managing the effort for the preparation of an LA for Construction Authorization (CA), including the Licensing Support Network, the docketing and review of the application by NRC, preparation and support for the licensing hearings, and approval for CA. It also includes LA Amendments after CA, submission of the LA Update for License to Receive and Possess Waste, review and processing, and terminates with the approval by NRC to receive and possess waste. It includes regulatory issue resolution, interactions with the NRC and management of regulatory commitments and licensing action items by DOE to NRC.

**Repository Facilities Design:** Comprises the management of all of the engineering efforts to provide the Surface, Subsurface, Engineered Barriers and Offsite Utilities facilities that make up the Yucca Mountain Repository.

**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 includes writing, updating and supporting the development of the safety analyses related portions of the LA and Safety Analysis Report, and subsequent updates, as needed.

**Site Operations:** Includes Site Management Integration, Site Engineering, Site Construction, Site Maintenance and Operations. Activities include field procurement, project controls, procedure integration, engineering, construction, operations and maintenance for Area 25 facilities at North Portal/ESF Pad, South Portal, Busted Butte, Central Support Area, and outlying areas

**Technical Alternatives:** As part of technical alternatives, it includes development of alternative approaches to the current baseline, which includes developing alternative approaches to improve the efficiency of repository operations, to reduce the life-cycle costs, and to enhance the schedule for waste emplacement.

**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 Yucca Mountain Project. It also includes Yucca Mountain Project support services.

### **Oak Ridge Operations Office**

The Oak Ridge Reservation encompasses about 37,000 acres in east Tennessee and is comprised of three facilities: the East Tennessee Technology Park; the Oak Ridge National Laboratory; and the Y-12 Plant.

### **Oak Ridge National Laboratory**

The Oak Ridge National Laboratory (ORNL) encompasses about 3,300 acres and has historically supported both the defense production operations and civilian energy research effort. ORNL currently conducts applied and basic research in energy technologies and the physical and life sciences.

For the Yucca Mountain Project, ORNL provides support in analyzing commercial reactor criticality data, radiochemical assays and uncanistered fuel design for the preclosure and post-closure analysis. The laboratory also provides technical support for the disposal criticality topical report, thermal/neutronics model and criticality analysis process report.

### **Pacific Northwest National Laboratory**

The Pacific Northwest National Laboratory (PNNL) is located on the Department's Hanford Site in Southeastern Washington State. The 1,465 square kilometer (560 square mile) site is bounded on the north by over 80 kilometers (50 miles) of the Columbia River.

For the Yucca Mountain Project, the PNNL develops, documents, and summarizes the technical basis for prediction of waste-form degradation and radionuclide mobilization within the waste package under expected Yucca Mountain environment for the preclosure and post-closure analysis.

## Repository Program

### Funding Profile by Subprogram

( dollars in thousands )

	FY 2007 Appropriation	FY 2008 Original Appropriation	FY 2008 Adjustments	FY 2008 Current Appropriation	FY 2009 Request
Repository Program					
Yucca Mountain Project	298,128	275,288	-8,234 <sup>a</sup>	267,054	372,759
Transportation	35,282	18,300	---	18,300	20,000
Program Management & Integration	46,656	26,412	---	26,412	27,000
Subtotal, Repository Program	380,066	320,000	-8,234 <sup>a</sup>	311,766	419,759
Program Direction	64,640	70,000	4,674 <sup>b</sup>	74,674	74,983
Total, Repository Program	444,706	390,000	-3,560	386,440	494,742

<sup>a</sup> Includes rescission applied to the Yucca Mountain Project subprogram within the Repository Program subaccount (-\$1,093,940 from the Nuclear Waste Disposal account; and -\$1,829,000 from the Defense Nuclear Waste Disposal account), in accordance with P.L. 110-161, the Consolidated Appropriations Act, 2008, and a reallocation (-\$5,311,000) as authorized by the Statement of Managers accompanying P.L. 110-161, to restore the Program Direction subaccount to the original request level.

<sup>b</sup> Includes rescission applied to the Program Direction subaccount of the Nuclear Waste Disposal account (-\$637,000), in accordance with P.L. 110-161, the Consolidated Appropriations Act, 2008, and a reallocation (+\$5,311,000) as authorized by the Statement of Managers accompanying P.L. 110-161, to restore the Program Direction subaccount to the original request level.



## Yucca Mountain Project

### Funding Schedule by Activity

(dollars in thousands)			
	FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
Yucca Mountain Project			
License	62,826	60,000	82,759
Safety Analyses and Assessments	93,908	63,000	73,000
Waste Package	9,168	9,054	27,000
Canister Handling Facility	11,207	---	---
Receipt & Canister Receipt/Closure Facility	---	9,000	---
Canister Handling Facilities (RF/CRCF)	---	---	17,000
Fuel Handling Facility	8,370	---	---
Initial and Wet Handling Facilities	18,962	9,000	---
Fuel Handling Facilities (IHF/WHF)	---	---	17,000
Subsurface Repository	5,372	---	---
Balance of Plant Infrastructure	12,585	54,000	83,000
Initial Infrastructure Readiness	25,961	18,000	---
Site Infrastructure Readiness	---	---	23,000
Project Support	49,769	43,000	50,000
Second Repository Report	---	2,000	---
Total, Yucca Mountain Project	298,128	267,054	372,759

### Description

The mission of the Yucca Mountain Project 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.

### Yucca Mountain Project

The Yucca Mountain Site was approved for development as a repository on July 23, 2002. To achieve its mission the Department and the Office of Civilian Radioactive Waste Management (OCRWM) will submit to the Nuclear Regulatory Commission (NRC) a License Application (LA) to receive a Construction Authorization for the Department of Energy to build and operate a repository at the Yucca Mountain Site.

In FY 2009, OCRWM and DOE will be participating in the review process and licensing proceedings with the NRC in defense of our LA. In addition to these LA defenses activities, OCRWM will continue work on progression of the preliminary engineering designs for fuel handling and canister handling facilities required for the receipt of SNF and HLW for emplacement in the repository; preclosure and post-closure safety analyses and assessments; and providing financial assistance to the State of Nevada and Affected Units of Local Government.

FY 2009 represents a crucial period for DOE and for the regulatory process for the Yucca Mountain repository. A significant portion of the work in FY 2009 is required to support the defense of a high-quality and docketable LA, culminating in the eventual construction authority for the Yucca Mountain repository. The Department's activities are premised on meeting NRC requirements and obtaining any necessary regulatory approvals.

After submittal and docketing of the LA, the Department will be required to respond to technical questions and Requests for Additional Information (RAIs) from the NRC in a timely fashion. Also, the Department will be required to support any depositions, interrogatories, discovery and response to discovery, and preparation for and appearance at the evidentiary hearings that are likely to begin in FY 2009 following completion of the NRC review of the LA and issuance of its Safety Evaluation Report on that application.

It is expected there will be multiple NRC Licensing Boards established for process, multiple interveners, and several hundred contentions files by parties and potential parties to the proceeding. The Department must respond in a timely manner to each potential contention during the pre-hearing process so that the hearings focus on a limited set of issues. The NRC is expected to issue a final decision on a construction authorization for the repository in three to four years after submittal of the LA. To support this schedule, DOE must aggressively prepare and present its defense of the LA. In addition, with submittal of the LA, DOE will be subject to additional regulatory requirements as an applicant, including NRC reporting requirements and inspections by NRC staff.

The geologic repository will be developed through phases that incrementally increase nuclear materials handling capabilities. The objective is to develop the initial operational capabilities for the geologic repository to receive and process SNF and HLW at a modest rate. Processing capabilities then will be expanded to receive and emplace at an increased rate the entire 70,000 metric tonnes of heavy metal (MTHM) currently authorized by law for the first geologic repository.

In accordance with NRC regulations, the design as described in the LA is for the complete system. Both preliminary and complete designs will be developed for the complete system.

The Yucca Mountain Project is divided into stages that incrementally increase nuclear material handling capabilities. This approach divides this large project into manageable segments while facilitating a competitive contracting strategy and providing the best value to the taxpayers. The first stage, referred to as the Initial Operating Capability is comprised of the Fuel Handling Facilities and the Canister Handling Facilities and is designed to provide those facilities and functions necessary for DOE to receive and possess waste. The Fuel Handling Facilities are the Initial Handling Facility (IHF) and the Wet Handling Facility (WHF). The Canister Handling Facilities are the Canister Receipt and Closure Facility (CRCF) and the Receipt Facility (RF). The capabilities that need to be available to initiate receipt and demonstrate the capability to emplace waste include the ability to: close waste packages; demonstrate the capability to emplace waste packages in the geologic repository; provide emergency and medical management; and provide safeguards and security. This requires that associated utilities and infrastructure be provided to support large-scale construction and operations. Assets developed under this phase are critical for the Department to initiate operations. The main facilities included in this phase are the IHF, WHF, and CRCF plus emplacement drift in the underground repository.



The second stage, referred to as the Full Operating Capability, is comprised of the Receipt Facility and two more CRCFs. In this stage, OCRWM will add new facilities and functions to those developed during the first stage and provides additional throughput capabilities for handling SNF and HLW. Also included in this phase are the emplacement drifts of the geologic repository.

The breakout of activities in this budget element fall within the following categories:

- License activities complimentary to the licensing process and the LA defense;
- Activities for design and construction of facilities and fabrication of equipment – Fuel Handling Facilities (IHF/WHF), Canister Handling Facilities (CRCF/RF), Waste Package, Site Infrastructure Readiness, and Balance of Plant Infrastructure;
- Safety Analyses and Assessment activities for preclosure and post-closure analyses; and
- Project Support activities for project management and financial assistance.

The program continues to implement an operational strategy based on a canisterized approach for commercial spent fuel handling. This approach centers on the development of canisters that are suitable for the transportation, aging and disposal of spent nuclear fuel, which will comprise 90% of the expected waste material for disposal. The use of Transportation, Aging and Disposal (TAD) canisters reduces fuel-handling operations, permitting smaller, less complex surface facilities at the repository site that allow operations to be conducted in a cleaner, simplified, and safe manner by minimizing radiation exposure issues.

Since the canisterized approach is an integral part of the repository operational concept, completing design work for the Fuel Handling Facilities (IHF/WHF) and the Canister Handling Facilities (CRCF/RF) is fundamental for the defense of the license application. The IHF is an open bay transfer facility that will be the first operational facility at the Yucca Mountain Project. The Receipt Facility is a multi-level concrete structure that will receive transportation casks containing TAD canisters and Dual Purpose canisters and transfer the canisters to either shielded transfer casks or aging overpacks. The CRCF is a multi-level concrete structure with the capability to receive and load canistered SNF and HLW into waste packages and subsequently close the waste packages for emplacement in the geologic repository. The WHF is a multi-level concrete and steel frame structure with the capability to receive and load uncanistered fuel into TAD canisters for subsequent transfer to CRCF for closure in waste packages and subsequent emplacement in the geologic repository, or transfer to an Aging Overpack for aging. These facilities are required to implement the canisterized approach for safely handling SNF and HLW at the Yucca Mountain geologic repository and are important facilities for initial operating capability.

## Detailed Justification

(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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### License

62,826

60,000

82,759

#### License Application:

The License Application (LA) will be submitted to the Nuclear Regulatory Commission (NRC) in 2008 and is expected to be docketed by NRC within three to six months. This will begin a three year period in which there will be an intensive effort to defend the LA leading up to the NRC authorization for repository construction. The principal activities that will occur during the licensing defense phase include: continued progression of the critical path repository design; continued progression of science activities; support on the NRC staff's technical review of the LA; support of the NRC administrative hearing process; support of anticipated litigation; Safety Analysis Report upkeep and configuration control; and consistency management of all the documents, external correspondence, and external communications supporting the above activities.

Preparation of an LA amendment to be submitted subsequent to docketing of the LA by NRC. This amendment will incorporate responses to Requests for Additional Information (RAIs) and updates from on going project technical and analytical work. Develop the draft version of the Emergency Plan. Develop draft technical specifications by incorporating information from design and analysis documents as they evolve and mature.

#### License Coordination:

Provide support to the integration function for the preparation of LA updates including planning, scheduling, and reporting and issue resolution. Provide coordination support for the Supplemental Environmental Impact Statement (SEIS), Safeguards and Security and Emergency planning efforts as they relate to the LA.

#### NRC Interactions:

Manage NRC/DOE licensing and technical issues. Track status of issues and develop strategies and positions to support NRC closure of licensing technical issues and agreements. Manage technical meetings with NRC, ACNW, and 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 statute, and track issues/questions, commitments, and action items.

#### Licensing Support:

Comply with NRC regulation by processing documentary material related to the licensing of a geologic repository and make material available on the NRC Licensing Support Network (LSN) internet portal. Support document review to affirm legal, deliberative, and litigation privilege. Comply with applicable regulations, guidelines, and policies for records management.

#### License Defense:

Provide outside legal services to support the development and defense of the LA. Support NRC docketing acceptance review by promptly and thoroughly responding to questions and RAIs. Support the NRC post-docketing technical review with multiple rounds of several hundred anticipated RAIs.

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Support the adjudicatory hearing process immediately after docketing. Identify likely topics for interrogatories and contentions and prepare anticipatory response plans and responses or draft testimony.

License Defense Safeguards and Security, Emergency Management, and Safety:

In FY 2009 the initial NRC and DOE required safeguards and security documents will be developed in more detail as the design of the repository and the surface facilities is finalized. These documents include the Nuclear Materials Control and Accountability Plan, Physical Protection Plan, Training and Qualification Plan, safeguards contingency plan and the Standard Practices and Procedures Plan. Initial Emergency Management and Response Plans will also be developed in more detail.

**Safety Analyses and Assessments** **93,908** **63,000** **73,000**

Science and technology work previously done under this budget element is reflected now under Program Management and Integration within the “Science and Technology and International” budget element in an effort to match the OCRWM work breakdown structure (WBS). In FY 2008 this science and technology work of bore hole drilling in Death Valley included the \$1,600,000 Congressionally Directed Project for Inyo County, California.

This work area includes all activities related to the performance confirmation program and preclosure and post-closure safety analysis on the Yucca Mountain project such as: collection of data; conducting system and subsystem analyses; periodic reporting of testing and analysis results to the NRC; development of the safety analysis; answering Requests for Additional Information (RAIs); providing subsequent updates of the application, as needed; and oversight and coordination of Safety Analysis and Assessment activities including planning, monitoring, and reporting functions.

Total System Performance Assessment and Integration:

Support of the initial license application submittal including developing responses to Requests for Additional Information (RAIs) on the technical aspects of the TSPA. Conduct total system performance assessment analyses of new information generated as a result of ongoing testing (e.g., performance confirmation program or long-term tests) and any NRC specified analyses on an as needed basis. Conduct needed analyses to support the detailed design development, including evaluations of operating conditions and specifications. Update the total system performance assessment to support the license application update for receive and possess.

Preclosure Safety Analysis and Performance Confirmation:

Preclosure safety analysis (PCSA) and preclosure criticality analysis activities in support of the license application include the following:

- Address Requests for Additional Information (RAIs) from the NRC.
- Continuation of cask/canister reliability calculations including analysis of TAD canister, aging overpack and transportation cask designs.
- Conclusion of Pacific Northwest National Laboratory (PNNL) Fuel in Air testing program.
- Complete supporting analysis for radionuclide retention factors.

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- Update the Nuclear Safety Design Basis (NSDB).
- Investigate event sequences that were truncated due to screening arguments.
- Update the three criticality safety calculations per latest TAD and DOE SNF canister designs.
- Perform feasibility and cost/benefit analyses on the facility designs and operations for crediting fuel burn-up in the preclosure criticality safety analysis.

Additional preclosure safety analyses need to be completed for Critical Decision 2 (CD-2) to support the required hazard analysis reports for. More detailed preclosure safety analyses must be performed, particularly in the areas of evaluation of the detailed design development against existing PCSA analyses, and update Materials and Dimensions document based on detailed design development.

#### Post-Closure Testing:

Post LA Test Coordination: FY 2009 activities include field test data management; maintaining the drilling cores collected during and after site characterization in a controlled environment; field testing design; and drilling and excavation. These activities support the performance confirmation data collection and collection of data requested by NRC during the licensing process.

Long Term Testing: FY 2009 activities include testing of waste package and drip shield materials to augment the data used to establish corrosion rates; testing of spent fuel to establish technical bases for burn-up credit; and other elective testing to reduce uncertainties in performance.

Performance Confirmation Testing: FY 2009 activities include development and implementation of test plans and activities that are part of the Performance Confirmation Program required by 10 CFR 63 subpart F.

#### Technical Data Management:

Upgrade the software and hardware used to maintain the technical data management system. Populate and maintain 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. Manage and ensure the integrity and traceability of the technical data and Program records that have been compiled to support license application and associated design and analyses activities for Yucca Mountain.

#### Post Closure Safety Analysis:

Support the initial license application submittal and respond to Requests for Additional Information (RAIs) on sub-system models to support license application. Evaluate results from performance confirmation testing activities. Conduct analyses as needed to support detailed design development, 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 NRC Requests for Additional Information (RAIs).

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**Waste Package** **9,168** **9,054** **27,000**

Engineering activities in support of license defense include the following:

- Address Requests for Additional Information (RAIs) from the NRC.

Additional design needs to be completed for Critical Decision 2 (CD-2) to support the baseline cost estimate, as well as completion of the additional design and hazard analysis reports required for CD-2. Detailed design must be performed, particularly in the areas of detailed fabrication and assembly drawings for all waste package configurations, as well as design and procurement specifications for the Transport and Emplacement Vehicle.

**Canister Handling Facility** **11,207** **--** **--**

The work previously done under this budget element is reflected now under the budget element “Canister Handling Facilities (RF/CRCF).”

**Receipt Facility and  
Canister Receipt/Closure Facility** **--** **9,000** **--**

The work previously done under this budget element is reflected now under the budget element “Canister Handling Facilities (RF/CRCF).”

**Canister Handling Facilities (RF/CRCF)** **--** **--** **17,000**

The work previously done under budget elements “Canister Handling Facility” and “Receipt Facility and Canister Receipt and Closure Facilities” is reflected under this budget element.

Engineering activities in support of license defense include the following:

- Address Requests for Additional Information (RAIs) from the NRC.
- Progression of the design in areas such as structural Tier 2 seismic analysis, aircraft crash impact analysis, Important to Safety (ITS) controls and interlocks, mechanical handling, confinement ventilation, “as low as reasonably achievable” (ALARA) exposures, and event sequence termination and recovery.
- Incorporation of final geotechnical data into the design.
- Equipment design development in several areas such as the canister transfer machine, the waste package transfer trolley, the cask transfer trolley, and the site transporter.

Additional design needs to be completed for Critical Decision 2 (CD-2) to support the baseline cost estimate, as well as completion of the additional design and hazard analysis reports required for CD-2. Detailed design must be performed, particularly in the areas of structural design, procurement of designs for the mechanical handling and related equipment, and routing and support of heating, ventilation, and air conditioning (HVAC) ductwork and electrical raceway.

**Fuel Handling Facility** **8,370** **--** **--**

The work previously done under this budget element is reflected now under the budget element “Fuel Handling Facilities (IHF/WHF).”

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**Initial and Wet Handling Facilities Designs**

**18,962**

**9,000**

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The work previously done under this budget element is reflected now under the budget element “Fuel Handling Facilities (IHF/WHF).”

**Fuel Handling Facilities (IHF/WHF)**

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**17,000**

The work previously done under budget elements “Fuel Handling Facility” and “Initial and Wet Handling Facility Designs” is reflected under this budget element.

Engineering activities in support of license defense include the following:

- Address Requests for Additional Information (RAIs) from the NRC.
- Progression of the design in areas such as structural Tier 2 seismic analysis, aircraft crash impact analysis, ITS controls and interlocks, mechanical handling, confinement ventilation, “as low as reasonably achievable” (ALARA) exposures, and event sequence termination and recovery.
- Incorporation of final geotechnical data into the design.

Additional design needs to be completed for Critical Decision 2 (CD-2) to support the baseline cost estimate as well as completion of the additional design and hazard analysis reports required for CD-2. Detailed design must be performed, particularly in the areas of structural design, procurement of designs for the mechanical handling and related equipment, and routing and support of HVAC ductwork and electrical raceway.

**Subsurface Repository**

**5,372**

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The work previously done under this budget element was moved under the budget element “Balance of Plant Infrastructure” in the FY 2008 budget request.

**Balance of Plant Infrastructure**

**12,585**

**54,000**

**83,000**

Balance of plant infrastructure includes the non-nuclear facilities, utilities, and functions that support the receipt and handling of spent nuclear fuel and high-level waste; the maintenance of both surface and subsurface facilities and utilities; and upgrading or replacing systems, structures and/or facilities to address code and safety compliance. The balance of plant infrastructure element includes two major areas: balance of plant design, including subsurface and aging pad design; and site operations and maintenance.

Balance of Plant Infrastructure Safeguards and Security, Emergency Management, and Safety:

In FY 2009 the design of the surface and subsurface facilities associated with the Safeguards and Security and Emergency Management functions will progress to a level that will enable the necessary security assessments and response plans to be fully developed.

Balance of Plant Design:

Engineering activities supporting license defense for aging pad system include the following:

- Address Requests for Additional Information (RAIs) from the NRC.

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- Progression of the design in areas such as structural Tier 2 seismic analysis, aircraft crash impact analysis, mechanical handling, “as low as reasonably achievable” (ALARA) exposures, and event sequence termination and recovery.
- Equipment design development in areas such as the aging cask transporter
- Incorporation of final geotechnical data into the design

Additional design needs to be completed for Critical Decision 2 (CD-2) to support the baseline cost estimate, as well as completion of the additional design and hazard analysis reports required for CD-2. Detailed design must be performed, particularly in the area of structural design.

Engineering activities in support of license defense regarding the subsurface facilities include the following:

- Address Requests for Additional Information (RAIs) from the NRC.
- Progression of the design in areas such as thermal basis, emplacement drift structural steel invert, subsurface ground support system, and subsurface layout and compliance with scientific offsets.

Additional design needs to be completed for CD-2 to support the baseline cost estimate , as well as completion of the additional design and hazard analysis reports required for CD-2. Detailed design must be performed, particularly in the areas of underground design details, and exhaust shafts and pads, and design requirements to support long lead contracts and procurements.

#### Site Operations and Maintenance:

The Ten-Year Site Plan identifies the minimum needs for upgrades planned for FY 2007 to FY 2012. The current site facilities (both surface and subsurface) and the associated utilities were constructed to support site characterization and performance confirmation testing. These facilities and are required to facilitate scientific and engineering access to ongoing performance confirmation testing.

FY 2009 activities include minimal operations at the site to maintain its caretaker status. Minimal safety and security monitoring activities along with maintaining environmental permits will be performed. Maintenance of the infrastructure will be performed on a breakdown basis.

Further, FY 2009 work includes providing minimal engineering design for the Exploratory Studies Facility systems to support field activities; maintaining configuration control of all site critical systems (i.e., systems required to maintain a safe workplace and mitigate hazards for personnel on site); providing designs and operational data to ensure all site operational systems (i.e., temporary systems) are maintained and remain in operating order; and providing requirements for decommissioning and removal of the non-operational systems.

FY 2009 activities also include providing drilling, excavation, construction, and set-up support for performance confirmation testing and field activities and development of a restart plan for underground systems, if required for license defense.

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FY 2009 work also includes implementing applicable requirements to ensure safe, uniform, and reliable operations; maintaining and enforcing site-related procedures and policies; providing personnel to operate and control facility systems and equipment; maintaining a regulatory compliant hazardous material transportation program; monitoring, directing, and controlling work activities; operating the motor pool; and calibrating scientific equipment.

**Initial Infrastructure Readiness** **25,961** **18,000** **--**

The work previously done under this budget element is reflected now under the budget element "Site Infrastructure Readiness."

**Site Infrastructure Readiness** **--** **--** **23,000**

The work previously done under budget element "Initial Infrastructure Readiness" is reflected now under this budget element.

In order to assure safe and reliable operations of the systems and structures at the Exploratory Studies Facility tunnel, Yucca Mountain Project field facilities, and common site utilities, safety upgrade corrective actions, improvements and facility and infrastructure replacements are necessary. Several safety upgrades, improvement and facility replacements were completed in FY 2007 and FY 2008. Work on others will be deferred until FY 2010, as necessary.

Also included is construction of a small demonstration project for design and construction of underground tunnels and alcoves. Once operational, lessons learned will be used for enhancing design, engineering, construction, and operations related to the repository. All activities are subject to the National Environmental Policy Act and appropriate regulatory approvals.

#### Site Safety Upgrades:

The Ten-Year Site Plan identifies the minimum needs for upgrades to site systems and utilities and is planned for FY 2007 to FY 2012. Site safety upgrades will be deferred until FY 2010, as necessary.

#### Off-Site Utilities:

Current site activity relies on an aging power system operated by the Nevada Test Site, which is unreliable for current operations. Further, use of this system incurs excessive costs (greater than 21 cents per kilowatt-hour). To provide a code-compliant system that is available to meet current needs, will require the design and construction of approximately 17 miles of 138kV transmission lines, a new substation, and an approximately 1.5-mile power transmission connection to the South Portal of the Exploratory Studies Facility. An additional 138kV/230kV line will be necessary to provide for adequate required power redundancy necessary to support repository construction and operating. Off-site utilities activities will be deferred until FY 2010, as necessary.

#### Access Road:

The current access road leading to the Exploratory Studies Facility is of declining condition increasing safety risk to workers and visitors. This road was constructed approximately 40 years ago and does not conform to state/national standards. Access road improvements will be deferred until FY 2010.



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**Exploratory Studies Facility Infrastructure Readiness:**

Work in this area includes the eventual design and construction of facilities and utilities necessary to support current site mission. Activities deferred from FY 2008 due to budgets constraints, including the design and construction of temporary security badging and access control facilities at Gate 500 to support current site mission, are deferred again until FY 2010, as necessary.

**Engineering and Safety Demonstration Project:**

The demonstration project will consist of initial planning, engineering, and start-up of construction for underground tunnels and alcoves in Area 25 to be used for enhancing design, engineering, construction, and operations issues related to the repository development. FY 2009 work includes the initial planning and concept development of this facility.

<b>Project Support</b>	<b>49,679</b>	<b>43,000</b>	<b>50,000</b>
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**Project Control:**

Provide baseline management, planning, scheduling, and cost estimating support to the OCRWM. Maintain and operate the OCRWM earned value management system and provide reports for both DOE and contractor use. Provide estimating support for annual work plans, engineering estimates, value engineering, and life cycle cost estimates. Maintain the OCRWM risk management system and perform risk assessments. Project Control includes monitoring project activities to ensure compliance with applicable statutes, regulations, and DOE orders to ensure that Project objectives are met; and monitoring project activities to ensure that they are accomplished in accordance with approved work scopes, authorized budgets and scheduled milestones.

**Systems Engineering:**

Successful application of systems engineering ensures that the performance of a geologic repository is balanced against the construction and operating costs of the repository. Value engineering and design evaluation studies and analyses will be done to optimize design, construction, and operating costs. Systems Engineering also includes studies to mitigate project risks and independent validation of software.

**Compliance Management:**

This element includes work related to compliance management, development and maintenance of configuration management system, identification and implementation of process improvements. Development and maintenance of requirement document hierarchy identifying higher-level project requirements and allocating them to the implementing project management oversight organizations for implementing a corrective action program that captures corrective action commitments.

**Information Management:**

This element encompasses the provision of services to the ORCWM community in compliance with federal regulations and the requirements of the work that is being performed under the auspices of the Quality Assurance Requirements Description document. This work includes records management, document development and publication, document management, procedures development and management and business process modeling. Manage and ensure the integrity and traceability of the

(dollars in thousands)

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technical data and Program records that have been compiled to support license application and associated design and analyses activities for Yucca Mountain.

**Environmental, Safety and Health:**

This budget element encompasses the work required to provide environmental, safety, and health support necessary to protect project personnel and the environment throughout the design and pre-construction phase of the Project. This includes: acquiring materials, developing and implementing a training and qualification program and employing necessary personnel to support emergency medical and mine rescue; providing assistance and oversight to maintain and operate the support systems necessary to provide a safe environment for project personnel and public tours; developing safety and health programs ensuring full compliance with safety and health regulations and applicable requirements; environmental monitoring; maintaining compliance with federal and state environmental requirements including air quality, water quantity and quality, hazardous materials and waste management, cultural resources, Native American interactions, biological resources, land access, and support for land withdrawal; conducting air quality monitoring/modeling and preparing environmental permit applications necessary to support geologic repository construction; developing radiological control and monitoring program; implement resource management (e.g., cultural, biological, land management) activities as identified in the Resource Management Strategy document; working to implement the Emergency Management Strategy Document, including developing the Emergency Preparedness Plan and associated procedures, and supporting DOE in interface of the Emergency Preparedness Plan; developing an Emergency Operations Center; and updating the emergency management plan and conducting necessary emergency management drills and exercises.

**National Environmental Policy Act:**

Provide overall technical and procedural expertise to support compliance with National Environmental Policy Act. The Nuclear Waste Policy Act of 1982 requires the NRC to adopt, to the extent practicable, the repository Final Environmental Impact Statement (EIS) during the licensing process. Complete evaluation of geologic repository program changes affecting environmental impacts as described in the Final EIS associated baseline and provide support to NRC hearings, if any, regarding adoption of the Final EIS.

**General Project Services:**

Provide administrative services including development, production, distribution, archival storage of technical products and records, and managing the transportation fleet used by the project.

**Procurement:**

Perform work associated with procuring materials, equipment and subcontractor services. Includes maintenance and training of the material acquisition schedule, procurement plans, and execution schedules for pre-qualifying and selecting potential subcontractors/vendors. All work will be in accordance with the requirements in the DOE acquisition regulations and federal acquisition regulations.

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**Communications/Intergovernmental Relations:**

Provide communications and outreach programs, including maintenance of the OCRWM external website, continue operation of public tours, exhibits, and speakers bureau programs, continue the toll-free 800 number, continue to maintain and administer public information center(s) in Nevada. Develop fact sheets and other program literature as required. In FY 2009 the program will also maintain an active intergovernmental program with the affected units of government in Nevada and any affected Indian Tribes; maintain active liaison with other federal, state, local governments and Indian Tribes; and maintain an active relationship with national and local media and international media, both print and electronic.

**Lease Scoring:**

Maintain current leases on office space occupied by the management and operating contractor. These leases are negotiated to carry the least lease termination liability.

**Financial Assistance:**

Provide financial assistance to the State of Nevada, Affected Units of Local Government (AULG) and Payments-Equal-to-Taxes (PETT) consistent with the Nuclear Waste Policy Act of 1982. Continue regular and frequent intergovernmental interactions with the State of Nevada, the Affected Units of Local Government, Timbisha Shoshone Tribe, and, as appropriate, with those tribes with traditional ties to cultural resources in the Yucca Mountain region. The FY 2009 funding profile is suggested as follows.

<u>Funding Purpose</u>	<u>Projected Amount (\$M)</u>
Oversight §116(c), State of Nevada	5.0
Oversight §116(c), AULG	9.0
Oversight §118(b), Timbisha Shoshone	0.5
On-Site Representative §117(d), Nye County	1.0
PETT, State of Nevada	0.9
PETT, Nye County	11.5
PETT, Clark County	0.1
TOTAL	28.0

**Repository Integration:**

Formulate project strategies, policies, plans, and procedures; the management and resolution of complex issues involving internal and external organizations; identification of risks and development of mitigation strategies; and directing and supervising the development and integration of technical and non-technical products and documents. Manage support for interactions with regulatory agencies and other stakeholders, including development and implementation of regulatory compliance policies, strategies plans and activities. Perform work related to the documentation of the business lines and development of the regulatory processes necessary for a nuclear culture. Perform identification, allocation, and maintenance of requirements and implementation of a document hierarchy and its

(dollars in thousands)

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supporting infrastructure; business process modeling; implementation of an integrated corrective action and lessons learned program; development and implementation of an integrated assessment program; and definition and development of an integrated management system that will provide verifiable and repeatable work processes for activities subsequent to LA. This effort also includes the planning efforts and documentation associated with the development of the strategies, plans, policies, and procedures associated with the future Disposal Operations activities.

**Second Repository Report**

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**2,000**

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No funding is requested for this activity in FY 2009. Funding provided in FY 2008 is sufficient to complete this report as mandated by the Nuclear Waste Policy Act amendments.

**Total, Yucca Mountain Project**

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**298,128**

**267,054**

**372,759**

## Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$000)
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### **License**

+22,759

The increase is due to the importance of defending the License Application to the NRC during FY 2009, and provides funds for a robust defense of the license application; timely responses to NRC Requests for Additional Information and other NRC interactions; and the development of more detailed safeguards and security documents as required by the NRC.

### **Safety Analyses and Assessments**

+10,000

The increase is due to the importance of defending the License Application to the NRC during FY 2009, and provides funds for technical support to respond to NRC Requests for Additional Information (RAIs); technical experts for depositions and interrogatories; demonstrated compliance with NRC requirement for performance confirmation to validate license application safety case; and additional analyses required to resolve contentions admitted to the licensing proceedings by the NRC.

### **Waste Package**

+17,946

The increase is due to the importance of defending the License Application to the NRC during FY 2009, and provides funds for design work to support the defense of the license application.

### **Receipt Facility and Canister Receipt/Closure Facilities**

-9,000

The decrease is due to the work previously done under this budget element being reflected now under the budget element "Canister Handling Facilities (RF/CRCF)."

### **Canister Handling Facilities (RF/CRCF)**

+17,000

The increase is due to the work previously done under budget element "Receipt Facility and Canister Receipt/Closure Facilities" being reflected now under this budget element. The net increase of \$8,000,000 is due to the importance of defending the License Application to the NRC during FY 2009, and overall funds progress on preliminary design work to support the docketing and defense of the license application, and incorporation of final geotechnical data into the design.

### **Initial and Wet Handling Facilities Designs**

-9,000

The decrease is due to the work previously done under this budget element being reflected now under the budget element "Fuel Handling Facilities (IHF/WHF)."

### **Fuel Handling Facilities (IHF/WHF)**

+17,000

The increase is due to the work previously done under budget element “Initial Handling Facility (IHF) and Wet Handling Facility (WHF) Designs” being reflected now under this budget element. The net increase of \$8,000,000 is due to the importance of defending the License Application to the NRC during FY 2009, and overall funds progress on preliminary design work to support the docketing and defense of the license application, and incorporation of final geotechnical data into the design.

### **Balance of Plant Infrastructure**

+29,000

The increase is due to the importance of defending the License Application to the NRC during FY 2009, and funds minimal progress on designs for the aging pad system and subsurface facilities, particularly to enable the necessary security assessments and response plans to be developed; support for performance confirmation testing required for license defense; as well as minimal operations at the site to maintain its caretaker status including minimal safety and security monitoring activities and maintaining environmental permits.

### **Initial Infrastructure Readiness**

-18,000

The decrease is due to the work previously done under this budget element being reflected now under the budget element “Site Infrastructure Readiness.”

### **Site Infrastructure Readiness**

+23,000

The increase is due to the work previously done under budget element “Initial Infrastructure Readiness” being reflected now under this budget element. The net increase of \$5,000,000 is due to the importance of defending the License Application to the NRC during FY 2009, and, overall, funds the initial planning and concept development of an engineering and safety demonstration project facility to be used for enhancing design, engineering, construction, and operations issues related to the repository development. FY 2009 work includes the initial planning and concept development of this facility.

### **Project Support**

+7,000

The increase is due to the importance of defending the License Application to the NRC during FY 2009, and funds management support enabling the design, technical and scientific programs supporting the docketing and defense of the license application; information and records management; environmental, safety and health; maintaining expertise to support compliance with the NEPA; providing communications and intergovernmental relations; and Payment equal to taxes (PETT) and oversight funding to the State of Nevada and Affected Units of Local Government commensurate with overall program funding.

FY 2009 vs. FY 2008 (\$000)
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**Second Repository Report**

The decrease is due to the funding for this program in FY 2008 being sufficient to complete the report as mandated by the Nuclear Waste Policy Act amendments.

-2,000

**Total Funding Change, Yucca Mountain Project**

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+105,705





## Transportation

### Funding Schedule by Activity

	(dollars in thousands)		
	FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
Transportation			
National Transportation			
Cask Systems	350	---	---
Rail Car Development	690	---	---
Rolling Stock	---	---	1,200
Support Facilities	854	---	---
Nat'l Transportation Support Facilities	---	---	300
Intitutional Planning, Policy and Analysis	1,245	150	---
Stakeholder Relations	4,135	3,000	---
180(c) Grants	457	850	---
Nat'l Transportation Institutional	---	---	4,200
Operations System Development	923	---	---
Transportation Planning and Analysis	525	---	---
Nat'l Transportation Operations	---	---	3,750
Corporate Management	1,254	1,000	---
Nat'l Transportation Management	---	---	550
Total National Transportation	10,433	5,000	10,000
Nevada Transportation			
Nevada Rail	18,249	6,300	4,500
National Environmental Policy Act (NEPA)	6,600	7,000	---
Nevada Rail Envir. Impact Statement (EIS)	---	---	500
Design/EIS Suppt. Field Invest. & Analysis	---	---	5,000
Total Nevada Transportation	24,849	13,300	10,000
Total Transportation	35,282	18,300	20,000

## **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 the repository. 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 is collaborating with stakeholders and interested parties to develop this transportation system in support of the OCRWM mission.

The Department must design, develop, test, and operate a transportation system capable of shipping 70,000 metric tonnes of heavy metal (MTHM) of SNF and HLW from across the Nation to the repository at Yucca Mountain. Prior to the first shipment, the hardware has to be tested along with the safety, security, emergency response, and communication systems. This pre-operational testing aligns with recommendations from the National Research Council report, "Going the Distance, The Safe Transport of Spent Nuclear Fuel and High-Level Radioactive Waste in the United States." The full scope of transportation system development includes:

- Designing and constructing a rail line in Nevada to support rail shipments from across the country to the repository at Yucca Mountain;
- Designing, obtaining NRC certification, and procuring 130 to 150 transportation casks to support planned shipment rates and to protect the communities through which spent fuel will be transported;
- Designing, testing, and producing 120 rail cars that meet the Association of American Railroad's Standard S-2043 for shipment of spent nuclear fuel and high level radioactive waste;
- Designing the facilities to maintain the casks, the railroad and the rail cars in compliance with requirements;
- Collaboratively developing and testing the communication, tracking, security, and emergency response infrastructure with affected stakeholders;
- Collaboratively developing the criteria and methodology for selecting shipment routes. Conducting demonstrations and exercises along selected routes to train emergency responders and to enhance public confidence; and
- Supporting research on the consequences of sabotage events and the integrity of casks with the Nuclear Regulatory Commission and international working group partners.

### National Transportation

In FY 2009, under the Rolling Stock activity the program will continue design and testing of an escort car with Naval Reactors. Within the Operations Development activity the program will complete requirements documents for transportation operations; complete the transportation technical baseline; and initiate systems engineering studies to ensure that operations plans are informed by technical data regarding rail and highway infrastructure near utility sites. Activities mandated by the Nuclear Waste Policy Act Section 180(c) will include: planning for emergency preparedness training and technical assistance to States and tribes; and developing implementation plans for a pilot program and demonstration projects. Collaboration with States, Tribes and industry stakeholders will continue in FY 2009. Actual testing of the 180(c) grant program and full-scale demonstration projects with local emergency responder organizations will be deferred at this funding level.

### Nevada Transportation

Nevada Transportation will pursue land acquisition and rights of way for the Nevada Rail Line. In addition, initial detailed characterization and preliminary design work for structures along the Nevada Rail Line will begin. Plans to mitigate impacts from rail line construction to local landowners and land users will be developed. Detailed contour maps for areas of complicated terrain will also be developed along with final cultural resource studies and threatened and endangered species reviews. This work is necessary to finalize the horizontal layout of the rail line for the Right-of-Way application to the Bureau of Land Management.

### FY 2009 Objectives

The FY 2009 objectives are aligned with the transportation work breakdown structure and planning baselines. FY 2009 funding is a subset of the planning baseline requirements needed to complete transportation system development for transportation operations.

#### **Detailed Justification**

(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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#### **National Transportation**

**10,433**

**5,000**

**10,000**

- **Cask Systems**

**350**

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Funding to support development of infrastructure for the NRC's Package Performance Study was part of the FY 2009 execution plan but has been deferred until FY 2010.

- **Rail Car Development**

**690**

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The work previously done under this budget element is reflected now under the budget element "Rolling Stock."

- **Rolling Stock**

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**1,200**

The work previously done under budget element "Rail Car Development" is reflected under this budget element.

FY 2009 funding is for completion of the preliminary design of the rail car to be used for armed escorts and to fund long-range procurements of materials for fabricating the prototype rail car to be used for testing. This development effort is in collaboration with the Naval Nuclear Propulsion Program (NNPP). NNPP will use the same car design for their shipments. The transportation security requirements of both programs were aligned to allow this efficient approach to escort rail car design and testing to succeed. NNPP will be using this escort car for shipments of Navy spent fuel to Idaho National long before Yucca Mountain is operating, so this aspect of rail car development is being pursued in advance of rail cars for casks or the required buffer cars.

(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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- **Support Facilities** **854**                      --                      --  
The work previously done under this budget element is reflected now under the budget element “National Transportation Support Facilities.”
  - **National Transportation Support Facilities**                      --                      --                      **300**  
The work previously done under budget element “Support Facilities” is reflected under this budget element.
- The casks will be purchased and operated under an NRC Certificate of Compliance (CoC). In order to maintain the CoC’s for the various cask designs, specific maintenance activities will have to be performed. The Cask Maintenance Facility serves this function. The performance and operating requirements for the cask maintenance facility changed with adoption of the Transportation, Aging, and Disposal (TAD) canister concept, but the conceptual design has not been updated to reflect those changes. FY 2009 funding will provide an updated conceptual design and will support updates to the cost and schedule planning baseline for the transportation support facility development project.
- **Institutional Planning, Management and Analysis** **1,245**                      **150**                      --  
The work previously done under this budget element is reflected now under the budget element “National Transportation Institutional.”
  - **Stakeholder Relations** **4,135**                      **3,000**                      --  
The work previously done under this budget element is reflected now under the budget element “National Transportation Institutional.”
  - **Section 180(c) Grants** **457**                      **850**                      --  
The work previously done under this budget element is reflected now under the budget element “National Transportation Institutional.”
  - **National Transportation Institutional**                      --                      --                      **4,200**  
The work previously done under budget elements “Institutional Planning, Management and Analysis,” “Stakeholder Relations/Interactions,” and “Section 180(c) Grants” is reflected under this budget element.

FY 2009 activities include funding for state and tribal participation in collaborative development of route selection criteria and methodology. This will result in identification of a preliminary set of National Transportation Routes.

Projects with states, tribes and emergency responders to address perceptions of risk associated with SNF transport will be carried out at this funding level. Funding for the Commercial Vehicle Safety Alliance is part of that effort.

(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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A pilot project to assess the funding process for emergency response training implementation by states and tribes will be started. This will include development and testing of final technical assistance plans for emergency exercises and shipment operations as part of the pilot project on training. Discussions with Tribes on the process to allocate their funding for emergency preparedness training will be completed and incorporated into the NWPA Section 180(c) implementation policy.

Collaborative development of the Transportation System with a broad cross section of stakeholders will continue through continued meetings with the Transportation External Coordination Working Group and its members. The National Transportation Plan will be updated and reviewed with the stakeholder community as details are added and formal decisions on transportation system development are made.

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|--|------------|-----------|--------------|
| <ul style="list-style-type: none"> <li> <b>Operations System Development</b> </li> </ul>   | <b>923</b> | <b>--</b> | <b>--</b>    |
| The work previously done under this budget element is reflected now under the budget element "National Transportation Operations."                                 |            |           |              |
| <ul style="list-style-type: none"> <li> <b>Transportation Planning &amp; Analysis</b> </li> </ul>  | <b>525</b> | <b>--</b> | <b>--</b>    |
| The work previously done under this budget element is reflected now under the budget element "National Transportation Operations."                                 |            |           |              |
| <ul style="list-style-type: none"> <li> <b>National Transportation Operations</b> </li> </ul>  | <b>--</b>  | <b>--</b> | <b>3,750</b> |
| The work previously done under budget elements "Operations System Development," and "Transportation Planning and Analysis" is reflected under this budget element. |            |           |              |

In FY 2009 the program will complete requirements identification for operations and will initiate updates to information on shipping site capabilities and reviews of transportation infrastructure status adjacent to shipping sites. The program will begin development of operations plans with key stakeholders to identify requirements and expectations. Logistics benchmarking studies with private sector transportation companies will be completed to inform operational planning. Support for tests to quantify the consequences of potential sabotage events on spent fuel casks will be provided in collaboration with an international working group. The Multi-Lateral Agreement for this effort was processed through the State Department in FY 2008. FY 2009 funding will also support maintenance of core transportation models (RADTRAN and TRAGIS), which will be used for transportation routing option studies and radiological consequence analyses as part of the route development effort.

- |   |
|---|
| <ul style="list-style-type: none"> <li> <b>Corporate Management</b> <div> 1,254 1,000 -- </div> <p>The work previously done under this budget element is reflected now under the budget element "National Transportation Management."</p> </li> </ul> |
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(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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- **National Transportation Management**                      --                      --                      **550**  
The work previously done under budget element “Corporate Management” is reflected under this budget element.

FY 2009 funding will support the program to collect data and conduct cost and schedule variance analyses, monitor milestone completion and maintenance of critical path activity tracking. Updates to planning baselines and development of project performance baselines for Nevada Rail Transportation and National Transportation capital projects are also covered by this funding.

<b>Total, National Transportation</b>	<b>10,433</b>	<b>5,000</b>	<b>10,000</b>
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<b>Nevada Transportation</b>	<b>24,849</b>	<b>13,300</b>	<b>10,000</b>
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- **Nevada Rail**    **18,249**                      **6,300**                      **4,500**  
After the Rail Alignment Environmental Impact Statement is completed in FY 2008, a significant amount of work is needed on preliminary design of structures and the rail line itself. This work must be completed to finalize the Nevada Rail Project Performance Baseline. The funding in FY 2009 is sufficient to begin key conceptual design activities associated with major structures and facilities for the baseline. In addition, refined engineering reports needed for the Rail Line Right-of-Way can be completed. A significant number of permit requests will need to be developed and submitted and some permits, such as ground water, require long lead times to obtain. This work will begin in FY 2009. Land ownership issues and impact mitigation activities will also be pursued in FY 2009. The Bureau of Land Management (BLM) currently manages most of the land the rail line will cross, and the Right-of-Way Application to address all of the BLM requirements will be completed this year.

- **National Environmental Policy Act (NEPA)**                      **6,600**                      **7,000**                      --  
The work previously done under this budget element is reflected now under the budget element “Nevada Rail Environmental Impact Statement (EIS).”

- **Nevada Rail Environmental Impact Statement (EIS)**                      --                      --                      **500**  
The work previously done under budget element “National Environmental Policy Act (NEPA)” is reflected under this budget element.

The Final Rail Alignment Environmental Impact Statement will be published in FY 2008, along with a Record of Decision on the selected alignment for the Nevada Rail Line. As design work is advanced for the rail line in preparation for a construction contract, deviations

(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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from the horizontal alignment described in the Environmental Impact Statement (EIS) may be required. These deviations will require NEPA support, as will any final decisions on transportation facility location. NEPA support is also planned to respond to challenges raised on the Record of Decision that is planned for publication in late FY 2008.

- **Design/EIS Supporting Field Investigations & Analysis** -- -- **5,000**

This is a new budget element for FY 2009.

Beginning characterization of soils under key structures, completing cultural resource studies, and threatened and endangered species reviews can also be completed with this level of funding. This work is necessary to finalize the horizontal layout of the rail line. The FY 2009 funding is insufficient to complete the detailed characterization of soils along the rail line. That work is on the critical path to finalizing the Nevada Rail Transportation Project Performance Baseline. Geotechnical characterization involves drilling thousands of core sample holes, excavating test pits and performing laboratory tests of the sample materials extracted. In FY 2009, geotechnical characterization of soils under key structures can begin and that will minimize the negative planning schedule variance for the Nevada Rail Transportation Project.

FY 2009 funding will also support high-resolution contour mapping. This data is also a prerequisite to final design efforts. Some critical path design activities such as road crossings will be developed so necessary agreements can be worked out with the Nevada Department of Transportation. Conceptual design for large structures will be started in FY 2009 to allow a phased approach to rail line construction as funding becomes available.

<b>Total, Nevada Transportation</b>	<b>24,849</b>	<b>13,300</b>	<b>10,000</b>
<b>Total, Transportation</b>	<b>35,282</b>	<b>18,300</b>	<b>20,000</b>

## Transportation Explanation of Funding Changes

FY 2009 vs. FY 2008 (\$000)
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### National Transportation

#### Rolling Stock

+1,200

The increase is to complete the preliminary design of the rail car to be used for armed escorts and to fund long-range procurements of materials for fabricating the prototype rail car to be used for testing in accordance with the joint transportation security requirements of the Naval Nuclear Propulsion Program and OCRWM.

#### National Transportation Support Facilities

+300

The increase is to provide an updated conceptual design of the Cask Maintenance Facility to reflect the TAD canister concept, and to support updates to the cost and schedule planning baseline for the transportation support facility development project.

#### Institutional Planning, Management and Analysis

-150

The decrease is due to the work previously done under this budget element being reflected now under the budget element "National Transportation Institutional."

#### Stakeholder Relations

-3,000

The decrease is due to the work previously done under this budget element being reflected now under the budget element "National Transportation Institutional."

#### Section 180(c) Grants

-850

The decrease is due to the work previously done under this budget element being reflected now under the budget element "National Transportation Institutional."

#### National Transportation Institutional

+4,200

The increase is due to the work previously done under budget elements "Institutional Planning, Management and Analysis," "Stakeholder Relations," and "Section 180(c) Grants" being reflected now under this budget element. The net increase of \$200,000 funds the update of the National Transportation Plan; continuation of work on inspections; expansion of stakeholder relations with unions and tribal governments; and initiation of pilot grant for activities deferred in FY 2008.



FY 2009 vs. FY 2008 (\$000)
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### **National Transportation Operations**

+3,750

The increase is due to the work previously done under budget elements “Operations System Development,” and “Transportation Planning and Analysis” being reflected now under this budget element, and this work being deferred in FY 2008. The increase funds sabotage event tests on fuel rodlets; expansion of rail infrastructure study near shipping sites; and beginning of development of operations plan.

### **Corporate Management**

-1,000

The decrease is due to the work previously done under this budget element being reflected now under the budget element “National Transportation Management.”

### **National Transportation Management**

+550

The increase is due to the work previously done under budget element “Corporate Management” being reflected now under this budget element. The request funds the management of project reporting for casks and facility acquisitions.

### **Total Funding Change, National Transportation**

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+5,000

## **Nevada Transportation**

### **Nevada Rail**

-1,800

The decrease is due to the completion in FY 2008 of the Rail Alignment Environmental Impact Statement. The request funds beginning key conceptual design activities; completion of refined engineering reports needed for the Rail Line Right-of-Way; beginning development of permit requests; and completion of the Right-of-Way Application to address all of the BLM requirements.

### **National Environmental Policy Act (NEPA)**

-7,000

The decrease is due to the work previously done under this budget element being reflected now under the budget element “Nevada Rail Environmental Impact Statement (EIS).”

FY 2009 vs. FY 2008 (\$000)
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+500

**Nevada Rail Environmental Impact Statement (EIS)**

The increase is due to the work previously done under budget element “National Environmental Policy Act (NEPA)” being reflected now under this budget element. The request funds NEPA support to respond to challenges raised on the Record of Decision on the selected alignment for the Nevada Rail Line that is planned for publication in 2008, as well as NEPA support for any deviations from the Final Rail Alignment Environmental Impact Statement also published in 2008.

**Design/EIS Supporting Field Investigations & Analysis**

+5,000

The increase is due to this being a new program Element for FY 2009. The request funds the initiation of major bridge design, geotechnical and hydrological analysis.

**Total Funding Change, Nevada Transportation**

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-3,300

**Total Funding Change, Transportation**

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+1,700

## Program Management and Integration

### Funding Schedule by Activity

(dollars in thousands)

	FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
Program Management and Integration			
Quality Assurance	---	---	10,000
Program Management			
Quality Assurance	7,700	8,529	---
Program Management and Control	18,328	3,020	2,200
Audits and Reports	543	---	---
Information Management	3,831	4,157	3,300
Human Resources and Education	710	650	500
Total, Program Management	31,112	16,356	6,000
Safeguards and Security	---	---	5,000
Waste Acceptance	---	---	4,000
System Analysis and Strategy Development			
Waste Acceptance	897	4,376	---
System Engineering	382	720	400
System Analysis	2,646	---	---
Fee Adequacy Assessment	215	485	200
Regulatory Coordination	725	2,950	---
System Configuration Management	178	525	400
Total, System Analysis and Strategy Development	5,043	9,056	1,000
Science and Technology and International			
Science and Technology	9,770	---	---
International Program and Coordination	731	1,000	1,000
Total, Science and Technology and International	10,501	1,000	1,000
Total, Program Management and Integration	46,656	26,412	27,000

## Program Management and Integration

### Description

The Program Management and Integration activity provides strategic direction, guidance, integration, planning, quality assurance, budgeting, and program management support to the Yucca Mountain Project and Transportation activities in executing the Program's Mission. This subprogram leads the Office of Civilian Radioactive Waste Management (OCRWM) implementation of the President's Management Agenda.

### Detailed Justification

(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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<b>Quality Assurance</b>	<b>--</b>	<b>--</b>	<b>10,000</b>
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The Quality Assurance work previously done under budget elements "Program Management" and "Audits and Reports" are reflected now under this budget element. The budget was restructured for FY 2009 to give these important activities more visibility.

The Quality Assurance (QA) element identifies and ensures M&O contractor, Sandia National Lab, and OCRWM implementation of federally mandated requirements for nuclear quality assurance applicable to the OCRWM program activities related to radiological health, safety and waste isolation. The QA program is formulated to ensure quality in activity planning and performance through QA developed end products such as a highly complicated Total System Performance Assessment (TSPA) involving state of the art computer models, and the design of the repository and transportation elements. The QA program performs surveillance, audits, and inspections to verify the quality of work in progress; 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. It is essential that OCRWM staff and contractors effectively implement the QA program, as QA compliance to 10 CFR 63 is critical to becoming a successful licensee.

Quality Assurance program independence requires that project participants establish a QA organization independent of the line functions to support achievement of quality in the products, services and activities. Quality Assurance is not an administrative function, but rather a necessary step (per NRC regulations) to assure technical acceptability and confidence in fulfilling our mission to protect the public, workers, and the environment.

FY 2009 funding supports these QA activities mandated by the Nuclear Waste Policy Act, and required by the NRC for nuclear quality assurance.

<b>Program Management</b>	<b>31,112</b>	<b>16,356</b>	<b>6,000</b>
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The request funds the following, as detailed below:

▪ <b>Quality Assurance</b>	<b>7,700</b>	<b>8,529</b>	<b>--</b>
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The quality assurance work previously done under this budget element is reflected now under a higher-level budget element "Quality Assurance."

(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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▪ **Program Management and Control** **18,328** **3,020** **2,200**

The Program Management and Control element coordinates OCRWM management functions of planning, acquiring resources, program execution, program monitoring and evaluation, and change control. These activities provide the basis for prioritizing, and allocating resources; defining, costing, and executing work scope and schedules; and monitoring, analyzing, and reporting Program performance. Other activities include interacting with 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.

The key components of this element are business and management center planning, formulating and executing budgets and annual work plans, establishing cost and schedule baselines and baseline management, developing Capital Asset Management Plan, and implementation of DOE 413.3-1 policies. 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.

▪ **Audits and Reports** **543** **--** **--**

The Quality Assurance audits and reports work previously done under this budget element is reflected now under the higher-level budget element "Quality Assurance"

▪ **Information Management** **3,831** **4,157** **3,300**

Maintain existing information systems and networks for facilities in the Washington, DC metropolitan area; 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.

▪ **Human Resources and Education** **710** **650** **500**

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. Compliance with the President's Management Agenda Initiative on Human Capital Management.

<b>Total Program Management</b>	<b>31,112</b>	<b>16,356</b>	<b>6,000</b>
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(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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### **Safeguards and Security**

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**5,000**

The Safeguards and Security work previously done under the “System Analysis and Strategy Development” budget element is reflected now under this budget element. The budget was restructured for FY 2009 to give these important activities more visibility. The headquarters-directed Safeguards and Security work would be funded from this budget element; other programmatic Safeguards and Security work is also funded in the Yucca Mountain Project within the “License” and “Balance of Plant Design” budget elements.

#### **Safeguards and Security:**

Provide technical support for development, implementation, and coordination of the required Safeguards and Security functions at Headquarters through the Headquarters Security Office and at the Yucca Mountain Site to ensure those functions are in compliance with appropriate DOE and NRC requirements.

In FY 2009 the focus will be the acquisition and installation of the necessary systems, facilities, equipment, communication systems and procedures to fully operate Yucca Mountain facilities in compliance with applicable regulations and DOE policies and procedures during both normal and emergency operating situations; and develop agreements with Federal, State, and local agencies, and establish a protective force prior to the initiation of construction.

#### **Emergency Management:**

Provide technical support for development and coordination of emergency management and response functions to ensure those functions are in compliance with appropriate DOE and NRC requirements.

In FY 2009 efforts will be focused on the development of the Yucca Mountain Radiological Emergency Response Plan design of integrated accident detection and warning system and establishing emergency response plans/resources sharing agreements with nearby Federal, State and local resources. These activities are necessary to fulfill 10 CFR 63.161 requirements.

#### **Safety:**

The FY 2009 funding request provides technical support for assessment of safety programs. Develop and execute plans to address issues due to changes in applicable regulations, both in the Geologic Repository Operating Area (GROA) (conversion from 10 CFR 835 to 10 CFR 20) and outside the GROA (implementation of the new 10 CFR 835). Occupational radiological safety programs are required by 10 CFR 63.21, 10 CFR 63.111, and 10 CFR 835. Waivers or exemptions from DOE requirements will be developed and executed as needed to preclude dual regulation and enhance operational performance. Headquarters assessments of field safety programs will be performed as required by DOE orders. The “as low as reasonably achievable” (ALARA) exposures process will be reviewed and ALARA studies performed as necessary. An ALARA program is a significant element of the radiological safety program required by 10 CFR 63.111. Nuclear safety analyses will be performed to evaluate safety concerns with designs and operations (i.e., potential for criticality in the Initial Handling Facility if certain neutron-reflecting materials are present).

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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**5.043**

**9.056**

## FY 2009 Congressional Budget

(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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- **Waste Acceptance** **897** **4,376** **--**  
The waste acceptance work previously done under this budget element is reflected now under a higher-level individual budget element "Waste Acceptance." The budget was restructured for FY 2009 to give these important activities more visibility.
- **System Engineering** **382** **720** **400**  
Funding for system engineering supports the management and integration of the project components through integration and development of formal baselines, procedures and the system requirements hierarchy. Interface with the program elements and management of requirements documents facilitates the flow down of Program level requirements and interfaces to project level requirements. Activities include the review and revisions of baseline documents and procedures.
- **System Analysis** **2,646** **--** **--**  
Activities deferred from FY 2008 due to budgets constraints, including review and integration of the Department's Global Nuclear Energy Partnership (GNEP) activities, analyses supporting the integration of the TAD canister into the system, and maintenance and utilization of the Total System Model, are deferred again until FY 2010, as necessary.
- **Fee Adequacy Assessment** **215** **485** **200**  
This element annually determines the adequacy of the fee charged to generators of commercial spent nuclear fuel (SNF), in accordance with the Section 302(a) of the Nuclear Waste Policy Act of 1982. The FY 2009 request provides for the assessment of the fee and the analysis of the defense contribution for the total life cycle cost of the program 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, review and updating the total system life cycle costs, updating waste and fee projections, briefings to senior staff on the analysis generated, interface with KPMG auditors for the Department, and A-123 reviews of the effort. Additional activities include responding to inquiries on the adequacy of the fee, and interfacing with program staff on the assumptions and estimates for the total life cycle costs of the system.
- **Regulatory Coordination** **725** **2,950** **--**  
This budget element is eliminated in the FY 2009 request. The Safeguards and Security work previously done under this budget element is reflected now under a higher-level individual budget element "Safeguards and Security." The budget was restructured for FY 2009 to give these important activities more visibility.

The Regulatory Coordination work previously done under this budget element is now reflected under the Yucca Mountain Project budget elements "License," "Balance of Plant Infrastructure," and "Project Support" as well as the Program Management and Integration budget element "Program Management."



(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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▪ **System Configuration Management**

**178****525****400**

The FY 2009 funding request for this element establishes, maintains and documents interface control agreements at the program level between program elements and between project-level external interfaces including the Transportation Aging and Disposal (TAD) canister system waste generators to ensure compatibility among interfacing design features.

**Total, System Analysis and Strategy  
Development**

**5,043****9,056****1,000**

**Science and Technology, and International**

**10,501****1,000****1,000**

The request funds the following, as detailed below:

▪ **Science and Technology**

**9,770****--****--**

The science and technology work previously done under the Yucca Mountain Project budget element "Safety Analyses and Assessments" is reflected now under this budget element in an effort to match the OCRWM Work Breakdown Structure (WBS).

Restart of this program is deferred until FY 2010.

▪ **International Program and  
Coordination**

**731****1,000****1,000**

The FY 2009 budget request funds support of DOE commitments to the Joint Convention on the Safety of Spent Fuel Management and Safety of Radioactive Waste Management; OECD/NEA and State Department initiatives; maintenance of electronic database on international radioactive waste management programs; and coordination of international activities

**Total, Science and Technology, and  
International**

**10,501****1,000****1,000**

**Total Program Management & Integration**

**46,656****26,412****27,000**

## Explanation of Funding Changes

FY 2008 vs. FY 2009 (\$000)
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### Quality Assurance

+10,000

The increase is due to the Quality Assurance work previously done under budget element "Program Management" being reflected now under this budget element. The budget was restructured for FY 2009 to give these activities more visibility.

The request funds the following: identifying and ensuring principal contractors implement requirements mandated by the NRC for nuclear Quality Assurance applicable to activities related to public radiological health, safety, and waste isolation.

### Program Management

-10,356

The decrease is due to the transfer of Quality Assurance work previously done under this budget element to the higher-level "Quality Assurance" budget element.

The request funds project management and control; Nuclear Waste Fund audits; information management; and human resources and education.

### Safeguards and Security

+5,000

The increase is due to the Safeguards and Security work previously done under budget element "System Analysis and Strategy Development" being reflected now under this budget element. The budget was restructured for FY 2009 to give these important activities more visibility. Safeguards and Security work is also funded in the Yucca Mountain Project within the "License" and "Balance of Plant Design" budget elements.

The request funds the acquisition and installation of the necessary systems, facilities, equipment, communication systems required for compliance with applicable regulations; development of the Yucca Mountain Radiological Emergency Response Plan; and technical support for assessment of safety programs.

### Waste Acceptance

+4,000

The increase is due to the Waste Acceptance work previously done under budget element "System Analysis and Strategy Development" being reflected now under this budget element. The budget was restructured for FY 2009 to give these important activities more visibility.

The request funds the performance of technical analyses and evaluations to support development of performance-based waste acceptance criteria for both commercial waste and government-managed materials; ensuring consistency with Yucca Mountain License Application and proposed technical specifications, policies and procedures; and supports Department of Justice for ongoing utility litigation.

**System Analysis and Strategy Development**

-8,056

The decrease is due to the transfer of Waste Acceptance work previously done under this budget element to the higher-level “Waste Acceptance” budget element, as well as the transfer of Safeguards and Security work previously done under this budget element to the higher-level “Safeguards and Security” budget element. The budget was restructured for FY 2009 to give these important activities more visibility.

**Science and Technology and International**

0

There is no change in funding for this budget element.

The work previously done under budget element “International Program and Coordination” is reflected under this budget element. Science and Technology work previously done under the Yucca Mountain Project “Safety Analyses and Assessments” budget element is reflected now under this budget element in an effort to match the OCRWM Work Breakdown Structure (WBS).

**Total Funding Change, Program Management and Integration**

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+588



## Program Direction

### Funding Profile by Category

(dollars in thousands/whole FTE's)

	FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
Office of Repository Development			
Salaries and Benefits	19,266	19,823	27,066
Travel	649	629	1,300
Support Services	10,171	15,315	10,607
Other Related Expenses	4,415	4,323	5,000
Total, Office of Repository Development	34,501	40,090	43,973
Full-Time Equivalents	131	131	175
 NNSA Service Center			
Salaries and Benefits	917	917	917
Total, NNSA Service Center	917	917	917
Full-Time Equivalents	3	3	3
 Headquarters			
Management & Operational Support			
Salaries and Benefits	10,597	10,751	16,893
Travel	350	346	700
Support Services	12,462	15,667	10,000
Other Related Expenses	413	465	---
Working Capital Fund	1,916	1,999	2,500
 Other Matrix Support			
Salaries and Benefits	4,469	4,424	---
Travel	15	15	---
Total, Headquarters	30,222	33,667	30,093
Full-Time Equivalents	110	110	118
 Total Program Direction			
Salaries and Benefits	35,249	35,915	44,876
Travel	1,014	990	2,000
Support Services	22,633	30,982	20,607
Other Related Expenses	4,828	4,788	5,000
Working Capital Fund	1,916	1,999	2,500
Total, Program Direction	65,640	74,674	74,983
Full-Time Equivalents	244	244	296

## Program Direction

### Description

Program Direction provides overall direction and administrative support for the Office of Civilian Radioactive Waste Program (OCRWM) to manage and dispose of the Nation's Spent Nuclear Fuel (SNF) and High Level Radioactive Waste (HLW).

This budget provides for salaries and benefits of Federal staff and the support services contracts required for advisory and assistance services. 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 2009 budget.

### Detailed Justification

(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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#### Salaries and Benefits

35,249

35,915

44,876

In FY 2009 there is a planned increase in federal staff (an additional 52 FTEs) and a concurrent reduction in the use of support services, resulting in a total request for Salaries and Benefits of \$44,876 to fund increased federal staffing to allow for OCRWM to design, license, start-up and manage the construction and operation of the Yucca Mountain Project with safety, quality, and cost effectiveness. This is required to prepare OCRWM to be a Nuclear Regulatory Commission license holder and operator of the repository. Funds salaries, awards, lump sum leave payments, retention and recruitment bonuses, benefits and buyout compensation for full-time permanent and other than full-time permanent employees.

#### Travel

1,014

990

2,000

The request funds increased travel by OCRWM 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.

#### Support Services

22,633

30,982

20,607

The Support Services budget element includes all costs which are defined as advisory and assistance services acquired by contract from non-governmental services to support or improve the OCRWM organization. This element provides support for the following: complying with NRC requirements, developing and maintaining QA Requirements and Description, developing QA procedures, and conducting audits, surveillance, and reviews of M&O contractor and other participant activities. Support services provide a university based independent technical review capability of the work accomplished by the DOE National Laboratories and the M&O contractor. In addition, funds are provided for operation and management of communications network and computer facilities.

The request funds the following: Providing required safety and security and emergency management program planning and management; S&S systems registration, reporting, and tracking support; and

other program management support.

(dollars in thousands)

FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
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**Other Related Expenses**

**4,828**

**4,788**

**5,000**

The “Other Related Expenses” budget element includes costs for building leases and other related expenses (communications, utilities, computer/video support, training, printing and graphics, photocopying, postage, supplies, and common administrative services).

**Working Capital Fund**

**1,916**

**1,999**

**2,500**

The “Working Capital Fund” budget element funds legal support services and other Working Capital Fund expenses (i.e. funding for headquarters building maintenance, rents, communications, utilities, computer and video support, printing and graphics, photocopying, postage, supplies and common administrative services).

**Total, Program Direction**

**65,640**

**74,674**

**74,983**

## Explanation of Changes

FY 2008 vs. FY 2009 (\$000)
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### Salaries and Benefits

+8,961

The increase is due to the increased federal staffing (52 additional FTEs) to allow for OCRWM to design, license, and manage the construction and operation of the Yucca Mountain Project with safety, quality, and cost effectiveness. This is required to prepare OCRWM to be a Nuclear Regulatory Commission license holder and operator of the repository.

### Travel

+1,010

The increase is due to the need for increased travel by OCRWM staff to meet with NRC officials to discuss and review NRC Requests for Additional Information as part of the defense of the License Application.

### Support Services

-10,375

The decrease is due to the planned increase in federal staff and a concurrent reduction in the use of support services.

### Other Related Expenses

+212

There is no significant increase in this area.

### Working Capital Fund

+501

The increase is due to the increased level of federal staffing and the resulting need for increased funding of other DOE offices doing program-related work.

### Total Funding Changes, Program Direction

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+309



## Support Services by Category

(dollars in thousands)

	FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
Technical Support			
Yucca Mountain Project			
Management and Technical Services	5,492	9,377	4,477
Information Management	2,831	3,815	2,000
Administrative Services	937	1,438	---
Total, Yucca Mountain Project	9,260	14,630	6,477
Transportation			
National Transportation	544	544	500
Nevada Transportation	930	3,768	2,000
Total, Transportation	1,474	4,312	2,500
System Analysis and Strategic Development			
System Engineering	382	406	600
System Analysis	297	294	400
Waste Acceptance	896	643	700
Regulatory Coordination	725	595	800
Total, System Analysis & Strategic Development	2,300	1,938	2,500
Total, Technical Support	13,034	20,880	11,477
Management Support			
Program Management & Integration			
Quality Assurance	3,800	4,212	3,500
Program Management & Control			
Program Management, Planning & Control	888	450	500
Audits and Reports	543	455	500
Baseline Management	---	---	---
Program & Policy Integration	537	610	630
Public Information	---	---	---
Total, Program Management & Control	1,968	1,515	1,630
Information Management	3,831	4,375	4,000
Total, Program Management & Integration	9,599	10,102	9,130
Total, Management Support	9,599	10,102	9,130
Total, Support Services	22,633	30,982	20,607

## Other Related Expenses by Category

	FY 2007 Appropriation	FY 2008 Appropriation	FY 2009 Request
Other Related Expenses			
Yucca Mountain Project			
Communication, Other Rent, and Utilities	2,680	1,989	2,000
Other Services	1,025	1,881	2,000
Human Resources & Administration	710	453	500
Total, Yucca Mountain Project	4,415	4,323	4,500
Headquarters			
Other Services	53	47	50
Human Resources & Administration	---	35	50
Supplies and Materials	15	25	50
Services Performed by Other Agencies	345	358	350
Total, Headquarters	413	465	500
Total, Other Related Expenses	4,828	4,788	5,000

## GENERAL PROVISIONS

### SEC. 301. CONTRACT COMPETITION.

(a) None of the funds in this or any other appropriations Act for fiscal year [2008 ]2009 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 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) *In this section:*

(1) *The term "noncompetitive management and operating contract" means a contract that was awarded more than 50 years ago without competition for the management and operation of Ames Laboratory, Argonne National Laboratory, Lawrence Berkeley National Laboratory, Livermore National Laboratory, and Los Alamos National Laboratory.*

(2) 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.

(c) *For all management and operating contracts other than those listed in subsection (b)(1), none of the funds appropriated by this Act may be used to award a management and operating contract, 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. At least 60 days before a contract award for which the Secretary intends to grant such a waiver, the Secretary shall submit to the Committees on Appropriations of the House of Representatives and the Senate a report notifying the Committees 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) 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.]

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. WORKFORCE RESTRUCTURING. None of the funds appropriated by this Act may be used to—

(1) develop or implement a workforce restructuring plan that covers employees of the Department of Energy; or

(2) provide enhanced severance payments or other benefits for employees of the Department of Energy, under section 3161 of the National Defense Authorization Act for Fiscal Year 1993 (Public Law 102-484; 42 U.S.C. 7274h).

SEC. 304. SECTION 3161 ASSISTANCE. None of the funds appropriated by this Act may be used to augment the funds made available for obligation by this Act for severance payments and other benefits and community assistance grants under section 3161 of the National Defense Authorization Act for Fiscal Year 1993 (Public Law 102-484; 42 U.S.C. 7274h) unless the Department of Energy submits a reprogramming [request] *notification* to the appropriate congressional committees.

SEC. 305. 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. 306. 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. 307. 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. 308. 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 [2008 ]2009 until the enactment of the Intelligence Authorization Act for fiscal year [2008 ]2009.

[SEC. 309. LABORATORY DIRECTED RESEARCH AND DEVELOPMENT. Of the funds made available by the Department of Energy for activities at government-owned, contractor-operator 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. 310. YIELD RATE. For fiscal year 2008, except as otherwise provided by law in effect as of the date of this Act or unless a rate is specifically set by an Act of Congress thereafter, the Administrators of the Southeastern Power Administration, the Southwestern Power Administration, and the Western Area Power Administration, shall use the "yield" rate in computing interest during construction and interest on the unpaid balance of the costs of Federal power facilities. The yield rate shall be defined as the average yield during the preceding fiscal year on interest-bearing marketable securities of the United States which, at the time the computation is made, have terms of 15 years or more remaining to maturity.]

[SEC. 311. USE PERMIT. The Use Permit granted to the contractor for activities conducted at the Pacific Northwest National Laboratory by Agreement DE-GM05-00RL01831 between the Department of Energy and the contractor shall continue in effect during the term of the existing Operating Contract and the extensions or renewals thereof and shall be incorporated into any future management and operating contract for the Pacific Northwest National Laboratory and such Use Permit may not be waived, modified or terminated unless agreed to by both contractor and the Department of Energy.]

[SEC. 312. (a) ACROSS-THE-BOARD RESCISSIONS.—There is hereby rescinded—  
(1) from discretionary accounts in this title that contain congressionally directed projects, an amount equal to 1.6 percent of the budget authority provided for fiscal year 2008 for such projects; and

(2) from all discretionary accounts in this title, an amount equal to 0.91 percent of the other budget authority provided for fiscal year 2008.

(b) DEFINITIONS.—For purposes of this section: (1) The term "congressionally directed project" means a congressional earmark or congressionally directed spending item specified in the list of such earmarks and items for this division that is included in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act).

(2) The term "other budget authority" means an amount equal to all discretionary budget authority, less the amount provided for congressionally directed projects.

(c) PROPORTIONATE APPLICATION TO OTHER PROGRAMS, PROJECTS, AND ACTIVITIES.—Any rescission made by subsection (a)(2) shall be applied proportionately—

(1) to each discretionary account; and

(2) within each such account, to each program, project, and activity (with programs, projects, and activities as delineated in the appropriation Act or accompanying reports for the relevant fiscal year covering such account).

(d) REPORT.—Within 30 days after the date of the enactment of this section, the Director of the Secretary of Energy shall submit to the Committees on Appropriations of the House of Representatives and the Senate a report specifying the account and amount of each rescission made pursuant to this section.]

SEC. 309. *Section 312 of the Energy and Water Development Appropriations Act, 2004 (Pub. L. 108-137), is amended as follows: (1) In the first sentence by inserting between "the material" and "in the concrete silos", the words "formerly stored", by inserting before the period: "when such material is disposed at an Nuclear Regulatory Commission-regulated or Agreement State-regulated facility"; and (2) In the second sentence, striking "for the purpose" and everything that follows, and inserting; "after the material has been disposed at an NRC-regulated or Agreement materials being disposed as NRC-regulated or Agreement State-regulated facilities and shall not preclude the materials from otherwise being disposed at facilities operated by the Department of Energy so long as the materials meet the disposal facility's waste acceptance criteria." Not to exceed 5 per centum of any appropriation made available for Department of Energy activities funded in this Act or subsequent Energy and Water Development Appropriations Acts, not to exceed \$5,000,000, 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 any such proposed transfers: Provided, That 15 days in advance of such transfer, notice shall be submitted to the Committees on Appropriations of the House and Senate.*

SEC. 310. *Not to exceed 5 per centum of any appropriation made available for Department of Energy activities funded in this Act or subsequent Energy and Water Development Appropriations Acts may 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.*

SEC. 311. *Section 311 of the Energy and Water Development Appropriations Act, 2008 is repealed. (Energy and Water Development and Related Agencies Appropriations Act, 2008.)*