

Department of Energy

FY 2022 Congressional Budget Request



Environmental Management

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Table of Contents

	Page
Appropriation Account Summary	1
Appropriation Language	3
Overview	5
Carlsbad	52
Idaho	83
Oak Ridge	113
Paducah	145
Portsmouth	156
Richland	183
River Protection	222
Savannah River	251
Lawrence Livermore National Laboratory	348
Los Alamos National Laboratory	357
Nevada	370
Sandia National Laboratories	380
Separations Process Research Unit	385
West Valley Demonstration Project	390
Energy Technology Engineering Center	399
Moab	405
Other Sites	410
Mission Support	417
Program Direction	433
Crosscuts	442
Uranium Enrichment Decontamination and Decommissioning Fund Deposit	447
Funding by Appropriation by Site	XXX
General Provisions	451

DEPARTMENT OF ENERGY
Appropriation Summary
FY 2022
(Dollars in Thousands)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs. FY 2021 Enacted	
				\$	%
Department of Energy Budget by Appropriation					
Energy Efficiency and Renewable Energy	2,777,277	2,861,760	4,732,000	+1,870,240	+65.35%
Electricity	190,000	211,720	327,000	+115,280	+54.45%
Cybersecurity, Energy Security and Emergency Response	156,000	156,000	201,000	+45,000	+28.85%
Strategic Petroleum Reserve	195,000	188,000	197,000	+9,000	+4.79%
Naval Petroleum and Oil Shale Reserve	14,000	13,006	13,650	+644	+4.95%
Strategic Petroleum Reserve Petroleum Account	10,000	1,000	7,350	+6,350	+635.00%
Northeast Home Heating Oil Reserve	10,000	6,500	0	-6,500	-100.00%
Total, Petroleum Reserve Accounts	229,000	208,506	218,000	+9,494	+4.55%
Total, Cybersecurity, Energy Security, and Emergency Response	385,000	364,506	419,000	+54,494	+14.95%
Nuclear Energy (270)	1,340,000	1,357,800	1,700,700	+342,900	+25.25%
Fossil Energy and Carbon Management	750,000	750,000	890,000	+140,000	+18.67%
Uranium Enrichment Decontamination and Decommissioning (D&D) Fund	881,000	841,000	831,340	-9,660	-1.15%
Energy Information Administration	126,800	126,800	126,800	+0	+0.00%
Non-Defense Environmental Cleanup	319,200	319,200	338,860	+19,660	+6.16%
Science	7,000,000	7,026,000	7,440,000	+414,000	+5.89%
Office of Technology Transitions (OTT)	0	0	19,470	+19,470	N/A
Office of Clean Energy Demonstration (OCED)	0	0	400,000	+400,000	N/A
Advanced Research Projects Agency - Energy	425,000	427,000	500,000	+73,000	+17.10%
Advanced Research Projects Agency - Climate	0	0	200,000	+200,000	N/A
Nuclear Waste Disposal	0	27,500	7,500	-20,000	-72.73%
Departmental Administration	161,000	166,000	321,760	+155,760	+93.83%
Indian Energy Policy and Programs	22,000	22,000	122,000	+100,000	+454.55%
Inspector General	54,215	57,739	78,000	+20,261	+35.09%
Title 17 Innovative Technology Loan Guarantee Program	29,000	-363,000	179,000	+542,000	-149.31%
Advanced Technology Vehicles Manufacturing Loan Program	5,000	-1,903,000	5,000	+1,908,000	-100.26%
Tribal Energy Loan Guarantee Program	2,000	2,000	2,000	+0	+0.00%
Total, Credit Programs	36,000	-2,264,000	186,000	2,450,000	-108.22%
Total, Energy Programs	14,467,492	12,295,025	18,640,430	6,345,405	+51.61%
Federal Salaries and Expenses	434,699	443,200	464,000	+20,800	+4.69%
Weapons Activities	12,457,097	15,345,000	15,484,295	+139,295	+0.91%
Defense Nuclear Nonproliferation	2,164,400	2,260,000	1,934,000	-326,000	-14.42%
Naval Reactors	1,648,396	1,684,000	1,860,705	+176,705	+10.49%
Total, National Nuclear Security Administration	16,704,592	19,732,200	19,743,000	10,800	+0.05%
Defense Environmental Cleanup	6,255,000	6,426,000	6,841,670	+415,670	+6.47%
Other Defense Activities	906,000	920,000	1,170,000	+250,000	+27.17%
Total, Environmental and Other Defense Activities	7,161,000	7,346,000	8,011,670	665,670	+9.06%
Nuclear Energy (050)	153,408	149,800	149,800	+0	+0.00%
Total, Atomic Energy Defense Activities	24,019,000	27,228,000	27,904,470	676,470	+2.48%
Southeastern Power Administration (SEPA)	0	0	0	+0	+0.00%
Southwestern Power Administration (SWPA)	10,400	10,400	10,400	+0	+0.00%
Western Area Power Administration	89,196	89,372	90,772	+1,400	+1.57%
Falcon and Amistad Operating and Maintenance Fund	228	228	228	+0	+0.00%
Colorado River Basins Power Marketing Fund *	-21,400	-21,400	-21,400	+0	+0.00%
Total, Power Marketing Administrations	78,424	78,600	80,000	1,400	+1.78%
Federal Energy Regulatory Commission	0	0	0	+0	+0.00%
Total, Energy and Water Development and Related Agencies	38,564,916	39,601,625	46,624,900	7,023,275	+17.73%
Excess Fees and Recoveries, FERC	-16,000	-9,000	-9,000	+0	+0.00%
Title XVII Loan Guar. Prog Section 1703 Negative Credit Subsidy Receipt	-15,000	0	-10,800	-10,800	N/A
UED&D Fund Offset	0	0	-415,670	-415,670	N/A
Discretionary Funding by Appropriation	38,533,916	39,592,625	46,189,430	+6,596,805	+16.66%
DOE Budget Function	38,533,916	39,592,625	46,189,430	+6,596,805	+16.66%
NNSA Defense (050) Total	16,704,592	19,732,200	19,743,000	+10,800	+0.05%
Non-NNSA Defense (050) Total	7,314,408	7,495,800	8,161,470	+665,670	+8.88%
<i>Defense (050)</i>	<i>24,019,000</i>	<i>27,228,000</i>	<i>27,904,470</i>	<i>676,470</i>	<i>2.48%</i>
Science (250)	7,000,000	7,026,000	7,440,000	+414,000	+5.89%
Energy (270)	7,514,916	5,338,625	10,844,960	+5,506,335	+103.14%
<i>Non-Defense (Non-050)</i>	<i>14,514,916</i>	<i>12,364,625</i>	<i>18,284,960</i>	<i>5,920,335</i>	<i>47.88%</i>

* Amount has been adjusted per Section 127 of Public Law 116-159, Continuing Appropriations Act, 2021 and Other Extensions Act.

**Environmental Management
Proposed Appropriations Language**

Defense Environmental Cleanup

For Department of Energy expenses, including the purchase, construction, and acquisition of plant and capital equipment and other expenses necessary for atomic energy defense environmental cleanup activities in carrying out the purposes of the Department of Energy Organization Act (42 U.S.C. 7101 et seq.), including the acquisition or condemnation of any real property or any facility or for plant or facility acquisition, construction, or expansion, and the purchase of not to exceed 1 passenger minivan for replacement only, [\$6,426,000,000]\$6,841,670,000, to remain available until expended, of which \$415,670,000 shall be transferred to the "Uranium Enrichment Decontamination and Decommissioning Fund": Provided, That of such amount, [\$289,000,000]\$293,106,000 shall be available until September 30, [2022]2023, for program direction. (Energy and Water Development and Related Agencies Appropriations Act, 2021.)

Non-Defense Environmental Cleanup

For Department of Energy expenses, including the purchase, construction, and acquisition of plant and capital equipment and other expenses necessary for nondefense 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, [\$319,200,000] \$338,860,000, to remain available until expended: Provided, That, in addition, fees collected pursuant to subsection (b)(1) of section 6939f of title 42, United States Code, and deposited under this heading in fiscal year [2021] 2022 pursuant to section 309 of title III of division C of Public Law 116–94 are appropriated, to remain available until expended, for mercury storage costs: Provided further, That of the amount appropriated under this heading, \$116,203,000 shall be derived from the United States Enrichment Corporation Fund, to remain available until expended. (Energy and Water Development and Related Agencies Appropriations Act, 2021.)

Uranium Enrichment Decontamination and Decommissioning Fund

For Department of Energy expenses necessary in carrying out uranium enrichment facility decontamination and decommissioning, remedial actions, and other activities of title II of the Atomic Energy Act of 1954, and title X, subtitle A, of the Energy Policy Act of 1992, [\$841,000,000]\$831,340,000, to be derived from the Uranium Enrichment Decontamination and Decommissioning Fund, to remain available until expended, of which [\$5,000,000]\$33,500,000 shall be available in accordance with title X, subtitle A, of the Energy Policy Act of 1992. (Energy and Water Development and Related Agencies Appropriations Act, 2021.)

Explanation of Changes

The proposed Non-Defense Environmental Cleanup appropriations include a proviso for a portion of the funding to be derived from the United States Enrichment Corporation (USEC) Fund consistent with Public Law 105-204. These funds would be used for the disposition of depleted uranium hexafluoride produced by USEC prior to privatization pursuant to Public Law 105-204, which requires the Secretary of Energy to submit to Congress a plan to ensure that all amounts accrued on the books of USEC for the disposition of depleted uranium hexafluoride will be used to treat and recycle depleted uranium hexafluoride. The reserved amount of the USEC Fund, currently approximately \$369 million, will be used to finance operation of facilities to treat and recycle depleted uranium hexafluoride at the Portsmouth (Ohio) and Paducah (Kentucky) plants.

Public Law Authorizations

- Public Law 95-91, "Department of Energy Organization Act (1977)"
- Public Law 102-579, "Waste Isolation Pilot Plant Land Withdrawal Act (1992)"
- H.R. 776, "Energy Policy Act of 1992"
- Public Law 103-62, "Government Performance and Results Act of 1993"
- Public Law 111-352, "GPRA Modernization Act of 2010"
- Public Law 113-66, "National Defense Authorization Act for Fiscal Year 2014"

Environmental Management (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request
Defense Environmental Cleanup	6,266,800	6,426,000	6,841,670
Non-Defense Environmental Cleanup	319,200	322,200	338,860
Uranium Enrichment Decontamination and Decommissioning Fund	881,000	841,000	831,340
Subtotal, Environmental Management	7,467,000	7,589,200	8,011,870
15-D-401 Containerized Sludge Removal (RL)	-11,800	0	0
	0	-3,000	0
D&D Fund Offset	0	0	-415,670
Total, Environmental Management	7,455,200	7,586,200	7,596,200

Overview

The Office of Environmental Management (EM) has been tasked with addressing the significant environmental liability that resulted from six decades of nuclear weapons production activities and government-sponsored nuclear energy research that played a critical role in domestic security and prosperity. The EM program was established in 1989, and is responsible for the cleanup of millions of gallons of radioactive waste; the safe management and disposition of thousands of tons of spent nuclear fuel and nuclear material; disposition of large volumes of transuranic waste and mixed low-level waste; remediation of huge quantities of contaminated soil and groundwater; and deactivation and decommissioning of thousands of excess facilities.

As the EM program performs its mission, it will transition to zero-emissions operations to the extent feasible at the Waste Isolation Pilot Plant; support environmental justice at Los Alamos National Lab and other sites; invest in Historically Black Colleges and Universities and other Minority Serving Institutions; expand engagement with Tribal Nations; and sustain union jobs. There is a union presence at every EM major site with one or more union affiliates representing EM's contractor workforce. EM's contracts exemplify DOE's commitment to continue supporting a highly-skilled, diverse workforce that provides more than 27,000 jobs that pay prevailing wages in safe and healthy workplaces complex-wide. EM contracts ensure workers have the right to organize, join a union, and bargain collectively with their employers.

To advance cleanup, EM will utilize science-based approaches; apply best practices and lessons learned; identify, develop, and deploy practical technological solutions derived from scientific research; and look for innovative and sustainable practices that make cleanup safer, more efficient, and more cost-effective.

EM Progress

EM continues to pursue its cleanup objectives safely within a framework of regulatory compliance commitments and best business practices. The rationale for cleanup prioritization is based on achieving the highest risk reduction benefit per radioactive content (activities focused on wastes that contain the highest concentrations of radionuclides and sites with the highest radionuclide contamination). Taking many variables into account, EM prioritizes its cleanup activities as follows:

- Activities to maintain a safe, secure, and compliant posture in the EM complex
- Radioactive tank waste stabilization, treatment, and disposal
- Spent (used) nuclear fuel storage, receipt, and disposition
- Nuclear material consolidation, stabilization, and disposition
- Transuranic and mixed/low-level waste disposition
- Soil and groundwater remediation
- Excess facilities deactivation and decommissioning

Most importantly, EM will continue to discharge its responsibilities by conducting cleanup within a "Safety First" culture that integrates environmental, safety, and health requirements and controls into all work activities. This ensures protection for the workers, public, and the environment.

Over the past three decades, the EM program has achieved significant and lasting progress in tackling this environmental legacy. EM has eliminated, or mitigated, at most sites the environmental, safety, and health risks from the most dangerous legacy wastes and contaminated facilities. In addition, contaminant pathways have been effectively controlled in groundwater and soils to mitigate potential future risks.

The program's combined active remediation footprint has been reduced by 90 percent, from approximately 3,300 square miles to less than 300 square miles. Significant legacy cleanup work remains at the following sites:

- Energy Technology Engineering Center
- Hanford
- Idaho National Laboratory
- Lawrence Livermore National Laboratory
- Los Alamos National Laboratory
- Moab
- Nevada National Security Site
- Oak Ridge
- Paducah
- Portsmouth
- Sandia National Laboratories
- Savannah River Site
- Separations Process Research Unit
- Waste Isolation Pilot Plant
- West Valley Demonstration Project

Highlights of EM's significant accomplishments to date have included:

- Completing cleanup activities at major former weapons production sites such as Rocky Flats in Colorado and the Fernald and Mound sites in Ohio.
- Opening the world's only deep geological repository for transuranic waste resulting from atomic energy defense activities at WIPP in New Mexico.
- Completing the bulk of cleanup activities along the 220-square-mile Columbia River corridor at Hanford in Washington State.
- Placing six former plutonium-producing reactors at the Hanford Site into long-term stabilization.
- Completing the removal of the former uranium enrichment complex at Oak Ridge in Tennessee, including Building K-25, at one time the largest building in the world under one roof.
- Completing the construction of the tank waste treatment system at the Savannah River Site in South Carolina, including almost 25 years of successful operations at the Defense Waste Processing Facility, as well as the construction and startup of the Salt Waste Processing Facility.
- Completing the Advanced Mixed Waste Treatment Project at the Idaho National Laboratory, where 65,000 cubic meters of legacy transuranic waste were processed for off-site disposal.
- Completing construction and initiating operation of two depleted uranium hexafluoride conversion plants at the Paducah Site in Kentucky and Portsmouth Site in Ohio.
- Completing waste vitrification activities and subsequent demolition of the Vitrification Facility at the West Valley Demonstration Project in New York — this was the first time EM has built, operated, and successfully decommissioned one of its major waste treatment facilities.
- Transferring more than 25,000 acres of land to local communities for beneficial reuse.
- Transferring 92 sites back to the active current site owner or to the DOE Office of Legacy Management for long-term stewardship following successful remediation activities.

In 2020, EM achieved a historic set of accomplishments, many of which were years in the making, that have shifted the trajectory for continued cleanup progress. These ranged from completing the removal of an entire uranium enrichment complex at Oak Ridge, to starting up the last major tank waste treatment facility at Savannah River, to demolishing what was once one of the highest risk buildings at the Hanford site, the Plutonium Finishing Plant.

These accomplishments are even more notable for being completed as EM, and the entire federal government, faced the unprecedented challenge of responding to the COVID-19 pandemic. As the pandemic progressed, EM took action to protect the workforce at its sites by aligning activities in response to local health conditions, ramping down or increasing work as necessary and appropriate. While EM continued to advance the DOE cleanup mission during this challenging time, some project impacts were unavoidable. EM is continuing to work with regulators across the complex on potential impacts to commitments.

Building on the substantial accomplishments achieved in 2020, calendar year 2021 launches a new era for sites across the EM program. EM will begin to significantly increase tank waste processing at Savannah River, building on the successful startup of the SWPF. In addition, the Hanford Site will draw nearer to the long-awaited goal of initiating tank waste treatment through continued progress on the capabilities necessary for the Direct Feed Low-Activity Waste program. In 2021, EM anticipates completing construction of the Tank-Side Cesium Removal system to prepare waste for eventual Direct Feed Low-Activity Waste processing.

This year will see continued progress on infrastructure improvements at the Waste Isolation Pilot Plant to enable an eventual increase in transuranic waste shipments from across DOE and ensure the facility can continue to play its vital role for the entire DOE for years to come. At Oak Ridge, following the successful completion of the multi-year “Vision 2020” effort to remove the former uranium enrichment complex at the East Tennessee Technology Park, cleanup will now increasingly focus on activities at the Y-12 National Security Complex and Oak Ridge National Laboratory. In 2021, EM expects to complete demolition of the deteriorating facilities at the former Biology Complex at Y-12.

At the Portsmouth Site, work is shifting from deactivation to demolition of the former uranium enrichment process buildings, with EM continuing to make progress on demolishing the former X-326 Process Building. At West Valley, EM will begin demolition of the last major facility remaining there — the Main Plant Process Building. After resuming demolition activities at the Energy Technology Engineering Center Site last year after almost a decade, EM anticipates completing the demolition of the remaining DOE-owned buildings in 2021. EM is also on track to complete the demolition of a former reactor stack at the Brookhaven National Laboratory in New York, marking the end of legacy cleanup activities at that site.

Building on these accomplishments, EM will focus on a foundation of strategic initiatives intended to ensure EM is positioned for continued success for the years to come.

Strategic Initiatives

In 2020, EM worked to implement a more corporate approach to managing its cleanup efforts. This included the development of a new strategy-focused function at EM headquarters to ensure a unified and integrated approach to strategically timed engagement and communication to create the right environment for successful mission execution, as well as the issuance of the inaugural EM Strategic Vision, covering the period of CY 2020-2030. This vision, intended to be updated on an annual basis, serves as a roadmap that helps lay out how various components of cleanup currently fit together; and prompts conversations and engagement on the future of the EM program. EM also has developed policies to ensure a robust and integrated approach to project and program management at a corporate level in response to recommendations from the Government Accountability Office and others.

Given that the vast majority of EM’s work is performed by private industry, EM continuously looks to further strengthen and enhance its acquisition and contracting capabilities. EM has launched the development of an acquisition corps through the EM Consolidated Business Center to help build a cadre of trained personnel to serve on acquisition integrated project teams and source evaluation boards to ensure greater efficiency and consistency in conducting major procurements. EM has also taken steps to ensure more strategic alignment in contractor incentives and greater consistency in evaluation of

contractor performance through the establishment of a Performance and Fee Review Board, made up of senior EM headquarters and field leadership.

EM is also continuing to move forward with its “end-state” contracting approach, which is discussed in more detail below. The idea is to convert most of EM’s existing “cost plus award fee” contracts to cost plus incentive contracts focused on end-states as they are recompeted over the next several years. The concept is to replicate the significant achievements made with cost plus incentive fee contracts used for closure sites beginning in the 1990s, including Rocky Flats, Fernald, and Mound. The faster EM can achieve cleanup, the sooner EM can eliminate the significant costs associated with maintaining infrastructure at our sites. In the fall of 2020, EM began transition for the first end-state contract awarded, for cleanup of Hanford’s Central Plateau. EM is also continuing to move forward with procurements for end-state contracts at several other sites, including Savannah River, Oak Ridge, and Idaho.

To build on our recent contract successes, EM will be assessing all of our contracts to identify best practices and share them across the complex.

End-State Contracting

Approximately 95 percent of EM’s annual budget is utilized through contracting with an array of industry partners. EM will continue to be a demanding client, expecting that contractors will perform in a safe, efficient, and cost-effective manner and with the highest ethical standards. Over the coming decade, EM will continue to develop and improve acquisition tools, processes, and resources to increase consistency and efficiency in competing and awarding contracts. This includes new templates, approaches, and policies to greatly improve efficiency in executing competitive acquisitions.

The next one to two years will see EM undertake new procurements for cleanup contracts at almost every site. This contracting push will result in the wider use of EM’s updated End State Contracting Model, which encompasses a two-step indefinite delivery/indefinite quantity contracting process. The End State Contracting Model provides the ability to group work under a contract into specific task orders to allow better clarity and shorter time horizons, as well as provide more accurate cost and schedule targets.

As many as four new end-state contracts could be awarded in 2021.

Highlights and Major Changes in the FY 2022 Budget Request

In FY 2022, EM will work to maintain and build upon the momentum generated through recent cleanup successes.

The FY 2022 investment of \$7,596,200,000 in discretionary budget authority, a record high in the history of the EM program, will fund activities to maintain a safe and secure posture in the EM complex, while maximizing cleanup activities. To that end, we will engage with our federal and state regulators regarding compliance requirements and achieving cleanup progress. EM is ready to effectively and efficiently utilize the resources the request provides to make significant progress.

In FY 2022, continued progress will be made on the treatment of radioactive waste in tanks across the complex—one of EM’s largest environmental and financial challenges. At the Savannah River Site, the Liquid Waste Program will achieve additional risk reduction by stabilization and immobilization of high activity radionuclides through vitrification into canisters at the Defense Waste Processing Facility and disposition of low-level waste in Saltstone Disposal Units. The Salt Waste Processing Facility, a key component in separating radionuclides from the salt waste, became operational in January 2021. This brings the whole liquid waste system into operations, making it capable of processing the bulk of the waste stored in the tank farms over the next decade.

The Office of River Protection at the Hanford site continues progress toward important cleanup required by the Amended Consent Decree and Tri-Party Agreement. The Office of River Protection budget request is designed to maintain safe operations of the tank farms to protect workers, the public, and the environment; meet regulatory commitments; and enable the development and maintenance of infrastructure necessary to enable waste treatment operations, to include facility operations and operational support of direct feed low-activity waste process systems.

Also at the Hanford site, Richland's FY 2022 budget request is designed to maintain safe operations; perform site-wide services; support Direct Feed Low-Activity Waste startup and commissioning; and conduct critical site infrastructure projects. The budget request supports key risk reduction efforts, including progress in modifications to the Waste Encapsulation and Storage Facility for transfer of the cesium-strontium capsules to dry storage by August 2025; continued groundwater treatment progress; additional progress in the remediation of the 300-296 waste site located beneath the 324 Building; and completion of 105KW Fuel Storage Basin debris disposition and deactivation activities.

At the Idaho site, the request will enable continued progress toward initiating operation of the Integrated Waste Treatment Unit to begin treating the stored sodium bearing tank waste. A 50-day simulant run was successfully conducted in FY 2019. Final plant modifications are underway in preparation for radiological operations in FY 2022.

Also at the Idaho site, the request continues progress in characterizing, packaging, and shipping stored contact-handled and remote-handled transuranic waste. The request continues processing, characterizing, packaging, and shipping mixed low-level radioactive waste and remote-handled mixed low-level radioactive waste to off-site disposal facilities, as well as, completing the treatment of contact handled sludge waste. The Advanced Mixed Waste Treatment Project will continue Resource Conservation and Recovery Act closure activities and begin decontamination and decommissioning.

FY 2022 will also mark the beginning of design and engineering for the expansion of the Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility to address the need for disposal options since the current landfill is nearing capacity, and the capability to accept and dispose of large, heavy items is diminishing. EM will continue spent nuclear fuel activities to meet the Idaho Settlement Agreement milestone of moving all spent nuclear fuel out of wet storage by 2023. This includes, transferring the remaining two fuel types out of Chemical Processing Plant Building-666 and beginning design and engineering work for an interim spent fuel staging project.

At Oak Ridge, the FY 2022 budget request supports the transition to a greater focus on the cleanup of high-risk excess facilities at Oak Ridge National Laboratory and Y-12 National Security Complex, following successful D&D activities at the East Tennessee Technology Park. The request also continues slab and soil remediation at the East Tennessee Technology Park. Shipments of transuranic waste to the Waste Isolation Pilot Plant will continue. Oak Ridge National Laboratory will continue to focus on developing mercury-related technology to support characterization, remediation, monitoring, and modeling of mercury contamination and testing and maturation of critical technologies to support design of the Transuranic Sludge Treatment Process. The downblending of the remaining uranium-233 material at Oak Ridge National Laboratory will continue, as well as design and construction of a second On-Site Waste Disposal Facility, to support Y-12 National Security Complex and Oak Ridge National Laboratory cleanup.

The Waste Isolation Pilot Plant's FY 2022 budget request supports disposal facility operations; regulatory and environmental compliance actions; the Central Characterization Project to perform transuranic waste characterization/certification activities to maintain progress toward legacy transuranic waste related milestones at generator sites; and transuranic waste transportation capabilities. The request also supports continued progress on repairing or replacing infrastructure, modernizing underground equipment to zero-emission battery-electric vehicles, the Safety Significant Confinement Ventilation System (15-D-411), and Utility Shaft (15-D-412). Design progress will also continue the Hoisting Capability Project (21-D-401).

At the Los Alamos National Laboratory, the FY 2022 budget request supports retrieval and repackaging of the below-grade transuranic waste to include readiness activities and infrastructure needs in order to manage the processing and packaging of the waste at Area G; remediation of the Middle DP Road Site after identification of newly discovered legacy contamination; completing cleanup of several aggregate areas under Consent Order cleanup Campaigns; continuing demolition, investigation and cleanup associated with Building 21-257, the Industrial Waste Lines, and the DP West Slabs at

Technical Area 21; and a continued to focus on surface water and groundwater management, consistent with the priorities established with the New Mexico Environment Department in the 2016 Consent Order. The request will continue the Chromium Plume Control Interim Measures to control migration of a hexavalent chromium plume beneath the Mortandad and Sandia canyons; continue Plume-Center Characterization activities to investigate and develop corrective measures for remediation of the hexavalent chromium plume, and design will be initiated for the proposed remedies; and continue installation of New Mexico Environment Department approved groundwater remedies for the Royal Demolition Explosives plume in Cañon de Valle. In addition, efforts will initiate planning for deactivation and decommissioning of proposed National Nuclear Security Administration high-risk excess facilities.

At Portsmouth, the FY 2022 budget request continues progress on the deactivation and decommissioning of the Portsmouth Gaseous Diffusion Plant. This budget request also supports the safe operation of the Depleted Uranium Hexafluoride Conversion facility. Funding is included for the On-Site Waste Disposal Facility, Line-Item Capital Project #1 (15-U-408) to receive the debris from the X-326 Process Building and includes funding the On-Site Waste Disposal Facility, Line-Item Capital Project #2 (20-U-401) to receive the debris from the X-333 Process Building. The mission of these projects is to construct an on-site facility for the disposal of debris generated from the demolition of the Portsmouth Gaseous Diffusion Plant and associated facilities.

At Paducah, the FY 2022 budget request supports activities to continue environmental remediation and to further stabilize the gaseous diffusion plant. The stabilization activities include non-destructive assay characterization, activities to remove hazardous materials, and surveillance and maintenance. This budget request also supports the safe operation of the Depleted Uranium Hexafluoride Conversion facility.

At West Valley, major activities planned for the West Valley Demonstration Project for FY 2022 focus on the ongoing demolition of the Main Plant Process Building; continuing site operations and maintenance; and disposition of newly generated waste.

At Moab, the FY 2022 request supports safely excavating, transporting, and placing mill tailings from Moab, Utah, to the disposal cell at Crescent Junction, Utah; replacing and maintaining equipment as needed for a safe work environment; placing a portion of the interim cover on the disposal cell; and extracting contaminated groundwater and injecting freshwater to protect the Colorado River. EM's request provides the Moab Project the resources to purchase new heavy-duty railcars to increase by 20 percent the capacity of material shipped to the disposal cell in Crescent Junction. EM's request also provides the resources to add additional staffing to increase shipments at the site, which will accelerate site completion by at least two years before the current projected end date of FY 2029.

At the Lawrence Livermore National Laboratory, additional resources will be invested for demolition and characterization work to supporting planning efforts for decommissioning and demolition work on National Nuclear Security Administration-owned high-risk contaminated excess facilities. The request will support completing Building 175 demolition to slab and Building 280 reactor removal. The majority of activities scheduled for FY 2022 for Site 300 support the development of remedial solutions for contamination at Building 812, Building 850, and Building 865.

EM's FY 2022 Budget Request also provides a significant focus on Cybersecurity activities. Headquarters' Cybersecurity provides services such as Site Test and Evaluations, Information Security Continuous Monitoring, Incident Response, Penetration Testing, and enterprise license purchasing through the Mission Innovation Protection Program. Cybersecurity activities, including the Mission Innovation Protection Program, will be funded out of the EM Safeguards and Security. For sites without a safeguards and security program, other site funding will be utilized. EM's Cybersecurity program will continue to:

- Implement and comply with the most current DOE Cybersecurity requirements.
- Maintain site Cybersecurity incident response capabilities.
- Upgrade and retire legacy information technology systems.

- Identify and secure high value assets.
- Remediate critical and high vulnerabilities that affect DOE information systems.
- Implement continuous diagnostic and mitigation implementation.
- Provide employee Cybersecurity awareness and privilege user training.
- Implement and sustain multifactor authentication for all standard and privilege users that access DOE information systems.

Working Capital Fund

In FY 2022, EM's share of the Working Capital Fund is estimated at \$31,147,000 which is split funded between Program Direction (through Headquarters Working Capital Fund Other Related Expenses line of account) and EM's environmental cleanup program activities.

EM's FY 2022 Program Direction Working Capital Fund estimate is \$11,869,000.

EM's remaining FY 2022 Working Capital Fund request is \$19,278,000. EM will fund activities within the Working Capital Fund such as A-123/Internal Controls, Building Occupancy, Copy Services, Corporate Business Systems (STARS, iBudget, iPortal/IDW, Digital Media, Oak Ridge Financial Services Center, and STRIPES), Corporate Training Services, Financial Statement Audits, Health Services, Interagency Transfers, Mail and Transportation, Overseas Presence, Pension Studies, Project Management Career Development Program, Printing and Graphics, Procurement Management, Supply and Telecommunications. These activities will be assessed to EM cleanup activities.

The table below provides a complete breakout of the Working Capital Fund Business Lines and how the activities are funded between Program Direction and EM cleanup activities.

FY 2022 Working Capital Fund Estimate

	Program Direction	EM Cleanup	Total
A123	0	338	338
Building Occupancy	8,298	0	8,298
Copy Services	0	198	198
Corporate Business Systems	204	8,315	8,519
Corp Training Services	252	0	252
Financial Statement Audits	0	2,455	2,455
Health Services	123	0	123
Interagency Transfers	0	1,746	1,746
Mail & Transportation	0	187	187
Overseas Presence	330	0	330
Pension Studies	0	147	147
PMCDP	0	730	730
Print & graphics	0	209	209
Procurement Management	0	4,953	4,953
Supply	236	0	236
Telecom	2,426	0	2,426
Total	11,869	19,278	31,147

Environmental Management Funding by Congressional Control (\$K)

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Defense Environmental Cleanup

Contribution to the Uranium Enrichment D&D Fund

0 0 415,670 +415,670

Closure Sites

Closure Sites Administration 4,987 4,987 3,987 -1,000

Hanford Site

Central Plateau Remediation 654,800 670,000 689,776 +19,776

Richland Community and Regulatory Support 10,121 8,621 5,121 -3,500

River Corridor and Other Cleanup Operations 236,102 232,479 196,000 -36,479

Construction

18-D-404: Modification of Waste Encapsulation and Storage Facility, Richland, WA (PBS RL-0013C) 11,000 15,000 8,000 -7,000

22-D-401: 400 Area Fire Station, (RL-0201) 0 0 15,200 +15,200

22-D-402: 200 Area Water Treatment Facility, (RL-0201) 0 0 12,800 +12,800

Total, Construction

11,000 15,000 36,000 +21,000

Total, Hanford Site

912,023 926,100 926,897 +797

Idaho National Laboratory

Idaho Cleanup and Waste Disposition 430,000 430,000 358,925 -71,075

Idaho Community and Regulatory Support 3,500 3,500 2,658 -842

Construction

22-D-403: Idaho Spent Nuclear Fuel Staging Facility, ID (ID-0012B-D) 0 0 3,000 +3,000

22-D-404: Additional ICDF Landfill Disposal Cell and Evaporation Ponds Project (ID-0030B) 0 0 5,000 +5,000

Total, Construction

0 0 8,000 +8,000

Total, Idaho National Laboratory

433,500 433,500 369,583 -63,917

NNSA Sites

Lawrence Livermore National Laboratory 1,727 1,764 1,806 +42

LLNL Excess Facilities D&D 65,000 35,000 35,000 0

Los Alamos Excess Facilities D&D 0 0 58,381 +58,381

Los Alamos National Laboratory 220,000 226,000 275,119 +49,119

Nevada 60,737 60,737 60,737 0

Sandia National Laboratories 2,652 4,860 4,576 -284

Separations Processing Research Unit 15,300 15,000 15,000 0

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Total, NNSA Sites	365,416	343,361	450,619	+107,258
Oak Ridge				
OR Cleanup and Disposition	101,100	112,471	73,725	-38,746
OR Nuclear Facility D&D	213,000	254,132	274,923	+20,791
OR Reservation Community and Regulatory Support	5,900	5,900	5,096	-804
OR Technology Development and Deployment	5,000	5,000	3,000	-2,000
U233 Disposition Program	55,000	55,000	55,000	0
Construction				
14-D-403: Outfall 200 Mercury Treatment Facility, OR (OR-0041)	70,000	20,500	0	-20,500
17-D-401: On-Site Disposal Facility	0	22,380	12,500	-9,880
Total, Construction	70,000	42,880	12,500	-30,380
Total, Oak Ridge	450,000	475,383	424,244	-51,139
Office of River Protection				
ORP Low-Level Waste Offsite Disposal	10,000	0	7,000	+7,000
Tank Farm Activities	775,000	784,000	817,642	+33,642
Waste Treatment and Immobilization Plant	15,000	50,000	50,000	0
Construction				
01-D-16D: High Level Waste Facility, RL	25,000	25,000	60,000	+35,000
01-D-16E: Pretreatment Facility, RL	15,000	0	20,000	+20,000
18-D-16: Waste Treatment and Immobilization Plant LBL/Direct Feed LAW	776,000	786,000	586,000	-200,000
Total, Construction	816,000	811,000	666,000	-145,000
Total, Office of River Protection	1,616,000	1,645,000	1,540,642	-104,358
Savannah River Site				
Radioactive Liquid Tank Waste Stabilization and Disposition	820,106	910,832	890,865	-19,967
Savannah River Legacy Pensions	0	0	130,882	+130,882
Savannah River Risk Management Operations	506,366	500,000	452,724	-47,276
SR Community and Regulatory Support	11,249	11,549	5,805	-5,744
Construction				
05-D-405: Salt Waste Processing Facility, SR	21,200	0	0	0
17-D-402: Saltstone Disposal Unit #7, SR (SR-0014C)	40,034	10,716	0	-10,716
18-D-402: Emergency Operations Center	6,792	6,500	8,999	+2,499
18-D-402: Saltstone Disposal Unit #8/9, SR (SR-0014C)	20,000	65,500	68,000	+2,500
19-D-701: SR Security System Replacement	4,525	1,000	5,000	+4,000
20-D-401: Saltstone Disposal Unit 10 11 12	500	562	19,500	+18,938
20-D-402: Advanced Manufacturing Collaborative Facility (AMC)	25,000	25,000	0	-25,000
Total, Construction	118,051	109,278	101,499	-7,779
Environmental Management/ Overview				

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Total, Savannah River Site	1,455,772	1,531,659	1,581,775	+50,116
Program Support				
Mission Support	12,979	12,979	62,979	+50,000
Program Direction	281,119	289,000	293,106	+4,106
Safeguards and Security	313,097	320,771	316,744	-4,027
Technology Development and Deployment				
Mission Support	25,000	30,000	25,000	-5,000
Waste Isolation Pilot Plant				
Waste Isolation Pilot Plant	294,353	313,260	350,424	+37,164
Construction				
15-D-411: Safety Significant Confinement Ventilation System, WIPP	58,054	35,000	55,000	+20,000
15-D-412: Utility Shaft	44,500	55,000	25,000	-30,000
21-D-401: Hoisting Capability Project	0	10,000	0	-10,000
Total, Construction	102,554	100,000	80,000	-20,000
Total, Waste Isolation Pilot Plant	396,907	413,260	430,424	+17,164
Total, Defense Environmental Cleanup	6,266,800	6,426,000	6,841,670	+415,670
Non-Defense Environmental Cleanup				
Mercury Storage Receipts	0	3,000	0	-3,000
Community, Regulatory and Program Support	200	0	0	0
Management and Storage of Elemental Mercury	1,200	2,100	2,100	0
Fast Flux Test Reactor Facility D&D	2,500	2,500	3,100	+600
Gaseous Diffusion Plants				
Paducah Gaseous Diffusion Plant	56,456	57,580	57,363	-217
Portsmouth Gaseous Diffusion Plant	56,629	57,974	58,840	+866
Total, Gaseous Diffusion Plants	113,085	115,554	116,203	+649
Small Sites				
Closure Sites Administration	0	0	11,997	+11,997
Energy Technology Engineering Center	18,200	12,000	21,340	+9,340
Idaho National Laboratory	12,800	11,000	11,000	0
Lawrence Berkeley National Laboratory	31,000	30,100	0	-30,100
Moab	45,000	47,833	85,000	+37,167
Oak Ridge	10,000	0	0	0
Other Sites	10,000	10,000	0	-10,000
Total, Small Sites	127,000	110,933	129,337	+18,404
West Valley Demonstration Project	75,215	88,113	88,120	+7

Environmental Management/
Overview

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Total, Non-Defense Environmental Cleanup	319,200	322,200	338,860	+16,660
Uranium Enrichment Decontamination and Decommissioning Fund				
U/Th Reimbursements				
Mission Support	5,250	5,000	33,500	+28,500
Oak Ridge	195,693	134,701	105,000	-29,701
Paducah	240,000	240,000	198,995	-41,005
Portsmouth				
Portsmouth Gaseous Diffusion Plant	367,193	367,193	397,311	+30,118
Construction				
15-U-408: On-Site Waste Disposal Facility, Portsmouth (PO-0040)	41,102	46,639	5,000	-41,639
20-U-401: On Site Waste Disposal Facility (Cell Line 2&3)	10,000	16,500	65,235	+48,735
Total, Construction	51,102	63,139	70,235	+7,096
Total, Portsmouth	418,295	430,332	467,546	+37,214
Pension and Community and Regulatory Support				
Oak Ridge	17,655	25,000	20,000	-5,000
Paducah Gaseous Diffusion Plant	2,094	2,099	2,739	+640
Portsmouth Gaseous Diffusion Plant	2,013	3,868	3,560	-308
Total, Pension and Community and Regulatory Support	21,762	30,967	26,299	-4,668
Total, Uranium Enrichment Decontamination and Decommissioning Fund	881,000	841,000	831,340	-9,660
Total, Environmental Management	7,467,000	7,589,200	8,011,870	+422,670
15-D-401 Containerized Sludge Removal (RL)	-11,800	0	0	0
	0	-3,000	0	+3,000
D&D Fund Offset	0	0	-415,670	-415,670
Total, Environmental Management	7,455,200	7,586,200	7,596,200	+10,000
Full Time Equivalents	1,182	1,275	1,290	+15

SBIR/STTR:

- FY 2020 Enacted Transfer: SBIR \$1,095; STTR \$0
- FY 2021 Projected Transfer: SBIR \$1,278; STTR \$0
- FY 2022 Request: SBIR \$1,022; STTR \$0

**Environmental Management
Funding by Budget Chapters (\$K)**

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Carlsbad	403,599	420,066	437,230	+17,164
Idaho	446,300	444,500	380,583	-63,917
Oak Ridge	682,348	644,344	561,244	-83,100
Paducah	314,339	315,885	275,303	-40,582
Portsmouth	493,427	508,864	546,636	+37,772
Richland	1,001,301	1,024,900	1,026,297	+1,397
River Protection	1,616,000	1,645,000	1,540,642	-104,358
Savannah River	1,629,924	1,702,870	1,746,219	+43,349
Lawrence Livermore National Laboratory	66,727	36,764	36,806	+42
Los Alamos National Laboratory	220,000	226,000	333,500	+107,500
Nevada	60,737	60,737	60,737	0
Sandia Site Office	2,652	4,860	4,576	-284
Separations Process Research Unit	15,300	15,000	15,000	0
West Valley Demonstration Project	79,611	92,411	92,418	+7
Energy Technology Engineering Center	18,200	12,000	21,340	+9,340
Moab	45,000	47,833	85,000	+37,167
Other Sites				
Closure Sites Administration	4,987	4,987	15,984	+10,997
Lawrence Berkeley National Laboratory	31,000	30,100	0	-30,100
Other Sites	10,000	10,000	0	-10,000
Subtotal, Other Sites	45,987	45,087	15,984	-29,103
Program Direction	281,119	289,000	293,106	+4,106
D&D Fund Deposit	0	0	415,670	+415,670
Mission Support	44,429	53,079	123,579	+70,500
Subtotal, Environmental Management	7,467,000	7,589,200	8,011,870	+422,670
15-D-401 Containerized Sludge Removal (RL)	-11,800	0	0	0
	0	-3,000	0	+3,000
D&D Fund Offset	0	0	-415,670	-415,670
Total, Environmental Management	7,455,200	7,586,200	7,596,200	+10,000

**Environmental Management
Capital Summary (\$K)**

Pursuant to Section 3121 of the Ike Skelton National Defense Authorization Act for FY 2011 (P.L. 111-383), notification is being provided for general plant projects with a total estimated cost of more than \$5 million planned for execution in FY 2021 and FY 2022.

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Capital Operating Expenses Summary (including (Major Items of Equipment (MIE))

Capital Equipment > \$500K (including MIE)	0	0	0	0	0	0
Accelerator Improvement Projects (AIP) (<\$5M)	0	0	0	0	0	0
Minor Construction	402,316	60,381	101,363	97,116	70,811	+83,958
Total, Capital Operating Expenses	402,316	60,381	101,363	97,116	70,811	+83,958

Capital Equipment > \$500K (including MIE)	0	0	0	0	0	0
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Accelerator Improvement Projects (Total Estimated Cost <\$5M)	0	0	0	0	0	0
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Minor Construction Projects

Carlsbad

Fire Water Loop Phase 3 (Spurs to facilities)	11,551	836	2,373	49	2,129	6,213	+4,084
Underground Salt Pocket Design	2,500	0	0	0	2,500	0	-2,500
Safety Significant Fire Suppression System (Waste Handling Building – 411 Fire System)	10,130	0	0	0	2,130	8,000	+5,870
Total, Carlsbad	24,181	836	2,373	49	6,759	14,213	+7,454

Oak Ridge

Technology Demonstration Facility	750	0	750	150	0	0	0
Viewing Tower/Equipment Building	9,564	1,564	8,000	18,422	0	0	0
Wayside Exhibits & Access to Historic Preservation Facilities	5,459	3,459	2,000	3,470	0	0	0
SWSA 6 Laydown & Storage Area	4,700	2,000	2,700	750	0	0	0
ORNL Fire Alarm Upgrades	11,900	2,000	7,400	5,400	2,500	0	-2,500

**Environmental Management/
Overview**

FY 2022 Congressional Budget Justification

	Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Zeolite Installation Building 3544	9,327	4,999	3,200	8,923	1,128	0	-1,128
Pretreatment System Building 3517	4,408	576	3,200	3,374	632	0	-632
Bailey DCS System Upgrade	15,832	0	4,600	1,464	5,740	5,492	-248
MSRE Upgrades	6,387	0	5,000	6,500	1,387	0	-1,387
Graphite Reactor Roof & Exhaust	5,250	0	4,500	5,650	750	0	-750
ORNL Equipment Staging	3,900	0	3,900	3,900	0	0	0
ORNL Improvement Projects ^a	9,000	0	0	0	0	9,000	+9,000
Y-12 Improvement Projects ^a	9,000	0	0	0	0	9,000	+9,000
Total, Oak Ridge	95,477	14,598	45,250	58,003	12,137	23,492	+11,355

^a When the scope of these projects is definitized, Congressional notification will be provided as required.

Paducah

Security Management Facility	4,373	0	4,373	0	0	0	0
Emergency Operations Center	6,000	0	6,000	0	0	0	0
Large Item Neutron Assay System	6,567	0	349	349	4,264	1,954	-2,310
Shoothouse	1,045	0	0	0	0	1,045	+1,045
ProForce Facility	3,659	0	0	0	0	3,659	+3,659
Modular Classified Records Storage	2,000	0	0	0	0	2,000	+2,000
NW Corner Strategy	350	0	0	0	0	350	+350
Total, Paducah	23,994	0	10,722	349	4,264	9,008	+4,744

Portsmouth

Electrical Supply and Distribution Gaseous Diffusion Plant	19,041	1,383	1,437	57	3,821	12,400	+8,579
Safeguards and Security Training Center	1,036	0	0	0	1,036	0	-1,036
Total, Portsmouth	20,077	1,383	1,437	57	4,857	12,400	+7,543

Richland

Cesium and Strontium Capsule Project Cask Storage Area	17,500	3,500	8,000	7,057	6,000	0	-6,000
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	Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Construct Integrated Disposal Facility (IDF) (DFLAW priority)	13,965	3,965	10,000	10,227	0	0	0
L-707, Advanced Electrical Metering ^a	2,855	60	1,212	59	0	1,583	+1,583
L-781, 181D Vertical Turbine Pumps, Header, Instrumentation, Commission ^a	4,366	678	702	0	0	2,986	+2,986
L-819, High Capacity Fiber Optic (300 Area Central Plateau) ^a	163	0	0	0	0	163	+163
L-826, 181B Vertical Turbine Pumps, Header, Instrumentation, Commission ^a	2,882	642	720	0	0	1,520	+1,520
L-838, Water Feeds to 622R, 6608 Facility and 200 W Sewer Lagoons ^a	144	0	0	0	0	144	+144
L-849, Replace 200E 1.1M Gallon PW Tank ^a	1,677	802	668	62	0	207	+207
L-850, Replace 200W 1.1M Gallon PW Tank (DFLAW Priority) ^a	11,106	843	1,323	722	1,871	7,069	+5,198
L-854, 200E Sewer Consolidations (DFLAW Priority) ^a	4,968	4,968	0	840	0	0	0
L-894, Raw Water Cross Connection Isolation 200E/W ^a	6,293	6,129	0	792	0	164	+164
L-895, Fire Protection Infrastructure for Plateau Raw Water ^a	10,135	7,366	2,769	3,853	0	0	0
L-906, HFD Station 92 Extension ^a	756	476	280	0	0	0	0
L-907, Fleet Complex Site Development	12,182	0	257	0	0	11,925	+11,925
L-908, Auto/Truck Shop and Storage	569	0	0	0	0	569	+569
L-909, Heavy Equipment Shop and Storage	916	0	0	0	0	916	+916
L-927, Sanitary Water Cross Line between 200E and 200W (DFLAW)	4,163	0	0	0	0	4,163	+4,163
Total, Richland	94,640	29,429	25,931	23,612	7,871	31,409	+23,538

^a These capital investments represent expenditures that may be performed between FY 2021 and FY 2022 based on emerging risks.

River Protection

Construct New Maintenance Shop ^a	12,120	1,200	3,350	996	6,670	900	-5,770
ETF Acetonitrile Treatment Upgrade ^a	16,570	0	2,700	1,764	5,320	8,550	+3,230
ETF Load in Expansion ^a	9,180	0	1,500	1,092	4,160	3,520	-640
Ancillary Equipment Addition ^a	15,414	1,040	0	0	0	14,374	+14,374
222-S Office Space Addition ^a	9,300	0	500	330	4,480	4,320	-160
AP Farm Tanker Truck Loading and Off Loading Station ^a	6,326	0	2,500	2,154	218	3,608	+3,390

	Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Modular Grout System ^a	10,725	0	0	0	4,225	6,500	+2,275
ETF Motor Control Center Upgrades ^a	11,525	0	500	0	3,850	7,175	+3,325
ETF Brine Storage Tanks ^a	6,800	0	0	0	0	6,800	+6,800
Total, River Protection	97,960	2,240	11,050	6,336	28,923	55,747	+26,824

^a These capital investments represent expenditures that may be accelerated to FY 2021 based on emerging or identified risks.

Savannah River

SRNL IGPPs ^a	17,895	11,895	0	4,328	0	6,000	+6,000
Replacement of Barricade 9	2,500	0	0	0	0	2,500	+2,500
Diesel Generator Replacement, 503-2A	375	0	375	427	0	0	0
Lab B 126/130 Renovation 773A	700	0	700	0	0	0	0
HVAC unit 735-A	375	0	375	247	0	0	0
Relocate Glass Apparatus Fabrication Laboratory to C-Wing, 735-A	1,100	0	1,100	803	0	0	0
Upgrade SRNL Limited Area Public Address System	100	0	100	136	0	0	0
Renovate Laboratory C-155 Hood and Gloveboxes, 773-A	750	0	750	46	0	0	0
Y-760, Relocate Glass Apparatus Fab. Lab.	300	0	0	0	300	0	-300
Y-794, Replacement HVAC Sys. 735-11A	925	0	0	717	925	0	-925
Replace B&C CHEX Diversion Fans and Dampers, 773-A	1,175	0	0	21	0	0	0
Design and Install the Delta V Control Room C-041 System Upgrade, 773-A	8,767	0	0	113	0	0	0
Construct Shop for SRNL Project Support	1,050	0	0	405	0	0	0
Renovate Lab B067/067 for High Accuracy Isotope Ratio Measurement	4,000	0	0	22	0	0	0
Y-710, Renovate Lab C-159/163	1,075	0	0	261	1,075	0	-1,075
773-A Collaboration Room Expansion	600	0	600	402	0	0	0
Renovate 773-A Entryway	600	0	600	782			
Construct Advanced Characterization Bldg. (TEM)	1,000	0	0	0	1,000	0	-1,000
TIMS Installation	1,500	0	0	0	1,500	0	-1,500

	Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
SRNL Delta V Control System Upgrade	1,200	0	0	0	1,200	0	-1,200
Total, Savannah River	45,987	11,895	4,600	8,710	6,000	8,500	+2,500
^a Projects and allocation of the FY 2021 and FY 2022 IGPP request are preliminary. Final FY 2021 and FY 2022 projects will reflect emerging or identified risks. When the scope of these project is definitized, Congressional notification will be provided as required.							
Total, Minor Construction	402,316	60,381	101,363	97,116	70,811	154,769	+83,958
Total, Capital Summary including Capital Equipment	402,316	60,381	101,363	97,116	70,811	154,769	+83,958

**Environmental Management
Construction Summary (\$K)**

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted-
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Waste Treatment and Immobilization Plant, Hanford WA

18-D-16, Waste Treatment and Immobilization Plant

LBL/Direct Feed LAW

Total Estimate Cost (TEC)	TBD	6,324,515	776,000	606,699	786,000	586,000	-200,000
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Other Project Costs (OPC)	0	0	0	0	0	0	0
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01-D-16D, High-Level Waste Facility

Total Estimate Cost (TEC)	TBD	2,648,318	25,000	66,169	25,000	60,000	+35,000
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Other Project Costs (OPC)	0	0	0	0	0	0	0
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01-D-16E Pretreatment Facility

Total Estimate Cost (TEC)	TBD	3,742,050	15,000	15,806	0	20,000	+20,000
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Other Project Costs (OPC)	0	0	0	0	0	0	0
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Total Estimate Cost (TEC)	TBD	12,714,883	816,000	688,674	811,000	666,000	-145,000
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Other Project Costs (OPC)	0	0	0	0	0	0	0
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Total Project Cost (TPC) 01-D-416	TBD	12,714,883	816,000	688,674	811,000	666,000	-145,000
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14-D-403, Outfall 200 Mercury Treatment Facility, OR (OR-0041)

Total Estimate Cost (TEC)	N/A*	121,608	N/A*	26,589	N/A*	0	N/A*
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Other Project Costs (OPC)	N/A*	11,892	N/A*	52	N/A*	0	N/A*
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Total Project Cost (TPC) 14-D-403	224,000	133,500	70,000	26,641	20,500	0	-20,500
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* Congress appropriated line item funds for TPC beginning in FY 2017.

**15-U-408, On Site Waste Disposal Facility – Initial
Infrastructure and Cell 1, 4 and 5 Liner Construction**

Total Estimate Cost (TEC)	268,058	141,650	38,821	43,412	45,682	4,750	-40,932
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Other Project Costs (OPC)	16,616	8,522	2,281	2,338	957	250	-707
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Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted-
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Total Project Cost (TPC) 15-U-408

284,674	150,172	41,102	45,750	46,639	5,000	-41,639
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15-D-411, Safety Significant Confinement Ventilation System (WIPP) (CB-0080)

Total Estimate Cost (TEC)	261,316	207,962	53,354	36,023	27,321	50,000	+22,679
Other Project Costs (OPC)	26,469	14,000	4,700	119	7,679	5,000	-2,679

Total Project Cost (TPC) 15-D-411

287,785^a	221,962	58,054	36,142	35,000	55,000	+20,000
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^a This is the current approved estimate. A Baseline Change Proposal is under review. The current appropriated dollars for this project are \$370M.

15-D-412, Utility Shaft, formerly Exhaust Shaft (WIPP) (CB-0080)

Total Estimate Cost (TEC)	189,120	62,100	44,500	46,813	55,000	23,173	-31,827
Other Project Costs (OPC)	7,865	6,038	0	1,292	0	1,827	+1,827

Total Project Cost (TPC) 15-D-412^b

196,985^b	68,138	44,500	48,105	55,000	25,000	-30,000
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^b This is the current approved estimate. A Baseline Change Proposal is under review.

17-D-401, On Site Disposal Facility (OR-0041)

Total Estimate Cost (TEC)	N/A*	16,302	0	9,539	22,314	12,073	-10,241
Other Project Costs (OPC)	N/A*	22,681	0	12	66	427	+361

Total Project Cost (TPC) 17-D-401

TBD	38,983	0	9,551	22,380	12,500	-9,880
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* Congress appropriated line item funds for TPC beginning in FY 2017.

18-D-401, Saltstone Disposal Unit #8 and #9, SR (SR-0014C)

Total Estimate Cost (TEC)	247,771	8,077	19,709	19,709	65,500	68,000	+2,500
Other Project Costs (OPC)	32,229	3,750	2,999	2,999	5,750	5,500	-250

Total Project Cost (TPC) 18-D-401

280,000	11,827	22,708	22,708	71,250	73,500	+2,250
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18-D-402, Emergency Operations Center, SR (SR-0042)

Total Estimate Cost (TEC)	TBD	1,759	6,792	1,265	6,500	8,999	+2,499
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Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted-
Other Project Costs (OPC)	TBD	4,000	0	0	0	0
Total Project Cost (TPC) 18-D-402	TBD	5,759	6,792	1,265	6,500	+2,499
18-D-404, Modification of Waste Encapsulation and Storage Facility						
Total Estimate Cost (TEC)	35,800	7,500	11,000	1,188	15,000	0
Other Project Costs (OPC)	12,500	4,500	0	993	0	8,000
Total Project Cost (TPC) 18-D-404	48,300	12,000	11,000	2,181	15,000	8,000
19-D-701, SR Security Replacement System, SR (SR-0042)						
Total Estimate Cost (TEC)	TBD	10,000	4,525	7830	1,000	5,000
Other Project Costs (OPC)	TBD	0	0	0	0	0
Total Project Cost (TPC) 19-D-701	TBD	10,000	4,525	7,830	1,000	5,000
20-U-401, On Site Waste Disposal Facility – Remaining Infrastructure and Cell 2, 3, and 6 Liner Construction						
Total Estimate Cost (TEC)	341,212	0	9,603	5,592	16,238	60,735
Other Project Costs (OPC)	31,788	0	397	24	262	4,500
Total Project Cost (TPC) 20-U-401	373,000	0	10,000	5,616	16,500	65,235
20-D-401, Saltstone Disposal Unit #10, #11 and #12, SR (SR-0014C)						
Total Estimate Cost (TEC)	TBD	0	500	47	562	19,500
Other Project Costs (OPC)	TBD	0	400	656	950	4,400
Total Project Cost (TPC) 20-D-401	TBD	0	900	703	1,512	23,900
21-D-401, Hoisting Capability Project (WIPP) (CB-0080)						
Total Estimate Cost (TEC)	TBD	0	0	0	7,500	0
Other Project Costs (OPC)	TBD	0	0	0	2,500	0

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted-
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Total Project Cost (TPC) 21-D-401

TBD	0	0	0	10,000	0	-10,000
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22-D-401, 400 Area Fire Station

Total Estimate Cost (TEC)	19,400	0	200	200	2,200	13,900	+11,700
Other Project Costs (OPC)	3,100	1,300	1200	1,200	200	1,300	+1,100
Total Project Cost (TPC) 22-D-401^a	22,500	1,300	1,400	1,400	2,400	15,200	+12,800

^a These projects became construction line items in FY 2022. Previously, they were General Plant Projects.

22-D-402, Central Plateau Water Treatment Facility

Total Estimate Cost (TEC)	22,200	0	200	200	10,800	7,800	-3,000
Other Project Costs (OPC)	9,800	2,000	1,200	1,200	100	5,000	+4,900
Total Project Cost (TPC) 22-D-402^a	32,000	2,000	1,400	1,400	10,900	12,800	+1,900

^a These projects became construction line items in FY 2022. Previously, they were General Plant Projects.

22-D-403 Idaho Spent Nuclear Fuel Staging Facility

Total Estimate Cost (TEC)	0	0	0	0	0	0	0
Other Project Costs (OPC)	TBD	0	0	0	0	3,000	+3,000
Total Project Cost (TPC) 22-D-403	TBD	0	0	0	0	3,000	+3,000

**22-D-404 Additional ICDF Landfill Disposal Cell and
Evaporation Ponds Project**

Total Estimate Cost (TEC)-	TBD	0	0	0	0	3,000	+3,000
Other Project Costs (OPC)	TBD	0	0	0	0	2,000	+2,000
Total Project Cost (TPC) 22-D-404	TBD	0	0	0	0	5,000	+5,000

Total All Construction Projects

Total Estimate Cost (TEC)^c	1,384,847	13,291,841	1,075,204	887,081	1,107,117	942,930	-164,187
Other Project Costs (OPC)^c	140,367	78,683	13,177	10,885	18,464	41,204	+22,740
Total Project Cost (TPC) All Construction Projects^d	1,525,214	13,370,524	1,088,381	897,966	1,125,581	984,134	-141,447

- ^c The TEC and OPC totals for this table exclude the OR datasheets (14-D-403 and 17-D-401) as Congress appropriated line item funds for TPC beginning in FY 2017.
- ^d The TPC for this table include all construction projects for the Environmental Management Program.

ANCILLARY TABLES

**Environmental Management
Appropriation/Fund Type/Site (\$K)**

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Operating				
Carlsbad				
CB-0020	6,692	6,806	6,806	0
CB-0090	26,500	16,608	39,216	+22,608
CB-0081	20,400	21,850	23,730	+1,880
CB-0080	229,953	262,802	273,265	+10,463
CB-0083	17,500	12,000	14,213	+2,213
Subtotal, Carlsbad	301,045	320,066	357,230	+37,164
D&D Fund Deposit				
HQ-DD-0100	0	0	415,670	+415,670
Idaho				
ID-0100	3,500	3,500	2,658	-842
ID-0013	179,025	181,186	126,373	-54,813
ID-0014B	185,886	181,500	130,664	-50,836
ID-0030B	38,685	37,921	39,312	+1,391
ID-0012B-D	26,404	29,393	27,340	-2,053
ID-0040	0	0	35,236	+35,236
Subtotal, Idaho	433,500	433,500	361,583	-71,917
Lawrence Livermore National Laboratory				
VL-LLNL-0031	1,312	1,339	1,390	+51
VL-FOO-0013B-D	415	425	416	-9
CBC-LLNL-0040	65,000	35,000	35,000	0
Subtotal, Lawrence Livermore National Laboratory	66,727	36,764	36,806	+42
Los Alamos National Laboratory				
VL-FAO-0101	3,394	3,394	3,394	0
VL-LANL-0030	132,050	121,027	166,666	+45,639
VL-LANL-0013	84,556	101,579	105,059	+3,480
CBC-LANL-0040	0	0	58,381	+58,381
Subtotal, Los Alamos National Laboratory	220,000	226,000	333,500	+107,500
Mission Support				
HQ-MS-0100	6,979	6,979	6,979	0
HQ-TD-0100	25,000	30,000	25,000	-5,000

EM-HBCU-0100

Subtotal, Mission Support

Nevada

VL-NV-0100

VL-NV-0030

VL-NV-0080

Subtotal, Nevada

Oak Ridge

OR-0100

OR-TD-0100

OR-0013B

OR-0041

OR-0042

OR-0020

OR-0011D

Subtotal, Oak Ridge

Other Sites

CBC-0100-FN

CBC-0100-RF

CBC-0100-EM

Subtotal, Other Sites

Paducah

PA-0020

Portsmouth

PO-0020

Program Direction

HQ-PD-0100

HQ-PDWCF-0100

Subtotal, Program Direction

Richland

RL-0100

RL-0013C

RL-0030

RL-0011

RL-0041

RL-0040

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
6,000	6,000	56,000	+50,000
37,979	42,979	87,979	+45,000
4,741	5,065	5,142	+77
35,134	34,859	33,326	-1,533
20,862	20,813	22,269	+1,456
60,737	60,737	60,737	0
5,900	5,900	5,096	-804
5,000	5,000	3,000	-2,000
101,100	112,471	73,725	-38,746
60,000	135,732	140,137	+4,405
153,000	118,400	134,786	+16,386
9,000	9,260	12,000	+2,740
55,000	55,000	55,000	0
389,000	441,763	423,744	-18,019
1,100	1,100	1,076	-24
1,900	1,800	582	-1,218
1,987	2,087	2,329	+242
4,987	4,987	3,987	-1,000
15,789	16,206	16,206	0
16,490	16,690	16,690	0
270,571	277,133	281,237	+4,104
10,548	11,867	11,869	+2
281,119	289,000	293,106	+4,106
10,121	8,621	5,121	-3,500
176,855	182,340	220,341	+38,001
138,995	116,966	139,100	+22,134
0	17,359	0	-17,359
133,675	131,435	172,000	+40,565
102,427	101,044	24,000	-77,044

RL-0020
 RL-0201
Subtotal, Richland River Protection
 ORP-0014
 ORP-0070
 ORP-0014A
Subtotal, River Protection
Sandia Site Office
 VL-SN-0030
Savannah River
 SR-0100
 SR-0101
 SR-0013
 SR-0011C
 SR-0014C
 SR-0030
 SR-0020
 SR-0041
 SR-0042
Subtotal, Savannah River
Separations Process Research Unit
 VL-SPRU-0040
West Valley Demonstration Project
 OH-WV-0020
Subtotal, Operating Line Item Construction
Carlsbad
 CB-0080
Idaho
 ID-0030B
 ID-0012B-D
Subtotal, Idaho
Oak Ridge
 OR-0041
Richland

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
86,778	96,300	96,300	0
338,950	353,335	330,335	-23,000
987,801	1,007,400	987,197	-20,203
775,000	784,000	817,642	+33,642
15,000	50,000	50,000	0
10,000	0	7,000	+7,000
800,000	834,000	874,642	+40,642
2,652	4,860	4,576	-284
11,249	11,549	5,805	-5,744
0	0	130,882	+130,882
43,825	50,071	45,968	-4,103
360,558	349,724	312,760	-36,964
820,106	910,832	890,865	-19,967
65,508	56,412	55,439	-973
174,152	171,211	164,444	-6,767
26,324	27,264	21,000	-6,264
10,151	16,529	17,557	+1,028
1,511,873	1,593,592	1,644,720	+51,128
15,300	15,000	15,000	0
4,196	4,298	4,298	0
5,149,195	5,347,842	5,937,671	+589,829
102,554	100,000	80,000	-20,000
0	0	5,000	+5,000
0	0	3,000	+3,000
0	0	8,000	+8,000
70,000	42,880	12,500	-30,380

RL-0013C
 RL-0201
Subtotal, Richland River Protection
 ORP-0060
Savannah River
 SR-0014C
 SR-0042
Subtotal, Savannah River
Subtotal, Line Item Construction
Subtotal, Environmental Management Non-Defense Environmental Cleanup Operating
Energy Technology Engineering Center
 CBC-ETEC-0040
Idaho
 ID-0012B-N
Mission Support
 HQ-MSF
 HQ-MSF-0100
Subtotal, Mission Support
Moab
 CBC-MOAB-0031
Oak Ridge
 OR-0104
Other Sites
 CBC-ND-0100
 CBC-LBNL-0040
 CBC-0040-EF
Subtotal, Other Sites
Paducah
 PA-0011
 PA-0011X
Subtotal, Paducah
Portsmouth
 PO-0011X

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
11,000	15,000	8,000	-7,000
0	0	28,000	+28,000
11,000	15,000	36,000	+21,000
816,000	811,000	666,000	-145,000
81,734	76,778	87,500	+10,722
36,317	32,500	13,999	-18,501
118,051	109,278	101,499	-7,779
1,117,605	1,078,158	903,999	-174,159
6,266,800	6,426,000	6,841,670	+415,670
18,200	12,000	21,340	+9,340
12,800	11,000	11,000	0
0	3,000	0	-3,000
1,200	2,100	2,100	0
1,200	5,100	2,100	-3,000
45,000	47,833	85,000	+37,167
10,000	0	0	0
0	0	11,997	+11,997
31,000	30,100	0	-30,100
10,000	10,000	0	-10,000
41,000	40,100	11,997	-28,103
863	778	0	-778
55,593	56,802	57,363	+561
56,456	57,580	57,363	-217
56,629	57,974	58,840	+866

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Richland				
RL-0042	2,500	2,500	3,100	+600
West Valley Demonstration Project				
OH-WV-0040	72,105	79,003	63,219	-15,784
OH-WV-0013	3,110	9,110	24,901	+15,791
OH-WV-0100	200	0	0	0
Subtotal, West Valley Demonstration Project	75,415	88,113	88,120	+7
Subtotal, Operating	319,200	322,200	338,860	+16,660
Uranium Enrichment Decontamination and Decommissioning Fund				
Operating				
Mission Support				
HQ-UR-0100	5,250	5,000	33,500	+28,500
Oak Ridge				
OR-0102	17,655	25,000	20,000	-5,000
OR-0040	195,693	134,701	105,000	-29,701
Subtotal, Oak Ridge	213,348	159,701	125,000	-34,701
Paducah				
PA-0103	2,094	2,099	2,739	+640
PA-0040	240,000	240,000	198,995	-41,005
Subtotal, Paducah	242,094	242,099	201,734	-40,365
Portsmouth				
PO-0104	2,013	3,368	3,400	+32
PO-0040	367,193	367,193	397,311	+30,118
PO-0103	0	500	160	-340
Subtotal, Portsmouth	369,206	371,061	400,871	+29,810
Subtotal, Operating	829,898	777,861	761,105	-16,756
Line Item Construction				
Portsmouth				
PO-0040	51,102	63,139	70,235	+7,096
Subtotal, Environmental Management	881,000	841,000	831,340	-9,660
Subtotal, Environmental Cleanup	7,467,000	7,589,200	8,011,870	+422,670
15-D-401 Containerized Sludge Removal (RL)	-11,800	0	0	0
	0	-3,000	0	+3,000
D&D Fund Offset	0	0	-415,670	-415,670
Total, Environmental Cleanup	7,455,200	7,586,200	7,596,200	+10,000

Summary

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Operating	5,149,195	5,347,842	5,937,671	+589,829
Line Item Construction	1,117,605	1,078,158	903,999	-174,159
Subtotal, Defense Environmental Cleanup	6,266,800	6,426,000	6,841,670	+415,670
Defense EM Funded UE D&D Fund Contribution				
Operating	0	0	0	0
Line Item Construction	0	0	0	0
Non-Defense Environmental Cleanup				
Operating	319,200	322,200	338,860	+16,660
Line Item Construction	0	0	0	0
Subtotal, Non-Defense Environmental Cleanup	319,200	322,200	338,860	+16,660
Uranium Enrichment Decontamination and Decommissioning Fund				
Operating	829,898	777,861	761,105	-16,756
Line Item Construction	51,102	63,139	70,235	+7,096
Subtotal, Uranium Enrichment Decontamination and Decommissioning Fund	881,000	841,000	831,340	-9,660
Decontamination and Decommissioning Fund Contribution				
Operating	0	0	0	0
Line Item Construction	0	0	0	0
Defense Uranium Enrichment Decontamination and Decommissioning				
Operating	0	0	0	0
Line Item Construction	0	0	0	0
Subtotal, Environmental Cleanup	7,467,000	7,589,200	8,011,870	+422,670
Offsets	-11,800	-3,000	-415,670	-412,670
Total, Environmental Cleanup	7,455,200	7,586,200	7,596,200	+10,000
Total Operating	6,298,293	6,447,903	7,037,636	+589,733
Total Line Item Construction	1,168,707	1,141,297	974,234	-167,063
Subtotal, Environmental Management	7,467,000	7,589,200	8,011,870	+422,670
Offsets	-11,800	-3,000	-415,670	-412,670
Total, Environmental Management	7,455,200	7,586,200	7,596,200	+10,000

Environmental Management Federal Staffing

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Carlsbad	43	55	60	+5
Idaho	38	39	48	+9
Oak Ridge	73	73	69	-4
Portsmouth/Paducah Project Office	51	55	53	-2
Richland	201	216	233	+17
River Protection	134	155	119	-36
Savannah River	214	239	238	-1
Small Sites	23	25	22	-3
Nevada Site Office	15	15	13	-2
Los Alamos Site Office	23	30	35	+5
Subtotal, Field, Full-Time Equivalents	815	902	890	-12
Headquarters Operations	243	244	256	+12
Consolidated Business Center	124	129	144	+15
Total, Field, Full-Time Equivalents	1,182	1,275	1,290	+15

Environmental Management Project Schedule Range 50% to 80% Confidence Level (Single date indicates both 50% and 80% Confidence Levels are the same)	
Site	Completion Date
Energy Technology Engineering Center	TBD ^a
Separations Process Research Unit	2021
Brookhaven National Laboratory	2020
Lawrence Livermore National Laboratory	2023
Sandia National Laboratory	2028
Nevada Nuclear Security Site	2030
Moab	2034
Waste Isolation Pilot Plant	2035 - 2042
Los Alamos National Laboratory	2036
West Valley Demonstration Project	2040 - 2045
Idaho National Laboratory	2045 - 2060
Portsmouth Gaseous Diffusion Plant	2039 – 2041
Oak Ridge	2046
Paducah Gaseous Diffusion Plant	2065 - 2070
Savannah River Site	2065
Hanford Site	2070-2075

^a EM will continue to aggressively pursue cleanup at ETEC in accordance with the Administrative Order on Consent while working with regulators to facilitate cleanup as quickly as possible.

**Environmental Management
Program Life-Cycle Cost (LCC) Range
(\$M)**

Site	LCC Total Range	
Argonne National Laboratory-East	188	-
Ashtabula	138	-
Brookhaven National Laboratory	495	-
Columbus	172	-
D&D Fund Deposit	3,343	-
Energy Technology Engineering Center	708	-
Fernald	3,220	-
Hanford Site	118,724	- 126,761
Headquarters	2,298	- 5,331
Idaho National Laboratory	19,954	- 23,252
Inhalation Toxicology Laboratory	13	-
Kansas City Plant	30	-
Laboratory for Energy-Related Health Research	40	-
Lawrence Berkeley National Laboratory	117	-
Lawrence Livermore National Laboratory	681	- 724
Los Alamos National Laboratory	7,239	- 8,437
Miamisburg	670	-
Moab	1,111	- 1,120
Nevada National Security Site	2,345	- 2,481
Oak Ridge	23,708	- 23,850
Office of River Protection	236,556	- 414,862
Other	1,165	-
Paducah Gaseous Diffusion Plant	39,412	- 45,671
Pantex Plant	206	-
Portsmouth Gaseous Diffusion Plant	17,598	- 19,652
Program Direction	25,620	- 26,369
Rocky Flats Environmental Technology Site	6,573	-
Sandia National Laboratory	299	- 302
Savannah River Site	101,081	- 127,111
Separation Process Research Unit	340	-
Stanford Linear Accelerator Center	70	-
Technology Development and Deployment	3,439	- 3,502
Waste Isolation Pilot Plant	17,603	- 19,468
West Valley Demonstration Project	4,027	- 4,188
	-	-
Total EM Program	639,114	- 867,569

Environmental Management
Lifecycle Costs by Program Baseline Summary (PBS) (\$K)

PBS Name	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
	(97-2020)	Low Range	High Range	Low Range	High Range
ACTIVE SITES					
Carlsbad					
CB-0020: Safeguards and Security - WIPP					
	83,302	166,223	199,094	249,525	282,396
CB-0083: Critical Infrastructure Repair/Replacement					
	28,726	1,079,370	1,245,592	1,108,096	1,274,318
CB-0100: US/Mexico/Border/Material Partnership					
	11,387	0	0	11,387	11,387
CB-0900: Pre-2004 Completions					
	7,137	0	0	7,137	7,137
CB-0080: Operate Waste Disposal Facility-WIPP					
	3,887,018	9,679,184	11,151,432	13,566,202	15,038,450
CB-0081: Central Characterization Project					
	468,431	576,094	664,812	1,044,525	1,133,243
CB-0082: WIPP Recovery Activities					
	97,138	0	0	97,138	97,138
CB-0090: Transportation-WIPP					
	548,158	682,186	787,245	1,230,344	1,335,403
CB-0101: Community and Regulatory Support					
	288,698	0	0	288,698	288,698
TOTAL	5,419,995	12,183,057	14,048,175	17,603,052	19,468,170
Idaho					
HQ-SNF-0012X: SNF Stabilization and Disposition-Storage Operations Awaiting Geologic Repository					
	60,089	0	0	60,089	60,089
HQ-SNF-0012X-ID: SNF Stabilization and Disposition-Storage Operations Awaiting Geologic Repository					
	18,995	0	0	18,995	18,995
HQ-SNF-0012Y: SNF Stabilization and Disposition-New/Upgraded Facilities Awaiting Geologic Repository					
	66,844	0	0	66,844	66,844
ID-0011: NM Stabilization and Disposition					
	19,058	0	0	19,058	19,058
ID-0012B: SNF Stabilization and Disposition (Defense)					
	640,453	2,486,632	3,395,804	3,127,085	4,036,257
ID-0012B-N: SNF Stabilization and Disposition (Non-Defense)					
	104,818	168,182	205,906	273,000	310,724
ID-0012C: SNF Stabilization and Disposition-2035					
	0	0	0	0	0
ID-0012C-N: Fort Saint Vrain Facility					
	19,842	0	0	19,842	19,842
ID-0013B: Solid Waste Stabilization and Disposition					
	4,512,573	1,285,121	1,502,057	5,797,694	6,014,630
ID-0013B.NEW: INL Recovery Act Project--TRU Waste					
	115,315	0	0	115,315	115,315
ID-0014B: Radioactive Liquid Tank Waste Stabilization and Disposition-2012					
	3,097,649	3,527,500	5,552,791	6,625,149	8,650,440
ID-0014B-T: Radioactive Liquid Tank Waste Stabilization and Disposition-2012 (T)					

PBS Name	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
	(97-2020)	Low Range	High Range	Low Range	High Range
	71,140	0	0	71,140	71,140
ID-0014C: Radioactive Liquid Tank Waste Stabilization and Disposition-2035					
	0	0	0	0	0
ID-0030B: Soil and Water Remediation-2012					
	1,698,236	670,961	722,941	2,369,197	2,421,177
ID-0030C: Soil and Water Remediation-2035					
	0	0	0	0	0
ID-0040-EF: ID Excess Facilities D&D					
	2,688	0	0	2,688	2,688
ID-0040B: Nuclear Facility D&D-2012					
	698,414	0	0	698,414	698,414
ID-0040B.NEW: D&D NE Facilities (New)					
	90,956	0	0	90,956	90,956
ID-0040C: Nuclear Facility D&D-2035					
	0	0	0	0	0
ID-0050B: Non-Nuclear Facility D&D-2012					
	122,763	0	0	122,763	122,763
ID-0050C: Non-Nuclear Facility D&D-2035					
	0	0	0	0	0
ID-0100: Idaho Community and Regulatory Support					
	99,628	65,985	122,970	165,613	222,598
ID-0900: Pre-2004 Completions					
	310,264	0	0	310,264	310,264
TOTAL	11,749,725	8,204,381	11,502,469	19,954,106	23,252,194
Oak Ridge					
HQ-SW-0013X: Solid Waste Stabilization and Disposition-Science Current Generation					
	92,469	0	0	92,469	92,469
HQ-SW-0013X-OR: Solid Waste Stabilization and Disposition-Science Current Generation					
	143,584	0	0	143,584	143,584
HQ-SW-0013Y: Solid Waste Stabilization and Disposition-NNSA Current Generation - Y-12					
	207,616	0	0	207,616	207,616
OR-0011D: U233 Disposition Program					
	441,745	385,938	396,413	827,683	838,158
OR-0011Y: NM Stabilization and Disposition-ETTP Uranium Facilities Management					
	52,430	0	0	52,430	52,430
OR-0011Z: Downblend of U-233 in Building 3019					
	164,347	0	0	164,347	164,347
OR-0013A: Solid Waste Stabilization and Disposition-2006					
	464,926	0	0	464,926	464,926
OR-0013B: Solid Waste Stabilization and Disposition-2012					
	1,922,264	924,082	931,360	2,846,346	2,853,624
OR-0020: Safeguards and Security					
	355,423	314,946	317,832	670,369	673,255
OR-0030: Soil and Water Remediation-Melton Valley					
	350,609	0	0	350,609	350,609
OR-0031: Soil and Water Remediation-Offsites					
	59,893	0	0	59,893	59,893
OR-0040: Nuclear Facility D&D-East Tennessee Technology Park (D&D Fund)					

PBS Name	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
	(97-2020)	Low Range	High Range	Low Range	High Range
	4,270,598	446,917	462,445	4,717,515	4,733,043
OR-0041: Nuclear Facility D&D-Y-12					
	996,142	3,290,939	3,344,032	4,287,081	4,340,174
OR-0041-IFDP: Y-12 Integrated Facilities Disposition Projects					
	13,910	1,940,496	1,940,496	1,954,406	1,954,406
OR-0041.NEW: Y-12 Recovery Act Project					
	156,504	0	0	156,504	156,504
OR-0042: Nuclear Facility D&D-Oak Ridge National Laboratory					
	1,168,877	953,701	1,006,983	2,122,578	2,175,860
OR-0042-IFDP: ORNL Integrated Facilities Disposition Projects					
	41,163	2,760,179	2,760,179	2,801,342	2,801,342
OR-0042.NEW: Oak Ridge Recovery Act Project					
	58,284	0	0	58,284	58,284
OR-0043: Nuclear Facility D&D-East Tennessee Technology Park (Defense)					
	87,148	0	0	87,148	87,148
OR-0044-EF: OR Excess Facilities D&D					
	108,940	55,789	55,789	164,729	164,729
OR-0100: Oak Ridge Reservation Community & Regulatory Support (Defense)					
	154,502	158,901	158,901	313,403	313,403
OR-0101: Oak Ridge Contract/Post-Closure Liabilities/Administration					
	105,169	0	0	105,169	105,169
OR-0102: East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration					
	339,277	0	0	339,277	339,277
OR-0103: Oak Ridge Reservation Community & Regulatory Support (D&D Fund)					
	44,375	0	0	44,375	44,375
OR-0104: Community and Regulatory (Non-Defense)					
	19,772	0	0	19,772	19,772
OR-0900-D: Pre-2004 Completions (Defense)					
	16,829	0	0	16,829	16,829
OR-0900-N: Pre-2004 Completions (Non-Defense)					
	618,567	0	0	618,567	618,567
OR-TD-0100: Technology Development Activities - Oak Ridge					
	15,212	3,000	3,000	18,212	18,212
OR-TDD-0100: Oak Ridge Technology and Development					
	2,415	0	0	2,415	2,415
TOTAL	12,472,990	11,234,888	11,377,430	23,707,878	23,850,420
Paducah					
PA-0011: NM Stabilization and Disposition-Paducah Uranium Facilities Management					
	58,607	70,602	74,174	129,209	132,781
PA-0011X: NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion					
	952,342	7,248,702	7,503,591	8,201,044	8,455,933
PA-0013: Solid Waste Stabilization and Disposition					
	285,273	0	0	285,273	285,273
PA-0020: Safeguards and Security					
	169,186	947,112	989,552	1,116,298	1,158,738
PA-0040: Nuclear Facility D&D-Paducah					
	2,692,719	26,638,257	32,659,140	29,330,976	35,351,859
PA-0100: Paducah Community and Regulatory Support (Non-Defense)					

	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
PBS Name	(97-2020)	Low Range	High Range	Low Range	High Range
	10,534	0	0	10,534	10,534
PA-0101: Paducah Contract/Post-Closure Liabilities/Administration (Non-Defense)					
	-1,856	0	0	-1,856	-1,856
PA-0102: Paducah Contract/Post-Closure Liabilities/Administration (D&D Fund)					
	41,667	435	435	42,102	42,102
PA-0103: Paducah Community and Regulatory Support (D&D Fund)					
	44,725	183,851	190,510	228,576	235,235
TOTAL	4,253,197	35,088,960	41,417,403	39,342,157	45,670,600
Portsmouth					
PO-0011: NM Stabilization and Disposition-Portsmouth Uranium Facilities Management					
	107,114	0	0	107,114	107,114
PO-0011X: NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion					
	931,015	2,960,449	3,121,111	3,891,464	4,052,126
PO-0013: Solid Waste Stabilization and Disposition					
	444,906	0	0	444,906	444,906
PO-0020: Safeguards and Security					
	261,093	380,818	536,500	641,911	797,593
PO-0040: Nuclear Facility D&D-Portsmouth					
	3,670,423	8,328,152	10,054,934	11,998,575	13,725,357
PO-0041: Nuclear Facility D&D-Portsmouth GCEP					
	69,140	0	0	69,140	69,140
PO-0101: Portsmouth Cold Standby					
	365,597	0	0	365,597	365,597
PO-0103: Portsmouth Contract/Post-Closure Liabilities/Administration (D&D Fund)					
	14,267	6,466	8,191	20,733	22,458
PO-0104: Portsmouth Community and Regulatory Support (D&D Fund)					
	16,597	42,457	51,233	59,054	67,830
TOTAL	5,880,152	11,718,342	13,771,968	17,598,494	19,652,120
Richland					
HQ-SNF-0012X-RL: SNF Stabilization and Disposition-Storage Operations Awaiting Geologic Repository					
	2,785	0	0	2,785	2,785
RL-0011: NM Stabilization and Disposition-PFP					
	2,987,066	0	0	2,987,066	2,987,066
RL-0012: SNF Stabilization and Disposition					
	3,086,600	0	0	3,086,600	3,086,600
RL-0013B: Solid Waste Stabilization and Disposition-200 Area-2012					
	796	0	0	796	796
RL-0013C: Solid Waste Stabilization & Disposition					
	3,696,304	16,211,316	16,960,183	19,907,620	20,656,487
RL-0020: Safeguards and Security					
	1,311,164	13,320,207	14,775,472	14,631,371	16,086,636
RL-0030: Soil and Water Remediation-Groundwater/Vadose Zone					
	2,767,122	11,810,066	12,248,549	14,577,188	15,015,671
RL-0040: Nuclear Facility D&D-Remainder of Hanford					
	2,315,696	18,340,904	20,920,380	20,656,600	23,236,076
RL-0041: Nuclear Facility D&D-River Corridor Closure Project					
	5,091,994	1,714,911	1,818,880	6,806,905	6,910,874

	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
PBS Name	(97-2020)	Low Range	High Range	Low Range	High Range
RL-0042: Nuclear Facility D&D-Fast Flux Test Facility Project					
	332,922	871,302	1,002,590	1,204,224	1,335,512
RL-0043: HAMMER Facility					
	7,426	0	0	7,426	7,426
RL-0044: B-Reactor Museum					
	1,940	0	0	1,940	1,940
RL-0080: Operate Waste Disposal Facility					
	71,232	0	0	71,232	71,232
RL-0100: Richland Community and Regulatory Support					
	383,617	1,178,165	1,270,897	1,561,782	1,654,514
RL-0201: Hanford Sitewide Services					
	1,021,910	32,066,274	34,553,019	33,088,184	35,574,929
RL-0900: Pre-2004 Completions					
	132,586	0	0	132,586	132,586
TOTAL	23,211,160	95,513,145	103,549,970	118,724,305	126,761,130
River Protection					
HQ-HLW-0014X-RV: Radioactive Liquid Tank Waste Stabilization and Disposition-Storage Operations Awaiting Geologic Rep					
	0	0	0	0	0
ORP-0014: Radioactive Liquid Tank Waste Stabilization and Disposition					
	11,128,809	194,859,123	371,876,478	205,987,932	383,005,287
ORP-0014-T: Radioactive Liquid Tank Waste Stabilization and Disposition (T)					
	0	0	0	0	0
ORP-0060: Major Construction-Waste Treatment Plant					
	13,139,788	16,962,910	18,251,678	30,102,698	31,391,466
ORP-0061: Pre-Waste Treatment Plan, Transition Activity					
	433,314	0	0	433,314	433,314
ORP-0070: Waste Treatment Plant Operations					
	30,620	0	0	30,620	30,620
ORP-0100: Office of River Protection Community and Regulatory Support					
	1,458	0	0	1,458	1,458
ORP-TD-0100: Technology Development Activities - River Protection					
	63	0	0	63	63
ORP-TDD-0014: ORP-TDD-0014					
	35	0	0	35	35
TOTAL	24,734,087	211,822,033	390,128,157	236,556,120	414,862,244
Savannah River					
SR-0100: Non-Closure Mission Support					
	289,755	944,244	1,165,409	1,233,999	1,455,164
SR-0101: Savannah River Community and Regulatory Support					
	164,742	0	0	164,742	164,742
SR-0900: Pre-2004 Completions					
	198,242	0	0	198,242	198,242
HQ-HLW-0014X-SR: Radioactive Liquid Tank Waste Stabilization and Disposition-Storage Operations Awaiting Geologic Rep					
	0	0	0	0	0
HQ-SNF-0012X-SR: SNF Stabilization and Disposition-Storage Operations Awaiting Geologic Repository					

	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
PBS Name	(97-2020)	Low Range	High Range	Low Range	High Range
	68,140	0	0	68,140	68,140
SR-0011A: NM Stabilization and Disposition-2006					
	134,065	0	0	134,065	134,065
SR-0011B: NM Stabilization and Disposition-2012					
	3,671,623	0	0	3,671,623	3,671,623
SR-0011C: NM Stabilization and Disposition-2035					
	4,567,034	12,843,214	14,133,119	17,410,248	18,700,153
SR-0012: SNF Stabilization and Disposition					
	679,786	0	0	679,786	679,786
SR-0013: Solid Waste Stabilization and Disposition					
	2,203,751	8,445,223	10,272,316	10,648,974	12,476,067
SR-0014B: Radioactive Liquid Tank Waste Stabilization and Disposition-2012					
	0	0	0	0	0
SR-0014C: Radioactive Liquid Tank Waste Stabilization and Disposition-2035					
	15,044,785	19,715,003	35,349,748	34,759,788	50,394,533
SR-0014C-T: Radioactive Liquid Tank Waste Stabilization and Disposition-2035 (T)					
	137,603	0	0	137,603	137,603
SR-0020: Safeguards and Security					
	2,827,264	10,592,066	13,184,422	13,419,330	16,011,686
SR-0030: Soil and Water Remediation & Facility Deactivation and Decommissioning					
	2,459,146	12,825,691	16,128,965	15,284,837	18,588,111
SR-0040: Nuclear Facility D&D					
	494,319	0	0	494,319	494,319
SR-0040B: Nuclear Facility D&D-2012					
	778	0	0	778	778
SR-0041: Surveillance, Maintenance and Deactivation					
	55,137	316,867	393,775	372,004	448,912
SR-0042: Infrastructure and Land Management					
	33,754	2,369,127	3,453,676	2,402,881	3,487,430
TOTAL	33,029,924	68,051,436	94,081,429	101,081,360	127,111,353
Lawrence Livermore					
CBC-LLNL-0040: LLNL Excess Facilities					
	3,847	92,916	125,465	96,763	129,312
HQ-SW-0013Y: Solid Waste Stabilization and Disposition-NNSA Current Generation - LLNL					
	158,028	0	0	158,028	158,028
VL-FOO-0013B-D: Solid Waste					
	15,969	4,400	4,400	20,369	20,369
VL-LLNL-0013: Solid Waste Stabilization and Disposition-Lawrence Livermore National Laboratory					
	71,966	0	0	71,966	71,966
VL-LLNL-0030: Soil and Water Remediation-Lawrence Livermore National Laboratory - Main Site					
	136,158	0	0	136,158	136,158
VL-LLNL-0031: Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300					
	148,273	49,684	59,416	197,957	207,689
TOTAL	534,241	147,000	189,281	681,241	723,522
Los Alamos					
VL-FAO-0101: Miscellaneous Programs and Agreements in Principle					
	114,265	78,785	107,203	193,050	221,468

PBS Name	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
	(97-2020)	Low Range	High Range	Low Range	High Range
VL-LANL-0013: VL-KCP-0040					
	1,455,820	1,174,483	1,574,000	2,630,303	3,029,820
VL-LANL-0030: Solid Waste Stabilization and Disposition-LANL Legacy					
	2,205,498	2,027,807	2,759,235	4,233,305	4,964,733
VL-LANL-0040-D: Soil and Water Remediation-LANL					
	52,830	107,683	146,524	160,513	199,354
VL-LANL-0040-N: Nuclear Facility D&D-LANL (Defense)					
	21,585	0	0	21,585	21,585
TOTAL	3,849,998	3,388,758	4,586,961	7,238,756	8,436,959
Nevada					
NV-0030: Soil and Water Remediation - Offsites					
	88,373	0	0	88,373	88,373
VL-NV-0013: Solid Waste Stabilization and Disposition-Nevada					
	107,838	0	0	107,838	107,838
VL-NV-0030: Soil and Water Remediation - Nevada					
	1,252,273	232,112	299,448	1,484,385	1,551,721
VL-NV-0080: Operate Waste Disposal Facility-Nevada					
	270,154	257,747	315,163	527,901	585,317
VL-NV-0100: Nevada Community and Regulatory Support					
	86,231	50,154	61,771	136,385	148,002
TOTAL	1,804,869	540,013	676,382	2,344,882	2,481,251
Sandia					
VL-SN-0030: Soil and Water Remediation-Sandia					
	268,297	30,826	33,598	299,123	301,895
TOTAL	268,297	30,826	33,598	299,123	301,895
Separations Process Research Unit					
VL-SPRU-0040: Nuclear Facility D&D-Separations Process Research Unit					
	247,283	92,896	92,896	340,179	340,179
TOTAL	247,283	92,896	92,896	340,179	340,179
West Valley					
OH-WV-0012: SNF Stabilization and Disposition-West Valley					
	32,319	0	0	32,319	32,319
OH-WV-0013: Nuclear Facility D&D West Valley					
	406,198	71,713	100,778	477,911	506,976
OH-WV-0014: Radioactive Liquid Tank Waste Stabilization and Disposition-West Valley High-Level Waste Storage					
	0	0	0	0	0
OH-WV-0020: Safeguards and Security-West Valley					
	45,908	109,172	110,954	155,080	156,862
OH-WV-0040: Nuclear Facility D&D-West Valley					
	1,159,328	2,202,107	2,332,123	3,361,435	3,491,451
OH-WV-0100: West Valley Site Services					
	0	0	0	0	0
TOTAL	1,643,753	2,382,992	2,543,855	4,026,745	4,187,608
Energy Technology Engineering Center					

	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
PBS Name	(97-2020)	Low Range	High Range	Low Range	High Range
CBC-ETEC-0040: Nuclear Facility D&D-Energy Technology Engineering Center					
	354,127	351,933	351,933	706,060	706,060
VL-ETEC-0040: Nuclear Facility D&D-Energy Technology Engineering Center					
	1,771	0	0	1,771	1,771
TOTAL	355,898	351,933	351,933	707,831	707,831
Moab					
CBC-MOAB-0031: Soil and Water Remediation-Moab					
	653,940	456,657	465,575	1,110,597	1,119,515
TOTAL	653,940	456,657	465,575	1,110,597	1,119,515
Brookhaven					
BRNL-0030: Soil and Water Remediation-Brookhaven National Laboratory					
	262,114	0	0	262,114	262,114
BRNL-0040: Nuclear Facility D&D-Brookhaven Graphite Research Reactor					
	137,240	0	0	137,240	137,240
BRNL-0041: Nuclear Facility D&D-High Flux Beam Reactor					
	67,102	21,920	21,920	89,022	89,022
BRNL-0041.NEW: A/B Waste Lines Removal and FHWMF Perimeter Area Soils Remediation					
	3,351	0	0	3,351	3,351
BRNL-0100: Brookhaven Community and Regulatory Support					
	2,907	0	0	2,907	2,907
TOTAL	472,714	21,920	21,920	494,634	494,634
Other Sites					
CBC-0040-EF: Excess Office of Science Facilities					
	1,813	0	0	1,813	1,813
CBC-0100-EM: CBC Legal Support					
	1,907	27,407	27,407	29,314	29,314
CBC-0100-FN: CBC Post Closure Administration - Fernald					
	69,197	0	0	69,197	69,197
CBC-0100-MD: CBC Post Closure Administration - Mound					
	2,127	0	0	2,127	2,127
CBC-0100-RF: CBC Post Closure Administration - Rocky Flats					
	40,587	4,333	4,333	44,920	44,920
CBC-ND-0100: CBC - Non-Defense Post Closure					
	10,705	0	0	10,705	10,705
CBC-UM-0100: CBC - Non-Defense Post Closure Administration - UMTRA Sites					
	383	0	0	383	383
OH-FN-0100: Fernald Post-Closure Administration					
	0	15,159	15,159	15,159	15,159
TOTAL	126,719	46,899	46,899	173,618	173,618
Mission Support					
HQ-CDP-0100-N: Congressionally Directed Projects - Non Defense					
	-25	0	0	-25	-25
HQ-MS-0100: Policy, Management, and Technical Support					
	879,500	843,195	876,923	1,722,695	1,756,423
HQ-MSF: Mercury Storage Facility Construction Project					

	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
PBS Name	(97-2020)	Low Range	High Range	Low Range	High Range
	1,107	0	0	1,107	1,107
HQ-OPS-0900: Pre-2004 Completions					
	0	0	0	0	0
HQ-SS-0020: HQ-SS-0020					
	95	0	0	95	95
HQ-UR-0100: Uranium/Thorium Reimbursements					
	501,158	71,898	71,898	573,056	573,056
HQ-TD-0100: Cleanup Innovation and Technology					
	1,870,715	1,568,901	1,631,657	3,439,616	3,502,372
TOTAL	3,252,550	2,483,994	2,580,478	5,736,544	5,833,028
Program Direction					
HQ-PD-0100: Program Direction					
	6,909,047	18,711,024	19,459,465	25,620,071	26,368,512
TOTAL	6,909,047	18,711,024	19,459,465	25,620,071	26,368,512
Lawrence Berkeley					
CBC-LBNL-0030: Soil and Water Remediation-Lawrence Berkeley National Laboratory					
	34,887	0	0	34,887	34,887
CBC-LBNL-0040: Decontamination and Decommissioning - LBNL					
	80,739	0	0	80,739	80,739
VL-LBNL-0030: Soil and Water Remediation-Lawrence Berkeley National Laboratory					
	1,539	0	0	1,539	1,539
TOTAL	117,165	0	0	117,165	117,165
D&D Fund Deposit					
HQ-DD-0100: Contribution to the Uranium Enrichment D&D Fund					
	3,342,826	0	0	3,342,826	3,342,826
TOTAL	3,342,826	0	0	3,342,826	3,342,826
COMPLETED SITES					
Argonne					
CH-ANLW-0030: Soil and Water Remediation-Argonne National Laboratory-West					
	8,245	0	0	8,245	8,245
CH-ANLE-0030: Soil and Water Remediation					
	30,244	0	0	30,244	30,244
CH-ANLE-0040: Nuclear Facility D&D					
	69,806	0	0	69,806	69,806
CH-ANLE-0040.NEW: Argonne Recovery Act Project					
	78,918	0	0	78,918	78,918
TOTAL	187,213	0	0	187,213	187,213
Ashtabula					
OH-AB-0030: Soil and Water Remediation-Ashtabula					
	137,991	0	0	137,991	137,991
TOTAL	137,991	0	0	137,991	137,991
California Site Support					
VL-FOO-0100-D: LLNL Community and Regulatory Support					

PBS Name	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
	(97-2020)	Low Range	High Range	Low Range	High Range
	5,617	0	0	5,617	5,617
CBC-CA-0013B-N: Solid Waste Stabilization and Disposition-California Sites-2012 (Non-Defense)					
	6,226	0	0	6,226	6,226
CBC-CA-0100-N: Community and Regulatory Support (Non-Defense)					
	2,932	0	0	2,932	2,932
VL-FOO-0013B-N: Solid Waste Stabilization and Disposition-Oakland Sites-2012 (Non-Defense)					
	68	0	0	68	68
VL-FOO-0100-N: Oakland Community and Regulatory Support (Non-Defense)					
	89	0	0	89	89
VL-FOO-0900-N: Pre-2004 Completions (Non-Defense)					
	20,896	0	0	20,896	20,896
TOTAL	35,828	0	0	35,828	35,828
Chicago Operations Office					
CH-OPS-0900: Pre-2004 Completions					
	98,862	0	0	98,862	98,862
TOTAL	98,862	0	0	98,862	98,862
Columbus					
OH-CL-0040: Columbus Nuclear Facility D&D					
	172,289	0	0	172,289	172,289
TOTAL	172,289	0	0	172,289	172,289
Fernald					
OH-FN-0013: Solid Waste Stabilization and Disposition-Fernald					
	1,626,711	0	0	1,626,711	1,626,711
OH-FN-0020: Safeguards and Security-Fernald					
	15,509	0	0	15,509	15,509
OH-FN-0030: Soil and Water Remediation-Fernald					
	1,337,752	0	0	1,337,752	1,337,752
OH-FN-0050: Non-Nuclear Facility D&D-Fernald					
	226,037	0	0	226,037	226,037
OH-FN-0101: Fernald Community and Regulatory Support					
	13,902	0	0	13,902	13,902
TOTAL	3,219,911	0	0	3,219,911	3,219,911
General Atomics					
VL-GA-0012: SNF Stabilization and Disposition-General Atomics					
	15,169	0	0	15,169	15,169
TOTAL	15,169	0	0	15,169	15,169
Inhalation Toxicology Laboratory					
CBC-ITL-0030: Soil and Water Remediation - ITL					
	12,537	0	0	12,537	12,537
VL-ITL-0030: Soil and Water Remediation-Inhalation Toxicology Laboratory					
	13	0	0	13	13
TOTAL	12,550	0	0	12,550	12,550
Kansas City Plant					

	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
PBS Name	(97-2020)	Low Range	High Range	Low Range	High Range
VL-KCP-0030: Soil and Water Remediation-Kansas City Plant					
	30,277	0	0	30,277	30,277
VL-KCP-0040: Deactivation and Decommissioning - Kansas City Plant					
	50	0	0	50	50
TOTAL	30,327	0	0	30,327	30,327
Laboratory for Energy-Related Health Research					
LEHR-0040: Nuclear Facility D&D-Laboratory for Energy-Related Health Research					
	39,549	0	0	39,549	39,549
VL-LEHR-0040: Nuclear Facility D&D-Laboratory for Energy-Related Health Research					
	559	0	0	559	559
TOTAL	40,108	0	0	40,108	40,108
Miamisburg					
OH-MB-0013: Solid Waste					
	264,692	0	0	264,692	264,692
OH-MB-0020: Safeguards and Security-Miamisburg					
	28,284	0	0	28,284	28,284
OH-MB-0030: Soil and Water					
	264,529	0	0	264,529	264,529
OH-MB-0031: Soil and Water Remediation - OU-1					
	0	0	0	0	0
OH-MB-0031.NEW: Mound Operable Unit 1 Recovery Act Project					
	17,526	0	0	17,526	17,526
OH-MB-0040: Nuclear Facility D&D-Miamisburg					
	-406	0	0	-406	-406
OH-MB-0100: Miamisburg Post-Closure Administration					
	86,578	0	0	86,578	86,578
OH-MB-0101: Miamisburg Community and Regulatory Support					
	9,710	0	0	9,710	9,710
TOTAL	670,913	0	0	670,913	670,913
New Mexico Site Support					
VL-FAO-0100-D: Nuclear Material Stewardship (Defense)					
	108,725	0	0	108,725	108,725
VL-FAO-0100-N: Nuclear Material Stewardship (Non-Defense)					
	15,044	0	0	15,044	15,044
VL-FAO-0900: Pre-2004 Completions					
	232,740	0	0	232,740	232,740
TOTAL	356,509	0	0	356,509	356,509
NNSA Service Center					
VL-SV-0100: South Valley Superfund					
	6,061	0	0	6,061	6,061
TOTAL	6,061	0	0	6,061	6,061
Ohio Field Office					
OH-OPS-0900-D: Pre-2004 Completions					
	57,659	0	0	57,659	57,659

PBS Name	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
	(97-2020)	Low Range	High Range	Low Range	High Range
OH-OPS-0900-N: Pre-2004 Completions (Non-Defense)					
	396,924	0	0	396,924	396,924
TOTAL	454,583	0	0	454,583	454,583
Pantex					
VL-PX-0030: Soil and Water Remediation-Pantex					
	191,127	0	0	191,127	191,127
VL-PX-0040: Nuclear Facility D&D-Pantex					
	15,209	0	0	15,209	15,209
TOTAL	206,336	0	0	206,336	206,336
Princeton					
CH-PPPL-0030: Soil and Water Remediation-Princeton Site A/B					
	309	0	0	309	309
TOTAL	309	0	0	309	309
Rocky Flats					
RF-0011: NM Stabilization and Disposition					
	470,485	0	0	470,485	470,485
RF-0013: Solid Waste Stabilization and Disposition					
	892,507	0	0	892,507	892,507
RF-0020: Safeguards and Security					
	300,388	0	0	300,388	300,388
RF-0030: Soil and Water					
	2,088,694	0	0	2,088,694	2,088,694
RF-0040: Nuclear Facility D&D-North Side Facility Closures					
	1,920,831	0	0	1,920,831	1,920,831
RF-0041: Nuclear Facility D&D-South Side Facility Closures					
	756,890	0	0	756,890	756,890
CBC-RF-0102: Rocky Flats Future Use					
	3,061	0	0	3,061	3,061
RF-0100: RFETS					
	102,972	0	0	102,972	102,972
RF-0101: Rocky Flats Community and Regulatory Support					
	37,041	0	0	37,041	37,041
TOTAL	6,572,869	0	0	6,572,869	6,572,869
SEFOR					
CBC-SEFOR-0040N: Southwest Experimental Fast Oxide Reactor (SEFOR) to the University of Arkansas					
	23,939	0	0	23,939	23,939
TOTAL	23,939	0	0	23,939	23,939
Stanford Linear Accelerator Center					
CBC-SLAC-0030: Soil and Water Remediation-Stanford Linear Accelerator Center					
	69,111	0	0	69,111	69,111
VL-SLAC-0030: Soil and Water Remediation-Stanford Linear Accelerator Center					
	1,043	0	0	1,043	1,043
TOTAL	70,154	0	0	70,154	70,154

	Prior Cost	Lifecycle Cost Remaining (FY 2021 to FY 2090)		Lifecycle Total	
PBS Name	(97-2020)	Low Range	High Range	Low Range	High Range
Tuba City					
CBC-TUBA-0031: Tuba City Mill Tailings					
	540	0	0	540	540
TOTAL	540	0	0	540	540
GRAND TOTAL	156,642,991	482,471,156	710,926,245	639,114,147	867,569,236

Carlsbad

Overview

The Carlsbad Field Office supports cleanup of radioactive and chemical waste resulting from the Manhattan Project and Cold War activities. The Carlsbad Field Office has the responsibility for management of the National Transuranic Waste Program and the Waste Isolation Pilot Plant, the Nation's only mined geologic repository for the permanent disposal of defense-generated transuranic waste. The Carlsbad Field Office's National Transuranic Waste Program coordinates with all DOE sites that generate transuranic waste to retrieve, repackage, characterize, ship, and dispose of defense transuranic waste resulting in cleaning up sites, reducing risks, and decreasing nuclear footprints. As a result of the activities that are an on-going hazardous activity on the site, Carlsbad Field Office plans to purchase an ambulance and fire truck in FY 2022 to replace aging equipment that is beyond repair.

Direct maintenance and repair for operations at the Carlsbad Field Office is estimated to be \$11,890,000 in FY 2022.

Current Status

Waste Isolation Pilot Plant operations are impacted by the capability of the current ventilation system to support waste emplacement and simultaneous mining activities. Currently, ventilation is provided via operation of the Interim Ventilation System and Supplemental Ventilation System. The Waste Isolation Pilot Plant's three line-item capital projects, the Safety Significant Confinement Ventilation System (15-D-411), Utility Shaft (15-D-412(formerly Exhaust Shaft) and Hoisting Capability Project (21-D-401) will provide the increased airflow and infrastructure capabilities necessary to continue safely and efficiently operating the Waste Isolation Pilot Plant facility for the long term. The new Safety Significant Confinement Ventilation System is necessary to operate at a consistently higher level of ground control, mining, and waste emplacement capability. Ongoing actions in FY 2022 to support waste emplacement operations include: sustainment of safety management program improvements; continued underground stabilization activities (e.g., geotechnical surveys, roof bolting; continued emplacement under radiological contamination controls in Panel 7 and beginning emplacement in Panel 8; collection and analysis of environmental samples; regular maintenance, repair and upgrade of surface and underground structures, systems, components, and equipment; supplemental ventilation system operation and maintenance; mining operations; on-going construction activities on the new Safety Significant Confinement Ventilation System; continue shaft construction of the new Utility Shaft; site preparation, and long lead procurement for additional hoisting capability; periodic replacement of the underground ventilation system filters; and other activities to ensure protection of the workers, the public, and the environment.

Highlights of the FY 2022 Budget Request

The funding request supports disposal facility operations, regulatory and environmental compliance actions, the Central Characterization Project to perform transuranic waste characterization/certification activities to maintain progress toward legacy transuranic waste related milestones at generator sites, transuranic waste transportation capabilities, continued progress on repairing or replacing infrastructure, modernizing underground equipment to zero-emission battery-electric vehicles and new Safety Significant Confinement Ventilation System (15-D-411) and Utility Shaft (15-D-412).

The Waste Isolation Pilot Plant activities planned in FY 2022 within Project Baseline Summary Operate Waste Disposal Facility-WIPP, CB-0080, include: Documented Safety Analysis maintenance, environmental monitoring, Resource Conservation and Recovery Act permit maintenance, surface and underground operations, maintenance/repair of equipment and infrastructure to maintain operational capabilities, mining, and continuation of waste emplacement operations using existing disposal panels. Key enhancements/improvements to be maintained in FY 2022 include: safety management programs, continued radiological contamination mitigation in the repository, emergency management capabilities, and contractor assurance system. In FY 2022, the Waste Isolation Pilot Plant will also be working towards approval through the regulatory processes for mining of replacement and additional disposal panels and drifts. In FY 2022 the Waste Isolation Pilot Plant will continue work on the Environmental Protection Agency Recertification and New Mexico Environment Department reviews, increasing the number of regulatorily approved shielded container assemblies designs available for disposal of remote-handled transuranic waste, and continuing preliminary activities to support additional hoisting capability for salt removal, material, and personnel evacuation. In FY 2022 the Waste Isolation Pilot Plant will

procure new shielded container assemblies for disposal of remote-handled transuranic waste and will procure new highway shipping containers for heavy loads such as the shielded container assemblies.

Within Project Baseline Summary Central Characterization Project (CB-0081), transuranic waste characterization program certifications and transportation certification support activities are supported for Savannah River Site, Oak Ridge National Laboratory, Lawrence Livermore National Laboratory, Argonne National Laboratory, and Los Alamos National Laboratory in FY 2022. Transportation certification activities only support the Idaho National Laboratory. Idaho's transuranic waste characterization program certification is planned within Idaho's budget request. Day-to-day waste characterization activities such as visual examination, real time radiography, nondestructive assay, dose to curie conversion, and flammable gas analysis are planned within each respective site's budget.

Transportation activities within Project Baseline Summary Transportation-WIPP (CB-0090) include support of a core shipping capability for transuranic waste shipments to both the Waste Isolation Pilot Plant and inter-site shipments using Nuclear Regulatory Commission licensed Type B transportation containers, maintenance and support for transportation containers, Nuclear Regulatory Commission Certificate of Compliance maintenance for transportation containers, as well as maintenance of established shipping corridors and associated stakeholder support activities with state and Tribal organizations. In FY 2022, the transportation capability supports up to 14 waste shipments per week to the Waste Isolation Pilot Plant, with expected shipments from Idaho National Laboratory, Los Alamos National Laboratory, Savannah River Site, Oak Ridge National Laboratory, Lawrence Livermore National Laboratory, Argonne National Laboratory and potentially other sites.

The FY 2022 request includes \$25,000,000 in Total Estimated Cost line-item funding for construction for the new Utility Shaft, formerly Exhaust Shaft, (15-D-412) and \$55,000,000 for continued construction of Safety Significant Confinement Ventilation System (15-D-411). The exhaust shaft has been renamed the utility shaft, which provides the best description for the multiple capabilities the shaft could be utilized for including: airflow, salt hoists, material handling, transporting personnel and emergency egress. In addition, as design-engineering matured, it was determined that for usability and nuclear safety reasons, the new shaft would better serve as an intake shaft and that the existing air intake shaft would better be used as an exhaust shaft to provide for an unfiltered exhaust pathway for mining dust and supporting mine operations.

FY 2021 - 2022 Key Milestones/Outlook

- (FY 2021-FY 2022) Continue progress in repair/replacement of critical infrastructure needed to increase the Waste Isolation Pilot Plant emplacement capacity.
- (FY 2021-FY 2022) Continue regulatory processes for design and disposal approval.
- (FY 2021-FY 2022) Continue construction on the Safety Significant Confinement Ventilation System (15-D-411).
- (FY 2021-FY 2022) Continued shaft sinking of the Utility Shaft (15-D-412).

Regulatory Framework

The Waste Isolation Pilot Plant has four primary regulators: 1) the Environmental Protection Agency, which regulates radioactive (transuranic) constituents and certifies that the Waste Isolation Pilot Plant will comply with the long-term radioactive waste disposal regulations (40 Code of Federal Regulations Part 191, Subparts B and C); 2) the New Mexico Environment Department, which regulates the hazardous constituents of waste in the repository during the operational time frame; 3) the Nuclear Regulatory Commission, which certifies the design and capability of Type B radioactive material shipping containers; and 4) the Department of Transportation, which regulates highway transportation and radioactive and hazardous material shipping containers.

In the Waste Isolation Pilot Plant Land Withdrawal Act of 1992, as amended, (Public Law 102-579), Congress established regulatory conditions and standards covering limits on the types and quantities of waste that the Department could place in the repository. The Waste Isolation Pilot Plant operates under a renewed Resource Conservation and Recovery Act, Part B, Hazardous Waste Facility Permit issued by the New Mexico Environment Department in December 2010 and is continuing through the New Mexico Environment Department review. The Waste Isolation Pilot Plant can continue operating under a

Timely Renewal provision until New Mexico Environment Department reaches a decision on the 10-year renewal application.

The Environmental Protection Agency regulates the Waste Isolation Pilot Plant under specific criteria established in 40 Code of Federal Regulations Part 194 that require the Department to demonstrate that the Waste Isolation Pilot Plant would meet containment standards, which apply after final facility closure, for 10,000 years. The Environmental Protection Agency initially certified the Waste Isolation Pilot Plant's compliance with these regulations on May 18, 1998. The Department received subsequent Compliance Recertification, verifying continued compliance from the Environmental Protection Agency in March 2006, November 2010, and July 2017. The Compliance Recertification was submitted to the Environmental Protection Agency in March 2019 and the Carlsbad Field Office is continuing through the review process with the regulators.

In addition, under the terms of the Waste Isolation Pilot Plant Land Withdrawal Act, the Mine Safety and Health Administration is responsible for quarterly inspections of the Waste Isolation Pilot Plant facility and communicating inspection results to the Carlsbad Field Office. The Mine Safety and Health Administration has been conducting regular and at least quarterly inspections of the Waste Isolation Pilot Plant under an existing Memorandum of Understanding between the Department and Mine Safety and Health Administration.

Contractual Framework

Program planning and management at the Carlsbad Field Office is conducted through the issuance and execution of contracts to large and small businesses. The Carlsbad Field Office develops near-term and long-term planning approaches in order to develop contract strategies and operations plans at a more detailed level. Selected contractors then execute these plans to complete cleanup.

The Waste Isolation Pilot Plant contract is currently a Management and Operating Contract. It was awarded to Nuclear Waste Partnership, LLC, on a cost plus award fee basis (with mostly performance-based incentives) with an original base performance period of October 1, 2012, to September 30, 2017, with one five year option period of October 1, 2017, to September 30, 2022. The contract was modified to divide the five-year option into 3-year and 2-year option periods. The contract was then modified to split the 2-year option period into a 1-year option (Option Period 2) and two 6-month options (Option Periods 3 and 4). Option Period 2 has been exercised for the period October 1, 2020 to September 30, 2021. The government intends to exercise Option Period 3 for the period October 1, 2021 to March 31, 2022, to allow for the award of the procurement of the follow-on contract. Options Period 4 will be exercised if needed.

This Waste Isolation Pilot Plant Management and Operating contract covers all site operations at the Waste Isolation Pilot Plant and support of the National Transuranic Waste Program, including the receipt and handling of transuranic waste shipments, characterization of waste at generator sites, verification/certification of waste documentation, permitting and certification of the repository, and transportation engineering and certification.

The Carlsbad Field Office also manages contracts, cooperative agreements, work authorizations, and grants that provide management and scientific analysis, technical assistance, site integration, transportation and emergency management services, transportation tracking and communications support, and electric utilities. The transportation services prime contract is with a small business, Cast Specialty Transportation, Inc. This indefinite delivery/indefinite quantity contract has a base year period and four option periods. The Cast Specialty contract is for the period June 2017 to May 2022. As transportation requirements become known during the term of the contract, the Contracting Officer will place fixed price per unit task orders with the contractor for the transportation of transuranic waste. A follow-on contract will be awarded as an indefinite delivery/indefinite quantity contract in FY 2022 to replace the expiring Cast Specialty Transportation, Inc. contract.

Strategic Management

The Department will work to reduce the footprint at transuranic waste sites across the complex through disposal of transuranic waste streams. The Carlsbad Field Office is key to the ultimate cleanup of transuranic waste across the DOE complex, as well as support to other DOE mission programs.

Carlsbad

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Waste Isolation Pilot Plant				
Waste Isolation Pilot Plant				
CB-0080 / Operate Waste Disposal Facility-WIPP				
Operating	229,953	262,802	273,265	+10,463
Construction				
15-D-411: Safety Significant Confinement Ventilation System, WIPP	58,054	35,000	55,000	+20,000
15-D-412: Utility Shaft	44,500	55,000	25,000	-30,000
21-D-401: Hoisting Capability Project	0	10,000	0	-10,000
	332,507	362,802	353,265	-9,537
CB-0081 / Central Characterization Project	20,400	21,850	23,730	+1,880
CB-0083 / Critical Infrastructure Repair/Replacement	17,500	12,000	14,213	+2,213
CB-0090 / Transportation-WIPP	26,500	16,608	39,216	+22,608
Subtotal, Waste Isolation Pilot Plant	396,907	413,260	430,424	+17,164
Safeguards and Security				
CB-0020 / Safeguards and Security	6,692	6,806	6,806	0
Total, Defense Environmental Cleanup	403,599	420,066	437,230	+17,164

Carlsbad
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Waste Isolation Pilot Plant

Waste Isolation Pilot Plant

CB-0080 / Operate Waste Disposal Facility-WIPP

- Decrease reflects planned investments in various capital projects and timing of regulatory actions. -9,537

CB-0081 / Central Characterization Project

- Increase reflects anticipated increase in support sites' transuranic waste characterization programs and transportation certification activities. Increase will support an increase of shipments from 10/week to 14/week with the opening of Panel 8 in the mine in FY 2022. +1,880

CB-0083 / Critical Infrastructure Repair/Replacement

- Increase reflects continued infrastructure recapitalization projects as well as mine modernization activities. +2,213

CB-0090 / Transportation-WIPP

- Increase reflects transportation activities from multiple locations required for sustained operations at a rate of up to 14 shipments per week. Support the Procurement of additional Type-B over-the-highway HalfPact Shipping Containers and trailers. +22,608

Defense Environmental Cleanup

Safeguards and Security

CB-0020 / Safeguards and Security

- No change. 0

Total, Carlsbad	+17,164
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Operate Waste Disposal Facility-WIPP (PBS: CB-0080)

Overview

This Project Baseline Summary can be found within the Defense Environmental Cleanup appropriation.

This Project Baseline Summary includes all activities necessary for waste emplacement operations and supports activities related to the disposal of contact-handled and remote-handled transuranic waste at the Waste Isolation Pilot Plant. Key elements of Waste Isolation Pilot Plant operations are: 1) operation of the disposal repository – including mining, waste handling, and the maintenance/repair of infrastructure to safely maintain the facility and operations in compliance with all Federal and state laws, regulations, and environmental requirements; and 2) environmental compliance – maintenance of compliance certification through monitoring and verifying the performance of the system's sensitive parameters.

FY 2022 funding includes the following activities: surface and underground operations, including waste emplacement in existing approved disposal panels and mine stability (ground control); maintenance and repair of facilities and equipment; repair or improvement of New Mexico roads used for the transportation of DOE shipments of transuranic waste to the Waste Isolation Pilot Plant, environmental monitoring; emergency preparedness and management; quality assurance; nuclear safety measures, including Documented Safety Analysis maintenance; security, safety and health programs, including safety management program and oversight program enhancements such as fire protection systems; regulatory compliance, including Resource Conservation and Recovery Act permit maintenance; project planning and control; implementation of DOE Order 413.3B requirements; mining and panel closure activities; radiological contamination mitigation in the repository, procurement, finance and accounting; information systems; and management and oversight and interagency programs.

The Waste Isolation Pilot Plant's three line-item capital projects, the Safety Significant Confinement Ventilation System (15-D-411), Utility Shaft (15-D-412) and Hoisting Capability Project (21-D-401) are designed to provide the increased airflow and infrastructure capabilities necessary to operate the Waste Isolation Pilot Plant facility.

In FY 2022, the Waste Isolation Pilot Plant will also be executing the regulatory processes for mining of replacement and additional disposal panels and drifts to allow for disposal up to the Waste Isolation Pilot Plant Land Withdrawal Act volume limits and for increasing the number of regulatory approved shielded container designs available for disposal of remote handled transuranic waste.

The request for this PBS supports direct maintenance and repair activities required in the course of daily operations.

Operate Waste Disposal Facility-WIPP (PBS: CB-0080)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$362,802,000	\$353,265,000	-\$9,537,000
<ul style="list-style-type: none"> • Initiate design work for pre-decisional additional hoisting capability and provide upgrades to existing hoist capabilities. • Complete Panel 8 mining. • Perform activities for continued waste emplacement operations including sustainment of safety management program improvements, active mining, mine integrity, and infrastructure improvements. • Support activities for site environmental compliance, Resource Conservation and Recovery Act permit compliance, quality assurance, and payments to regulatory agencies. 	<ul style="list-style-type: none"> • Perform activities for continued waste emplacement operations including sustainment of safety management program improvements, active mining, mine stabilization, and habitability activities in all underground areas, radiological contamination control activities, High Efficiency Particulate Air Filter change out, purchase of zero or low emission mining equipment and infrastructure improvements. • Maintain safety and personnel health programs, surface and underground operations, program administration, generator site interface, public affairs programs, interagency and cooperative agreements for independent oversight, environmental oversight, and rights-of-way. • Support 40 Code of Federal Regulations Part 191/194 compliance, site environmental compliance, Resource Conservation and Recovery Act permit compliance, quality assurance, and payments to regulatory agencies. • Support routine facility and equipment maintenance items and activities. • Maintain enhancements/improvements established in response to the Accident Investigation Boards' various reports and required corrective actions. 	<ul style="list-style-type: none"> • Decrease reflects planned investments in various capital projects and timing of regulatory actions.

- Continue progress toward completion of Safety Significant Confinement Ventilation System (15-D-411) and Utility Shaft (formerly Exhaust Shaft) (15-D-412) projects to support completion of the new permanent ventilation system.
 - Provide upgrades to existing hoist capabilities.
 - Begin emplacement in Panel 8.
 - Continue regulatory activities to support mining replacement and additional panels needed to continue the mission.
 - Procure bulk-ordered shielded container assemblies for shipment of remote-handled transuranic waste to the Waste Isolation Pilot Plant.
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Central Characterization Project (PBS: CB-0081)

Overview

This Project Baseline Summary can be found within the Defense Environmental Cleanup appropriation.

This project consists of Central Characterization Project activities, which are managed by DOE's National Transuranic Program. The project consists of two primary areas of overall program scope. First, the National Transuranic Program-Central Characterization Project provides certifications of waste generator sites' programs, systems, and processes utilized for characterization of transuranic waste to be disposed at the Waste Isolation Pilot Plant. Second, the National Transuranic Program-Central Characterization Project maintains the on-site resources at each generator site to certify all transuranic waste shipments both between DOE sites (inter-site) and directly to the Waste Isolation Pilot Plant. As part of the certification scope, the National Transuranic Program-Central Characterization Project maintains the resources to manage the DOE-wide transuranic waste shipping certification process required by the Waste Isolation Pilot Plant's Hazardous Waste Facility Permit issued by the New Mexico Environment Department.

Day-to-day waste characterization activities such as visual examination, real time radiography, nondestructive assay, dose to curie conversion and flammable gas analysis are planned within each respective site's budget.

Central Characterization Project (PBS: CB-0081)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$21,850,000	\$23,730,000	+\$1,880,000
<ul style="list-style-type: none"> Conduct Central Characterization Project certifications for transuranic waste disposition and transportation at the Savannah River Site, Oak Ridge National Laboratory, Lawrence Livermore National Laboratory, Argonne National Laboratory, and Los Alamos National Laboratory. 	<ul style="list-style-type: none"> Provide acceptable knowledge and procedural support, and mobile waste loading support at actively shipping generator sites. Support generator site interface for the Central Characterization Project activities, Central Characterization Project administration, and Performance Demonstration Program for Resource Conservation and Recovery Act constituents. Conduct Central Characterization Project certifications for transuranic waste disposition and transportation at the Savannah River Site, 	<ul style="list-style-type: none"> Increase reflects anticipated increase in support sites' transuranic waste characterization programs and transportation certification activities. Increase will support an increase of shipments from 10/week to 14/week with the opening of Panel 8 in the mine in FY 2022.

Oak Ridge National Laboratory, Lawrence Livermore National Laboratory, Argonne National Laboratory, and Los Alamos National Laboratory. Provide only transportation certification at Idaho National Laboratory (where Idaho National Laboratory funds waste certification).

Critical Infrastructure Repair/Replacement (PBS: CB-0083)

Overview

This Project Baseline Summary can be found within the Defense Environmental Cleanup appropriation.

Historically the Waste Isolation Pilot Plant operated some infrastructure and equipment beyond its designed life-cycle in harsh environmental conditions of salt dust, high heat, and high humidity (during the summer monsoonal seasons). These conditions, combined with minimal routine maintenance and repair led to degraded installed structures, systems, components, and major items of equipment. Major repairs and replacements of facility structures, systems, and components are necessary to maintain life safety, assure nuclear safety, and ensure the capability to emplace waste at a production rate that supports EM's cleanup mission.

This PBS was established to address the Waste Isolation Pilot Plant's degraded and beyond design life infrastructure, which includes General Plant Projects and Major Items of Equipment that are needed for safety and regulatory compliance and to sustain mining and waste emplacement operations.

FY 2022 funding is requested for the projects in the table below.

Project Name	Current Status	Mission Impact	Resolution/Description	Requested Amount (1000s)	FY Planned
Fire Water Loop Phase 3 (Spurs to facilities)	System is degraded but operable with compensatory measures	Waste Handling interruptions. Significant operations impacts.	Procure subcontractor services to fabricate, install, and test the spurs to the facilities installed in this phase. Phases 1 & 2 finish is a prerequisite to completion of spurs. Incremental progress achievable during Phases 1 & 2.	6,213	FY22
Safety Significant Fire Suppression System (Waste Handling Building 411 Fire System)	System is impaired. Compensatory measures are in place. Fire system is required by the Technical Safety Requirements to protect workers and waste.	Reduction in shipping and waste emplacement. Potential life safety issue. Potential for offsite release.	Procure subcontractor services to fabricate and install a new/refurbished fire suppression system in the Waste Handling Building. The DOE Operational Readiness Review team identified these deficiencies in 2016.	8,000	FY22
			FY22 TOTAL	14,213	

Critical Infrastructure Repair/Replacement (PBS: CB-0083)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$12,000,000	\$14,213,000	+\$2,213,000
<ul style="list-style-type: none"> Repair, replace, or modernize the Waste Isolation Pilot Plant's degraded facility structures, systems, and components. 	<ul style="list-style-type: none"> Repair, replace, or modernize the Waste Isolation Pilot Plant's degraded facility structures, systems, and components. 	<ul style="list-style-type: none"> Increase reflects continued infrastructure recapitalization projects as well as mine modernization activities.

Transportation-WIPP (PBS: CB-0090)

Overview

This Project Baseline Summary can be found within the Defense Environmental Cleanup appropriation.

This program 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 transport in Nuclear Regulatory Commission licensed containers to other designated sites for treatment and/or characterization prior to shipment for disposal. 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, as amended, this program provides for technical assistance to states, Indian Tribes, and communities for the purpose of training public safety officials and other emergency responders in any State or Indian Tribal lands through which DOE plans to transport transuranic waste to or from the Waste Isolation Pilot Plant and inter-site transfers of transuranic waste.

FY 2022 funding supports waste shipment capabilities and coordination between generator sites and waste shipment capabilities to the Waste Isolation Pilot Plant, as well as transportation corridor grants with stakeholders.

Transportation-WIPP (PBS: CB-0090)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$16,608,000	\$39,216,000	+\$22,608,000
<ul style="list-style-type: none"> • Provide transportation activities from multiple locations required for sustained operations at a rate of up to ten shipments per week. • Maintains package certification and associated required maintenance for packages used: TRUPACT II's, Half PACTS, TRUPACT III's, and Remote-Handled-72B's. 	<ul style="list-style-type: none"> • Provide transportation activities from multiple locations required for sustained operations at a rate of up to 14 shipments per week. • Maintain package certification and associated required maintenance for packages used: TRUPACT II's, Half PACTS, TRUPACT III's, and Remote-Handled-72B's. • Procurement of additional Type-B over-the-highway HalfPact Shipping Containers. 	<ul style="list-style-type: none"> • Increase reflects transportation activities from multiple locations required for sustained operations at a rate of up to 14 shipments per week. Support the Procurement of additional Type-B over-the-highway HalfPact Shipping Containers and trailers.

Safeguards and Security (PBS: CB-0020)

Overview

This Project Baseline Summary can be found within the Defense Environmental Cleanup appropriation.

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 and ensures the security of disposed sensitive wastes.

The Cyber Security Program at the Carlsbad Field Office protects government information and technology systems to support both disposal operations at the Waste Isolation Pilot Plant and transuranic waste characterization, packaging, certification, and transportation activities within the National Transuranic Waste Program.

Safeguards and Security (PBS: CB-0020)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$6,806,000	\$6,806,000	+\$0
<ul style="list-style-type: none">• Provide security coverage at the Waste Isolation Plant.• Provide cyber security and key cyber security personnel to upgrade systems to monitor, address and resolve vulnerabilities as they are identified.	<ul style="list-style-type: none">• Provide physical security coverage at the Waste Isolation Plant.• Provide cyber security to ensure DOE information resources are identified and protected.	<ul style="list-style-type: none">• No change.

**Carlsbad
Capital Summary (\$K)**

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Capital Operating Expenses Summary (including (Major Items of Equipment (MIE))

Capital Equipment > \$500K (including MIE)	0	0	0	0	0	0	+0
Plant Projects (GPP and IGPP) (<\$20M)	24,181	836	2,373	49	6,759	14,213	+7,454
Total, Capital Operating Expenses	24,181	836	2,373	49	6,759	14,213	+7,454

Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <\$20M)

Carlsbad

Fire Water Loop Phase 3 (Spurs to facilities)	11,551	836	2,373	49	2,129	6,213	+4,084
Underground Salt Pocket Design	2,500	0	0	0	2,500	0	-2,500
Safety Significant Fire Suppression System (Waste Handling Building – 411 Fire System)	10,130	0	0	0	2,130	8,000	+5,870
Total, Carlsbad	24,181	836	2,373	49	6,759	14,213	+7,454
Total, Capital Summary	24,181	836	2,373	49	6,759	14,213	+7,454

**Carlsbad
Construction Projects Summary (\$K)**

	Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
15-D-411, Safety Significant Confinement Ventilation System (WIPP) (CB-0080)							
Total Estimate Cost (TEC)	261,316	207,962	53,354	36,023	27,321	50,000	+22,679
Other Project Costs (OPC)	26,469	14,000	4,700	119	7,679	5,000	-2,679
Total Project Cost (TPC) 15-D-411	287,785^a	221,962	58,054	36,142	35,000	55,000	+20,000
15-D-412, Utility Shaft, formerly Exhaust Shaft (WIPP) (CB-0080)							
Total Estimate Cost (TEC)	189,120	62,100	44,500	46,813	55,000	23,173	-31,827
Other Project Costs (OPC)	7,865	6,038	0	1,292	0	1,827	+1,827
Total Project Cost (TPC) 15-D-412	196,985^b	68,138	44,500	48,105	55,000	25,000	-30,000
21-D-401, Hoisting Capability Project (WIPP) (CB-0080)							
Total Estimate Cost (TEC)	TBD	0	0	0	7,500	0	-7,500
Other Project Costs (OPC)	TBD	0	0	0	2,500	0	-2,500
Total Project Cost (TPC) 21-D-401	TBD	0	0	0	10,000	0	-10,000

^a This is the current approved estimate. A Baseline Change Proposal is under review. The current appropriated dollars for this project are \$370M.

^b This is the current approved estimate. A Baseline Change Proposal is under review..

**15-D-411, Safety Significant Confinement Ventilation System (CB-0080)
Waste Isolation Pilot Plant, Carlsbad, New Mexico
Project is for Design and Construction**

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2022 Request for the Safety Significant Confinement Ventilation System is \$55,000,000: \$50,000,000 for construction and \$5,000,000 for other project costs.

This project will design and construct a new ventilation system for the Waste Isolation Pilot Plant underground repository. This project provides the entire surface and subsurface equipment and infrastructure for the underground ventilation system. Major equipment (Ventilation Fans, HEPA Filter Housings, Salt Reduction Units) continue to be manufactured and tested. The Salt Reduction Building Foundation has been placed and walls are started. The subgrade for the New Filter Building has been completed and the foundation work has started.

The contractor for the Safety Significant Confinement Ventilation System project indicated a breach in the Total Project Cost was expected. A Department-commissioned constructability review and the required annual Project Peer Review confirmed that a breach in the Total Project Cost and a schedule slip were likely. Based on this information, the contractor submitted a Baseline Change Proposal, which has begun the review process required by DOE Order 413.3B

The most recent DOE Order 413.3B approved Critical Decision is Critical Decision-2/3 that was approved on May 10, 2018, with a Total Project Cost of \$287,785,000 and Critical Decision-4 on November 30, 2022.

A Certified Federal Project Director is assigned to the Project.

Significant Changes

This Construction Project Data Sheet is an update of the FY 2021 Construction Project Data Sheet and does not include a new start for the budget year. The update includes a funding request above the Total Project Cost.

After the contractor for the Safety Significant Confinement Ventilation System project indicated a breach in the Total Project Cost. The Department (Carlsbad Field Office) commissioned a constructability review and the required annual Project Peer Review. Both confirmed that a breach in the Total Project Cost and a schedule slip were likely. Based on this information, the contractor was requested to submit a Baseline Change Proposal, which has undergone the DOE Order 413.3B required External Independent Review and Independent Cost Review. The contractor and Federal project teams are currently resolving issues from the reviews. As a result of estimates from these reviews, additional funding is being requested in FY2022 in order to limit the impact to construction activities while the Baseline Change Proposal is being reviewed.

In July 2019, a site-level Baseline Change Proposal (CBFO BCP # SSCVS-2) was approved to de-scope the seventh Salt Reduction Unit from the project (leaving six units total), as a result of significant cost associated with procurement of seven units. As part of the Baseline Change Proposal currently in progress, the project plans to eliminate the decontamination and decommissioning (removal of existing ventilation equipment, specifically termed the Interim Ventilation System) from the scope of this project. The removal of decontamination and decommissioning was recommended during the May 2020 Project Peer Review, is not necessary for the start-up of the new system, and portions of the mine ventilation control system are collocated with the IVS control system and must remain operable.

Critical Milestone History

(Fiscal quarter or date)										
	CD-0	Conceptual Design Complete	CD-1	CD-3A	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4	
FY 2016	10/22/2014	3QFY 2015	3QFY 2015	4QFY 2016	1QFY 2016	4QFY 2016	TBD	N/A	TBD	
FY 2017	10/22/2014	3QFY 2015	1QFY 2016	4QFY 2016	2QFY 2018	2QFY 2018	TBD	N/A	TBD	
FY 2018	10/22/2014	12/10/2015	12/23/2015	4QFY 2017	2QFY 2018	2QFY 2018	TBD	N/A	TBD	
FY 2019	10/22/2014	12/10/2015	12/23/2015	4QFY 2017	5/10/2018	2QFY 2018	TBD	N/A	TBD	
FY 2020	10/22/2014	12/10/2015	12/23/2015	10/6/2017	5/10/2018	5/10/2018	5/10/2018	11/30/2022	11/30/2022	
FY 2021	10/22/2014	12/10/2015	12/23/2015	10/6/2017	5/10/2018	5/10/2018	5/10/2018	11/30/2022	11/30/2022	
FY 2022	10/22/2014	12/10/2015	12/23/2015	10/6/2017	5/10/2018	5/10/2018	5/10/2018	TBD	TBD	

CD-0—Approve Mission Need

Conceptual Design Complete - Actual date the conceptual design was completed

CD-1 - Approve Alternative Selection and Cost Range

CD-2 - Approve Performance Baseline

Final Design Complete - Estimated date the project design will be completed

CD-3 -Approve Start of Construction

D&D Complete -Completion of D&D work (see Section 5)

CD-4 - Approve Start of Operations or Project Completion

CD-3A – Site Preparation, and Long Lead Procurement

Project Cost History

(Dollars in Thousands)							
	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2016	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2017	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2018	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2019	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	16,860	244,456	261,316	22,064	4,405	26,469	287,785
FY 2021	16,860	244,456	261,316	22,064	4,405	26,469	287,785
FY 2022	TBD	TBD	TBD	TBD	TBD	TBD	TBD

2. Project Scope and Justification

Scope

Design and construct a new ventilation system for the Waste Isolation Pilot Plant underground repository to replace the contaminated underground ventilation system components currently in place. This project will design and construct a new ventilation system for the Waste Isolation Pilot Plant underground repository, including High-Efficiency Particulate Air (HEPA) filters and fans, ductwork and dampers, diesel generator, exhaust stack, exhaust filter buildings, filter banks, and site support utilities. This project provides the entire surface infrastructure and equipment for the underground ventilation system. The new underground ventilation system will support additional personnel and equipment underground and will allow mining dust to exit the Waste Isolation Pilot Plant underground in an unfiltered exhaust pathway. Together, these

**Environmental Management/
Carlsbad/15-D-411 Safety Significant
Confinement Ventilation System,
WIPP**

outcomes provide the capability for simultaneous underground activities, such as mining and waste emplacement, which significantly increases operational efficiency.

Justification

In February 2014, the Waste Isolation Pilot Plant experienced two separate and unrelated events: a vehicle fire underground and a radiological release. As a result, the nation's only geologic repository suspended operations, leading to impacts to ongoing transuranic waste disposition efforts across the DOE complex, and impacting enforceable regulatory commitments. In addition, the radiological release led to the contamination of portions of the Waste Isolation Pilot Plant underground. The existing Waste Isolation Pilot Plant underground ventilation system of which the surface ventilation infrastructure is a component is inadequate to support operations of both "clean" and contaminated underground areas. The underground ventilation system serves the Waste Isolation Pilot Plant underground by providing acceptable working conditions, in a life-sustaining environment, during normal operations. The underground ventilation system serves as a first line of defense in the event of a waste handling accident by providing a single pass, direct flow of air through the underground facility to a series of high efficiency particulate air filtration units. In the event of breached waste containers, the underground ventilation system assists in the confinement of released material.

Failure to provide safe habitability standards for the worker and meet surface environmental protection needs will delay achieving Waste Isolation Pilot Plant normal operations and compromise the EM clean-up mission and the National Nuclear Security Administration's national security mission. The underground ventilation system is paramount to providing safe underground working conditions.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*.

Key Performance Parameters

The threshold key performance parameters represent the acceptable performance that the project must achieve. Achievement of the Threshold KPPs will be a prerequisite for approval of CD-4, Project Completion.

Performance Measure	Threshold
Airflow Capacity	Provide ventilation (540,000 cfm) measured at the exhaust shaft collar on the surface) for concurrent mining, maintenance, and waste emplacement operations in either filtered or unfiltered mode of operation.
Maintainability	Provide a ventilation system that can maintain continuous operations (540,000 cfm measured at the exhaust shaft collar on the surface) while allowing maintenance and filter medium replacement with isolation dampers on 22 HEPA filter units with 1 HEPA unit in standby and 1 HEPA filter unit in maintenance mode.
Response Time	Provide a safety significant pressure boundary with safety significant isolation dampers that will close within 75 seconds of initiation of an underground continuous air monitoring detection of a radioactive contamination event that will provide a ventilation system that will allow operations to be continued or re-established with a HEPA filtered ventilation mode of operation.

3. Project Cost and Schedule

Financial Schedule

(Dollars in Thousands)			
	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2015 ^a	12,000	12,000	0
FY 2016	4,860	4,860	5,208
FY 2017	0	0	11,652
Total, Design	16,860	16,860	16,860
Construction			
FY 2016	18,358	18,358	0
FY 2017	2,532	2,352	0
FY 2018	86,000	86,000	14,808
FY 2019	84,212	84,212	65,757
FY 2020	53,354	53,354	65,755
FY 2021	0	0	91,205
FY 2022	0	0	6,931
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2015	12,000	12,000	0
FY 2016	23,218	23,218	5,208
FY 2017	2,532	2,532	11,652
FY 2018	86,000	86,000	14,808
FY 2019	84,212	84,212	65,757
FY 2020	53,354	53,354	65,755
FY 2021	0	0	91,205
FY 2022	0	0	6,931
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Costs			
OPC (except D&D)			
FY 2015	5,000	5,000	1,232
FY 2016	0	0	782
FY 2017	2,000	2,000	1,778
FY 2018	3,500	3,500	1,367
FY 2019	3,500	3,500	1,587

FY 2020	4,700	4,700	3,570
FY 2021	3,364	3,364	6,568
FY 2022	0	0	4,726
Outyears	TBD	TBD	TBD
Total, OPC (except D&D)	TBD	TBD	TBD
OPC D&D			
FY 2021	4,405	4,405	0
FY 2022	0	0	0
Outyears	0	0	4,405
Total OPC D&D	4,405	4,405	4,405
Total OPC with D&D			
FY 2015	5,000	5,000	1,232
FY 2016	0	0	782
FY 2017	2,000	2,000	1,778
FY 2018	3,500	3,500	1,367
FY 2019	3,500	3,500	1,587
FY 2020	4,700	4,700	3,570
FY 2021	7,769	7,769	6,568
FY 2022	0	0	4,726
Outyears	TBD	TBD	TBD
Total OPC	TBD	TBD	TBD
Total Project Costs			
FY 2015	17,000	17,000	1,232
FY 2016	23,218	23,218	5,990
FY 2017	4,532	4,532	13,430
FY 2018	89,500	89,500	16,175
FY 2019	87,712	87,712	67,344
FY 2020	58,054	58,054	69,325
FY 2021	7,769	7,769	97,773
FY 2022	0	0	11,657
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

^a The FY 2015 Omnibus Appropriations Bill appropriated \$12,000,000 in construction funding for this project.

^b A Baseline Change Proposal is under review. **Note that Congress has already provided funding that exceeds the Baseline TPC.**

Details of Project Cost Estimate

(Dollars in Thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	16,860	16,860	16,860
Contingency	0	0	0
Total, Design	16,860	16,860	16,860
Construction			
Site Work	2,585	2,585	2,585
Long-lead Equipment	22,909	22,909	22,909
Construction	TBD	180,240	180,240
Contingency	TBD	38,722	38,722
Total, Construction	TBD	244,456	244,456
Total, TEC	TBD	261,316	261,316
Contingency, TEC	TBD	38,722	38,722
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	628	628
Conceptual Design	TBD	800	800
Reviews	TBD	2,600	2,600
Contingency	TBD	2,466	2,466
Other OPC	TBD	15,590	15,590
Total, OPC except D&D	TBD	22,064	22,064
OPC, D&D			
D&D	TBD	4,405	4,405
Contingency	0	0	0
Total, OPC D&D	TBD	4,405	4,405
Total, OPC	TBD	26,469	26,469
Contingency	TBD	2,446	2,446
Total, TPC	TBD	287,785	287,785
Total, Contingency	TBD	41,168	41,168

Schedule of Appropriation Requests

(Dollars in Thousands)

Request		Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Outyears ^a	Total ^b
FY 2016	TEC	35,218						TBD	TBD
	OPC	5,000						TBD	TBD
	TPC	40,218						TBD	TBD
FY 2017	TEC	37,570						TBD	TBD
	OPC	5,000						TBD	TBD
	TPC	42,570						TBD	TBD
FY 2018	TEC	37,750	46,000					TBD	TBD
	OPC	7,000	3,500					TBD	TBD
	TPC	44,750	49,500					TBD	TBD
FY 2019	TEC	37,750	46,000	84,212				TBD	TBD
	OPC	7,000	3,500	5,000				TBD	TBD
	TPC	44,750	49,500	89,212				TBD	TBD
FY 2020	TEC	37,750	86,000	84,212	53,354	0		0	261,316
	OPC	7,000	3,500	3,500	4,700	7,769		0	26,469
	TPC	44,750	89,500	87,712	58,054	7,769		0	287,785
FY 2021	TEC	37,750	86,000	84,212	53,354	0		0	261,316
	OPC	7,000	3,500	3,500	4,700	0	7,769	0	26,469
	TPC	44,750	89,500	87,712	58,054	0	7,769	0	287,785
FY 2022	TEC	37,750	86,000	84,212	53,354	27,231	50,000	TBD	TBD
	OPC	7,000	3,500	3,500	4,700	7,769	5,000	TBD	TBD
	TPC	44,750	89,500	87,712	58,054	35,000	55,000	TBD	TBD

^{a,b} With the appropriated funds in FY21 and the FY22 request, the funds exceed the approved project TPC.

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	29
Expected Future Start of D&D of this capital asset (fiscal quarter)	TBD

Related Funding requirements

(Dollars in Thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	3,647	3,647	105,763	105,763
Utilities	64	64	1,856	1,856
Maintenance & Repair	287	287	8,323	8,323
Total	3,998	3,998	115,942	115,942

5. D&D Information

This project will design and construct a new ventilation system for the Waste Isolation Pilot Plant underground repository. The existing facilities that were planned to undergo decontamination and decommissioning as part of this project, are being recommended for elimination as part of the Baseline Change Proposal currently in process. The D&D removal of the Interim Ventilation System was recommended during the May 2020 Project Peer Review, is not necessary for the start-up of

**Environmental Management/
Carlsbad/15-D-411 Safety Significant
Confinement Ventilation System,
WIPP**

FY 2022 Congressional Budget Justification

the new system, and portions of the mine ventilation control system are collocated with the IVS control system and must remain operable.

The new area being constructed in this project is replacing existing facilities.

The location of this construction project is an environmental closure site and, therefore, is exempt from the “one-for-one” requirement.

6. Acquisition Approach

The acquisition approach is to use the existing cost-plus incentive management and operations contract with Nuclear Waste Partnership LLC. Additionally, the management and operations contractor will establish one or more firm-fixed-price subcontracts for Title I (Conceptual), Title II (Final Decision), and Title III (Construction) services through a competitive bid process.

15-D-412, Utility Shaft (formerly Exhaust Shaft) (CB-0080)
Waste Isolation Pilot Plant, Carlsbad, New Mexico
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2022 Request for the Utility Shaft (formerly Exhaust Shaft) is \$25,000,000: \$23,173,000 for construction and \$1,827,000 other project costs. FY2022 funds will be utilized on the shaft sinking contract, installation of the new exhaust stack and procurement of air handling equipment.

This project will sink a new 2,150 foot vertical shaft and two new horizontal drifts to the Waste Isolation Pilot Plant repository underground to support a new underground ventilation system. A CD-3A, signed December 19, 2018, authorized the construction of aboveground infrastructure along with procurement of a Hybrid bolter and Electric Miner. The CD-2/3 was signed June 11, 2019. The construction of the shaft is contingent upon a Class 3 permit modification request, which was submitted in August 2019 to the New Mexico Environment Department. The Class 3 permit modification request process is expected to conclude in a decision the 1st quarter of FY 2022. The first Temporary Authorization was received on April 24, 2020, which allowed the shafts and drifts subcontractor to start shaft sinking on April 27, 2020. The Temporary Authorization allowed for construction of the shaft to proceed for 180 days through October 24, 2020. A request for the reissuance of the Temporary Authorization for an additional 180 days was denied by the New Mexico Environment Department on November 18, 2020, which temporarily halted shaft sinking construction activities until the Class 3 permit modification request process has concluded.

The most recent Department of Energy (DOE) Order (O) 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, approved Critical Decision (CD) is Critical Decision-2/3, *Approve Project Performance Baseline/Approve Start of Construction*, which was approved on June 11, 2019, with a Performance Baseline (Total Project Cost) of \$196,985,000 and CD-4, *Project Completion*, in the first quarter of fiscal year (FY) 2024. The project achieved CD-3A, *Approve Long-Lead Procurement, and Site Preparations*, in the first quarter of FY 2019.

A Certified Federal Project Director is assigned to the Project.

Significant Changes

This Construction Project Data Sheet is an update of the FY 2021 Construction Project Data Sheet and does not include a new start for the budget year.

As a result of the New Mexico Environmental Department denial of the reissuance of the Temporary Authorization, in which COVID-19 was a significant factor cited, it is expected that the Total Project Cost and the CD-4 established for this project will be breached. A Baseline Change Proposal, based solely impacts from the Temporary Authorization denial due to COVID-19, is in the early stages of preliminary review.

Critical Milestone History

(fiscal quarter or date)

	CD-0	Conceptual Design Complete	CD-1	CD-3A	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2016	10/22/2014	3QFY2015	3QFY2015		1QFY2016	4QFY2016	TBD	N/A	TBD
FY 2017	10/22/2014	4QFY2015	1QFY2016		1QFY2018	1QFY2018	TBD	N/A	TBD
FY 2018	10/22/2014	12/10/2015	12/23/2015		2QFY2018	2QFY2018	TBD	N/A	TBD
FY 2019	10/22/2014	12/10/2015	12/23/2015		6/11/2019	2QFY2018	TBD	N/A	TBD
FY 2020	10/22/2014	12/10/2015	12/23/2015	1QFY 2019	6/11/2019	3QFY2019	3QFY2019	N/A	TBD
FY 2021	10/22/2014	12/10/2015	12/23/2015	1QFY 2019	6/11/2019	6/11/2019	6/11/2019	N/A	12/31/2023
FY 2022	10/22/2014	12/10/2015	12/23/2015	12/19/2018	6/11/2019	6/11/2019	6/11/2019	N/A	TBD

CD-0—Approve Mission Need

Conceptual Design Complete - Actual date the conceptual design was completed

CD-1— Approve Alternative Selection and Cost Range

CD-2— Approve Performance Baseline

Final Design Complete - Estimated date the project design will be completed

CD-3A — Approve Long-lead Procurements and Site Preparation

CD-3 — Approve Start of Construction

D&D Complete - Completion of D&D work (see Section 5)

CD-4 — Approve Start of Operations or Project Completion

Project Cost History

(Dollars in Thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2016	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2017	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2018	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2019	14,033	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	7,034	TBD	TBD	TBD	N/A	TBD	TBD
FY 2021	7,034	182,086	189,120	7,865	N/A	7,865	196,985
FY 2022	7,034	TBD	TBD	TBD	N/A	TBD	TBD

2. Project Scope and Justification

Scope

Design and construct a new utility shaft to provide for multiple capabilities including: airflow, salt hoists, waste emplacement, material handling, transporting personnel, and emergency egress.

Justification

In February 2014, the Waste Isolation Pilot Plant experienced two separate events: a vehicle fire underground and a radiological release. As a result, the nation's only geologic repository suspended operations, leading to impacts to ongoing transuranic waste disposition efforts across the DOE complex, and impacting enforceable regulatory commitments. In addition, the radiological release has led to the contamination of portions of the Waste Isolation

Pilot Plant underground. The existing Waste Isolation Pilot Plant exhaust shaft is contaminated and is inadequate to support operations of both “clean” and contaminated underground areas. The underground ventilation system serves the Waste Isolation Pilot Plant underground by providing acceptable working conditions, in a life-sustaining environment, during normal operations. The underground ventilation system serves as a first line of defense in the event of a waste handling accident by providing a single pass, direct flow of air through the underground facility to a series of high efficiency particulate air filtration units. In the event of breached waste containers, the underground ventilation system assists in the confinement of released material.

Failure to provide safe habitability standards for the worker and meet surface environmental protection needs will delay resumption of Waste Isolation Pilot Plant normal operations and compromise the EM cleanup mission and the National Nuclear Security Administration’s national security mission. The underground ventilation system is paramount to providing safe underground working conditions.

This project is being conducted in accordance with the project management requirements in DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*.

Key Performance Parameters

The Threshold Key Performance Parameters represent the acceptable performance that the project must achieve. Achievement of the Threshold KPPs will be a prerequisite for approval of CD-4, Project Completion.

Performance Measure	Threshold
Exhaust air flow volume	Provide an unfiltered exhaust pathway for mining dust at 150,000 cubic feet per minute ventilation flow rate through the new exhaust stack at 0.35 inches water gauge.
Intake air flow volume	Provide a minimum of 520,000 cubic feet per minute of intake ventilation flow at 4.5 inches water gauge, for each individual fan to the new air intake shaft (Shaft Number 5) for the underground repository.

3. Project Cost and Schedule

Financial Schedule

(Dollars in Thousands)			
	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2015 ^a	4,000	4,000	0
FY 2016	3,034	3,034	207
FY 2017	0	0	5,848
FY 2018	0	0	979
Total, Design	7,034	7,034	7,034
Construction			
FY 2016	4,466	4,466	0
FY 2017	30,000	30,000	0

	Budget Authority (Appropriations)	Obligations	Costs
FY 2018	19,600	19,600	0
FY 2019	1,000	1,000	22,681
FY 2020	44,500	44,500	45,489
FY 2021	55,000	55,000	55,421
FY 2022	23,173	23,173	53,495
Outyears ^b	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD

Total Estimated Cost (TEC)

FY 2015	4,000	4,000	0
FY 2016	7,500	7,500	207
FY 2017	30,000	30,000	5,848
FY 2018	19,600	19,600	979
FY 2019	1,000	1,000	22,681
FY 2020	44,500	44,500	45,489
FY 2021	55,000	55,000	55,421
FY 2022	23,173	23,173	53,495
Outyears ^b	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD

Other Project Cost (OPC)

FY 2014	1,000	1,000	0
FY 2015	1,000	1,000	0
FY 2017	1,500	1,500	66
FY 2018	1,900	1,900	1,563
FY 2019	638	638	2,367
FY 2020	0	0	1,271
FY 2021	0	0	648
FY 2022	1,827	1,827	900
Outyears ^b	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD

Total Project Costs

FY 2014	1,000	1,000	0
FY 2015	5,000	5,000	0
FY 2016	7,500	7,500	207
FY 2017	31,500	31,500	5,914
FY 2018	21,500	21,500	2,542
FY 2019	1,638	1,638	25,048
FY 2020	44,500	44,500	46,760
FY 2021	55,000	55,000	56,069
FY 2022	25,000	25,000	54,395

	Budget Authority (Appropriations)	Obligations	Costs
Outyears ^b	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

^a The FY 2015 Omnibus Appropriations Bill appropriated \$4,000,000 in construction funding for this project.

^b A Baseline Change Proposal is under review.

Details of Project Cost Estimate

	(Dollars in Thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	7,034	7,034	7,034
Contingency	0	0	0
Total, Design	7,034	7,034	7,034
Construction			
Site Work	30,935	30,935	30,935
Long-lead Equipment	5,974	5,974	5,974
Construction	TBD	113,302	113,302
Contingency	21,083	31,875	31,875
Total, Construction	TBD	182,086	182,086
Total, TEC	189,120	189,120	189,120
Contingency, TEC	21,083	31,875	31,875
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	0	0	0
Conceptual Design	0	0	0
Independent Reviews & Estimates	1,488	1,488	1,488
Contingency	1,665	2,868	2,868
Other OPC	TBD	3,509	3,509
Total, OPC except D&D	TBD	7,865	7,865
Total, OPC	TBD	7,865	7,865
Contingency, OPC	1,665	2,868	2,868
Total, TPC	TBD	196,985	196,985
Total, Contingency	22,748	34,743	34,743

^a A Baseline Change Proposal is under review.

Schedule of Appropriation Requests

(Dollars in Thousands)									
Request		Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Outyears ^a	Total ^b
FY 2016	TEC	11,500							TBD

Request		Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Outyears ^a	Total ^b
	OPC	2,000							TBD
	TPC	13,500							TBD
FY 2017	TEC	14,033							TBD
	OPC	2,000							TBD
	TPC	16,033							TBD
FY 2018	TEC	41,500	19,600						TBD
	OPC	3,500	1,900						TBD
	TPC	45,000	21,500						TBD
FY 2019	TEC	41,500	19,600	1,000					TBD
	OPC	3,500	1,900	638					TBD
	TPC	45,000	21,500	1,638					TBD
FY 2020	TEC	41,500	19,600	1,000	44,500				TBD
	OPC	3,500	1,900	638	0				TBD
	TPC	45,000	21,500	1,638	44,500				TBD
FY 2021	TEC	41,500	19,600	1,000	44,500	50,000		0	189,120
	OPC	3,500	1,900	638	0	0		0	7,865
	TPC	45,000	21,500	1,638	44,500	50,000		0	196,985
FY 2022	TEC	41,500	19,600	1,000	44,500	55,000	23,173	TBD	TBD
	OPC	3,500	1,900	638	0	0	1,827	TBD	7,865
	TPC	45,000	21,500	1,638	44,500	55,000	25,000	TBD	TBD

^{a,b} A Baseline Change Proposal is under review.

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	32
Expected Future Start of decontamination and decommissioning of this capital asset (fiscal quarter)	FY 2056

Related Funding requirements
(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	471	TBD	15,083	TBD
Utilities	348	TBD	11,128	TBD
Maintenance & Repair	305	TBD	9,765	TBD
Total	1,124	TBD	35,976	TBD

5. D&D Information

This project will design and construct a new 2,150 foot vertical utility shaft to the Waste Isolation Pilot Plant repository. There is no cost estimated for decontamination and decommissioning in this construction project.

The location of this construction project is an environmental closure site and, therefore, is exempt from the “one-for-one” requirement.

6. Acquisition Approach

The acquisition approach is to use the existing cost-plus incentive management and operations contract with Nuclear Waste Partnership LLC. Additionally, the management and operations contractor will establish a firm-fixed-price contract for Title I (Conceptual), Title II (Final Design) and Title III (Construction) services through a competitive bid process.

Idaho

Overview

The Idaho Site supports the Department's cleanup activities to address the environmental legacy that resulted from decades of nuclear weapons production and government-sponsored nuclear energy research. The Idaho Cleanup Project is responsible for the treatment, storage and disposition of a variety of radioactive and hazardous waste streams, removal and disposition of targeted buried waste, protection of the Snake River Plain Aquifer, removal or deactivation of unneeded facilities, and the removal of DOE's inventory of spent nuclear fuel and high-level radioactive waste from Idaho.

The Idaho Cleanup Project has achieved significant risk reduction in exhuming and processing radioactive waste for off-site disposition; deactivating and decommissioning excess facilities, remediating contaminated soils, and transferring spent nuclear fuel from wet to dry storage at the Idaho Nuclear Technology and Engineering Center. Near-term remaining work includes addressing remaining liquid tank waste; completion of waste exhumation from the Subsurface Disposal Area, processing of stored legacy remote-handled and contact-handled transuranic waste, Advanced Mixed Waste Treatment Project Resource Conservation and Recovery Act closure and initiation of demolition and dismantlement, treatment of sodium bearing waste, and placement of all nuclear materials in safe storage ready for disposal.

Longer-term work scope will include completion of packaging, certification and shipping of transuranic waste to the Waste Isolation Pilot Plant; calcine waste disposition; demolition and dismantlement of remaining excess facilities; completing Comprehensive Environmental Response, Compensation and Liability Act Record of Decision cleanup requirements, including Test Area North groundwater remediation and closure of the tank farm; installing final caps; maintaining long-term stewardship functions; and making legacy spent nuclear fuel road ready for final dispositioning.

Direct maintenance and repair at the Idaho Site is estimated to be \$26,120,000.

Highlights of the FY 2022 Budget Request

The funding request supports completion of buried waste exhumation from within the final of nine retrieval enclosures, as well as continues progress in characterizing, packaging and shipping stored contact-handled and remote-handled transuranic waste. The request also continues processing, characterizing, packaging and shipping mixed low-level radioactive waste and remote-handled mixed low-level radioactive waste to off-site disposal facilities. The funding request completes treatment of contact handled sludge waste. Deactivation and decommissioning activities at the Advanced Mixed Waste Treatment Project will begin as part of Resource Conservation & Recovery Act closure activities.

The funding request continues progress toward initiating operation of the Integrated Waste Treatment Unit to begin treating the sodium-bearing tank waste. The Idaho Cleanup Project completed a 50-day simulant run in FY 2019. Final plant modifications are underway in preparation for radiological operations in FY 2022.

This request supports the beginning of design and engineering for the Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility expansion.

This request also supports spent nuclear fuel activities such as continued progress to meet the Idaho Settlement Agreement milestone of moving all spent nuclear fuel out of wet storage by 2023. This includes, transferring the remaining two fuel types out of Chemical Processing Plant Building-666 and beginning design and engineering work for an interim spent fuel storage project.

FY 2021 - 2022 Key Milestones/Outlook

The following are the Idaho Cleanup Projects' regulatory milestones:

- (May 2021) Complete Resource Conservation and Recovery Act Closure of Idaho Nuclear Technology and Engineering Center Tank Farm.

**Environmental Management/
Idaho**

FY 2022 Congressional Budget Justification

- (June 2021) Sodium Bearing Waste Treatment Facility-Commence Operations and fill one canister.
- (September 2021) Certify 15 percent of remaining Contact-Handled Transuranic Waste.
- (September 2021) Develop and submit certification schedule for Remote-Handled Transuranic Waste.
- (September 2021) Complete treatment of 1 cubic meter of Remote Handled Waste.
- (September 2021) Sodium Bearing Waste Treatment Facility Complete 100th canister.
- (December 2021) Complete treatment of Idaho Settlement Agreement (Original Volume) Transuranic Contaminated Waste (sludge).
- (December 2021) Allocate to and make from the State of Idaho 55 percent of all transuranic waste shipments received at Waste Isolation Pilot Plant.
- (2021) Ship any transuranic retrieved from the Subsurface Disposal Area after December 31, 2017 within 365 days of the date of retrieval.
- (September 2022) Certify 25 percent of remaining Contact-Handled Transuranic Waste.
- (September 2022) Sodium Bearing Waste Treatment Facility Complete 15 percent treatment (128,095 gal).
- (September 2022) Ship Idaho Settlement Agreement (Original Volume) Transuranic Contaminated Waste Reclassified as Mixed Low-Level Waste (sludge waste).
- (December 2022) Allocate to and make from the State of Idaho 55 percent (three year running average) of all transuranic waste shipments received at Waste Isolation Pilot Plant.
- (2022) Ship any transuranic retrieved from the Subsurface Disposal Area after December 31, 2017 within 365 days of the date of retrieval.

Regulatory Framework

There are two primary regulators of the Idaho Site: the United States Environmental Protection Agency and the State of Idaho Department of Environmental Quality. The United States Nuclear Regulatory Commission monitors DOE activities related to radioactive liquid waste tank stabilization and disposition. It also licenses the Independent Spent Fuel Storage Installations containing Three Mile Island fuel debris and some Fort St. Vrain spent nuclear fuel. Six primary compliance agreements, amendments and consent orders executed between 1991 and 2015 govern cleanup work at the Idaho Site. Those six agreements encompass the majority of the cleanup requirements and commitments. The six primary agreements are:

Federal Facility Agreement and Consent Order (1991): The Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory between DOE, the United States Environmental Protection Agency, and Idaho Department of Environmental Quality established a strategy and plan for cleanup at the Idaho Site under the Comprehensive Environmental Response, Compensation, and Liability Act. The agreement divides the Idaho Site into ten 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 Site's primary facility areas, and allows for inclusion of newly identified release sites.

Notice of Non-Compliance Consent Order (1992): This consent order and associated modifications (between DOE and the State of Idaho Department of Environmental Quality) establishes actions and milestones to resolve Resource Conservation and Recovery Act compliance issues associated with the configuration of stored liquid 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 such as the removal of all spent nuclear fuel from the Idaho Site by January 1, 2035, treatment and offsite shipment of stored transuranic waste by December 31, 2018, treatment of high-level radioactive waste by 2035 for offsite disposition, and treatment of liquid radioactive waste by December 31, 2012. The State suspended the receipt of offsite spent nuclear fuel for storage at the Idaho Site until the remaining sodium bearing waste is treated. Failure to meet certain milestones

result in the suspension of spent nuclear fuel receipts, financial penalties, and the potential to return to Court for resolution of noncompliance. A supplemental agreement was reached in November 2019 that commits the department to 55% (three year running average) of all transuranic waste shipments to the Waste Isolation Pilot Plant and complete one full canister of sodium bearing waste.

Colorado Agreement (1996): This agreement (between DOE and the State of Colorado) requires DOE to have removed all spent nuclear fuel located at Fort St. Vrain from Colorado by January 1, 2035. Failure to meet this milestone results in financial penalties.

Site Treatment Plan: To fulfill requirements in the 1992 Federal Facility Compliance Act, the Idaho National Laboratory prepared the Idaho National Laboratory Site Treatment Plan to address the treatment and long-term storage of mixed waste (radioactive waste mixed with hazardous chemicals). The plan also has estimated schedules and requirements for processing of mixed waste. 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 of FY 2005 (Public Law 108-375): The Federal Facility Agreement defines the enforceable commitments for completing the closure of non-compliant radioactive waste tanks at Idaho. Originally, all tanks were to be closed in accordance with the waste incidental to reprocessing methodology in DOE Order 435.1. Section 3116 of the FY 2005 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 disposal as other than high-level radioactive waste when certain criteria are met. To meet criteria established in the statute, DOE must remove highly radioactive radionuclides to the maximum extent practical.

Contractual Framework

As of October 1, 2021, it is anticipated that the program planning and contract management at the Idaho Cleanup Project will be conducted primarily under a new end state Indefinite-Delivery/Indefinite-Quantity Contract under which Cost-Reimbursement and/or Fixed-Priced task orders will be issued. The primary objective of the new Idaho Cleanup Project contract with DOE-ID will be continuation of safely accomplishing as much of the remaining EM cleanup mission at the Idaho National Laboratory Site as possible to meet regulatory and legal requirements. The new Idaho Cleanup Project contract scope will also include requirements from the Nuclear Regulatory Commission Licensed Facilities (currently performed by STI as described below), which includes providing management and oversight of the Nuclear Regulatory Commission licensed Independent Spent Fuel Storage Installations in support of the Idaho Cleanup Project. Under the new end state contract, Idaho will develop near-term and long-term planning approaches to develop task order strategies and program/project plans at a more detailed level. The selected contractor will execute these plans to complete cleanup on cost and schedule based on task orders that will be negotiated and implemented in post award. The end state contract will have a ten (10) year ordering period with the potential to issue a not-to-exceed five (5) year task order prior to the end of the contract ordering period. The estimated value of the new end state contract is \$6.4 billion. The current Idaho Cleanup Project core contract, managed by Fluor Idaho, LLC is scheduled to complete on September 30, 2021. However, the contract contains the Continuity of Services clause that allow up to three additional months to support transition activities, if necessary.

In addition, it is anticipated that physical security services at Fort St. Vrain in Colorado will be executed under a new Firm-Fixed Price contract and a service-disabled veteran owned small business set-aside with a period of performance of 5 years and an estimated value of \$25 million. Physical security services at Fort St. Vrain are currently provided under the current Nuclear Regulatory Commission Licensed Facilities contract, which was awarded as a small business set-aside to Spectra Tech Inc. (Spectra Tech). This contract is set to expire on September 30, 2021. However, the contract contains the Continuity of Services clause that allow up to three additional months to support transition activities, if necessary.

Strategic Management

The Idaho Site will identify disposal pathways and schedules for transuranic waste, liquid sodium bearing waste, tank farm closure, calcined waste, and spent nuclear fuel to meet key Idaho site commitments.

The following factors present the strongest impacts to the overall achievement of the program's strategic goal:

- Availability of the Waste Isolation Pilot Plant and shipping assets (containers, tractors, trailers and drivers, and shipping schedules), for legacy transuranic waste.
- Start-up challenges and associated delays in treating liquid sodium bearing tank waste at the first-of-a-kind Integrated Waste Treatment Unit.
- Safe and compliant storage of high-level radioactive waste (calcine) and spent nuclear fuel.
- Off-site disposition of the high-level radioactive waste (calcine) and spent nuclear fuel.
- Development and documentation of the technical and legal basis to disposition treated Sodium Bearing Waste.
- Availability of adequate space in the Idaho Comprehensive Disposal Facility to support demolition and dismantlement scope.
- Schedule delays resulting from the COVID-19 pandemic.

Idaho

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Idaho National Laboratory				
Idaho Cleanup and Waste Disposition				
ID-0012B-D / SNF Stabilization and Disposition-2012 (Defense)				
Operating	26,404	29,393	27,340	-2,053
Construction				
22-D-403: Spent Nuclear Fuel Storage Facility, ID (ID-0012B-D)	0	0	3,000	+3,000
	26,404	29,393	30,340	+947
ID-0013 / Solid Waste Stabilization and Disposition	179,025	181,186	126,373	-54,813
ID-0014B / Radioactive Liquid Tank Waste Stabilization and Disposition-2012	185,886	181,500	130,664	-50,836
ID-0030B / Soil and Water Remediation-2012				
Operating	38,685	37,921	39,312	+1,391
Construction				
22-D-404: Additional ICDF Landfill Disposal Cell and Evaporation Ponds Project (ID-0030B)	0	0	5,000	+5,000
	38,685	37,921	44,312	+6,391
ID-0040 / Idaho Demolition and Dismantlement	0	0	35,236	+35,236
Subtotal, Idaho Cleanup and Waste Disposition	430,000	430,000	366,925	-63,075
Idaho Community and Regulatory Support				
ID-0100 / Idaho Community and Regulatory Support	3,500	3,500	2,658	-842
Total, Idaho National Laboratory	433,500	433,500	369,583	-63,917
Non-Defense Environmental Cleanup				
Small Sites				
Idaho National Laboratory				
ID-0012B-N / SNF Stabilization and Disposition-2012 (Non-Defense)	12,800	11,000	11,000	0
Total, Idaho	446,300	444,500	380,583	-63,917

Idaho
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Idaho National Laboratory

Idaho Cleanup and Waste Disposition

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

- No significant change. +947

ID-0013 / Solid Waste Stabilization and Disposition

- The decrease reflects a reduction in Radioactive Waste Management Complex infrastructure support and Resource Conservation and Recovery Act closure as waste processing progresses and facilities transition from Resource Conservation and Recovery Act closure to demolition and dismantlement activities (PBS40). -54,813

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

- The decrease reflects Integrated Waste Treatment Unit transition from facility outage scope to startup activities and reflects completion of Idaho Nuclear Technology and Engineering Center infrastructure projects to reduce future liabilities. -50,836

ID-0030B / Soil and Water Remediation-2012

- The increase reflects funding to support increased Resource Conservation and Recovery Act Closure of the Accelerated Retrieval Projects facilities due to planned completion of exhumations and transition of facilities to demolition and dismantlement activities (PBS40). In addition, the increase reflects engineering and design work to support the line item project to expand the Integrated Disposal Facility disposal cell. +6,391

ID-0040 / Idaho Demolition and Dismantlement

- The increase reflects the scope transition from Resource Conservation and Recovery Act closure of the Accelerated Retrieval Project, Transuranic Storage Area/Retrieval Enclosure and the Advanced Mixed Wasted Treatment Plant to demolish and dismantle those facilities (PBS 13/30 to PBS 40). +35,236

Idaho Community and Regulatory Support

ID-0100 / Idaho Community and Regulatory Support

- No significant change. -842

Non-Defense Environmental Cleanup

Small Sites

Idaho National Laboratory

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

- No change.

0

Total, Idaho	-63,917
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SNF Stabilization and Disposition-2012 (Defense) (PBS: ID-0012B-D)

Overview

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

This project includes safe and secure storage of legacy spent nuclear fuel and managing the receipt of off-site spent nuclear fuel shipments. EM currently manages and stores approximately 267 metric tons of spent nuclear fuel at the Idaho Site and in Colorado. The EM plan includes the receipt of approximately 28 metric tons of spent nuclear fuel from off-site locations, including Foreign and Domestic Research Reactor spent nuclear fuel, from FY 1998 through disposition.

SNF Stabilization and Disposition-2012 (Defense) (PBS: ID-0012B-D)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$29,393,000	\$30,340,000	+\$947,000
<ul style="list-style-type: none"> • Maintain all dry spent nuclear fuel storage facilities with accompanying spent nuclear fuel in a safe and secure state. • Maintain the wet storage facility Chemical Processing Plant building-666 and dry storage facility Chemical Processing Plant Building-603, with accompanying spent nuclear fuel in a safe and secure state. • Retrieve Experimental Breeder Reactor II fuel from wet storage for transfer to the Materials and Fuels Complex. • Retrieve Advanced Test Reactor fuel from wet storage for placement into dry storage. • Receive and store up to 15 shipments of Advanced Test Reactor spent nuclear fuel. • Plan for receipt of foreign and domestic research reactor spent nuclear fuel from off-site. • Continue to perform transfer of spent fuel at Chemical Processing Plant 749 from 1st 	<ul style="list-style-type: none"> • Maintain all dry spent nuclear fuel storage facilities with accompanying spent nuclear fuel in a safe and secure state. • Maintain the wet storage facility Chemical Processing Plant building-666 and dry storage facility Chemical Processing Plant Building-603, with accompanying spent nuclear fuel in a safe and secure state. • Retrieve Experimental Breeder Reactor II fuel from wet storage for transfer to the Materials and Fuels Complex. • Retrieve Advanced Test Reactor fuel from wet storage for placement into dry storage. • Receive and store up to 15 shipments of Advanced Test Reactor spent nuclear fuel. • Plan for receipt of foreign and domestic research reactor spent nuclear fuel from off-site. • Continue to perform transfer of spent fuel at Chemical Processing Plant 749 from 1st generation vaults to second generation vaults 	<ul style="list-style-type: none"> • No significant change.

generation vaults to second generation vaults
due to hydrogen generation to support stable,
long-term storage.

due to hydrogen generation to support stable,
long-term storage.

- Begin engineering and conceptual design work
for spent fuel staging capability.
-

Solid Waste Stabilization and Disposition (PBS: ID-0013)

Overview

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

This waste treatment and disposal activity dispositions stored transuranic waste, low-level radioactive waste, Resource Conservation and Recovery Act hazardous waste, and mixed low-level radioactive waste in compliance with the Idaho Settlement Agreement requirements; closes on-site low-level radioactive 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 disposed by this project were generated primarily by other DOE sites and also active operations at the Idaho Site. Completion of these activities is necessary for compliance with the Idaho Settlement Agreement, and contributes to reducing the footprint and completing cleanup of the site which also includes direct maintenance and repair that are applicable to these areas.

Treatment, certification, and shipping of transuranic waste for disposal at the Waste Isolation Pilot Plant, and disposal and shipment of mixed low-level radioactive waste for disposal will continue. The inventory of certified transuranic waste will be safely and compliantly stored at the Idaho Site pending shipment to the Waste Isolation Pilot Plant.

Solid Waste Stabilization and Disposition (PBS: ID-0013)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$181,186,000	\$126,373,000	-\$54,813,000
<ul style="list-style-type: none"> Maintain and operate the Radioactive Waste Management Complex infrastructure outside the subsurface disposal area 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. Continue certifying and shipping transuranic waste to the Waste Isolation Pilot Plant. Treat and dispose mixed low-level radioactive waste and low-level radioactive waste offsite. 	<ul style="list-style-type: none"> Maintain and operate the Radioactive Waste Management Complex infrastructure outside the subsurface disposal area 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. Continue certifying and shipping transuranic waste to the Waste Isolation Pilot Plant. Treat and dispose mixed low-level radioactive waste and low-level radioactive waste offsite. 	<ul style="list-style-type: none"> The decrease reflects a reduction in Radioactive Waste Management Complex infrastructure support and Resource Conservation and Recovery Act closure as waste processing progresses and facilities transition from Resource Conservation and Recovery Act closure to demolition and dismantlement activities (PBS40).

- Provide for storage of processed and certified transuranic waste pending shipment to the Waste Isolation Pilot Plant.
 - Continue Resource Conservation & Recovery Act closure of the Advanced Mixed Waste Treatment Plant.
 - Continue treatment of contact handled sludge waste.
-
- Provide for storage of processed and certified transuranic waste pending shipment to the Waste Isolation Pilot Plant.
 - Continue Resource Conservation & Recovery Act closure of the Advanced Mixed Waste Treatment Plant.
 - Complete treatment of contact handled sludge waste.

Radioactive Liquid Tank Waste Stabilization and Disposition-2012 (PBS: ID-0014B)

Overview

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 waste; close the tank farm tanks, associated piping and infrastructure; and operate and maintain the Idaho Nuclear Technology and Engineering Center. This project also includes activities to support the preparation of stored calcined high-level radioactive waste for final disposition. Completion of this project will close the last four high-level liquid waste tanks and cap the tank farm area leading to the reduction of the most significant environmental, safety and health threat which also includes direct maintenance and repair for these areas.

Radioactive Liquid Tank Waste Stabilization and Disposition-2012 (PBS: ID-0014B)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$181,500,000	\$130,664,000	-\$50,836,000
<ul style="list-style-type: none"> Develop and further the regulatory path forward for disposal of the sodium bearing waste treatment product. Complete the current outage (Outage J) and begin the Integrated Waste Treatment Unit (IWTU) readiness activities in preparation for hot operations to process sodium-bearing tank waste. Maintain tank farm and systems necessary for safe delivery of sodium bearing waste until treatment is complete. Continue providing Idaho Nuclear Technology and Engineering Center utilities, maintenance and operations for the process waste system, support laboratories, and existing process facilities. Perform liability reduction activities for facility longevity. 	<ul style="list-style-type: none"> Develop and further the regulatory path forward for disposal of the sodium bearing waste treatment product. Complete Integrated Waste Treatment Unit startup activities and initiate hot operations. Maintain tank farm and systems necessary for safe delivery of sodium bearing waste until treatment is complete. Continue providing Idaho Nuclear Technology and Engineering Center utilities, maintenance and operations for the process waste system, support laboratories, and existing process facilities. Provide engineering support for the retrieval and transfer of calcine. 	<ul style="list-style-type: none"> The decrease reflects Integrated Waste Treatment Unit transition from facility outage scope to startup activities and reflects completion of Idaho Nuclear Technology and Engineering Center infrastructure projects to reduce future liabilities.

- Continue developing and testing the methods and equipment needed to retrieve and transfer calcine.
-

Soil and Water Remediation (PBS: ID-0030B)

Overview

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

The objective of this project is remediation of contaminated soil and groundwater and closure of legacy Comprehensive Environmental Response, Compensation, and Liability Act sites at the Idaho National Laboratory. Completion of this project will contribute to reducing the footprint and the completion of the Idaho Cleanup Project.

Soil and Water Remediation-2012 (PBS: ID-0030B)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$37,921,000	\$44,312,000	+\$6,391,000
<ul style="list-style-type: none"> • Provide 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 exhumations at Accelerated Retrieval Project IX retrieval area. • Disposition of transuranic buried waste. • Maintain the remedies at Test Reactor Area; Central Facilities Area; Power Burst Facility/Auxiliary Reactor Area; and Experimental Breeder Reactor/BORAX. • Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for Idaho Nuclear Technology and Engineering Center tank farm soils and groundwater. 	<ul style="list-style-type: none"> • Provide risk reduction through implementation of the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for buried transuranic waste at the Radioactive Waste Management Complex subsurface disposal area. • Complete exhumations at Accelerated Retrieval Project IX retrieval area. • Disposition of transuranic buried waste. • Implement the CERCLA ROD for the following: <ul style="list-style-type: none"> o Idaho Nuclear Technology and Engineering Center tank farm soils and groundwater. o TAN groundwater o Site wide groundwater, miscellaneous sites, and future sites o Unexploded ordinance. • Maintain the remedies at Test Reactor Area; Central Facilities Area; Power Burst Facility/Auxiliary Reactor Area; and Experimental Breeder Reactor/BORAX. 	<ul style="list-style-type: none"> • The increase reflects funding to support increased Resource Conservation and Recovery Act Closure of the Accelerated Retrieval Projects facilities due to planned completion of exhumations and transition of facilities to demolition and dismantlement activities (PBS40). In addition, the increase reflects engineering and design work to support the line item project to expand the Integrated Disposal Facility disposal cell.

- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for TAN groundwater.
- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for site wide ground water, miscellaneous sites, and future sites.
- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision unexploded ordinance.
- Maintain Radioactive Waste Management Complex infrastructure for buried waste facilities.
- Maintain Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility operations.
- Perform ground water monitoring and subsurface investigation with analysis of contaminants and transport mechanisms affecting the Snake River Aquifer.
- Continue Resource Conservation and Recovery Act closure activities for Buried Waste Exhumation Facilities.
- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for Idaho Nuclear Technology and Engineering Center tank farm soils and groundwater.
- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for TAN Groundwater.
- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for site wide ground water, miscellaneous sites, and future sites.
- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for unexploded ordinance.
- Maintain Radioactive Waste Management Complex infrastructure.
- Maintain Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility operations.
- Perform ground water monitoring and subsurface investigation with analysis of contaminants and transport mechanisms affecting the Snake River Aquifer.
- Complete Resource Conservation and Recovery Act closure activities for Buried Waste Exhumation Facilities and transition to demolition and dismantlement activities.
- Supports further design and progress towards construction of a new Comprehensive Environmental Response, Compensation, and Liability Act disposal cell.

Idaho Community and Regulatory Support (PBS: ID-0100)

Overview

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

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

1) State of Idaho Department of Environmental Quality execution of requirement in the Federal Facility Agreement Consent Order and Environmental Oversight and Monitoring support; and 2) the Idaho Site Citizens Advisory Board is chartered by the DOE as an EM Site-Specific Advisory Board.

Idaho Community and Regulatory Support (PBS: ID-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$3,500,000	\$2,658,000	-\$842,000
<ul style="list-style-type: none">• Provide for site-wide environmental compliance and oversight.• Provide grant to the State of Idaho Department of Environmental Quality.• Provide for Citizens Advisory Board requirements.	<ul style="list-style-type: none">• Provide for site-wide environmental compliance and oversight.• Provide grant to the State of Idaho Department of Environmental Quality.• Provide for Citizens Advisory Board requirements.	<ul style="list-style-type: none">• No significant change.

Idaho Demolition and Dismantlement (PBS: ID-0040)

Overview

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

The objective of this PBS is to perform demolition and dismantlement scope across the Idaho Site to progress toward site closure. The near-term focus of this PBS will be the closure and eventual capping of the Radioactive Waste Management Complex where buried waste exhumations are performed along with transuranic and mixed/low level waste processing for disposal. Demolition and dismantlement of excessed facilities includes planning and engineering, deactivation of utilities, asbestos and other hazardous material abatement, equipment dismantlement and disposal, structure demolition, and waste disposition and related remedial actions.

Idaho Demolition and Dismantlement (PBS: ID-0040)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$0	\$35,236,000	+\$35,236,000
<ul style="list-style-type: none"> No planned activities. RCRA Closure work ongoing in PBS 13 and PBS 30. Scope will transition to demolition and dismantlement activities in FY 2022. 	<ul style="list-style-type: none"> Perform demolition and dismantlement on the following: <ul style="list-style-type: none"> Accelerated Retrieval Projects and related ancillary facilities. Transuranic Storage Area/Retrieval Enclosure and related ancillary facilities. Advanced Mixed Wasted Treatment Plant facility and related ancillary facilities. 	<ul style="list-style-type: none"> The increase reflects the scope transition from Resource Conservation and Recovery Act closure of the Accelerated Retrieval Project, Transuranic Storage Area/Retrieval Enclosure and the Advanced Mixed Wasted Treatment Plant to demolish and dismantle those facilities (PBS 13/30 to PBS 40).

SNF Stabilization and Disposition-2012 (Non-Defense) (PBS: ID-0012B-N)

Overview

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

The purpose of this project is to maintain and operate the Nuclear Regulatory Commission-licensed Independent Spent Fuel Storage Installations in accordance with license basis documents. This includes the management of spent nuclear fuel presently stored at Fort St. Vrain in Colorado and the Three Mile Island Independent Spent Fuel Storage Installation on the Idaho Site, and payment of related fees for the Idaho Spent Fuel Facility that is designed and licensed, but not yet built.

SNF Stabilization and Disposition-2012 (Non-Defense) (PBS: ID-0012B-N)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$11,000,000	\$11,000,000	+\$0
<ul style="list-style-type: none"> • Provide payments to the Nuclear Regulatory Commission to implement license and licensing-related activities related to the Fort St. Vrain, Three Mile Island-2, and Idaho Spent Fuel Facilities. • Provide security for Fort St. Vrain Spent nuclear fuel facility. • Continue to monitor Fort St. Vrain and Three Mile Island-2 Spent nuclear fuel. • Operate systems to meet Nuclear Regulatory Commission license conditions. • Provide support to construct personnel facilities on site at Fort St Vrain. 	<ul style="list-style-type: none"> • Provide payments to the Nuclear Regulatory Commission to implement license and licensing-related activities related to the Fort St. Vrain, Three Mile Island-2, and Idaho Spent Fuel Facilities. • Provide security for Fort St. Vrain Spent nuclear fuel facility. • Continue to monitor Fort St. Vrain and Three Mile Island-2 Spent nuclear fuel. • Operate systems to meet Nuclear Regulatory Commission license conditions. • Provide support to construct personnel facilities on site at Fort St Vrain. 	<ul style="list-style-type: none"> • No change.

Idaho
Construction Projects Summary (\$K)

	Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
22-D-403 Idaho Spent Nuclear Fuel Staging Facility							
Total Estimate Cost (TEC)	0	0	0	0	0	0	0
Other Project Costs (OPC)	TBD	0	0	0	0	3,000	+3,000
Total Project Cost (TPC) 22-D-403	TBD	0	0	0	0	3,000	+3,000
22-D-404 Additional ICDF Landfill Disposal Cell and Evaporation Ponds Project							
Total Estimate Cost (TEC)	TBD	0	0	0	0	3,000	+3,000
Other Project Costs (OPC)	TBD	0	0	0	0	2,000	+2,000
Total Project Cost (TPC) 22-D-404	TBD	0	0	0	0	5,000	+5,000

22-D-403, Idaho Spent Nuclear Fuel Staging Facility (ID-0012BD)
Idaho National Laboratory, Idaho Falls, Idaho
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2022 Request for the Idaho Spent Nuclear Fuel Staging Facility is \$3,000,000: \$0 for construction and \$3,000,000 other project costs. Funding in FY 2022 based on a design/build contract model which includes the design portion and project level of effort (federal and contractor project support staff).

The most recent Department of Energy (DOE) Order (O) 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, approved Critical Decision (CD) is Critical Decision-0, *Approve Mission Need*, with a Rough-Order of Magnitude (ROM) cost range between \$119,000,000 and \$205,000,000 with a CD-4, *Project Completion*, range between fiscal year (FY) 2026 and 2029. CD-0 was approved May 21, 2021.

A Certified Federal Project Director is not assigned to the Project.

Significant Changes

This Construction PBS is a new Construction PBS and is a new start for the budget year.

This project will build 100,000 square feet of storage (including the appropriate security measures) in order to close the spent nuclear fuel staging facility mission gap.

Critical Milestone History

(fiscal quarter or date)							
	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete CD-4
FY 2022	5/21/2021	FY 2022	TBD	TBD	TBD	TBD	TBD

CD-0—Approve Mission Need

Conceptual Design Complete - Actual date the conceptual design was completed

CD-1- Approve Alternative Selection and Cost Range

CD-2- Approve Performance Baseline

Final Design Complete - Estimated date the project design will be completed

CD-3A – Approve Long-lead Procurements and Site Preparation

CD-3 -Approve Start of Construction

D&D Complete -Completion of D&D work (see Section 5)

CD-4 - Approve Start of Operations or Project Completion

Project Cost History

(Dollars in Thousands)

	TEC Design	TEC Construction	TEC Total	OPC Except D&D	OPC, D&D	OPC Total	TPC
FY 2022	TBD	TBD	TBD	TBD	N/A	TBD	TBD

No construction, excluding for approved long-lead procurement and site preparation, will be performed until the project performance baseline has been validated and CD-3 has been approved.

2. Project Scope and Justification

Scope

Provide the capability to support near-term and long-term spent nuclear fuel packaging efforts, and storage at the Idaho National Laboratory Site. Approximately 100,000 square feet of storage space will be required to store the estimated 200 multi-canister overpacks that will be generated from the packaging efforts.

Justification

The Department of Energy's (DOE) Spent Nuclear Fuel Program located at the Idaho National Laboratory Site needs the capability to safely, compliantly, and efficiently store packaged Spent Nuclear Fuel. Storage is needed to support near-term and long-term Spent Nuclear Fuel packaging efforts. Storage at the Idaho National Laboratory Site will be required until the packaged Spent Nuclear Fuel is shipped out of Idaho. Storage space will be required to store the estimated 200 multi-canister overpacks that will be generated from the packaging efforts.

This project is being conducted in accordance with the project management requirements in DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets.

Key Performance Parameters

The Threshold Key Performance Parameters represent the acceptable performance that the project must achieve. Achievement of the Threshold Key Performance Parameters will be a prerequisite for approval of CD-4, Project Completion. The Objective Key Performance Parameters represent the desired project performance and will be defined at CD-2.

Performance Measure	Threshold	Objective
Capability to efficiently store packaged Spent Nuclear Fuel at the Idaho National Laboratory	Have Capability to store approximately 200 multi-canister overpacks	Efficiently store packaged Spent Nuclear Fuel at the Idaho National Laboratory

3. Project Cost and Schedule

Financial Schedule

(Dollars in Thousands)			
	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
Total Estimated Cost (TEC)			
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
FY 2022	3,000	3,000	3,000
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Costs			
FY 2022	3,000	3,000	3,000
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

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
Contingency	TBD	N/A	N/A
Total, Design	TBD	N/A	N/A

Environmental Management/
Idaho/22-D-403 Idaho Spent Nuclear
Fuel Staging Facility,
Idaho Falls, ID

Construction			
Site Work	TBD	N/A	N/A
Long-lead Equipment	N/A	N/A	N/A
Construction	TBD	N/A	N/A
Contingency	TBD	N/A	N/A
Total, Construction	TBD	N/A	N/A
			N/A
Total, TEC	TBD	N/A	N/A
Contingency, TEC	TBD	N/A	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	N/A	N/A	N/A
Conceptual Design	TBD	N/A	N/A
Independent Reviews & Estimates	N/A	N/A	N/A
Contingency	TBD	N/A	N/A
Other OPC	TBD	N/A	N/A
Total, OPC except D&D	TBD	N/A	N/A
Total, OPC	TBD	N/A	N/A
Contingency, OPC	TBD	N/A	N/A
Total, TPC	TBD	N/A	N/A
Total, Contingency	TBD	N/A	N/A

Schedule of Appropriation Requests

(Dollars in Thousands)

Request		FY 2022	Outyears	Total
FY 2022	TEC	0	TBD	TBD
	OPC	3,000	TBD	TBD
	TPC	3,000	TBD	TBD

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	TBD
Expected Future Start of decontamination and decommissioning of this capital asset (fiscal quarter)	TBD

Related Funding requirements

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	0	N/A	0	N/A
Utilities	0	N/A	0	N/A
<u>Maintenance & Repair</u>	TBD	N/A	TBD	N/A
Total	TBD	N/A	TBD	N/A

5 Demolition and Dismantlement Information

Demolition and dismantlement of the facilities currently holding the spent nuclear fuel after this mission is completed will be a separate effort and is not included in the current mission needs. There is no cost estimated for demolition and dismantlement in this construction project.

The location of this construction project is an environmental closure site and, therefore, is exempt from the “one-for-one” requirement.

6. Acquisition Approach

The acquisition approach is to use the Indefinite Delivery/Indefinite Quantity end-state contracting model with the new Idaho Cleanup Project contractor (i.e., post FY 2021).

22-D-404, Additional ICDF Landfill Disposal Cell and Evaporation Ponds Project (ID-0030B)

Idaho National Laboratory, Idaho Falls, Idaho

Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2022 Request for the Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility Integrated Disposal Facility Cell Expansion is \$5,000,000: \$3,000,000 for design, 2,000,000 for other project costs. Funding in FY 2022 is based on a Design/Build contract model which includes a portion of the design and a portion of other project costs.

The most recent Department of Energy (DOE) Order (O) 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, approved Critical Decision (CD) for this project is Critical Decision-0, *Approve Mission Need*, with a Rough-Order of Magnitude cost range between \$17,000,000 and \$38,000,000. CD-0 was approved on April 6, 2021.

A Certified Federal Project Director is not assigned to the Project.

Significant Changes

This Construction Project Data Sheet is a new Construction Project Data Sheet and is a new start for the budget year.

This project will provide the for the construction of additional disposal cell to accommodate continued disposal of Comprehensive Environmental Response, Compensation, and Liability Act generated Environmental Remediation and demolition and dismantlement wastes in accordance with a Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision. This additional disposal capacity is required to accommodate the remaining estimated volume of Comprehensive Environmental Response, Compensation, and Liability Act and demolition and dismantlement waste that will be generated between 2023 and 2050 from Idaho Cleanup Project activities as well as Naval Reactor Facility activities. Accompanying evaporation ponds are required to accept the leachate that is generated from the landfills.

Critical Milestone History

(fiscal quarter or date)

	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2022	4/6/21	FY 2022	FY 2022	TBD	TBD	TBD	TBD	TBD

CD-0—Approve Mission Need

Conceptual Design Complete -Actual date the conceptual design was completed

CD-1- Approve Alternative Selection and Cost Ranges

CD-2- Approve Performance Baseline

Final Design Complete - Estimated date the project design will be completed

CD-3A – Approve Long-lead Procurements and Site Preparation

CD-3 -Approve Start of Construction

D&D Complete -Completion of demolition and dismantlement work (see Section 5)

CD-4 - Approve Start of Operations or Project Completion

Project Cost History

(Dollars in Thousands)

	TEC Design	TEC Construction	TEC Total	OPC Except construction	OPC D&D	OPC Total	TPC
FY 2022	TBD	TBD	TBD	TBD	N/A	TBD	TBD

No construction, excluding for approved long-lead procurement and site preparation, will be performed until the project performance baseline has been validated and CD-3 has been approved.

2. Project Scope and Justification

Scope

Provide the capability to dispose of Comprehensive Environmental Response, Compensation, and Liability Act generated waste from Environmental Remediation and other demolition and dismantlement activities on the Idaho National Laboratory by expansion of the current Idaho Comprehensive Environmental Response, Compensation, and Liability Act disposal facility. This project will include construction of an additional disposal cell and evaporation ponds.

Justification

The mission need to construct an onsite disposal facility is established by a Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision. The standard Comprehensive Environmental Response, Compensation, and Liability Act process was followed to determine the optimal cleanup decision. Onsite disposal and construction of the Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility was the selected remedy to reduce risk to human health and the environment posed by contaminated soils and debris. A summary-level description of the selected remedy from the OU 3-13 Record of Decision (DOE ID 1999) is as follows:

To implement onsite disposal of Waste Area Group 3 and other Comprehensive Environmental Response, Compensation, and Liability Act -generated wastes at the Idaho National Engineering and Environmental Laboratory [now Idaho National Laboratory], construction and operation of an engineered disposal facility is proposed. The Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility will be an engineered facility meeting Resource Conservation and Recovery Act Subtitle C design and construction requirements, which are the same regulations required for commercial disposal facilities.

Key Performance Parameters

The Threshold key performance parameters represent the acceptable performance that the project must achieve. Achievement of the Threshold key performance parameters will be a prerequisite for approval of CD-4, Project Completion. The Objective key performance parameters represent the desired project performance and will be defined at CD-2.

Performance Measure	Threshold	Objective
Construction completion approval by regulators	Idaho CERCLA Disposal cell expansion construction by FY2025	Provide the for continued disposal of Comprehensive Environmental Response, Compensation, and Liability Act generated waste from Environmental Remediation and other demolition and dismantlement activities on the Idaho National Laboratory Site

3. Project Cost and Schedule

Financial Schedule

(Dollars in Thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2022	3,000	3,000	3,000
Outyears	TBD	TBD	TBD
	TBD	TBD	TBD
Construction			
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
Total Estimated Cost (TEC)			
FY 2022	3,000	3,000	3,000
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
FY 2022	2,000	2,000	2,000
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD

Total Project Costs			
FY 2022	5,000	5,000	5,000
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

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
Contingency	TBD	N/A	N/A
Total, Design	TBD	N/A	N/A
Construction			
Site Work	N/A	N/A	N/A
Long-lead Equipment	N/A	N/A	N/A
Construction	TBD	N/A	N/A
Contingency	TBD	N/A	N/A
Total, Construction	TBD	N/A	N/A
Total, TEC	TBD	N/A	N/A
Contingency, TEC	TBD	N/A	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	N/A	N/A
Conceptual Design	TBD	N/A	N/A
Independent Reviews & Estimates	N/A	N/A	N/A
Contingency	TBD	N/A	N/A
Other OPC	TBD	N/A	N/A
Total, OPC except D&D	TBD	N/A	N/A
Total, OPC	TBD	N/A	N/A
Contingency, OPC	TBD	N/A	N/A
Total, TPC	TBD	N/A	N/A
Total, Contingency	TBD	N/A	N/A

Schedule of Appropriation Requests

(Dollars in Thousands)

Request		FY 2022	Outyears	Total
FY 2022	TEC	3,000	TBD	TBD
	OPC	2,000	TBD	TBD
	TPC	5,000	TBD	TBD

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	TBD
Expected Future Start of decontamination and decommissioning of this capital asset (fiscal quarter)	TBD

Related Funding requirements

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	TBD	N/A	TBD	N/A
Utilities	TBD	N/A	TBD	N/A
<u>Maintenance & Repair</u>	TBD	N/A	TBD	N/A
Total	TBD	N/A	TBD	N/A

5. Demolition and Dismantlement Information

This project will provide the for continued disposal of Comprehensive Environmental Response, Compensation, and Liability Act generated waste from Environmental Remediation and other demolition and dismantlement activities on the Idaho National Laboratory site at the Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility. This disposal capacity is required to accommodate the remaining estimated volume of Comprehensive Environmental Response, Compensation, and Liability Act and demolition and dismantlement waste that will be generated between 2023 and 2050 from Idaho Cleanup Project activities as well as Naval Reactor Facility activities.

The location of this construction project is an environmental closure site and, consequently, is exempt from the “one-for-one” requirement.

6. Acquisition Approach

The acquisition approach is to use the indefinite delivery/indefinite quantity end state contracting model with new Idaho Cleanup Project contractor (estimated to be in calendar year 2021).

Oak Ridge

Overview

The Oak Ridge Office of Environmental Management supports the Department's effort to clean up the Manhattan Project and Cold War legacies on the Oak Ridge Reservation. The Oak Ridge Office of Environmental Management manages scope within three portfolios tied to sites located within the Oak Ridge Reservation (ORR). Approximately 500,000 people live within a 30-mile radius of the Oak Ridge Reservation. The local cleanup program conducts extensive sampling and modeling to understand and track conditions, and it performs remediation projects and implements control measures to prevent the transport of contaminants off-site from past federal operations.

- The East Tennessee Technology Park site managed by the Office of Environmental Management occupies approximately 2,200 acres adjacent to the Clinch River. The Office of Environmental Management is addressing this area in compliance with the Comprehensive, Environmental, Response, Compensation and Liability Act. The site was a former gaseous diffusion plant that was shut down in 1987. Facility demolition activities are complete, marking the first time an entire uranium enrichment complex has been successfully removed in the world. Crews are currently addressing remaining soil and groundwater contamination. The site is being transitioned into a multi-use industrial park.
- The Oak Ridge National Laboratory managed by the Office of Science covers 3,300 acres and conducts multi-program energy and basic research. Historically, it supported both defense production operations and civilian energy research. Manhattan Project and Cold War era legacies co-exist with modernized laboratory facilities.
- The Y-12 National Security Complex, managed by the National Nuclear Security Administration, spans 811 acres. It began as a uranium processing facility, but now it refurbishes nuclear weapon components and serves as the nation's storehouse for uranium-235 and carries out other national security activities. Manhattan Project and Cold War era legacies co-exist with revitalized national security facilities. The Environmental Management Waste Management Facility (a Comprehensive, Environmental, Response, Compensation and Liability Act disposal facility supporting cleanup of all three sites) is adjacent to the site.

The Office of Environmental Management addresses the scope required to remediate the Manhattan Project and Cold War nuclear weapons production legacy while protecting workers, public health, and the environment. The priorities and sequencing of scope are done in accordance with the regulatory framework and milestones contained within the Oak Ridge Federal Facility Agreement, the Site Treatment Plan, and a Polychlorinated Biphenyl Federal Facilities Compliance Agreement with the United States Environmental Protection Agency and/or the State of Tennessee.

Oak Ridge was placed on the National Priorities List in 1989; therefore, cleanup of the Oak Ridge Reservation is being conducted under the Comprehensive, Environmental, Response, Compensation and Liability Act of 1980.

Direct maintenance and repairs at Oak Ridge is estimated to be \$114,123,000 in FY 2022.

Highlights of the FY 2022 Budget Request

The following represents the most significant activities for the Oak Ridge Office of Environmental Management:

- Maintaining Oak Ridge Office of Environmental Management facilities in a safe, compliant and secure manner.
- Operating Oak Ridge Office of Environmental Management waste treatment and disposal facilities, including an on-site Comprehensive Environmental Response, Compensation, and Liability Act disposal facility and sanitary landfills adjacent to the Y-12 National Security Complex, and wastewater and gaseous waste treatment operations at Oak Ridge National Laboratory.
- Continuing cleanup of high-risk excess facilities at Oak Ridge National Laboratory and Y-12 National Security Complex.
- Continuing down-blending of uranium-233 material at Oak Ridge National Laboratory.
- Remediating building slabs, soil and groundwater at the East Tennessee Technology Park.
- Continue processing and shipping transuranic debris waste to the Waste Isolation Pilot Plant.
- Designing and constructing a second On-Site Waste Disposal Facility, to support cleanup at the Y-12 National Security Complex and Oak Ridge National Laboratory.

**Environmental Management/
Oak Ridge**

FY 2022 Congressional Budget Justification

- Testing and maturation of critical technologies to inform the final design of the Transuranic Sludge Treatment Process.
- Developing mercury-related technology to support characterization, remediation, monitoring, and modeling of mercury contamination.

The FY 2022 request includes funding for one line-item construction project: On-Site Waste Disposal Facility (\$12,500,000). The purpose of the second On-Site Waste Disposal Facility project is to provide waste disposal capacity for demolition debris and soils from Y-12 National Security Complex and Oak Ridge National Laboratory cleanup projects once the existing disposal facility has reached capacity. This second facility will enable EM to avoid costly transportation operations and allows the program to address high-risk contaminated facilities. The request includes funding for design and other project costs.

FY 2021 and FY 2022 Key Milestones/Outlook

- (July 2021) Record of Decision for the On-Site Waste Disposal Facility.
- (September 2021) Complete demolition of Biology Complex.
- (September 2021) Complete preparation of Building 2026 for hot cell processing and initiate down-blending of the remaining U-233 material stored in Building 3019 at Oak Ridge National Laboratory.
- (October 2021) Complete Sludge Test Area Construction.
- (September 2022) Complete demolition of Building 3026-D Facility.

Regulatory Framework

Cleanup of the Oak Ridge Reservation is primarily governed by three regulatory agreements/compliance orders:

- 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 on January 1, 1992. The document establishes a procedure framework and schedule for developing, implementing, and monitoring appropriate site response actions under the Comprehensive Environmental Response, Compensation, and Liability Act.
- The Oak Ridge Reservation Compliance Order was signed on September 26, 1995, by DOE and the Tennessee Department of Environment and Conservation. The document enforces treatment of mixed low-level wastes and transuranic wastes under the Resource Conservation and Recovery Act. This order establishes milestones in the Site Treatment Plan to complete treatment of all Oak Ridge mixed low-level wastes with a known disposition path by 2012 (accomplished in 2011). This order also established milestones for processing and shipment certification of transuranic wastes.
- 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.

Contractual Framework

Oak Ridge has multiple contracts with large and small businesses to accomplish the effective and safe execution of cleanup of the Oak Ridge Reservation. The major contracts for performing/supporting environmental management cleanup at Oak Ridge include:

- The URS|CH2M Oak Ridge LLC contract
 - o Scope - decontamination and decommissioning of surplus buildings, legacy soil and groundwater remediation at the East Tennessee Technology Park (former uranium enrichment gaseous diffusion plant), surveillance and maintenance of facilities at Oak Ridge National Laboratory and Y-12 National Security Complex, design and technical services support for the Outfall 200 Mercury Treatment Facility, and operations of waste treatment facilities and water quality activities at Oak Ridge National Laboratory and Y-12 National Security Complex. Oak Ridge Office of Environmental Management is in the process of recompeting this contract. For the follow-on, the contractor will perform environmental cleanup on the Oak Ridge Reservation including decontamination and demolition, remediation, waste treatment and disposal operations, and other environmental cleanup support activities, and will follow the Environmental Management End-state contract model.
 - o Period of Performance - April 29, 2011 to July 31, 2021 with two additional six-month options
 - o Contract Value - \$3.9B
 - o Type - Cost plus award fee contract with performance-based incentives and is structured with both cleanup and operations Contract Line Items. The contract structure includes both subjective and objective fee criteria through award fee and performance-based incentives. The performance-based incentives motivate the contractor to complete specific projects in a timely manner; while award fee incentivizes the contractor to effectively manage the contract from a project, safety, regulatory, and cost perspective. This dual approach has been extremely effective in ensuring that the contractor completes the work timely, safely, and within budget.
- The North Wind Solutions contract
 - o Scope - Processing of Environmental Management legacy transuranic debris waste at the Transuranic Waste Processing Center.
 - o Period of Performance - 10/19/2015-4/27/22 plus one 6-month option.
 - o Contract Value - \$295M.
 - o Type – The contract was awarded as a hybrid contract which consists of fixed priced contract line item numbers for maintenance, cost reimbursable for processing and fixed unit rates for movement of containers; however, the Oak Ridge Office of Environmental Management converted the remaining options to firm-fixed price contract line item numbers based upon the remaining work and availability of historical information.
 - o Performance – Contractor has achieved satisfactory performance ratings.
- The Isotek Systems LLC contract
 - o Scope - Complete the disposition of Uranium-233 material stored in Building 3019 at Oak Ridge National Laboratory. The contractor has completed the direct disposition campaign and is preparing for processing the remainder of the inventory.
 - o Period of Performance – Ends December 2024
 - o Contract Value - \$811M
 - o Type - The contract, originally awarded as a cost-reimbursement type, was converted to a firm-fixed price beginning with the direct disposition campaign. It is currently processing the low-dose portion of the remaining inventory in gloveboxes, and it is scheduled to begin processing the high-dose portion of the remaining inventory in hot cells later in 2021.
 - o The conversion to firm-fixed price has been a successful model for this contract and is expected to continue for the remaining options.
 - o Performance: The contractor has consistently achieved very good performance ratings and completed the direct disposition campaign ahead of schedule and within the negotiated firm-fixed price.
- The APTIM/North Wind contract
 - o Scope – Construction of the Outfall 200 Mercury Treatment Facility located at the Y-12 National Security Complex.
 - o Period of Performance – December 6, 2018 to December 5, 2022

- o Contract Value - \$110M
- o Type – Firm-fixed price
- o Performance – The contractor has recently begun construction activities in the field.
- Characterization, Sampling, and Demolition Blanket Purchase Agreements
 - o Scope – Tasks are competed among small business Blanket Purchase Agreements holders for characterization, sampling, and small-scale demolition across the Oak Ridge Reservation.
 - o Period of Performance- May 2019 to April 2024
 - o Contract Value - \$24.9M
 - o Type – All tasks will be awarded as firm-fixed price task orders.
 - o Performance - The prior Blanket Purchase Agreements have enabled the Oak Ridge Office of Environmental Management to procure characterization and sampling among qualified small businesses and have resulted in savings for the work, in addition to providing multiple small business opportunities, which is why DOE chose to recompetete them.

Strategic Management

The near-term Oak Ridge Environmental Management priorities are: (1) complete closure and continue reindustrialization of the East Tennessee Technology Park and transition the cleanup workforce as work ramps down to clean up of the excess contaminated facilities at the Oak Ridge National Laboratory and the Y-12 National Security Complex; (2) process and disposition the remaining uranium-233 inventory; (3) process and ship the remaining transuranic debris waste to the Waste Isolation Pilot Plant; (4) construct the Outfall 200 Mercury Treatment Facility at the Y-12 National Security Complex; (5) construct a new on-site Comprehensive Environmental Response, Compensation, and Liability Act disposal facility; (6) test the critical technologies to inform the final design of the facility that will treat transuranic sludges stored in tanks at Oak Ridge National Laboratory and (7) continue the groundwater monitoring program for the reservation.

A key component to cleanup success in Oak Ridge is the continued partnering with regulatory agencies and stakeholders. The Oak Ridge Federal Facility Agreement and the Site Treatment Plan are agreements between DOE, the Tennessee Department of Environment and Conservation, and/or the United States Environmental Protection Agency that govern cleanup of the ORR. Milestones for completion of cleanup efforts are established and provide a mechanism for ensuring that Oak Ridge cleanup priorities are developed in collaboration with all stakeholders to reduce risk and protect public health and the environment. In addition, collaboration occurs on a regular basis with the Oak Ridge Site Specific Advisory Board and Oak Ridge area stakeholders to ensure that program priorities are reviewed, and as appropriate revised, to reflect community input.

Oak Ridge

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Oak Ridge				
OR Cleanup and Disposition				
OR-0013B / Solid Waste Stabilization and Disposition-2012	101,100	112,471	73,725	-38,746
OR Nuclear Facility D&D				
OR-0041 / Nuclear Facility D&D-Y-12				
Operating	60,000	135,732	140,137	+4,405
Construction				
14-D-403: Outfall 200 Mercury Treatment Facility, OR (OR-0041)	70,000	20,500	0	-20,500
17-D-401: On-Site Disposal Facility	0	22,380	12,500	-9,880
	130,000	178,612	152,637	-25,975
OR-0042 / Nuclear Facility D&D-Oak Ridge National Laboratory	153,000	118,400	134,786	+16,386
Subtotal, OR Nuclear Facility D&D	283,000	297,012	287,423	-9,589
OR Reservation Community and Regulatory Support				
OR-0100 / Oak Ridge Reservation Community & Regulatory Support (Defense)	5,900	5,900	5,096	-804
OR Technology Development and Deployment				
OR-TD-0100 / Technology Development Activities - Oak Ridge	5,000	5,000	3,000	-2,000
U233 Disposition Program				
OR-0011D / U233 Disposition Program	55,000	55,000	55,000	0
Total, Oak Ridge	450,000	475,383	424,244	-51,139
Safeguards and Security				
OR-0020 / Safeguards and Security	9,000	9,260	12,000	+2,740
Total, Defense Environmental Cleanup	459,000	484,643	436,244	-48,399
Non-Defense Environmental Cleanup				
Small Sites				
Environmental Management/ Oak Ridge				

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Oak Ridge				
OR-0104 / Community and Regulatory (Non-Defense)	10,000	0	0	0
Uranium Enrichment Decontamination and Decommissioning Fund				
Oak Ridge				
Oak Ridge				
OR-0040 / Nuclear Facility D&D-East Tennessee Technology Park (D&D Fund)	195,693	134,701	105,000	-29,701
Pension and Community and Regulatory Support				
Oak Ridge				
OR-0102 / East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration	17,655	25,000	20,000	-5,000
Total, Uranium Enrichment Decontamination and Decommissioning Fund	213,348	159,701	125,000	-34,701
Total, Oak Ridge	682,348	644,344	561,244	-83,100

Oak Ridge
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Oak Ridge

OR Cleanup and Disposition

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

- Decrease reflects progress on processing transuranic debris waste. -38,746

OR Nuclear Facility D&D

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

- Decrease reflects planned completion of the Outfall Mercury Treatment Facility and ongoing regulatory engagement radiological discharge limits for the On-Site Waste Disposal Facility. -25,975

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

- Increase reflects funds requested to clean up high-risk excess contaminated facilities. +16,386

OR Reservation Community and Regulatory Support

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

- No significant change. -804

OR Technology Development and Deployment

OR-TD-0100 / Technology Development Activities - Oak Ridge

- Decrease reflects planned activities. -2,000

U233 Disposition Program

OR-0011D / U233 Disposition Program

- No change. 0

Defense Environmental Cleanup

Safeguards and Security

OR-0020 / Safeguards and Security

- Increase maintains security posture. +2,740

Uranium Enrichment Decontamination and Decommissioning Fund

Oak Ridge

Environmental Management/

Oak Ridge

Oak Ridge

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

- Decrease reflects ramp-down of cleanup activities at East Tennessee Technology Park. -29,701

Pension and Community and Regulatory Support

Oak Ridge

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

- Decrease reflects pension plan funding status in accordance with latest actuarial projections. -5,000

Total, Oak Ridge	-83,100
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Solid Waste Stabilization and Disposition (PBS: OR-0013B)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS funds the storage and disposition of the Oak Ridge Reservation transuranic debris and sludges and low-level waste.

Contact-handled transuranic debris processing began in FY 2006 and remote-handled transuranic debris processing began in FY 2008 at the Transuranic Waste Processing Center. All processed transuranic debris will be safely stored at Oak Ridge until off-site shipments to the Waste Isolation Pilot Plant are complete. Waste characterization and certification activities conducted by the National TRU Program Central Characterization project are included in this PBS.

A Sludge Processing Facility will be designed and constructed to process legacy transuranic sludge currently being stored in tanks at the Oak Ridge National Laboratory. Testing of the critical technologies this project will use is underway to mature and inform the final design of the facility.

Solid Waste Stabilization and Disposition-2012 (PBS: OR-0013B)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$112,471,000	\$73,725,000	-\$38,746,000
<ul style="list-style-type: none"> Maintain regulatory and safety basis documents and permits and operate waste storage facilities at the Oak Ridge National Laboratory. Operate the Transuranic Waste Processing Center to process transuranic debris waste and ship processed waste to the Waste Isolation Pilot Plant. Continue testing of sludge processing facility critical technologies. Manage mixed low-level radioactive waste in compliance with regulations. Conduct transition activities for the OREM cleanup follow-on contract. 	<ul style="list-style-type: none"> Maintain regulatory and safety basis documents and permits and operate waste storage facilities at the Oak Ridge National Laboratory. Operate the Transuranic Waste Processing Center to process transuranic debris waste and ship processed waste to the Waste Isolation Pilot Plant. Manage mixed low-level radioactive waste in compliance with regulations. Complete construction completion and begin operations of the Sludge Test Area to test and mature critical technologies to inform the final design of the transuranic sludge processing facility. 	<ul style="list-style-type: none"> Decrease reflects progress on processing transuranic debris waste.

Nuclear Facility D&D-Y-12 (PBS: OR-0041)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS funds the OREM operations and cleanup activities at the Y-12 National Security Complex. Y-12 is the source of mercury contamination in the Upper East Fork Poplar Creek that flows through the City of Oak Ridge. OREM performs the following work at Y-12: surveillance and maintenance of current EM-owned excess facilities awaiting decontamination and decommissioning; operations of a CERCLA disposal facility for cleanup debris; operations of landfills for disposition of sanitary waste; groundwater and surface water monitoring to assess the effectiveness of completed cleanup actions that support future remediation decisions identified in Comprehensive, Environmental, Response, Compensation and Liability Act Records of Decision; and deactivation and demolition of excess contaminated facilities.

This PBS also includes two Line Item Construction projects that will provide the infrastructure for the cost-effective cleanup of Y-12. The Outfall 200 Mercury Treatment Facility will construct a water treatment facility to remove mercury from Upper East Fork Poplar Creek which leaves the site, and to prepare for the environmental cleanup of the Y-12 National Security Complex site. The On Site Waste Disposal Facility will provide on-site waste disposal capacity for demolition debris and remediation waste from the cleanup of ORNL and Y-12.

Nuclear Facility D&D-Y-12 (PBS: OR-0041)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$178,612,000	\$152,637,000	-\$25,975,000
<ul style="list-style-type: none"> Continue routine surveillance and maintenance for EM-owned excess contaminated facilities at Y-12. Operate the Environmental Management Waste Management Facility and other Oak Ridge Reservation landfills. Continue implementing Oak Ridge Reservation groundwater strategy. Continue construction of the Outfall Mercury Treatment Facility. Continue Y-12 cleanup of high priority excess facilities. 	<ul style="list-style-type: none"> Continue routine surveillance and maintenance for EM-owned excess contaminated facilities at Y-12. Operate the Environmental Management Waste Management Facility and other Oak Ridge Reservation landfills. Continue Outfall Mercury Treatment Facility construction. Continue Y-12 cleanup of high priority excess facilities. Design and construction of the Environmental Management Disposal Facility needed to 	<ul style="list-style-type: none"> Decrease reflects planned completion of the Outfall Mercury Treatment Facility and ongoing regulatory engagement on radiological discharge limits for the On-Site Waste Disposal Facility.

- Design and construction of the Environmental Management Disposal Facility needed to support cleanup of Oak Ridge National Laboratory and Y12.

support cleanup of Oak Ridge National Laboratory and Y12.

Nuclear Facility D&D-Oak Ridge National Laboratory (PBS: OR-0042)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS funds the following Oak Ridge Environmental Management operations and cleanup activities at the Oak Ridge National Laboratory: operation of liquid, gaseous, and process waste treatment systems that support Office of Environmental Management and Office of Science missions; surveillance and maintenance of EM owned facilities awaiting future decontamination and decommissioning; groundwater and surface water monitoring; and deactivation and demolition of excess contaminated facilities.

Nuclear Facility D&D-Oak Ridge National Laboratory (PBS: OR-0042)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$118,400,000	\$134,786,000	+\$16,386,000
<ul style="list-style-type: none"> • Monitor groundwater and surface water in accordance with the Melton Valley and Bethel Valley Records of Decision. • Maintain liquid, gaseous and process waste operations systems in support of the missions of the Offices of Environmental Management and Science. • Continue Oak Ridge National Laboratory cleanup of high priority excess facilities. • Perform surveillance and maintenance required by the Melton Valley Comprehensive Environmental Response, Compensation and Liability Act Record of Decision and for inactive facilities and reactors at the Oak Ridge National Laboratory in a safe and compliant manner. • Conduct infrastructure upgrades to the Liquid and Gaseous Waste Operations 	<ul style="list-style-type: none"> • Maintain liquid, gaseous and process waste operations systems in support of the missions of the Offices of Environmental Management and Science. • Continue Oak Ridge National Laboratory cleanup of high priority excess facilities. • Continue routine surveillance and maintenance for Environmental Management-owned excess contaminated facilities at the Oak Ridge National Laboratory in a safe and compliant manner. • Conduct infrastructure upgrades to the Liquid and Gaseous Waste Operations facilities to ensure mission critical activities continue at Oak Ridge Environmental Management and the Oak Ridge National Laboratory. 	<ul style="list-style-type: none"> • Increase reflects funds requested to clean up high-risk excess contaminated facilities.

facilities to ensure mission critical activities continue at Oak Ridge Environmental Management and the Oak Ridge National Laboratory.

- Perform enhanced surveillance and maintenance activities at the Molten Salt Reactor Experiment Facility to address issues with safety systems.

- Perform enhanced surveillance and maintenance activities at the Molten Salt Reactor Experiment Facility to address issues with safety systems.
-

Oak Ridge Reservation Community & Regulatory Support (Defense) (PBS: OR-0100)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS funds the Environmental Surveillance Oversight and Federal Facility Agreement grants with the state of Tennessee and the activities of the Oak Ridge Site Specific Advisory Board. The Environmental Surveillance Oversight grant supports the Tennessee Department of Environment and Conservation's independent oversight and monitoring of DOE activities taking place both on-site and off-site associated with the Oak Ridge DOE programs. The Federal Facility Agreement regulatory grant provides funding for regulatory requirements of cleanup activities under the interagency Federal Facility Agreement under Comprehensive Environmental Response and Liability Act. The support for the Site Specific Advisory Board is chartered under the Federal Advisory Committee Act.

Oak Ridge Reservation Community & Regulatory Support (Defense) (PBS: OR-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$5,900,000	\$5,096,000	-\$804,000
<ul style="list-style-type: none"> Continue support to the State of Tennessee for conducting annual oversight, monitoring, and reporting. This includes: annual reports to the public; independent monitoring program of all environmental media; off reservation monitoring program of wells owned by private citizens adjacent to DOE land; establishment of background levels; oversight of DOE facility surveillance walkthroughs; Federal Facility Agreement support activities; and emergency management exercises. Continue activities by the Site Specific Advisory Board sponsored by DOE-EM to assist in public participation activities and outreach assistance. 	<ul style="list-style-type: none"> Continue support to the State of Tennessee for conducting annual oversight, monitoring, and reporting. This includes: annual reports to the public; independent monitoring program of all environmental media; off reservation monitoring program of wells owned by private citizens adjacent to DOE land; establishment of background levels; oversight of DOE facility surveillance walkthroughs; Federal Facility Agreement support activities; and emergency management exercises. Continue activities by the Site Specific Advisory Board sponsored by DOE-EM to assist in public participation activities and outreach assistance. 	<ul style="list-style-type: none"> No significant change.

Technology Development Activities (PBS: OR-TD-0100)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS funds technology development and deployment activities that focus on resolving technical challenges through the application of science and innovation to develop practical solutions for environmental cleanup in response to the highest priority needs of the Office of Environmental Management sites. These activities improve the technical maturity of current technologies, develop cost-effective alternative technologies, and improve and/or provide the next-generation of technologies for insertion into program activities. EM is enhancing its technology development and deployment efforts with a coordinated two-prong approach in which select projects will be managed at Headquarters while others will be managed at the field sites:

- Longer-term activities with low technology readiness levels (higher development risks) are managed at Headquarters; and
- Shorter-term activities with higher technology readiness levels are managed at the sites where the technology will result in direct mission-related benefits.

The largest environmental risks on the Department of Energy Oak Ridge Reservation stem from ongoing offsite release of mercury from the Y-12 National Security Complex. Downstream bioaccumulation of mercury in fish is a regulatory concern and mercury migration into and through other media such as groundwater, poses challenges to environmental remediation and management. To protect human health and the environment, the Department of Energy is initiating a series of early actions that can be taken pending demolition of the former mercury process buildings. The challenges associated with the remediation of mercury in soil and water are unique across the complex in both scale and complexity. Current mercury discharges from the Y-12 National Security Complex exceed regulatory standards. Early actions are required in order to address mercury sources; characterize areas that are accessible pending building demolition; and treat surface water to meet regulatory standards at the site boundary. The goal of this technology development and deployment investment is to reduce the overall remediation scope, schedule, and cost through improved understanding of mercury sources and transport through environmental media and the watershed; and to develop characterization, removal, and waste treatment/disposition techniques.

Technology Development Activities - Oak Ridge (PBS: OR-TD-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$5,000,000	\$3,000,000	-\$2,000,000
<ul style="list-style-type: none"> • Continue planned mercury technology development activities, to include focus areas related to understanding soil and groundwater source control, water chemistry and sediment manipulation, and ecological manipulation. 	<ul style="list-style-type: none"> • Continue planned mercury technology development activities, to include focus areas related to understanding soil and groundwater source control, water chemistry and sediment manipulation, and ecological manipulation. 	<ul style="list-style-type: none"> • Decrease reflects planned activities.

U233 Disposition Program (PBS: OR-0011D)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS funds the storage, processing and disposition of the inventory of uranium-233 stored in Building 3019 at the Oak Ridge National Laboratory. Uranium-233 is a special nuclear material that requires strict safeguards and security controls to protect against access. The Defense Nuclear Facilities Safety Board issued Recommendation 97-1, *Safe Storage of Uranium-233*, which identified concerns related to long-term storage of the inventory in Building 3019. The direct disposition campaign disposed of approximately half of the inventory (Consolidated Edison Uranium Solidification Project). The processing campaign that is underway will down blend and dispose of the remaining inventory. Disposition of the remaining uranium-233 inventory 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.

U233 Disposition Program (PBS: OR-0011D)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$55,000,000	\$55,000,000	+\$0
<ul style="list-style-type: none"> Continue required surveillance and maintenance and other activities at Building 3019 and Building 2026 to maintain a safe and secure condition. Continue glove box processing of oxides to extract thorium for medical applications. Complete build out of Building 2026 and begin hot cell processing to downblend remaining U-233 material. 	<ul style="list-style-type: none"> Continue required surveillance and maintenance and other activities at Building 3019 and Building 2026 to maintain a safe and secure condition. Continue Uranium-233 down blending operations in the Building 2026 hot cells. 	<ul style="list-style-type: none"> No change.

Safeguards and Security (PBS: OR-0020)

Overview

This PBS is within the Defense Environmental Cleanup appropriation

This PBS funds the safeguard and security services required to support the site's cleanup program, the implementation of Homeland Security Presidential Directive-12 requirements, and the Cyber Security Program activities to maintain information and technology systems in compliance with DOE requirements including vulnerability management, continuous diagnostic and mitigation implementation, cyber security awareness, and user training.

Safeguards and Security (PBS: OR-0020)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$9,260,000	\$12,000,000	+\$2,740,000
<ul style="list-style-type: none"> Provide safeguard and security services for the following major facilities: K-27, K-1037, Centrifuge Facilities, Classified Burial Grounds, Environmental Management Waste Management Facility, Transuranic Waste Processing Facility, and the overall East Tennessee Technology Park will be applied in the areas of: protection program management, emergency response, Physical Security, information protection, Protective Force, Personnel Security, Cyber Security and Nuclear Material Control and Accountability. Site security services will be applied using a graded, risk-based management approach supporting site cleanup mission priorities and protecting government equipment, materials, information, and the site workforce. 	<ul style="list-style-type: none"> Provide safeguard and security services for the following major facilities: Classified Burial Grounds, Environmental Management Waste Management Facility, and the overall East Tennessee Technology Park will be applied in the areas of: protection program management, emergency response, Physical Security, information protection, Protective Force, Personnel Security, and Nuclear Material Control and Accountability. Site security services will be applied using a graded, risk-based management approach supporting site cleanup mission priorities and protecting government equipment, materials, information, and the site workforce. 	<ul style="list-style-type: none"> Increase maintains security posture.

Nuclear Facility D&D-East Tennessee Technology Park (D&D Fund) (PBS: OR-0040)

Overview

This PBS is within the UED&D Fund appropriation.

This PBS funds the cleanup and closure of the East Tennessee Technology Park. The five large gaseous diffusion plants and their supporting facilities and other site structures not needed to complete cleanup of the site have been demolished. The remaining scope to close the site includes slab removals, soil and groundwater remediation and closure activities.

The end-state of the majority of the site will be appropriate for commercial reuse.

Nuclear Facility D&D-East Tennessee Technology Park (D&D Fund) (PBS: OR-0040)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$134,701,000	\$105,000,000	-\$29,701,000
<ul style="list-style-type: none"> • Maintain East Tennessee Technology Park in a safe and secure condition. • Conduct activities at the East Tennessee Technology Park to provide infrastructure and support to cleanup projects. • Conduct characterization and slab and soil remediation of the main plant area, Zone 2 and other activities required to close the site. 	<ul style="list-style-type: none"> • Conduct activities at the East Tennessee Technology Park to provide infrastructure and support to cleanup projects. • Conduct characterization and slab and soil remediation and other activities required to close the site. 	<ul style="list-style-type: none"> • Decrease reflects ramp-down of cleanup activities at East Tennessee Technology Park.

East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration (PBS: OR-0102)

Overview

This PBS is within the UED&D Fund appropriation.

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

East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration (PBS: OR-0102)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$25,000,000	\$20,000,000	-\$5,000,000
<ul style="list-style-type: none">Continue funding of contractor liabilities associated with post-retirement life, medical benefits and pensions.	<ul style="list-style-type: none">Continue funding of contractor liabilities associated with post-retirement life, medical benefits and pensions.	<ul style="list-style-type: none">Decrease reflects pension plan funding status in accordance with latest actuarial projections.

**Oak Ridge
Capital Summary (\$K)**

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Capital Operating Expenses Summary (including (Major Items of Equipment (MIE))

Capital Equipment > \$500K (including MIE)	0	0	0	0	0	0	+0
Plant Projects (GPP and IGPP) (<\$20M)	95,477	14,598	45,250	58,003	12,137	23,492	+11,355
Total, Capital Operating Expenses	95,477	14,598	45,250	58,003	12,137	23,492	+11,355

Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <\$20M)

Oak Ridge

Technology Demonstration Facility	750	0	750	150	0	0	0
Viewing Tower/Equipment Building	9,564	1,564	8,000	18,422	0	0	0
Wayside Exhibits & Access to Historic Preservation Facilities	5,459	3,459	2,000	3,470	0	0	0
SWSA 6 Laydown & Storage Area	4,700	2,000	2,700	750	0	0	0
ORNL Fire Alarm Upgrades	11,900	2,000	7,400	5,400	2,500	0	-2,500
Zeolite Installation Building 3544	9,327	4,999	3,200	8,923	1,128	0	-1,128
Pretreatment System Building 3517	4,408	576	3,200	3,374	632	0	-632
Bailey DCS System Upgrade	15,832	0	4,600	1,464	5,740	5,492	-248
MSRE Upgrades	6,387	0	5,000	6,500	1,387	0	-1,387
Graphite Reactor Roof & Exhaust	5,250	0	4,500	5,650	750	0	-750
ORNL Equipment Staging	3,900	0	3,900	3,900	0	0	0
ORNL Improvement Projects ^a	9,000	0	0	0	0	9,000	+9,000
Y-12 Improvement Projects ^a	9,000	0	0	0	0	9,000	+9,000
Total, Oak Ridge	95,477	14,598	45,250	58,003	12,137	23,492	+11,355

Total, Capital Summary	95,477	14,598	45,250	58,003	12,137	23,492	+11,355
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^a When the scope of these projects is definitized, Congressional notification will be provided as required.

**Oak Ridge
Construction Projects Summary (\$K)**

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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14-D-403, Outfall 200 Mercury Treatment Facility, OR (OR-0041)

Total Estimate Cost (TEC)	N/A*	121,608	N/A*	26,589	N/A*	0	N/A*
Other Project Costs (OPC)	N/A*	11,892	N/A*	52	N/A*	0	N/A*
Total Project Cost (TPC) 14-D-403	224,000	133,500	70,000	26,641	20,500	0	-20,500

* Congress appropriated line item funds for TPC beginning in FY 2017.

17-D-401, On Site Disposal Facility (OR-0041)

Total Estimate Cost (TEC)	N/A*	16,302	0	9,539	22,314	12,073	-10,241
Other Project Costs (OPC)	N/A*	22,681	0	12	66	427	+361
Total Project Cost (TPC) 17-D-401	TBD	38,983	0	9,551	22,380	12,500	-9,880

* Congress appropriated line item funds for TPC beginning in FY 2017.

17-D-401
On Site Waste Disposal Facility
Y-12 National Security Complex, Oak Ridge Tennessee
Project is for Design and Construction

1. Summary and Significant Changes, and Schedule and Cost History

Summary

The FY 2022 Request for the On-Site Waste Disposal Facility is \$12,500,000.

The most recent DOE O 413.3B approved Critical Decision is Critical Decision-1. The approval of the CD-1 was provided on August 24, 2018. The current approved CD-1 cost range is \$175,000,000-\$375,000,000. CD-1 approved cost range includes completion of final design for all three phases and construction for only Phase 1. Phase 1 will have a followon combined CD-2/3. Phases 2 and 3 will have their own combined CD-1/2/3's.

A Federal Project Director (FPD) has been assigned to the project and has approved this data sheet. The FPD is certified at Level III. FPD Level III certification is appropriate for projects with a total project cost (TPC) up to \$400 million, which bounds the top end of the CD-1 cost range.

The scope of this project is to plan, design and construct an engineered Comprehensive Environmental Response, Compensation and Liability Act waste disposal facility including all necessary site development, infrastructure improvements, and support facilities, but does not include the cost of operations and final closure of the facility. The On-Site Waste Disposal Facility will be constructed on or in the vicinity of the Y-12 National Security Complex in Oak Ridge, TN. The facility will accept disposal of low-level and mixed low-level wastes generated through the cleanup of legacy facilities on the Oak Ridge Reservation. The On-Site Waste Disposal Facility is expected to provide a disposal capacity of up to 2,200,000 cubic yards when all three construction phases are completed.

Significant Changes

This FY 2022 Data Sheet is an update to the Construction Project Data Sheet for the On-Site Waste Disposal Facility and does not include a new start for the budget year.

Critical Milestone History

<u>Fiscal Year or Date</u>								
Request	CD-0	Conceptual Design Complete	CD-1	Final Design Complete	CD-3A	CD-2/3	D&D Complete	CD-4
FY 2018								
Phase 1	5/26/2016	4Q FY2017	4Q FY2018	TBD	N/A	TBD	N/A	TBD
FY 2019								
Phase 1	5/26/2016	4Q FY2017	4Q FY2018	TBD	N/A	TBD	N/A	TBD
FY 2020								
Phase 1	5/26/2016	1/12/2018	8/24/2018	4Q FY2020	TBD	TBD	N/A	TBD
FY 2021								
Phase 1	5/26/2016	1/12/2018	8/24/2018	1Q FY2022	TBD	TBD	N/A	TBD
FY 2022								
Phase 1	5/26/2016	1/12/2018	8/24/2018	3Q FY2025	3Q FY2022	TBD	N/A	TBD

CD-0 – Approve Mission Need

Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)

CD-1 – Approve Alternative Selection and Cost Range

Environmental Management/

Oak Ridge/17-D-401 On Site Waste

Disposal Facility Y-12 National Security

Complex, Oak Ridge Tennessee

FY 2022 Congressional Budget Justification

CD-2 – Approve Performance Baseline

Final Design Complete – Estimated/Actual date the project design will be/was complete (d)

CD-3A – Site Preparation and Road Relocation

CD-3 – Approve Start of Construction

D&D Complete – Completion of D&D work (see Section 5)

CD-4 – Approve Start of Operations or Project Completion

Project Cost History

(Dollars in Thousands)

Request	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
FY 2018	21,396	TBD	TBD	TBD	TBD	TBD	TBD
Phase 1	21,936	TBD	TBD	TBD	TBD	TBD	TBD
FY 2019	21,396	TBD	TBD	TBD	TBD	TBD	TBD
Phase 1	21,936	TBD	TBD	TBD	TBD	TBD	TBD
FY 2020	26,396	TBD	TBD	TBD	TBD	TBD	TBD
Phase 1	26,396	TBD	TBD	TBD	TBD	TBD	TBD
FY 2021	26,396	TBD	TBD	TBD	TBD	TBD	TBD
Phase 1	26,396	TBD	TBD	TBD	TBD	TBD	TBD
FY 2022	47,888	TBD	TBD	TBD	TBD	TBD	TBD
Phase 1	47,888	TBD	TBD	TBD	TBD	TBD	TBD

2. Project Scope and Justification

Scope

The purpose of this line item is to provide safe, cost effective, long-term disposal of low-level radioactive waste and mixed low-level radioactive waste generated by Comprehensive Environmental Response, Compensation, and Liability Act cleanup projects at the Oak Ridge Reservation. The scope includes planning, design and construction of an engineered Comprehensive Environmental Response, Compensation, and Liability Act waste disposal facility including all necessary site development, infrastructure improvements, and support facilities, but does not include operations nor the final closure of the facility. The On-Site Waste Disposal Facility is expected to provide a disposal capacity of approximately 2,200,000 cubic yards with a 47-acre footprint. Components of the landfill include: bottom liner system, leachate collection/drainage/transfer systems, underdrain system, french drains and buttressing, and interim caps.

The On-Site Waste Disposal Facility is to be constructed in the three following phases.

Phase 1: This phase will consist of the full and final design of the entire disposal facility footprint that will consist of multiple disposal cells. The final cap will be conceptually designed but is not part of this project. The construction in Phase I will include two cells (approximately one-third capacity) along with all support facilities construction (e.g., water treatment system) and site preparation of entire footprint to support transition to operations.

Phase 2: This phase will consist of construction of one cell (approximately one-third capacity) after a full review of the final design and any necessary updates.

Phase 3: This phase will consist of construction of remaining cell (s) (final one-third capacity) after a full review of the final design and any necessary updates.

The Comprehensive Environmental Response, Compensation, and Liability Act and DOE O 413.3B Critical Decision process to support design and construction of the facility is ongoing. The number of cells may change during preliminary design but the disposal capacity of up to 2.2 million cubic yards will remain the same.

Environmental Management/

Oak Ridge/17-D-401 On Site Waste

Disposal Facility Y-12 National Security

Complex, Oak Ridge Tennessee

FY 2022 Congressional Budget Justification

Justification

The projected waste volumes from the remaining Comprehensive Environmental Response, Compensation, and Liability Act cleanup of Y-12 and ORNL will exceed the capacity of the existing on-site disposal facility, the Environmental Management Waste Management Facility. The scope of this line item is to construct a new on-site disposal facility; the On-Site Waste Disposal Facility, to provide the required additional waste disposal capacity.

The project is being conducted in accordance with the project management requirements in DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets.

Key Performance Parameters (KPPs)

The Threshold Key Performance Parameters, represent the acceptable performance that the project must achieve. Achievement of the Threshold Key Performance Parameters will be a prerequisite for approval of Critical Decision -4, Project Completion. The Objective Key Performance Parameters represent the desired project performance.

Performance Measure	Threshold	Objective
Design an ORR disposal facility with an air space capacity of up to 2.2 million cubic yards and required infrastructure for the disposal of OREM-generated CERCLA waste in support of cleanup activities conducted under the FFA.	Not available at CD-1.	Not available at CD-1.
Construct and deliver to operations the initial set of disposal cells to provide a minimum of one-third (approximately 700,000 cubic yards) of the total capacity, and all supporting infrastructure as needed for waste disposal.	Not available at CD-1.	Not available at CD-1.
Provide the necessary systems and infrastructure for the collection, storage, and treatment of landfill wastewater to ensure compliance with applicable or relevant and appropriate requirements (ARARs).	Not available at CD-1.	Not available at CD-1.

3. Project Cost and Schedule

Financial Schedule

(Dollars in Thousands)			
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2017	6,000	0	0
FY 2018	10,000	16,000	812
FY 2019	9,574	302	10,153
FY 2020	0	9,272	4,225
FY 2021	22,314	22,314	16,314
FY 2022	0	0	11,342
Outyears	0	0	5,042
Total, Design	47,888	47,888	47,888
Construction			
FY 2017 Phase 1	N/A	N/A	0
FY 2018 Phase 1	N/A	N/A	0
FY 2019 Phase 1	N/A	N/A	0
FY 2020 Phase 1	N/A	N/A	0
FY 2021 Phase 1	N/A	N/A	0
FY 2022 Phase 1	12,073	12,073	3,018
Outyears ^a Phase 1	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2017 Phase 1	6,000	0	0
FY 2018 Phase 1	10,000	16,000	812
FY 2019 Phase 1	9,574	302	10,153
FY 2020 Phase 1	0	9,272	4,225
FY 2021 Phase 1	22,314	22,314	16,314
FY 2022 Phase 1	12,073	12,073	14,360
Outyears ^a Phase 1	TBD	TBD	TBD
Total TEC	TBD	TBD	TBD
*Congress appropriated line item funds for TPC beginning in FY 2017.			
OPC except D&D			
FY 2011 Phase 1	1,063	1,063	343
FY 2012 Phase 1	214	214	737
FY 2013 Phase 1	627	627	591
FY 2014 Phase 1	2,332	2,332	2,140
FY 2015 Phase 1	3,978	3,978	3,320
FY 2016 Phase 1	7,050	7,050	4,266
FY 2017 Phase 1	1,973	1,973	4,439
FY 2018 Phase 1	5,297	5,297	6,462
FY 2019 Phase 1	426	148*	156
FY 2020 Phase 1	0	278	480
FY 2021 Phase 1	66	66	92
FY 2022 Phase 1	427	427	427

Environmental Management/
Oak Ridge/17-D-401 On Site Waste
Disposal Facility Y-12 National Security
Complex, Oak Ridge Tennessee

FY 2022 Congressional Budget Justification

		(Dollars in Thousands)		
		Appropriations	Obligations	Costs
Outyears ^a	Phase 1	TBD	TBD	TBD
Total, OPC except D&D		TBD	TBD	TBD
OPC				
FY 2011	Phase 1	1,063	1,063	343
FY 2012	Phase 1	214	214	737
FY 2013	Phase 1	627	627	591
FY 2014	Phase 1	2,332	2,332	2,140
FY 2015	Phase 1	3,978	3,978	3,320
FY 2016	Phase 1	7,050	7,050	4,266
FY 2017	Phase 1	1,973	1,973	4,439
FY 2018	Phase 1	5,297	5,297	6,462
FY 2019	Phase 1	426	148*	156
FY 2020	Phase 1	0	278	480
FY 2021	Phase 1	66	66	92
FY 2022	Phase 1	427	427	427
Outyears ^a	Phase 1	TBD	TB	TBD
Total, OPC		TBD	TBD	TBD

* Congress appropriated line item funds for TPC beginning in FY 2017. Congress also appropriated OPC funds through FY 2018 until CD-1 was approved.

Total Project Cost (TPC)

FY 2011	Phase 1	1,063	1,063	343
FY 2012	Phase 1	214	214	737
FY 2013	Phase 1	627	627	591
FY 2014	Phase 1	2,332	2,332	2,140
FY 2015	Phase 1	3,978	3,978	3,320
FY 2016	Phase 1	7,050	7,050	4,266
FY 2017	Phase 1	7,973	1,973	4,439
FY 2018	Phase 1	15,297	21,297	7,274
FY 2019	Phase 1	10,000	450	10,309
FY 2020	Phase 1	0	9,550	4,705
FY 2021	Phase 1	22,380	22,380	16,406
FY 2022	Phase 1	12,500	12,500	14,787
Outyears ^a	Phase 1	TBD	TBD	TBD
		TBD	TBD	TBD

* Congress appropriated line item funds for TPC beginning in FY 2017. Congress also appropriated OPC funds through FY 2018 until CD-1 was approved.

^a This project has not received CD-2 at this time; therefore, a baseline has not been established.

Details of Project Cost Estimate

(Dollars in Thousands)		
Current Total Estimate	Previous Total Estimate	Original Validated Baseline

Total Estimated Cost (TEC)

Design

47,888 26,396 N/A

**Environmental Management/
Oak Ridge/17-D-401 On Site Waste
Disposal Facility Y-12 National Security
Complex, Oak Ridge Tennessee**

FY 2022 Congressional Budget Justification

(Dollars in Thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Design	47,888	26,396	N/A
Construction			
Phase 1	TBD	TBD	N/A
Total Construction	TBD	TBD	N/A
Total Estimated Cost (TEC)	TBD	TBD	
Other Project Cost (OPC)			
Phase 1	TBD	TBD	N/A
Total, OPC	TBD	TBD	N/A
Total, TPC	TBD	TBD	N/A

Schedule of Appropriation Requests

Request		Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Out years	Total
FY 2018	TEC	6,000	1,000					TBD	TBD
	OPC	17,237	4,000					TBD	TBD
	TPC	23,237	5,000					TBD	TBD
FY 2019	TEC	6,000	10,000	4,690				TBD	TBD
	OPC	17,237	5,297	310				TBD	TBD
	TPC	23,237	15,297	5,000				TBD	TBD
FY 2020	TEC	6,000	10,000						
	OPC	17,237	5,297						
	TPC	23,237	15,297	10,000	15,269	0		TBD	TBD
FY 2021	TEC	6,000	10,000						
	OPC	17,237	5,297						
	TPC	23,237	15,297	10,000	0	22,380		TBD	TBD
FY 2022	TEC	6,000	10,000						
	OPC	17,237	5,297						
	TPC	23,237	15,297	10,000	0	22,380	12,500	TBD	TBD

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	TBD
Expected Future Start of D&D of this Capital Asset (fiscal quarter)	TBD

(Related Funding Requirements)

(Dollars in Thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	TBD	N/A	TBD	N/A
Utilities	0	0	0	0
Maintenance	0	0	0	0
Total, Operations & Maintenance	TBD		TBD	

5. D&D Information

The new area being constructed in this project is not replacing existing facilities.

Area	Square Feet
New area being constructed by this project at Y-12 National Security Complex	(footprint)*
Area of D&D in this project at Y-12 National Security Complex	0
Area at Y-12 National Security Complex to be transferred, sold, and/or D&D outside the project including area previously "banked"	0
Area of D&D in this project at other sites	0
Area at other sites to be transferred, sold, and/or D&D outside the project including area previously "banked"	0
Total area eliminated	0

The one-for-one replacement requirement is met by using previously "banked" square footage from demolished facilities at the East Tennessee Technology Park, Oak Ridge, Tennessee.

Note: Although located in the general area of the Y-12 National Security Complex, it is likely that the On-Site Waste Disposal Facility will be constructed outside the footprint of the Complex.

6. Acquisition Approach

Awarded contract to URS/CH2M Oak Ridge, LLC (UCOR) on April 29, 2011. This contract includes the cleanup of ETPP and other EM operations and activities, including the design of the On-Site Waste Disposal Facility and support for DOE Order 413.3B Critical Decision approval through Critical Decision-1 and preparation of CD 2/3 documents. The contract is a cost-plus award fee with performance-based incentives.

An Acquisition Strategy (AS) will be developed for the project to support Critical Decision-2/3 approval. This AS will address the contracting approach for CD-2/3 approval, construction, and transition to operations.

Paducah

Overview

Occupying 3,556 acres near Paducah, Kentucky, the Paducah Gaseous Diffusion Plant (GDP) enriched uranium and was the last government-owned uranium enrichment facility operating in the United States. The Paducah GDP produced low-enriched uranium originally as feedstock for nuclear weapons and later for commercial nuclear power plants until the extensive environmental cleanup program began. The Paducah Site cleanup will position the Department of Energy to meet the nation's Manhattan Project and Cold War legacy responsibilities. The overall cleanup strategy at Paducah includes near-term actions to control or eliminate ongoing sources of contamination, along with the continued investigation of other potential sources.

To complete cleanup, Paducah will maintain a safe, secure, and compliant posture; support high priority groundwater remediation; deactivate and decommission excess facilities; and disposition mixed and low-level radioactive waste.

Paducah will continue to operate the Depleted Uranium Hexafluoride Conversion Facility.

Direct maintenance and repair at Paducah is estimated to be \$27,885,000.

Highlights of the FY 2022 Budget Request

This FY 2022 Budget Request supports activities to continue environmental remediation and to further stabilize the former gaseous diffusion plant. The stabilization activities include non-destructive assay characterization, activities to remove hazardous materials, and surveillance and maintenance. This budget request also supports the safe operation of the Depleted Uranium Hexafluoride Conversion facility.

FY 2021 and FY 2022 Key Milestones/Outlook

- (February 2021) Complete Construction on New Tennessee Valley Authority Substation.
- (April 2021) Complete Installation on new Modular Security Management Building.
- (May 2021) Initiate Partial Dismantlement in Two Electrical Switchyards.
- (September 2021) Complete Disposal of 1,500,000 pounds of R-114 Refrigerant (Freon).
- (September 2021) Complete Phase 2 of Oxide Shipment Pilot Study (up to 12 cylinders transported on ABC railcar to Waste Control Specialist in Texas).
- (April 2022) Complete Fieldwork associated with C-400 Complex Investigation.
- (May 2022) Perform Readiness Assessment on Material Sizing Area for Converter Segmentation in the C-333 Process Building.

Regulatory Framework

In May 1994, the Paducah Site was placed on the United States 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 United States Environmental Protection Agency (Region 4) 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 an Agreed Order with the Commonwealth of Kentucky.

DOE and the Commonwealth of Kentucky have a separate Agreed Order addressing management of depleted uranium hexafluoride cylinders.

The United States Environmental Protection Agency and the Kentucky Department for Environmental Protection are the principal regulatory agencies for Paducah's waste management operations, in compliance with provisions of the Resource Conservation and Recovery Act; Hazardous Waste Management Permits; the Toxic Substances Control Act regulations for

polychlorinated biphenyl wastes; DOE Order 435.1, Radioactive Waste Management; the Commonwealth of Kentucky surface water discharge regulations and the Commonwealth of Kentucky solid and hazardous waste regulations.

Contractual Framework

Program planning and management at Paducah is conducted through the issuance and execution of contracts to large and small businesses. Paducah develops near-term and long-term planning approaches in order to develop contract strategies and program/project plans at a more detailed level. Selected contractors then execute these plans to complete cleanup on schedule. Current contracts at Paducah include:

- Mid-America Conversion Services, LLC, a cost-plus-award-fee/firm-fixed-price contract for operations of the Paducah and Portsmouth depleted uranium hexafluoride facilities and cylinder surveillance and maintenance, covering the period from September 29, 2016 – January 30, 2022.
- Four Rivers Nuclear Partnership, a cost-plus-award-fee contract with cost reimbursable and indefinite-delivery indefinite quantity contract for deactivation and remediation services, covering the period June 20, 2017 -June 19, 2022. This contract has the potential for a 36 month option period and a 24 month option period.
- Swift and Staley, Inc., a small business, hybrid firm-fixed -price contract for site support services, covering the period October 02, 2015 – June 30, 2021. Additional option periods were awarded to accommodate additional time required by DOE to award the follow-on contract.

Strategic Management

The overall environmental cleanup strategy at Paducah is based on taking near-term actions to control or eliminate ongoing sources of contamination along with continued investigation of other potential sources. DOE has been working with the Kentucky Department for Environmental Protection and the United States Environmental Protection Agency (Region 4) to further define which projects can be sequenced, while optimizing resources and utilizing a risk-based approach, to ensure timely environmental cleanup. In addition, Paducah is operating a depleted uranium hexafluoride conversion facility.

In August 2017, the three Federal Facility Agreement parties (DOE, United States Environmental Protection Agency and the Commonwealth of Kentucky) agreed to focus the next ten years on the investigation and cleanup of the C-400 Complex for all contaminants of concern. This work also includes the demolition of the C-400 Cleaning Building and remediation of the primary source of offsite groundwater contamination at the Paducah Site. Other environmental cleanup projects will be re-sequenced as a result of this determination.

The factors that could have an impact on individual projects and may impact the overall cleanup scope, schedule, and costs are identified below:

- DOE does not have a regulatory agreement on final cleanup levels, which remains a long-term, end-state issue.
- The final Comprehensive Environmental Response, Compensation and Liability Act action for the Paducah environmental remedial activities are ongoing. Until Records of Decision are agreed upon, a degree of project uncertainty exists. For example, current planning assumptions include that no more than three burial grounds will require excavation and that the other burial grounds will be capped and managed in-situ.
- Future decontamination and decommissioning costs are subject to several uncertainties, including the timing and 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.

Paducah Project Office

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Safeguards and Security				
PA-0020 / Safeguards and Security	15,789	16,206	16,206	0
Non-Defense Environmental Cleanup				
Gaseous Diffusion Plants				
Paducah Gaseous Diffusion Plant				
PA-0011 / NM Stabilization and Disposition-Paducah Uranium Facilities Management	863	778	0	-778
PA-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	55,593	56,802	57,363	+561
Subtotal, Paducah Gaseous Diffusion Plant	56,456	57,580	57,363	-217
Uranium Enrichment Decontamination and Decommissioning Fund				
Paducah				
Paducah Gaseous Diffusion Plant				
PA-0040 / Nuclear Facility D&D-Paducah	240,000	240,000	198,995	-41,005
Pension and Community and Regulatory Support				
Paducah Gaseous Diffusion Plant				
PA-0103 / Paducah Community and Regulatory Support	2,094	2,099	2,739	+640
Total, Uranium Enrichment Decontamination and Decommissioning Fund	242,094	242,099	201,734	-40,365
Total, Paducah	314,339	315,885	275,303	-40,582

Paducah Project Office
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup
Safeguards and Security
PA-0020 / Safeguards and Security

- No change. 0

Non-Defense Environmental Cleanup
Gaseous Diffusion Plants

Paducah Gaseous Diffusion Plant

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

- Decrease reflects transfer of management of residual polychlorinated biphenyls to Nuclear Facility Deactivation and Decommissioning beginning in FY 2022. -778

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

- Increase supports operations and plant and safety reliability mods, including Integrated Control System for DUF6 operations that replaces the existing, obsolete work station installed pre-2010. +561

Uranium Enrichment Decontamination and Decommissioning Fund

Paducah

Paducah Gaseous Diffusion Plant

PA-0040 / Nuclear Facility D&D-Paducah

- Decrease reflects completion of activities, including disposition of R-114 refrigerant (Freon), end-of-life replacement of information technology equipment, rail and road repairs, and deactivation of the C-531 switchyard. -41,005

Pension and Community and Regulatory Support

Paducah Gaseous Diffusion Plant

PA-0103 / Paducah Community and Regulatory Support

- Increase supports Federal Facility Agreement and Agreement-in-Principle grants to assure Federal Facility Agreement conditions and compliance schedules are met. It also supports Kentucky Research Consortium for Energy and Environment for support and oversight of environmental cleanup and groundwater modeling program. +640

Total, Paducah	-40,582
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Safeguards and Security (PBS: PA-0020)

Overview

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

The safeguards and security program at the Paducah Gaseous Diffusion Plant provides security services to protect nuclear materials, classified uranium enrichment technology, equipment, personnel, and facilities. This program includes maintaining a security protective force to ensure safeguard of nuclear materials, classified technology/information, and personnel. The safeguards and security program also supports the Paducah remediation and cleanup programs. Within the safeguards and security program, the Department continues to pursue realignment of sensitive security areas to support accelerated and less costly cleanup of the site.

Safeguards and Security (PBS: PA-0020)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$16,206,000	\$16,206,000	+\$0
<ul style="list-style-type: none"> • Provide safeguards and security services using a graded approach for the Paducah Gaseous Diffusion Plant to include: physical security systems, protective forces, information security, operational security, personnel security, material control and accountability, program management, and cybersecurity. • Complete installation of security management building within the modular security complex. 	<ul style="list-style-type: none"> • Provide safeguards and security services using a graded approach for the Paducah Gaseous Diffusion Plant to include: physical security systems, protective forces, information security, operational security, personnel security, material control and accountability, program management, and cybersecurity. • Initiate installation of protective force facility within the modular security complex. 	<ul style="list-style-type: none"> • No change.

NM Stabilization and Disposition (PBS: PA-0011)

Overview

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

This PBS project scope includes management of legacy polychlorinated biphenyl remediation activities 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, DOE Orders, and other applicable requirements. Polychlorinated biphenyls were used as coolant fluids and are a toxic environmental contaminant. The polychlorinated biphenyl collection and containment trough systems in the uranium enrichment buildings (C-310, C-315, C-331, C-333, C-335, and C-337) cover approximately 6,400,000 ft² and contain approximately 16,000 collection systems

NM Stabilization and Disposition-Paducah Uranium Facilities Management (PBS: PA-0011)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$778,000	\$0	-\$778,000
<ul style="list-style-type: none">Maintain integrity of polychlorinated biphenyl containment of trough systems in cascade buildings, including cleanup, sampling, and decontamination of spills and leaks.	<ul style="list-style-type: none">No planned activities.	<ul style="list-style-type: none">Decrease reflects transfer of management of residual polychlorinated biphenyls to Nuclear Facility Deactivation and Decommissioning beginning in FY 2022.

NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion (PBS: PA-0011X)

Overview

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

This PBS scope includes operating a depleted uranium hexafluoride conversion facility at the Paducah Gaseous Diffusion Plant site. The facility converts depleted uranium hexafluoride into a more stable chemical form (depleted uranium oxide) suitable for beneficial reuse or disposition. The depleted uranium oxide and cylinders will initially be stored on-site and ultimately sent to a disposal facility if beneficial reuses are not realized. The hydrogen fluoride co-product is sold on the commercial market for unrestricted use. The proceeds from the sale of hydrogen fluoride are used to offset project operating costs. The scope of this PBS also includes direct maintenance and repair that are applicable to these areas.

This PBS also includes surveillance and maintenance of all depleted uranium hexafluoride cylinders during conversion of the existing stockpile. Completion of these activities will contribute to reducing the footprint and total cleanup of the site.

NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion (PBS: PA-0011X)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$56,802,000	\$57,363,000	+\$561,000
<ul style="list-style-type: none"> Continue plant safety and reliability modifications in advance of readiness reviews and re-start of DUF6 conversion facility after shut down due to COVID-19. Complete Phase 2 of Oxide Shipment Pilot Study (up to 12 cylinders transported on ABC railcar to WCS in Texas). Initiate Integrated Control System upgrade. Conduct cylinder surveillance and maintenance to keep material in a safe, stable condition. Conduct annual plant maintenance outages. 	<ul style="list-style-type: none"> Conduct operations of DUF6 conversion facility. Package converted depleted uranium oxide and store on site. Continue plant safety and reliability modifications. Complete Integrated Control System upgrade. Conduct cylinder surveillance and maintenance to keep material in a safe, stable condition. Conduct annual plant maintenance outages. 	<ul style="list-style-type: none"> Increase supports operations and plant and safety reliability mods, including Integrated Control System for DUF6 operations that replaces the existing, obsolete work station installed pre-2010.

Nuclear Facility D&D (PBS: PA-0040)

Overview

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

The scope of this PBS includes environmental cleanup and risk reduction through focused response actions and surveillance and maintenance activities. The response actions involve treatment of on-site and off-site groundwater plumes, remediation of contaminated soils and burial grounds, and deactivation, decontamination and decommissioning of inactive or excess facilities, including the gaseous diffusion plant facilities. The scope also includes landfill operations and maintenance activities. Compliance requirements at the Paducah site are subject to negotiations with the regulators.

This PBS supports activities to continue environmental cleanup, further stabilize the gaseous diffusion plant to achieve a safe configuration, including facility modifications, surveillance and maintenance activities, and actions to remove hazardous materials. The scope of this PBS also includes direct maintenance and repair that are applicable to these areas.

Completion of these activities is required for reducing the site footprint and completing cleanup of the site.

Nuclear Facility D&D-Paducah (PBS: PA-0040)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$240,000,000	\$198,995,000	-\$41,005,000
<ul style="list-style-type: none"> Continue utility operations, pump-and-treat operations, waste and landfill operations, infrastructure support, environmental monitoring and reporting, surveillance and maintenance of facilities. Continue characterization and hazardous material removal activities in the C-333 Process Building (primary uranium enrichment facility being deactivated). Complete deactivation of C-400 Cleaning Building. 	<ul style="list-style-type: none"> Continue utility operations, pump-and-treat operations, waste and landfill operations, infrastructure support, environmental monitoring and reporting, surveillance and maintenance of facilities. Continue characterization and hazardous material removal activities in the C-333 Process Building (primary uranium enrichment facility being deactivated). 	<ul style="list-style-type: none"> Decrease reflects completion of activities, including disposition of R-114 refrigerant (Freon), end-of-life replacement of information technology equipment, rail and road repairs, and deactivation of the C-531 switchyard.

- Initiate construction of the Large Item Neutron Assay System.
 - Complete design and initiate procurement for the Material Sizing Area.
 - Continue Remedial Investigation Feasibility Study fieldwork activities for the C-400 Complex Operable Unit.
 - Continue utilities and space optimizations to reduce power and water utilization.
 - Initiate Partial Dismantlement in Two Electrical Switchyards.
 - Complete disposition of 1,500,000 pounds of R-114 refrigerant (Freon).
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- Complete construction of the Large Item Neutron Assay System
 - Continue procurement for the Material Sizing Area and complete construction.
 - Issue D1 Report for Remedial Investigation/Feasibility Study for the C-400 Complex Operable Unit.
 - Continue utilities and space optimizations to reduce power and water utilization.
 - Complete Partial Dismantlement in Two Electrical Switchyards.
 - Initiate construction of new Emergency Operations Center.

Paducah Community and Regulatory Support (PBS: PA-0103)

Overview

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

This PBS scope supports an Agreement-in-Principle grant to the Commonwealth of Kentucky to provide independent oversight of the environmental programs, including surface water, groundwater, air and other environmental monitoring; and a Federal Facility Agreement grant with the Commonwealth of Kentucky to assure Federal Facility Agreement conditions and compliance schedules are met in accordance with state, federal, and local guidance, regulations and statutes. This PBS also includes support to the Paducah Citizens Advisory Board for assistance in all public participation activities and a grant with Kentucky to support the groundwater program.

Paducah Community and Regulatory Support (PBS: PA-0103)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$2,099,000	\$2,739,000	+\$640,000
<ul style="list-style-type: none">Continue to ensure requirements are met regarding the Federal Facility Agreement and Agreement-In-Principle grants.Continue support to Citizens Advisory Board.	<ul style="list-style-type: none">Continue support to the Citizens Advisory Board to assist in the public participation activities required by the Comprehensive Environmental Response, Compensation, and Liability Act.Continue to ensure requirements are met regarding the Federal Facility Agreement and Agreement-In-Principle grants.Continue support to the Kentucky Research Consortium for Energy and Environment for groundwater modeling program.	<ul style="list-style-type: none">Increase supports Federal Facility Agreement and Agreement-in-Principle grants to assure Federal Facility Agreement conditions and compliance schedules are met. It also supports Kentucky Research Consortium for Energy and Environment for support and oversight of environmental cleanup and groundwater modeling program.

**Paducah
Capital Summary (\$K)**

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Request	FY 2022 Request	FY 2022 Request vs FY 2021 Request
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Capital Operating Expenses Summary (including (Major Items of Equipment (MIE))

Capital Equipment > \$500K (including MIE)	0	0	0	0	0	+0
Plant Projects (GPP and IGPP) (<\$20M)	23,994	0	10,722	349	4,264	+4,744
Total, Capital Operating Expenses	23,994	0	10,722	349	4,264	+4,744

Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <\$20M)

Security Management Facility	4,373	0	4,373	0	0	0	0
Emergency Operations Center	6,000	0	6,000	0	0	0	0
Large Item Neutron Assay System	6,567	0	349	349	4,264	1,954	-2,310
Shoothouse	1,045	0	0	0	0	1,045	+1,045
ProForce Facility	3,659	0	0	0	0	3,659	+3,659
Modular Classified Records Storage	2,000	0	0	0	0	2,000	+2,000
NW Corner Strategy	350	0	0	0	0	350	+350
Total, Paducah	23,994	0	10,722	349	4,264	9,008	+4,744
Total, Capital Summary	23,994	0	10,722	349	4,264	9,008	+4,744

Portsmouth

Overview

The Portsmouth Site, occupying 3,777 acres in Portsmouth, Ohio, is one of the three gaseous diffusion enrichment plants and enriched uranium for nuclear weapons. In the 1960s, Portsmouth's mission changed to focus on producing fuel for commercial nuclear power plants and other national security applications until the extensive environmental cleanup program began. The Portsmouth Site cleanup will position the Department of Energy to meet the nation's Manhattan Project and Cold War legacy responsibilities, including environmental cleanup, waste management, depleted uranium hexafluoride conversion, deactivation and decommissioning and long-term stewardship.

To complete cleanup, Portsmouth will maintain a safe, secure, and compliant posture; support deactivation and decommissioning of the gaseous diffusion plant; dispose of all low-level radioactive waste and mixed low-level radioactive waste resulting from deactivation and decommissioning activities; dispose of all excess materials; and perform groundwater trichloroethylene source zone removal.

The Portsmouth site will operate its Depleted Uranium Hexafluoride Conversion Facility.

Direct maintenance and repair at Portsmouth is estimated to be \$42,502,000.

Highlights of the FY 2022 Budget Request

This FY 2022 Budget Request continues progress on the deactivation and decommissioning of the former Portsmouth Gaseous Diffusion Plant. This budget request also supports the safe operation of the Depleted Uranium Hexafluoride Conversion facility.

The FY 2022 Budget Request includes \$5,000,000 in funding (\$0 for design, \$4,750,000 for construction, and \$250,000 for other project cost) for the On-Site Waste Disposal Facility, Line-Item Capital Project #1 (15-U-408) to receive the debris from demolition of the X-326 Process Building. The request includes \$65,235,000 in funding (\$7,500,000 for design, \$53,235,000 for construction, and \$4,500,000 for other project cost) for the On-Site Waste Disposal Facility, Line-Item Capital Project #2 (20-U-401) to receive the debris from the demolition of the X-333 Process Building.

FY 2021 and FY 2022 Key Milestones/Outlook

- (October 2020) Initiate soil excavation (X-740) activities for generation of On-Site Waste Disposal Facility (OSWDF) engineered fill.
- (June 2021) Initiate physical demolition of the First Process Building (X-326).
- (June 2021) Complete First Placement of Process Building Debris into On-Site Waste Disposal Facility Cell Liner 1.
- (August 2021) Initiate excavation of X-231B soil for use in On-Site Waste Disposal Facility.
- (August 2021) Complete convertor segmentation for the Second Process Building (X-333).
- (October 2021) Initiate Excavation of the 5-Unit plume for use in On-Site Waste Disposal Facility.
- (November 2021) Complete Construction of Cell Liner 4 and Cell Liner 5 of On-Site Waste Disposal Facility (15-U-408).
- (December 2021) Complete Sediment Pond 1 for On-Site Waste Disposal Facility (20-U-401).
- (January 2022) Complete Deactivation of Second Process Building (X-333).
- (February 2022) Initiate Pre-Demolition preparation of the Second Process Building (X-333).
- (April 2022) Complete Excavation and Site Restoration of the X-740 plume for use in On-Site Waste Disposal Facility.
- (September 2022) Continue Demolition of the First Process Building (X-326).
- (September 2022) Continue waste placement in the On-Site Waste Disposal Facility
- (September 2022) Continue Construction of Infrastructure for the On-Site Waste Disposal Facility (20-U-401).

Regulatory Framework

Oversight of cleanup activities at the Portsmouth site is the responsibility of the Ohio Environmental Protection Agency. The ongoing environmental media cleanup activities are being conducted in accordance with the State of Ohio Consent Decree, under the Resource Conservation and Recovery Act, which requires investigation and remediation of solid and hazardous waste management units. A Decision Document under the Consent Decree for final soil and groundwater cleanup is anticipated to be issued by Ohio Environmental Protection Agency in FY 2021.

DOE and the Ohio Environmental Protection Agency reached an agreement on the regulatory framework for final decontamination and decommissioning of the facilities and the disposition of project waste under the Ohio Environmental Protection Agency issuance of the Directors Final Findings and Orders for Decontamination and Decommissioning, which uses the framework of the Comprehensive Environmental Response, Compensation, and Liability Act requirements. The On-Site Waste Disposal Record of Decision was issued in June 2015, and the Process Building Record of Decision was issued in July 2015. The conditional Operating Disposal Authorization Statement required under DOE Order 435.1, Radioactive Waste Management was signed on December 17, 2019, and is required prior to first waste placement.

DOE and the Ohio Environmental Protection Agency have an agreement for the management of the storage of the depleted uranium hexafluoride cylinders. A separate Ohio Environmental Protection Agency Directors Final Findings and Orders formalizes the terms and requirements of this agreement.

DOE and Ohio Environmental Protection Agency reached an agreement on July 30, 2018, that exchanges DOE's commitment to undertake excavation of the X-740 groundwater plume and the X-231B biodegradation plot for the Ohio Environmental Protection Agency's commitment not to refer a Natural Resource Damage claim to the State of Ohio Attorney General.

Contractual Framework

Program planning and management at Portsmouth is conducted through the issuance and execution of contracts to large and small businesses. Portsmouth develops near-term and long-term planning approaches in order to develop contract strategies and program/project plans at a more detailed level. Selected contractors then execute these plans to complete cleanup on cost and schedule. Current contracts at Portsmouth include:

- Mid-America Conversion Services, LLC, a cost-plus-award-fee/fixed-price contract for operation of the Portsmouth and Paducah depleted uranium hexafluoride facilities and cylinder surveillance and maintenance, covering the period from September 30, 2016 - January 30, 2022.
- Fluor-BWXT Portsmouth LLC, a cost-plus-award-fee, cost-plus-fixed-fee, and Indefinite Delivery/Indefinite Quantity contract for decontamination and decommissioning of uranium gaseous diffusion buildings, and legacy soil and groundwater remediation, covering March 29, 2016 – March 28, 2022, with the option to exercise two six-month extensions.
- Portsmouth Mission Alliance, LLC, a fixed-price hybrid including fixed-price, cost-reimbursable, Indefinite Delivery/Indefinite Quantity contract for infrastructure support services, covering the period of April 25, 2016 – May 24, 2021, with the option to exercise three one-month extensions.

Strategic Management

The key environmental cleanup strategies for the Portsmouth site are to continue process building deactivation, including equipment removal actions and hazardous material abatement; initiate process building demolition; continue construction activities associated with an On-Site Waste Disposal Facility for disposition of the process buildings and Balance of Plant deactivation and demolition waste and debris; complete the remediation soil and groundwater of the deferred units under the Ohio Consent Decree; continue operations of groundwater treatment facilities in support of installed remedies; remove stored low-level radioactive waste and mixed low-level radioactive waste streams contaminated with hazardous or toxic chemicals; and operate the Depleted Uranium Hexafluoride Conversion Facility.

Future decontamination and decommissioning costs will be dependent upon the timing and extent of final environmental contamination, regulatory frameworks, and disposal/recycling options for the decontamination and decommissioning of

materials and wastes. The regulatory documents that could have significant impacts on individual projects and may affect the overall costs and schedule are outlined below:

- DOE will develop Remedial Design/Remedial Action Work Plans as part of the decision making process, in coordination with the Ohio Environmental Protection Agency, that will describe in detail the actions required to perform the demolition and waste disposition activities.
- DOE is working with Ohio Environmental Protection Agency to resolve comments on the Resource Conservation and Recovery Act Facility Investigation/Corrective Measure Study Report, which is part of the decision making process for the Resource Conservation and Recovery Act Soil and Groundwater Decision Document.
- DOE will continue to transfer uranium cylinders from thin-wall to thick-wall cylinders to place the material in Department of Transportation compliant configuration.
- DOE will continue to develop landfill and plume excavation work plans in accordance with the agreement reached with the Ohio Environmental Protection Agency.

Portsmouth Project Office

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Safeguards and Security				
PO-0020 / Safeguards and Security	16,490	16,690	16,690	0
Non-Defense Environmental Cleanup				
Gaseous Diffusion Plants				
Portsmouth Gaseous Diffusion Plant				
PO-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	56,629	57,974	58,840	+866
Uranium Enrichment Decontamination and Decommissioning Fund				
Portsmouth				
Portsmouth Gaseous Diffusion Plant				
PO-0040 / Nuclear Facility D&D-Portsmouth				
Operating	367,193	367,193	397,311	+30,118
Construction				
15-U-408: On-Site Waste Disposal Facility, Portsmouth (PO-0040)	41,102	46,639	5,000	-41,639
20-U-401: On Site Waste Disposal Facility (Cell Line 2&3)	10,000	16,500	65,235	+48,735
	<u>418,295</u>	<u>430,332</u>	<u>467,546</u>	<u>+37,214</u>
Pension and Community and Regulatory Support				
Portsmouth Gaseous Diffusion Plant				
PO-0103 / Portsmouth Contract/Post-Closure Liabilities/Administration	0	500	160	-340
PO-0104 / Portsmouth Community and Regulatory Support	2,013	3,368	3,400	+32
Subtotal, Portsmouth Gaseous Diffusion Plant	<u>2,013</u>	<u>3,868</u>	<u>3,560</u>	<u>-308</u>
Total, Uranium Enrichment Decontamination and Decommissioning Fund	<u>420,308</u>	<u>434,200</u>	<u>471,106</u>	<u>+36,906</u>
Total, Portsmouth	<u>493,427</u>	<u>508,864</u>	<u>546,636</u>	<u>+37,772</u>

Portsmouth Project Office
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Safeguards and Security

PO-0020 / Safeguards and Security

- No change.

0

Non-Defense Environmental Cleanup

Gaseous Diffusion Plants

Portsmouth Gaseous Diffusion Plant

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

- Increase supports operations and plant and safety reliability mods, including Integrated Control System for DUF6 operations that replaces the existing, obsolete work station installed pre-2010.

+866

Uranium Enrichment Decontamination and Decommissioning Fund

Pension and Community and Regulatory Support

Portsmouth Gaseous Diffusion Plant

PO-0103 / Portsmouth Contract/Post-Closure Liabilities/Administration

- Decrease due to reduced liabilities for litigation and post-retirement benefits.

-340

PO-0104 / Portsmouth Community and Regulatory Support

- No significant change.

+32

Portsmouth

Portsmouth Gaseous Diffusion Plant

PO-0040 / Nuclear Facility D&D-Portsmouth

- Increase supports progress of pre-demolition activities for X-333 Process Building and continuation of X-326 Process Building demolition, soil excavation, and On-Site Waste Disposal Facility waste placement operations and construction.

+37,214

Total, Portsmouth

+37,772

Safeguards and Security (PBS: PO-0020)

Overview

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

The safeguards and security program at the Portsmouth Gaseous Diffusion Plant provides security services to protect nuclear materials, sensitive uranium enrichment technology, equipment, and facilities. This program includes maintaining a security guard force to protect nuclear materials and classified technology/information. The safeguards and security program also supports the Portsmouth decommissioning and decontamination program. Within the safeguards and security program, the Department continues to pursue realignment of sensitive security areas to support accelerated and less costly cleanup of the site.

Safeguards and Security (PBS: PO-0020)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$16,690,000	\$16,690,000	+\$0
<ul style="list-style-type: none"> • Provide safeguards and security services using a graded approach for the Portsmouth Gaseous Diffusion Plant to include: physical security systems, protective forces, information security, operational security, personnel security, material control and accountability, program management, and cyber security. • Support the development of risk assessment reduction of security footprint at the site. 	<ul style="list-style-type: none"> • Provide safeguards and security services using a graded approach for the Portsmouth Gaseous Diffusion Plant to include: physical security systems, protective forces, information security, operational security, personnel security, material control and accountability, program management, and cyber security. • Support the development of risk assessment reduction of security footprint at the site. 	<ul style="list-style-type: none"> • No change.

NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion (PBS: PO-0011X)

Overview

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

This PBS scope includes operating a depleted uranium hexafluoride conversion facility at the Portsmouth Gaseous Diffusion Plant site. The facility converts depleted uranium hexafluoride into a more stable chemical form (depleted uranium oxide) suitable for beneficial reuse or disposition. The depleted uranium oxide and cylinders will initially be stored on-site and ultimately sent to a disposal facility if beneficial reuses are not realized. The hydrogen fluoride co-product is sold on the commercial market for unrestricted use. The proceeds from the sale of hydrogen fluoride are used to offset project operating costs. The scope of this PBS also includes direct maintenance and repair that are applicable to these areas.

This PBS also includes surveillance and maintenance of all depleted uranium hexafluoride cylinders during conversion of the existing stockpile. Completion of these activities will contribute to reducing the footprint and total cleanup of the site.

NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion (PBS: PO-0011X)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$57,974,000	\$58,840,000	+\$866,000
<ul style="list-style-type: none"> Continue plant safety and reliability modifications in advance of readiness reviews and re-start of DUF6 conversion facility after shut down due to COVID-19. Initiate Integrated Control System upgrade. Conduct cylinder surveillance and maintenance to keep material in a safe, stable condition. Conduct annual plant maintenance outages. 	<ul style="list-style-type: none"> Conduct operations of DUF6 conversion facility. Package converted depleted uranium oxide and store on site. Continue plant safety and reliability modifications. Complete Integrated Control System upgrade. Conduct cylinder surveillance and maintenance to keep material in a safe and stable condition. Conduct annual plant maintenance outages. 	<ul style="list-style-type: none"> Increase supports operations and plant and safety reliability mods, including Integrated Control System for DUF6 operations that replaces the existing, obsolete work station installed pre-2010.

Nuclear Facility D&D-Portsmouth (PBS: PO-0040)

Overview

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

This PBS scope includes remedial actions due to contamination resulting from the plant's historical uranium enrichment operations, facility decontamination and decommissioning, and surveillance and maintenance activities at the Portsmouth Gaseous Diffusion Plant.

This PBS also includes the design and construction of a capital project, the On-Site Waste Disposal Facility, for disposition of the debris generated from the site-wide cleanup, including debris generated from the decontamination, decommissioning, and demolition of the Gaseous Diffusion Plant.

The FY 2022 Budget Request of \$467,546,000 supports removal of high-risk radioactively contaminated equipment and hazardous materials from the uranium processing buildings, including \$5,000,000 (\$0 for design, \$4,750,000 for construction, and \$250,000 for other project cost) for the Portsmouth On-Site Waste Disposal Facility Capital Project #1 (15-U-408) to receive debris from the X-326 Process Building, and \$65,235,000 (\$7,500,000 for design, \$53,235,000 for construction, and \$4,500,000 for other project cost) for Portsmouth On-Site Waste Disposal Facility Capital Project #2 (20-U-401) to receive debris from the X-333 Process Building. The mission of this project is to construct an On-Site Waste Disposal Facility for debris generated from the demolition of the Portsmouth Gaseous Diffusion Plant and associated facilities.

Nuclear Facility D&D-Portsmouth (PBS: PO-0040)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$430,332,000	\$467,546,000	+\$37,214,000
<ul style="list-style-type: none"> Continue operations such as utility operations, pump-and-treat operations, waste and landfill operations, infrastructure support, environmental monitoring and reporting, surveillance and maintenance of facilities. Start-up Water Treatment Systems for Process Building demolition and soil excavation. Initiate physical demolition of X-326, first Process Building. 	<ul style="list-style-type: none"> Continue operations such as utility operations, pump-and-treat operations, waste and landfill operations, infrastructure support, environmental monitoring and reporting, surveillance and maintenance of facilities. Continue demolition of first process building (X-326) and waste placement in On-Site Waste Disposal Facility. 	<ul style="list-style-type: none"> Increase supports progress of pre-demolition activities for X-333 Process Building and continuation of X-326 Process Building demolition, soil excavation, and On-Site Waste Disposal Facility waste placement operations and construction.

- Complete first waste placement from X-326 demolition.
 - Continue deactivation of second Process Building (X-333).
 - Complete convertor segmentation for the Second Process Building (X-333).
 - Initiate soil excavation activities in X-231B and X-740 for generation of On-Site Waste Disposal Facility (OSWDF) engineered fill.
 - Continue electrical substation to upgrade gaining infrastructure.
 - Complete deactivation and initiate pre-demolition preparation of the second Process Building (X-333).
 - Complete construction of Cell Liner 4 & 5 of the On-Site Waste Disposal Facility Capital Project #1 (15-U-408).
 - Continue cell construction and infrastructure for the On-Site Water Disposal Facility Capital Project #2 (20-U-401).
 - Complete Sediment Pond 1 for On-Site Waste Disposal Facility (20-U-401).
 - Continue excavation activities for generation of On-Site Waste Disposal Facility engineered fill.
 - Continue electrical substation projects to upgrade aging infrastructure.
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Portsmouth Contract/Post-Closure Liabilities/Administration (PBS: PO-0103)

Overview

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

This PBS supports pending litigation expenses, severance and the administration of post retirement life and medical benefits.

Portsmouth Contract/Post-Closure Liabilities/Administration (PBS: PO-0103)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$500,000	\$160,000	-\$340,000
<ul style="list-style-type: none">Continue to provide defense against legal claims; record searches; and provide payment into Portsmouth pension.	<ul style="list-style-type: none">Continue to provide defense against legal claims filed against the Government and its contractors.Continue record searches in support of legal claims, Freedom of Information Act requests, and requests from both state and Federal regulatory and elected officials.Continue to provide payment into the Portsmouth pension program to remain in compliance with the Employee Retirement Income Security Act, DOE 350.1 and other applicable laws.	<ul style="list-style-type: none">Decrease due to reduced liabilities for litigation and post-retirement benefits.

Portsmouth Community and Regulatory Support (PBS: PO-0104)

Overview

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

This PBS supports activities to promote active involvement with the state and local stakeholders in the Environmental Management planning and decision-making processes and provides the opportunity for meaningful involvement in managing the cleanup and closure of the site.

Portsmouth Community and Regulatory Support (PBS: PO-0104)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$3,368,000	\$3,400,000	+\$32,000
<ul style="list-style-type: none">Support Ohio EPA oversight, Ohio University grant, and designated Site-Specific Advisory Board.	<ul style="list-style-type: none">Support oversight activities of the Ohio Environmental Protection Agency, including air monitoring by Ohio Environmental Protection Agency and Ohio Department of Health.Support the designated Site Specific Advisory Board.	<ul style="list-style-type: none">No significant change.

**Portsmouth
Capital Summary (\$K)**

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Capital Operating Expenses Summary (including (Major Items of Equipment (MIE))

Capital Equipment > \$500K (including MIE)	0	0	0	0	0	+0
Plant Projects (GPP and IGPP) (<\$20M)	20,077	1,383	1,437	57	4,857	+7,543
Total, Capital Operating Expenses	20,077	1,383	1,437	57	4,857	+7,543

Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <\$20M)

Portsmouth

Electrical Supply and Distribution Gaseous Diffusion Plant	19,041	1,383	1,437	57	3,821	12,400	+8,579
Safeguards and Security Training Center	1,036	0	0	0	1,036	0	-1,036
Total, Portsmouth	20,077	1,383	1,437	57	4,857	12,400	+7,543

Total, Capital Summary	20,077	1,383	1,437	57	4,857	12,400	+7,543
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Portsmouth
Construction Projects Summary (\$K)

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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**15-U-408, On Site Waste Disposal Facility – Initial Infrastructure and
Cell 1, 4 and 5 Liner Construction**

Total Estimate Cost (TEC)	268,058	141,650	38,821	43,412	45,682	4,750	-40,932
Other Project Costs (OPC)	16,616	8,522	2,281	2,338	957	250	-707
Total Project Cost (TPC) 15-U-408	284,674	150,172	41,102	45,750	46,639	5,000	-41,639

**20-U-401, On Site Waste Disposal Facility – Remaining Infrastructure
and Cell 2, 3, and 6 Liner Construction**

Total Estimate Cost (TEC)	341,212	0	9,603	5,592	16,238	60,735	+44,497
Other Project Costs (OPC)	31,788	0	397	24	262	4,500	+4,238
Total Project Cost (TPC) 20-U-401	373,000	0	10,000	5,616	16,500	65,235	+48,735

15-U-408, On-Site Waste Disposal Facility - Initial Infrastructure & Cell 1, 4 & 5 Liner Construction
Portsmouth Gaseous Diffusion Plant, Piketon, Ohio
Project is for Design and Construction

1. Summary, Significant Changes, and Schedule and Cost History

Summary The FY 2022 Request for the On-Site Waste Disposal Facility – Initial Infrastructure & Cell 1, 4, & 5 Liner CAP-1 Construction Project is \$5,000,000. This funding will support the completion of the initial infrastructure and the first three cells liner construction, which are required to support disposal of decommissioning and demolition debris from the 1st (X-326) process building demolition, and the project closeout.

This project is the first in a series of line-item capital projects to construct the entire On-Site Waste Disposal Facility with ten cells, two contingency cells, and final covers. The three major infrastructure components that constitute the entirety of the On-Site Waste Disposal Facility project are: 1) the On-Site Waste Disposal Facility infrastructure/support areas, 2) the On-Site Waste Disposal Facility waste placement proper (liners/covers and leachate collection/conveyance systems) with associated impacted material transfer area, and 3) the Interim Leachate Treatment System.

For the On-Site Waste Disposal Facility – Initial Infrastructure & Cell 1, 4, & 5 Liner Construction project, DOE approved CD-0, Approve Mission Need, CD-1, Approve Alternative Selection and Cost Range, and CD-3A, Approve Start of Partial Construction/Execution, on August 28, 2015, with a preliminary cost range of \$242,000,000 to \$350,000,000.

A realignment strategy was implemented to recover some of the schedule in the On-Site Waste Disposal Facility by deferring a portion of the infrastructure not needed for the construction of the first three cell liners of the On-Site Waste Disposal Facility which includes the Integrated Leachate Treatment System (ILTS), the dedicated haul road, the Impacted Material Transfer Area (IMTA) and other associated miscellaneous support structures. This remaining infrastructure was included in the second On-Site Waste Disposal Facility project (20-U-401). The realignment strategy for CAP-1 was approved on March 17, 2017 and revised the scope of this project to include Cell 4 and Cell 5 Liners and a temporary Modular Leachate Treatment System (MLTS). The realignment strategy optimized and re-sequenced the On-Site Waste Disposal Facility project schedule to accelerate the completion of the first three cells, which are required to support disposal of decommissioning and demolition debris from the 1st (X-326) process building. The CD-1 Total Project Cost range for the On-Site Waste Disposal Facility - Initial Infrastructure & Cell 1, 4 & 5 Liner Construction (CAP-1) Project was revised (CD-1R) to \$250,000,000 to \$340,000,000.

Completed Project Peer Reviews (PPRs), CD-2/3 ICE, and combined CD-2/3 Performance Baseline External Independent Review (EIR) / Construction Readiness Independent Project Review (IPR). Received approval for CD 2/3 on April 10, 2018, with a TPC of \$284,674,925.

A Federal Project Director (FPD) has been assigned to the project and has approved this data sheet. The FPD is certified at Level III. FPD Level III certification is appropriate for projects with a total project cost (TPC) up to \$400 million, which bounds the top end of the CD-1 cost range.

Significant Changes

This Construction Project Data Sheet is an update to the FY 2021 Congressional Request data sheet and does not include a new start for the budget year.

The TPC reflected in this data sheet is the CD-2 baseline. However, the \$5,000,000 of requested appropriations in FY 2022 will support the early completion of the project. The forecasted completion date is 2Q FY 2023, and the estimate at completion is \$242,913,000.

On November 5, 2020 Ohio EPA concurred with the Sitewide Waste Water Treatment Strategy which includes the Interim Leachate Treatment Systems (ILTS) Phase 2.

As of April 6, 2021, the following site preparatory activities have been completed: X-114A Facility demolition; land clearing; Sedimentation Pond 2, 3, 4, and Temporary Sediment Basin A functionally complete; Phase 1 and 2 Raw Water Line, Filling

**Environmental Management/
Portsmouth/15-U-408 On Site
Waste Disposal Facility**

FY 2022 Congressional Budget Justification

Station No. #1, #2 and Booster Station installation; On-Site Waste Disposal Facility (OSWDF) Access Control Facility; temporary trailer construction with electrical power, communications, potable water and sanitary sewer installations; perimeter fencing; and site earthwork (cut, fill, and rough grading); construction of Valve Houses 1,4 & 5; East Laydown area; all multiple layers of Cell 1 liner installed; excavation of 720 sandstone within Cell 1 footprint and areas to the north; Phase 2 sanitary sewer; grading of On-Site Waste Disposal Facility Access and Construction Roads; surface water control channels; power and communications in preparation of future operations; operations trailer complexes; MLTS/ILTS civil work and the 1,000,000 gallon holding tank, 250,000 gallon equalization tank, Tension Support Structure (TSS) and conveyance lines; and installation of MLTS equipment and mechanical piping for valve houses #1 and #4. Completed start-up and readiness review for MLTS, initiated installation of mechanical components of Valve House #5.

Additionally, the following work is forecasted to be complete by the end of FY 2021: Install Cell #1 Interim Transfer Ramp, and start utilizing the OSWDF capacity. Process an additional 30,000 cubic yards of clay sufficient for the construction of Cells 4 and 5 liners and initiate construction of OSWDF Cells 4 and 5 liners.

Critical Milestone History

The table below provides the preliminary schedule for CDs and major milestones for the Initial Infrastructure & Cell 1, 4 & 5 Liner Construction project.

(fiscal quarter or date)								
	CD-0	Conceptual Design Complete ^a	CD-1	CD-2	Final Design Complete ^b	CD-3	D&D Complete	CD-4
FY 2015	4Q FY2014	N/A	2Q FY2015	3Q FY2015	3Q FY2015	3Q FY2015	N/A	2Q FY2019
FY 2016	4Q FY2015	04/10/2014	4Q FY2015	TBD	TBD	TBD	TBD	TBD
FY 2017	4Q FY2015	04/10/2014	4Q FY2015	TBD	TBD	TBD	N/A	TBD
FY 2018	08/28/2015	04/10/2014	08/28/2015	2Q FY2018	TBD	TBD	N/A	TBD
FY 2019	08/28/2015	04/10/2014	08/28/2015	2Q FY2018	TBD	TBD	N/A	TBD
FY 2020	08/28/2015	04/10/2014	08/28/2015	4/10/2018	2Q FY2018	4/10/2018	N/A	3Q FY 2024
FY 2021	08/28/2015	04/10/2014	08/28/2015	4/10/2018	2/12/2019	4/10/2018	N/A	3Q FY 2024
FY 2022	08/28/2015	04/10/2014	08/28/2015	4/10/2018	2/12/2019	4/10/2018	N/A	3Q FY 2024

^a Conceptual Design was completed as part of the Remedial Investigation/Feasibility Study development prior to CD-0.

^b Title III design scope is planned to be, in part, subcontracted through a competitively-awarded contract with an Architectural and Engineering firm.

CD-0 – Approve Mission Need

Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)

CD-1 – Approve Alternate Selection and Cost Range

CD-2 – Approve Performance Baseline

Final Design Complete – Estimated/Actual date the project design will be/was complete(d)

CD-3 – Approve Start of Construction

D&D Complete – Completion of D&D work (see Section 5)

CD-4 – Approve Start of Operations or Project Completion

PB – Indicates the Performance Baseline

(Fiscal quarter or date)

	CD-3A Milestones ^{ab}		
	Long Lead Procurement Complete	Initial Site Preparation Complete	Access Control Fencing Complete
FY 2015	1Q FY2015	3Q FY2015	3Q FY2015
FY 2016	2Q FY2015	4Q FY2016	4Q FY2016
FY 2017	2Q FY2017	2Q FY2017	2Q FY2017
FY 2018	2Q FY2018	2Q FY2018	2Q FY2018
FY 2019	2Q FY2018	2Q FY2018	2Q FY2018
FY 2020	3Q FY2018	3Q FY2018	3Q FY2018
FY 2021	4/10/2018	4/10/2018	4/10/2018
FY 2022	4/10/2018	4/10/2018	4/10/2018

Notes: ^a Critical Decision-3A was approved on 8/28/2015 to allow for long-lead procurement, site preparation, and access control fencing necessary prior to Critical Decision 2/3 approval. At Critical Decision-2/3 approval, all remaining Critical Decision-3A scope not completed will become part of the Critical Decision 3 scope.

^b The above milestones reflect the projected upper range finish dates of the Critical Decision-3A scope, as defined in the Critical Decision-3A proposal, in accordance with DOE Order 413.3B.

Project Cost History

(Dollars in Thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC D&D	OPC, Total	TPC
FY 2015	10,819	276,507	287,326	22,674	N/A	22,674	310,000
FY 2016	10,819	276,507	287,326	22,674	N/A	22,674	310,000
FY 2017	15,573	323,245	338,818	11,182	N/A	11,182	350,000
FY 2018	15,573	323,245	338,818	11,182	N/A	11,182	350,000
FY 2019	15,573	323,245	338,818	11,182	N/A	11,182	350,000
FY 2020	15,017	253,041	268,058	16,616	N/A	16,616	284,674
FY 2021	16,680	251,378	268,058	16,616	N/A	16,616	284,674
FY 2022	17,043	251,015	268,058	16,616	N/A	16,616	284,674 ^c

Note: On April 10, 2018, CD-1R/2/3 approved.

^c Project is projecting completion early and under cost.

2. Project Scope and Justification

Scope

The On-Site Waste Disposal Facility initial infrastructure and Cell 1, 4 and 5 Liner Construction project includes design, construction, and startup of the Cell 1, 4 and 5 liners, including the initial infrastructure needed to support first waste placement, and decontamination and decommissioning/demolition of the X-114A Facility. The three liners consist of the following major components: installation of the associated cell liner systems and valve houses; installation of the North Leachate Transmission System; and construction of the On-Site Waste Disposal Facility temporary MLTS. Major components of the On-Site Waste Disposal Facility infrastructure included in this capital asset project are access roads; three sedimentation ponds; electrical power, communications, and raw water utilities; access control and fencing; personnel trailers; lay-down, storage, and borrow areas; and an environmental monitoring system. The initial infrastructure constitutes what is needed prior to waste placement and operation of the first three waste cells. Construction of the initial infrastructure and three cell liners required major earthwork activities including clearing/grubbing and large-scale grading involving cut and fill of soil and rock. The decommissioning/demolition of the X-

**Environmental Management/
Portsmouth/15-U-408 On Site
Waste Disposal Facility**

FY 2022 Congressional Budget Justification

114A Facility, which lies within the On-Site Waste Disposal Facility footprint, was performed in conjunction with new construction activities.

Justification

The mission need for this project was established by the approval of Mission Need (CD-0) for the On-Site Waste Disposal Facility Cell 1 Liner Construction Project on August 28, 2015, and the Mission Need (CD-0) for the On-Site Waste Disposal Facility Cell 4 and Cell 5 Liner Construction Project on August 15, 2016.

The Ohio Environmental Protection Agency and the DOE entered into a formal agreement regarding the decision-making process for the Portsmouth Gaseous Diffusion Plant D&D Project and for the associated waste management. The terms of the agreement are contained in the April 13, 2010, Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012, Modification thereto. The Comprehensive Environmental Response, Compensation, and Liability Act process was completed in June 2015, resulting in a Record of Decision selecting a combined on-site and off-site waste disposal approach as the preferred alternative.

The On-Site Waste Disposal Facility is necessary to provide a cost-effective, reliable waste disposal location for the safe disposal of an estimated five million cubic yards of debris and engineered fill from the Portsmouth D&D Project.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets.

Key Performance Parameters

The Threshold Key Performance Parameters, represent the acceptable performance that the project must achieve. Achievement of the Threshold Key Performance Parameters will be a prerequisite for approval of CD-4, Project Completion. The Objective Key Performance Parameters represent the desired project performance.

Performance Measure	Threshold	Objective
Design and construct a North Leachate Transmission System (LTS), and a Modular Leachate Treatment System (MLTS) with a minimum design flow of 50 gallons per minute (gpm) and maximum design flow of 100 gpm.	50 gpm	100 gpm

3. Project Cost and Schedule

Financial Schedule

	(dollars in thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
[Total Estimated Cost (TEC)]			
Design*			
FY 2015	364	364	364
FY 2016	3,899	3,899	3,899
FY 2017	4,572	4,572	4,572
FY 2018	4,021	4,021	4,021
FY 2019	3,732	3,732	3,732
FY 2020	252	252	252
FY 2021	203	203	203
FY 2022	0	0	0
Outyears	0	0	0

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total, Design	17,043	17,043	17,043
Construction*			
FY 2015	4,136	4,136	277
FY 2016	17,850	17,850	14,766
FY 2017	34,664	34,664	29,815
FY 2018	33,076	33,076	30,003
FY 2019	35,336	35,336	43,620
FY 2020	38,569	38,569	43,160
FY 2021	45,479	45,479	42,559
FY 2022	4,750	4,750	9,660
Outyears	37,155	37,155	37,155
Total, Construction	251,015	251,015	251,015
TEC			
FY 2015	4,500	4,500	641
FY 2016	21,749	21,749	18,665
FY 2017	39,236	39,236	34,387
FY 2018	37,097	37,097	34,024
FY 2019	39,068	39,068	47,352
FY 2020	38,821	38,821	43,412
FY 2021	45,682	45,682	42,762
FY 2022	4,750	4,750	9,660
Outyears	37,155	37,155	37,155
Total, TEC	268,058	268,058	268,058
[Other Project Cost (OPC)]			
OPC*			
FY 2015	0	0	0
FY 2016	2,705	2,705	2,705
FY 2017	1,932	1,932	686
FY 2018	1,785	1,785	2,039
FY 2019	2,100	2,100	2,792
FY 2020	2,281	2,281	2,338
FY 2021	957	957	1,050
FY 2022	250	250	261
Outyears	4,606	4,606	4,745
Total, OPC	16,616	16,616	16,616
Total Project Cost (TPC)			
FY 2015	4,500	4,500	641
FY 2016	24,454	24,454	21,370
FY 2017	41,168	41,168	35,073
FY 2018	38,882	38,882	36,063
FY 2019	41,168	41,168	50,144
FY 2020	41,102	41,102	45,750
FY 2021	46,639	46,639	43,812
FY 2022	5,000	5,000	9,921
Outyears	41,761	41,761	41,900

(dollars in thousands)

Budget Authority (Appropriations)	Obligations	Costs
Total, TPC	284,674	284,674

*TEC and OPC funds are appropriated at the Total Project level (15-U-408).

Note: Beginning in FY 2017, OPC was appropriated to the capital construction line-item account (15-U-408) within PBS PO-0040, Nuclear Facility D&D. Prior to FY 2017, OPC was appropriated to the operating account within PBS PO-0040. Title III design scope is planned to be, in part, subcontracted through a competitively-awarded contract with an Architectural and Engineering firm.

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

Design	16,905	16,542	16,542
Contingency	138	138	138
Total, Design	17,043	16,680	16,680

Construction

Building & Site Work	236,344	236,707	236,707
D&D	563	563	563
Contingency	14,108	14,108	14,108
Total, Construction	251,015	251,378	251,378

Total, TEC	268,058	268,058	268,058
Contingency, TEC	14,246	14,246	14,246

Other Project Cost (OPC)

OPC except D&D

Conceptual Planning	0	0	0
Cold startup	2,339	2,339	2,339
Other OPC Costs	13,948	13,948	13,948
Contingency	329	329	329
Total, OPC except D&D	16,616	16,616	16,616

D&D (if any)

D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A

Total, OPC	16,616	16,616	16,616
Contingency, OPC	329	329	329

Total, TPC	284,674	284,674	284,674
Total, Contingency	14,575	14,575	14,575

Schedule of Appropriation Requests

(Dollars in Thousands)

Request Year		Prior Years	FY 2021	FY 2022	Outyears	Total
FY 2015	TEC	287,326				287,326
	OPC	22,674				22,674
	TPC	310,000				310,000
FY 2016	TEC	287,326				287,326
	OPC	22,674				22,674
	TPC	310,000				310,000
FY 2017	TEC	305,375	32,980			338,355
	OPC	7,393	4,252			11,645
	TPC	312,768	37,232			350,000
FY 2018	TEC	338,818				338,818
	OPC	11.182				11.182
	TPC	350,000				350,000
FY 2019	TEC	338,818				338,818
	OPC	11.182				11.182
	TPC	350,000				350,000
FY 2020	TEC	180,152	43,839	33,500	10,567	268,058
	OPC	11,122	2,800	2,263	431	16,616
	TPC	191,274	46,639	35,763	10,998	284,674
FY 2021	TEC	180,152	43,839	33,500	10,567	268,058
	OPC	11,122	2,800	2,263	431	16,616
	TPC	191,274	46,639	35,763	10,998	284,674
FY 2022	TEC	180,471	45,682	4,750	37,155	268,058
	OPC	10,803	957	250	4,606	16,616
	TPC	191,274	46,639	5,000	41,761	284,674

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	3Q FY 2021
Expected Useful Life (duration of waste placement operations)	3-5 years
Expected Future Start of D&D of this Capital Asset (fiscal quarter)	N/A

Related Funding Requirements

(dollars in thousands, \$K)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	13,000	13,000	65,000	65,000
Utilities	330	330	1,650	1,650
<u>Maintenance</u>	931	931	4,655	4,655
Total, Operations & Maintenance	14,261	14,261	71,305	71,305

Note: Post-closure and long-term stewardship activities are not included within this table or anywhere else on this Construction Project Data Sheet.

5. D&D Information

This project required the removal of a 25-year-old outdoor firing range that was located within the planned footprint of the On-Site Waste Disposal Facility. Building demolition and debris removal was completed August 3, 2016, and construction completion report was delivered October 28, 2016. This structure is the only building slated for demolition and no further D&D activities are planned for this project.

Area	Square Feet
X-114A Outdoor Firing Range	1,410

This project is providing new capability and is not replacing a current capability; thus, this project was not justified on the basis of replacing current facilities.

The location of this construction project is an environmental management closure site and, therefore, is exempt from the "one-for-one" requirement.

6. Acquisition Approach

The acquisition approach for the project will be to have the prime contractor execute the work through subcontracting mechanisms with an emphasis on fixed price through competitive bids and the use of consent packages, consistent with current Portsmouth Decontamination and Decommissioning prime contract requirements under FAR 44. Title III design scope is planned to be, in part, subcontracted through a competitively awarded contract with an Architectural and Engineering firm.

**20-U-401 On-Site Waste Disposal Facility – Remaining Infrastructure and Cell 2, 3 and 6 Liner Construction
Portsmouth Gaseous Diffusion Plant, Piketon, Ohio
Project is for Design and Construction**

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2022 Request for the On-Site Waste Disposal Facility – Remaining Infrastructure & Cell 2, 3, & 6 Liner CAP-2 Construction Project is \$65,235,000. In FY 2022, funding will support accelerating initiation of Impacted Material Transfer Area (IMTA) construction, construction of Wheel Wash, significant progress on Integrated Leachate Treatment System (ILTS), and initiation of Cell 2 bowl excavation. Additionally, this funding will allow for continuation of design, procurement, and construction activities for this project.

The first Process Building (X-326) is being prepared for demolition, and the On-Site Waste Disposal Facility CAP-1 (15-U-408) provides the disposal capacity for the X-326 demolition debris. The next Process Building (X-333) is anticipated to be ready for pre-demolition in FY 2021. Disposal capacity for demolition debris has become the Portsmouth Site critical path requiring that CAP-2 (the construction of remaining infrastructure and three additional waste cells) be initiated in FY 2020 to support the demolition of X-333.

Completed CD-1/2/3 Independent Cost Estimate, and combined CD-1/2/3 Performance Baseline External Independent Review (EIR) / Construction Readiness Independent Project Review (IPR). Received approval for CD 1/2/3 on February 25, 2020, with a TPC of \$373,000,000.

A Federal Project Director (FPD) has been assigned to the project and has approved this data sheet. The FPD is certified at Level III. FPD Level III certification is appropriate for projects with a total project cost (TPC) up to \$400 million, which bounds the top end of the CD-1 cost range.

Significant Changes

This Construction Project Data Sheet is an update to the FY 2021 Congressional Request data sheet and does not include a new start for the budget year.

As of April 6, 2021, the following site preparatory activities have been completed: Initial paving of Fog Road Bypass, clearing and grubbing of trees and vegetation, design of Sedimentation Pond 1B, initiate procurement of long lead materials for Sedimentation Pond 1B, rough grading of Impacted Material Transfer Area (IMTA), initiated placement of aggregate for IMTA Haul Road, construction of OSWDF interior haul road, initiated installation of IMTA Scale House.

Additionally, the following work is projected to be completed by the end of FY 2021: Construction of IMTA Haul Road, installation of IMTA Scale House, construction of East Maintenance Building, initiate Sedimentation Pond 1B construction.

Critical Milestone History

The table below provides the preliminary schedule for Critical Decisions and major milestones for the Remaining Infrastructure and Cell 2, 3, and 6 Liner Construction project.

(fiscal quarter or date)

	CD-0*	Conceptual Design Complete	CD-1	CD-2	Final Design Complete**	CD-3	Construction D&D Complete	CD-4
FY 2020	4Q FY2019	04/10/2014***	4Q FY 2019	4Q FY 2019	4Q FY 2020	4Q FY 2019	N/A	TBD
FY 2021	8/15/2016	04/10/2014***	2Q FY 2020	2Q FY 2020	2Q FY 2020	2Q FY 2020	N/A	TBD
FY 2022	8/15/2016	04/10/2014***	02/25/2020	02/25/2020	4Q FY 2020	02/25/2020	N/A	4Q FY 2026

* The original CD-0 for the On-Site Waste Disposal Facility CAP-2 Project was approved on August 15, 2016.

** Regulatory Final Design for the entire On-Site Waste Disposal Facility, including the components included in the On-Site Waste Disposal Facility CAP-2 Project, will be completed as part of the On-Site Waste Disposal Facility CAP-1 Project (as shown). Certified for Construction design for the On-Site Waste Disposal Facility CAP-2 Project components will be completed within the On-Site Waste Disposal Facility CAP-2 Project.

*** Conceptual Design was completed as part of the Site-Wide Waste Disposition Project Remedial Investigation/Feasibility Study development prior to CD-0.

CD-0 – Approve Mission Need

Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)

CD-1 – Approve Alternate Selection and Cost Range

CD-2 – Approve Performance Baseline

Final Design Complete – Estimated/Actual date the project design will be/was complete(d)

CD-3 – Approve Start of Construction

D&D Complete – Completion of D&D work (see Section 5)

CD-4 – Approve Start of Operations or Project Completion

Project Cost History

	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC D&D	OPC, Total	TPC
FY 2020	7,900	TBD	TBD	TBD	N/A	TBD	TBD
FY 2021	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2022	43,438	297,774	341,212	31,788	N/A	31,788	373,000

2. Project Scope and Justification

Scope

The current scope of the On-Site Waste Disposal Facility CAP-2 project consists of construction of the remaining infrastructure for the On-Site Waste Disposal Facility which includes the Integrated Leachate Treatment System (ILTS), the dedicated haul road, the Impacted Material Transfer Area (IMTA) and other associated miscellaneous support structures. To support and advance the Portsmouth D&D Project mission (i.e., demolition of the next Portsmouth process building [X-333]), it is necessary to include and construct the next three cell liners (i.e., Cells 2, 3 and 6), valve houses and South Leachate Transmission System (i.e., Cells 2, 3 and 6) along with the remaining infrastructure as part of the On-Site Waste Disposal Facility CAP-2 Project. The project developed a combined CD-1/2/3 package which was approved on February 25, 2020.

**Environmental Management/
Portsmouth/20-U-401 On Site
Waste Disposal Facility –
Remaining Infrastructure and Cell 2, 3
and 6 Liner Construction**

FY 2022 Congressional Budget Justification

Justification

The Ohio Environmental Protection Agency and the DOE have entered into a formal agreement regarding the decision-making process for the Portsmouth D&D Project and for the associated waste management. The terms of the agreement are contained in the April 13, 2010, Director's Final Findings and Orders for Removal Action and Remedial Investigation and Feasibility Study and Remedial Design and Remedial Action, including the July 16, 2012, Modification thereto. The Comprehensive Environmental Response, Compensation, and Liability Act process was completed in June 2015, resulting in a Record of Decision selecting a combined on-site and off-site waste disposal approach as the preferred alternative.

This waste disposition response action provides a permanent solution for waste generated by the cleanup of Portsmouth ensuring capacity for waste expected to be generated from the Portsmouth D&D Project that is protective of human health, safety and the environment. Additionally, this action was determined through a feasibility study conducted under the Director's Final Findings and Orders to be the best value to the government in that it provides a cost-effective and implementable solution to the waste disposal needs facing the Portsmouth D&D Project.

The mission need for this project was established by the approval of Mission Need (CD-0) for the On-Site Waste Disposal Facility CAP-1 on August 28, 2015 and the Mission Need (CD-0) for the On-Site Waste Disposal Facility CAP-2 on August 15, 2016. The remaining infrastructure to be constructed within this project is necessary to increase the efficiency and productivity for transportation and waste placement operations for the life-cycle of the Portsmouth D&D Project. The advancement of Cell 2, 3, and 6 Liner construction is needed to support the Portsmouth site D&D objectives.

The project is being conducted in accordance with the project management requirements in DOE O 413.3B, *Program and Project Management for the Acquisition of Capital Assets*.

3. Project Cost and Schedule

Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
[Total Estimated Cost (TEC)]			
Design*			
FY 2020	1,754	1,754	1,754
FY 2021	6,360	6,360	6,360
FY 2022	6,866	6,866	6,866
Outyears	35,324	35,324	35,324
Total, Design	43,438	43,438	43,438
Construction*			
FY 2020	7,849	7,849	3,838
FY 2021	9,878	9,878	13,215
FY 2022	53,869	53,869	52,694
Outyears	226,178	226,178	228,027
Total, Construction	297,774	297,774	297,774
TEC			
FY 2020	9,603	9,603	5,592
FY 2021	16,238	16,238	19,575
FY 2022	60,735	60,735	59,560
Outyears	254,636	254,636	256,485
Total, TEC	341,212	341,212	341,212

**Environmental Management/
Portsmouth/20-U-401 On Site
Waste Disposal Facility –
Remaining Infrastructure and Cell 2, 3
and 6 Liner Construction**

(dollars in thousands)

Appropriations	Obligations	Costs
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[Other Project Cost (OPC)]*

FY 2020	397	397	25
FY 2021	262	262	191
FY 2022	4,500	4,500	4,500
Outyears	254,636	254,636	256,485
Total, OPC	31,788	31,788	31,788

Total Project Cost (TPC)

FY 2020	10,000	10,000	5,617
FY 2021	16,500	16,500	19,766
FY 2022	65,235	65,235	64,060
Outyears	281,265	281,265	283,557
Total, TPC	373,000	373,000	373,000

*TEC and OPC funds are appropriated at the Total Project level

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

Design	43,438	43,438	43,438
Contingency	0	0	0
Total, Design	43,438	43,438	43,438

Construction

Building & Site Work	282,203	282,203	282,203
D&D	0	0	0
Contingency	15,852	15,852	15,852
Total, Construction	298,055	298,055	298,055

Total, TEC

Contingency, TEC	15,852	15,852	15,852
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Other Project Cost (OPC)

OPC except D&D

Conceptual Planning	0	0	0
Cold startup	0	0	0
Other OPC Costs	31,085	31,085	31,085
Contingency	703	703	703

Environmental Management/
Portsmouth/20-U-401 On Site
Waste Disposal Facility –
Remaining Infrastructure and Cell 2, 3
and 6 Liner Construction

FY 2022 Congressional Budget Justification

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total, OPC except D&D	31,788	31,788	31,788
D&D (if any)			
D&D	0	0	0
Contingency	0	0	0
Total, D&D	0	0	0
Total, OPC	31,788	31,788	31,788
Contingency, OPC	703	703	703
Total, TPC	373,000	373,000	373,000
Total, Contingency	16,555	16,555	16,555

Schedule of Appropriation Requests

(Dollars in Thousands)

Request Year		FY 2020	FY 2021	FY 2022				Outyears	Total
FY 2020	TEC	9,400	TBD	TBD					TBD
	OPC	600	TBD	TBD					TBD
	TPC	10,000	TBD	TBD					TBD
FY 2021	TEC	9,400	8,400	TBD					TBD
	OPC	600	1,600	TBD					TBD
	TPC	10,000	10,000	TBD					TBD
FY 2022	TEC	9,603	16,238	60,735				254,636	341,212
	OPC	397	262	4,500				26,629	31,788
	TPC	10,000	16,500	65,235				281,265	373,000

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)
 Expected Useful Life (duration of waste placement operations)
 Expected Future Start of D&D of this Capital Asset (fiscal quarter)

FY24 Q4
 3-5 years
 N/A

(dollars in thousands, \$K)

	Annual Costs*		Life Cycle Costs*	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	13,000	13,000	65,000	65,000

Environmental Management/
 Portsmouth/20-U-401 On Site
 Waste Disposal Facility –
 Remaining Infrastructure and Cell 2, 3
 and 6 Liner Construction

FY 2022 Congressional Budget Justification

(dollars in thousands, \$K)

	Annual Costs*		Life Cycle Costs*	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Utilities	330	330	1,650	1,650
Maintenance	931	931	4,655	4,655
Total, Operations & Maintenance	14,261	14,261	71,305	71,305

**Post-closure and long-term stewardship activities are not included within this table or anywhere else on this Construction Project Data Sheet.*

5. Required D&D Information

Area	Square Feet
N/A	N/A

This project is providing new capability and is not replacing a current capability; thus, this project was not justified on the basis of replacing current facilities.

The location of this construction project is an environmental management closure site and, therefore, is exempt from the “one-for-one” requirement.

6. Acquisition Approach

The acquisition approach for the project continues to have the Prime Contractor execute the work through subcontracting mechanisms with an emphasis on fixed price through competitive bids and the use of consent packages, consistent with current Portsmouth D&D Prime Contract requirements under FAR 44. Title III design scope is planned to be, in part, subcontracted through a competitively awarded contract with an Architectural and Engineering firm.

Richland

Overview

The cleanup of the Richland Site supports the Department of Energy in meeting the challenges of the nation's Manhattan Project and Cold War environmental legacy responsibilities. The Richland Operations Office manages cleanup of the Hanford Site, with the exception of the work managed by the Office of River Protection. The Richland Operations Office provides landlord site services for the entire Hanford site, including for the Office of River Protection. The Office of River Protection and the Richland Operations Office work together to facilitate mutual mission success.

The Hanford Site was established during World War II to produce plutonium for the nation's nuclear weapons. The Hanford mission is now primarily site cleanup and environmental restoration to protect the public and the environment (e.g., groundwater, Columbia River, etc.).

The legacy of Hanford's 40 years of nuclear weapons production for the nation's defense includes enormous quantities of spent (used) nuclear fuel, leftover plutonium in various forms, buried waste, contaminated soil and groundwater, and contaminated buildings that must undergo cleanup and be demolished. Forty percent of the approximately 1 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. Continued remediation of the waste sites and demolition of old facilities is required to prevent contamination from transporting to the groundwater and potentially reaching the public (e.g., Columbia River).

The Department is working to reduce the footprint at the Richland Site and has realized significant cleanup momentum over the past several years. As such, efforts continue 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, thereby, reducing the risks to workers, the community, and the environment.

Direct maintenance and repair at the Richland Site is estimated to be \$190,991,000.

The Richland Operations Office plans to purchase the following vehicles in FY 2022: 1 Fire Engine Pumper Truck; 2 Bucket Trucks; 2 Septic Trucks; 2 Potable Water Trucks; 8 Full Size Cargo Vans; 1 Digger Derrick; 2 Water Trucks; 2 Large Service Cargo Vans; 1 Purge Water Truck; 1 Vapor Tracking Van; and 1 Step-Van. The total estimated cost of this equipment is \$3,900,000.

Highlights of the FY 2022 Budget Request

The Richland budget request is designed to maintain safe operations; perform Hanford site-wide services; support Direct Feed Low-Activity Waste startup and commissioning; and conduct critical site infrastructure projects. The budget request also supports progress in modifications to the Waste Encapsulation and Storage Facility for transfer of the cesium-strontium capsules to dry storage by August 2025, continued groundwater treatment progress, additional progress in the remediation of the 300-296 waste site located beneath the 324 Building, and completion of 105KW Fuel Storage Basin above and below water debris disposition and deactivation activities.

The Richland Operations Office also provides the Hanford site-wide landlord services. The services include, but are not limited to, roads and transportation services; electrical and water services; facility maintenance; network and software engineering; physical and cyber security, and records management.

FY 2021 & FY 2022 Key Milestones/Outlook

The following listing represents key milestones included in the Tri-Party Agreement for performance in fiscal years 2021 and 2022.

- (April 2021) M-091-01AE; Submit Hanford Land Disposal Restrictions Summary Report (for 2020).
- (September 2021) M-016-85A; Complete Remote Excavation of 300-296 Waste Site.

- (September 2021) M-085-90; Submit Remedial Investigation/Feasibility Study Work Plan for 200-CR-1 to Environmental Protection Agency.
- (December 2021) M-024-72; Complete construction of all groundwater wells listed for CY2021.
- (April 2022) M-026-01AF; Submit Hanford Land Disposal Restrictions Summary Report.
- (September 2022) M-016-173; Select K Basin Sludge Treatment and Packaging Technology.

Regulatory Framework

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 along with the Resource Conservation and Recovery Act treatment, storage, and disposal unit regulations and corrective action provisions. Negotiation of revised Tri-Party Agreement Milestones to reflect the impact of technical issues and other challenges is in progress.

Contractual Framework

Program planning and management at Richland is conducted through the issuance and execution of contracts to large and small businesses. Richland develops near- and long-term planning approaches in order to develop contract strategies and program/project plans at a more detailed level. Selected contractors then execute these plans to complete cleanup on schedule. Current prime contracts at Richland include:

- The Central Plateau Cleanup Contract is an Indefinite Delivery/Indefinite Quantity (ID/IQ) contract to achieve significant risk and financial liability reduction that provides the best overall optimal solution to Hanford Site completion and closure. The contract is one of the first Environmental Management End State contract in the DOE complex. The contract was awarded on December 12, 2019, and the 10-year ordering period lasts through December 11, 2029. Task orders to perform specific end states can be issued for periods of up to five years, and can be issued at any time during the ordering period. Contract transition from the Plateau Remediation Contract was delayed by a protest and the COVID-19 pandemic. Transition began on October 5, 2020, and was completed on January 24, 2021.
- The Hanford Mission Integration Solutions Contract is a cost-plus-award-fee contract for infrastructure support services in support of Hanford Site cleanup, with an Indefinite Delivery Indefinite Quantity (IDIQ) component to facilitate specialized task orders. This contract was awarded on December 5, 2019. This contract has a base period of performance from January 25, 2021, through August 16, 2025, with one 3-year option and one 2-year option. The contract base period of performance was preceded by a 161-day transition that started on August 17, 2020.
- The Hanford Occupational Medical Services Contract is a hybrid contract for Hanford Site occupational medical services that includes firm-fixed price with cost reimbursement and an Indefinite Delivery Indefinite Quantity (IDIQ) component to facilitate specialized task orders. This contract was awarded on December 31, 2018. Contract transition completed on March 31, 2019, and HPM Corporation began the new contract on April 1, 2019. The new HPM contract has a 3-year base period of December 31, 2018, to December 31, 2021, and two 24-month option periods to December 31, 2025.

Strategic Management

The Hanford mission includes eliminating hazards near the Columbia River by cleaning up the River Corridor, treating contaminated groundwater near the Columbia River, and demolishing the site's main plutonium production facility, the Plutonium Finishing Plant. The work will reduce the active cleanup footprint to 75 square miles in the center of the site, reduce overhead costs and reduce cleanup mortgages. The Hanford mission is also guided by the Hanford Federal Facility Agreement and Consent Order, known as the Tri-Party Agreement established on May 15, 1989. The Tri-Party Agreement include but is not limited to: (1) cleanup commitments; (2) agency cleanup responsibilities; and (3) enforceable milestones to achieve regulatory compliance and remediation.

Richland

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Hanford Site				
Central Plateau Remediation				
RL-0011 / NM Stabilization and Disposition-PFP	0	17,359	0	-17,359
RL-0013C / Solid Waste Stabilization and Disposition- 2035				
Operating	176,855	182,340	220,341	+38,001
Construction				
18-D-404: Modification of Waste Encapsulation and Storage Facility, Richland, WA (PBS RL-0013C)	11,000	15,000	8,000	-7,000
	187,855	197,340	228,341	+31,001
RL-0030 / Soil and Water Remediation-Groundwater/Vadose Zone - 2035	138,995	116,966	139,100	+22,134
RL-0201 / Hanford Site Wide Services				
Operating	338,950	353,335	330,335	-23,000
Construction				
22-D-401: 400 Area Fire Station, (RL-0201)	0	0	15,200	+15,200
22-D-402: 200 Area Water Treatment Facility, (RL-0201)	0	0	12,800	+12,800
	338,950	353,335	358,335	+5,000
Subtotal, Central Plateau Remediation	665,800	685,000	725,776	+40,776
Richland Community and Regulatory Support				
RL-0100 / Richland Community and Regulatory Support	10,121	8,621	5,121	-3,500
River Corridor and Other Cleanup Operations				
RL-0040 / Nuclear Facility D&D-Remainder of Hanford - 2035	102,427	101,044	24,000	-77,044
RL-0041 / Nuclear Facility D&D-River Corridor Closure Project	133,675	131,435	172,000	+40,565
Subtotal, River Corridor and Other Cleanup Operations	236,102	232,479	196,000	-36,479
Total, Hanford Site	912,023	926,100	926,897	+797
Safeguards and Security				
RL-0020 / Safeguards and Security	86,778	96,300	96,300	0
Total, Defense Environmental Cleanup	998,801	1,022,400	1,023,197	+797

Environmental Management/
Richland

Non-Defense Environmental Cleanup

Fast Flux Test Reactor Facility D&D

Fast Flux Test Reactor Facility D&D

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

Total, Richland

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
2,500	2,500	3,100	+600
1,001,301	1,024,900	1,026,297	+1,397

Richland
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Hanford Site

Central Plateau Remediation

RL-0011 / NM Stabilization and Disposition-PFP

- The decrease is associated with the completion of the decommissioning and demolition activity of the Plutonium Finishing Plant facilities to slab-on-grade. -17,359

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

- The increase supports Integrated Disposal Facility transition to operations and activities to move the cesium-strontium capsules to dry storage. +31,001

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

- The increase supports additional Pump and Treat well drilling optimization, completion of Composite Analysis documentation required for the Integrated Disposal Facility disposal authorization and completion of documentation necessary to implement the Interim Record of Decision for the 200 East Area groundwater operable units on the Central Plateau. +22,134

RL-0201 / Hanford Site Wide Services

- The increase provides additional services and capacity through Tribal grants. Other significant changes include the establishment of two construction projects (22-D-401 and 22-D-402) previously funded as General Plant Projects. +5,000

Richland Community and Regulatory Support

RL-0100 / Richland Community and Regulatory Support

- The decrease reflects elimination of payment in lieu of tax payments. -3,500

River Corridor and Other Cleanup Operations

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

- Reduction reflects completion of near term crib stabilization and holding tank risk reduction activities. -77,044

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

- The increase supports the completion of 105KW Fuel Storage Basin above and below water debris disposition and deactivation activities to prepare for the basin dewatering. Also supports progress toward the interim safe stabilization (ISS) of the 105KE reactor and continued progress toward completing the 100K area waste site remediation in close proximity to the Columbia River. +40,565

Defense Environmental Cleanup

Safeguards and Security

RL-0020 / Safeguards and Security

- No change. 0

Non-Defense Environmental Cleanup

Fast Flux Test Reactor Facility D&D

Fast Flux Test Reactor Facility D&D

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

- No significant change.

+600

Total, Richland	+1,397
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Solid Waste Stabilization and Disposition (PBS: RL-0013C)

Overview

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

The scope of this PBS includes storage and disposal of irradiated nuclear fuel, transuranic waste, mixed low-level radioactive waste, and low-level radioactive waste generated at the Hanford Site and other DOE and Department of Defense facilities. This PBS also includes packaging of EM legacy and non-legacy irradiated nuclear fuel and storage in the Canister Storage Building or 200 Area Interim Storage Area and Environmental Restoration Disposal Facility disposal operations. In addition, 1,936 cesium and strontium capsules in wet storage in the Waste Encapsulation and Storage Facility will be transferred to dry storage, and retrieval of contact- and remote-handled suspect transuranic waste in the low-level burial grounds will also be performed. About 24,000 cubic meters of suspect transuranic waste is to be processed and an estimated 10,000 cubic meters will eventually be shipped to the Waste Isolation Pilot Plant. About 51,000 cubic meters of mixed low-level radioactive waste will be treated and disposed in the mixed waste trenches or other facilities. Over 200 de-fueled naval reactor compartments will be disposed of in a dedicated trench and about 130,000 cubic meters of low-level radioactive waste will be disposed through site closure.

Solid Waste Stabilization and Disposition- 2035 (PBS: RL-0013C)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$197,340,000	\$228,341,000	+\$31,001,000
<ul style="list-style-type: none"> • Support operations necessary to provide for safe and compliant operations of waste storage facilities for the Hanford Site. • Support safe disposal operations of the Environmental Restoration Disposal Facility. • Integrated Disposal Facility: Continue upgrades and permitting to support Direct Feed Low-Activity Waste. • Repackage transuranic waste at Permafix. • Start modifications of the Waste Encapsulation and Storage Facility needed to relocate cesium and strontium capsules to dry storage. 	<ul style="list-style-type: none"> • Support operations necessary to provide for safe and compliant operations of waste storage facilities for the Hanford Site. • Support safe disposal operations of the Environmental Restoration Disposal Facility. • Integrated Disposal Facility: Complete all upgrades and permitting needed to support Direct Feed Low-Activity Waste startup. • Near completion of modifications to the Waste Encapsulation and Storage Facility necessary to begin moving the cesium-strontium capsules to dry storage. • Procurement of components for the Cesium/Strontium capsules cask storage system. 	<ul style="list-style-type: none"> • The increase supports Integrated Disposal Facility transition to operations and activities to move the cesium-strontium capsules to dry storage.

- Transuranic and Mixed Low-level waste repackaging.
-

Soil and Water Remediation-Groundwater/Vadose Zone (PBS: RL-0030)

Overview

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

This PBS scope includes groundwater/vadose zone remediation activities that address groundwater contamination and protection of the groundwater resources on the Hanford Site. The principal activities for this PBS include: 1) field characterization to assess the extent of radiological/chemical contamination and contaminants for movement in the vadose zone and groundwater; 2) vadose zone, groundwater and risk assessment modeling and evaluating cumulative impacts to the Hanford groundwater and Columbia River; 3) operation of groundwater remediation systems and implementation of alternative methods; 4) installation of wells to maintain an integrated Comprehensive Environmental Response, Compensation, and Liability Act and Resource Conservation and Recovery Act compliant network for monitoring groundwater plumes and for implementing groundwater/vadose zone remedies; 5) groundwater well drilling, maintenance, decommissioning; and 6) complete final restoration of groundwater on the Hanford Site. This PBS supports the regulatory decision-making process for remediation of all of the groundwater operable units on the Hanford site. It also supports the regulatory processes for waste sites along the River Corridor and on the Central Plateau as well as the regulatory processes for and remediation of soil contamination in the Central Plateau deep vadose zone.

Soil and Water Remediation-Groundwater/Vadose Zone - 2035 (PBS: RL-0030)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$116,966,000	\$139,100,000	+\$22,134,000
<ul style="list-style-type: none"> Continue technical integration of site-wide groundwater and vadose zone cleanup activities. Perform sampling activities and analytical requests required to meet the CERCLA/RCRA/AEA compliance monitoring requirements. Supports monitoring well drilling required to meet Tri-Party Agreement M-24 Resource Conservation and Recovery Act Well Drilling Commitments. Continue operation and optimization of the Pump & Treat Facilities on the River Corridor and Central Plateau, resulting in treatment of 	<ul style="list-style-type: none"> Continue site-wide groundwater contamination monitoring activities, as well as pump and treat operations of all six Pump and Treat Facilities, including the well realignments and well drilling necessary to effectively remediate groundwater contamination. Continue the technical integration of site-wide groundwater and vadose zone cleanup activities. Make significant progress towards completion of the Composite Analysis required to obtain disposal authorization for the Integrated Disposal Facility, and final closure authorization 	<ul style="list-style-type: none"> The increase supports additional Pump and Treat well drilling optimization, completion of Composite Analysis documentation required for the Integrated Disposal Facility disposal authorization and completion of documentation necessary to implement the Interim Record of Decision for the 200 East Area groundwater operable units on the Central Plateau.

over 2 Billion gallons of groundwater to minimize the spread of groundwater contamination and potential for contamination reaching the Columbia River.

- Obtain the Interim Record of Decision for the 200 East Area (C Tank Farm Area) groundwater operable units on the Central Plateau.

of Waste Management Area C, in support of Direct Feed Low-Activity Waste.

- Make significant progress towards the Cumulative Impact Evaluation Model development enabling more efficient remediation of the Central Plateau.
 - Complete the Comprehensive Environmental Response, Compensation and Liability Act decision documentation necessary to implement an Interim Record of Decision for the 200 East Area (C Tank Farm Area) groundwater operable units on the Central Plateau.
 - Support monitoring well drilling across all the Operable Units and continues to meet Tri-Party Agreement M-24 Resource Conservation and Recovery Act Well Drilling Commitments.
-

Hanford Site Wide Services (PBS: RL-0201)

Overview

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

This PBS scope includes services and projects to ensure safe and secure daily operations on the 586-square-mile Hanford Site. The Richland Operations Office provides these Hanford Site landlord services. These site services support cleanup activities at both the Richland Operations Office and the Office of River Protection, as well as the science and research mission of the Pacific Northwest National Laboratory, which also includes General Plant Projects as well as direct maintenance and repair that are applicable to these areas. These integrated infrastructure services and projects include, but are not limited to, roads and transportation services; electrical and water services; facility maintenance; network and software engineering; and records management.

Hanford Site Wide Services (PBS: RL-0201)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$353,335,000	\$358,335,000	+\$5,000,000
<ul style="list-style-type: none"> • Supports contracted services for occupational health, Information Technology support; performance assessment activities; records management; general services such as custodial; land management; regulatory grants, permits, and fees; litigation support; Tribal commitments; National Historic Preservation Act compliance; and rent. • Supports safe operations and site services necessary to maintain functionality of required site infrastructure; fire protection; emergency management services; physical control of government property and equipment; services including, but not limited to, utilities and other functions; safety, environmental, health, and training; business services; and information management. 	<ul style="list-style-type: none"> • Supports contracted services for occupational health; Information Technology support; performance assessment activities; records management; and general services such as custodial, land management, regulatory grants, permits, and fees, litigation support, Tribal involvement and training, National Historic Preservation Act compliance, and rent. • Supports safe operations and site services necessary to maintain functionality of required site infrastructure; fire protection; emergency management services; physical control of government property and equipment; services including, but not limited to, utilities and other functions; safety, environmental, health, and training; business services; and information management. 	<ul style="list-style-type: none"> • The increase provides additional services and capacity through Tribal grants. Other significant changes include the establishment of two construction projects (22-D-401 and 22-D-402) previously funded as General Plant Projects.

- Supports site infrastructure requirements in support of Direct Feed Low Activity Waste commissioning and start-up.
 - Supports other Hanford infrastructure operations and services required to transition the site to 24/7 nuclear operations.
-

- Supports site infrastructure requirements in support of Direct Feed Low Activity Waste commissioning and start-up.

Richland Community and Regulatory Support (PBS: RL-0100)

Overview

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

The scope of this PBS includes stakeholder support and assistance payments. The activities included in this PBS are: 1) grants to Washington State and Oregon State; and 2) funding to support the Hanford Advisory Board and related activities. This PBS scope will end upon completion of the Hanford EM mission.

Richland Community and Regulatory Support (PBS: RL-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$8,621,000	\$5,121,000	-\$3,500,000
<ul style="list-style-type: none">Support Washington and Oregon States' emergency preparedness, environmental oversight, Hanford Advisory Board, and Payment in Lieu of Taxes.	<ul style="list-style-type: none">Support Washington and Oregon States' emergency preparedness, environmental oversight, and Hanford Advisory Board.	<ul style="list-style-type: none">The decrease reflects elimination of payment in lieu of tax payments.

Nuclear Facility D&D-Remainder of Hanford (PBS: RL-0040)

Overview

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

This PBS scope includes implementation of various Hanford Site cleanup initiatives: cleanup of radioactivity and chemical contamination in about 1,000 waste sites with potential impact to groundwater and approximately 500 facilities primarily on the Central Plateau. Life-cycle work scope includes: decontamination, decommissioning, dismantlement, and disposition of surplus facilities (including canyon facilities - B Plant, T Plant, U Plant, PUREX, and REDOX); remediation of all 200 Area waste sites containing large inventories of 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; safe operation of facilities awaiting deactivation and demolition; and maintenance and repair of system infrastructure. Following the assessment activities for the Central Plateau through the remedial decision process under PBS RL-0030, remedial design and implementation will be performed under PBS RL-0040. This PBS scope includes the physical cleanup of these waste sites and facilities.

Nuclear Facility D&D-Remainder of Hanford - 2035 (PBS: RL-0040)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$101,044,000	\$24,000,000	-\$77,044,000
<ul style="list-style-type: none"> Support surveillance and maintenance activities necessary to ensure safety for waste sites and surplus facilities on Hanford's Central Plateau. Also supports project management functions that includes: Environment, Safety and Health oversight, quality management, safety and job hazards analysis, technical support, and integration with site activities. Supports Facilities Risk Mitigation activities (e.g. below grade stabilization activities, canyon hazards removal activities, etc.). Supports deactivation, decontamination, decommissioning, and demolition (D4) of structures located in the Hanford 200 West Area. 	<ul style="list-style-type: none"> Support surveillance and maintenance activities necessary to ensure safety for waste sites and surplus facilities on Hanford's Central Plateau. Also supports project management functions that includes: Environment, Safety and Health oversight, quality management, safety and job hazards analysis, technical support, and integration with site activities. 	<ul style="list-style-type: none"> Reduction reflects completion of near term crib stabilization and holding tank risk reduction activities.

Nuclear Facility D&D-River Corridor Closure Project (PBS: RL-0041)

Overview

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

The River Corridor Closure Project addresses the remediation of contaminated soils and facilities adjacent to the Columbia River. This project will remediate waste sites; deactivate, decontaminate, decommission, and demolish associated facilities; and place the old production reactors in an interim safe storage condition until a final decision is made addressing reactor disposition. Remediation activities are being conducted in accordance with Comprehensive Environmental Response, Compensation, and Liability Act Interim Action Records of Decision. The River Corridor is divided into four major sub-areas: (1) 100 Area, comprised of shutdown plutonium production reactors, support facilities, and burial grounds; (2) 300 Area, comprised of former reactor fuel fabrication, research and development, and support facilities; (3) the support complex in the 400 Area, comprised of a small number of former maintenance and storage facilities and waste sites located outside of the Fast Flux Test Facility reactor protected area; and (4) 600 Area, comprised of the remaining 618-11 burial grounds located between the 100 and 300 Areas, and vacant land extending from the Columbia River to the Central Plateau in the middle of the Site.

Nuclear Facility D&D-River Corridor Closure Project (PBS: RL-0041)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$131,435,000	\$172,000,000	+\$40,565,000
<ul style="list-style-type: none"> • Provide operations and maintenance support to maintain the K West Basin, a Category 2 nuclear facility, in a safe and compliant manner. Support surveillance and maintenance activities. • Continue Risk Mitigation activities for deteriorating structures. • Support remediation of the highly contaminated 300-296 waste site under the 324 building. 	<ul style="list-style-type: none"> • Provide operations and maintenance support to maintain the K West Basin, a Category 2 nuclear facility, in a safe and compliant manner. Supports surveillance and maintenance activities. Continue to support operations necessary to provide for safe and compliant monitoring of the 324 Building. • Complete 324 Building structural modifications, cutting and removal of the B-cell floor and initiating 300-296 waste site remote remediation. • Complete 105 K West Fuel Storage Basin above and below water debris disposition and 	<ul style="list-style-type: none"> • The increase supports the completion of 105KW Fuel Storage Basin above and below water debris disposition and deactivation activities to prepare for the basin dewatering. Also supports progress toward the interim safe stabilization (ISS) of the 105KE reactor and continued progress toward completing the 100K area waste site remediation in close proximity to the Columbia River.

deactivation activities to prepare for the basin dewatering.

- Progress toward 105 K East Reactor Interim Safe Storage (ISS).
 - Continue completion of the 100K Area east side waste sites remediation, backfill and final closure.
-

Safeguards and Security (PBS: RL-0020)

Overview

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

The Safeguards and Security Program at the Hanford Site protects nuclear materials, equipment, information, facilities, and supports the Hanford remediation and cleanup programs. These activities provide for overall site access security and protection of personnel and government property as part of EM's overall landlord responsibilities for the 586 square mile Hanford Site.

Safeguards and Security (PBS: RL-0020)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$96,300,000	\$96,300,000	+\$0
<ul style="list-style-type: none"> • Provide services within the Safeguards and Security programs for the Hanford Site, including protection of Category I Spent Nuclear Material. Safeguards and Security services are provided for both the Richland Operations Office and the Office of River Protection, including Protection Program Management, Emergency Response, Physical Security, Information Protection, Protective Force, Personnel Security, Cyber Security and Nuclear Material Control and Accountability. • Support Design Basis Threat, Cybersecurity, and Industrial Controls activities to address evolving threats and requirements. 	<ul style="list-style-type: none"> • Provide services within the Safeguards and Security programs for the Hanford Site, including protection of Category I Spent Nuclear Material. Safeguards and Security services are provided for both the Richland Operations Office and the Office of River Protection, including Protection Program Management, Emergency Response, Physical Security, Information Protection, Protective Force, Personnel Security, Cyber Security and Nuclear Material Control and Accountability. • Support Design Basis Threat, Cybersecurity, and Industrial Controls activities to address evolving threats and requirements. 	<ul style="list-style-type: none"> • No change.

Nuclear Facility D&D-Fast Flux Test Facility Project (PBS: RL-0042)

Overview

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

This PBS scope includes deactivation and decommissioning of 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 260,000 gallons of bulk sodium by conversion to sodium hydroxide for use by the Waste Treatment Plant; and the shutdown of Fast Flux Test Facility auxiliary systems.

The Fast Flux Test Facility Project has completed the sodium drain from the Fast Flux Test Facility to the Sodium Storage Facility, stored the reactor nuclear fuel and placed the facility in long-term surveillance and maintenance.

Nuclear Facility D&D-Fast Flux Test Facility Project (PBS: RL-0042)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$2,500,000	\$3,100,000	+\$600,000
<ul style="list-style-type: none"> Support long-term safe and compliant surveillance and maintenance for Fast Flux Test Facility and support facilities, which also includes residual and stored bulk sodium at the Fast Flux Test Facility. 	<ul style="list-style-type: none"> Support long-term safe and compliant surveillance and maintenance for Fast Flux Test Facility and support facilities, which also includes residual and stored bulk sodium at the Fast Flux Test Facility. 	<ul style="list-style-type: none"> No significant change.

**Richland
Capital Summary (\$K)**

Pursuant to Section 3121 of the Ike Skelton National Defense Authorization Act for FY 2011 (P.L. 111-383), notification is being provided for general plant projects with a total estimated cost of more than \$5 million planned for execution between FY 2021 and FY 2022.

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Capital Operating Expenses Summary (including (Major Items of Equipment (MIE))

Capital Equipment > \$500K (including MIE)	0	0	0	0	0	0	0
Plant Projects (GPP and IGPP) (<\$20M)	94,640	29,429	25,931	23,612	7,871	31,409	+23,538
Total, Capital Operating Expenses	94,640	29,429	25,931	23,612	7,871	31,409	+23,538

General Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <\$20M)

<u>Richland</u>							
Cesium and Strontium Capsule Project Cask Storage Area	17,500	3,500	8,000	7,057	6,000	0	-6,000
Construct Integrated Disposal Facility (IDF) (DFLAW priority)	13,965	3,965	10,000	10,227	0	0	0
L-707, Advanced Electrical Metering ^a	2,855	60	1,212	59	0	1,583	+1,583
L-781, 181D Vertical Turbine Pumps, Header, Instrumentation, Commission ^a	4,366	678	702	0	0	2,986	+2,986
L-819, High Capacity Fiber Optic (300 Area Central Plateau) ^a	163	0	0	0	0	163	+163
L-826, 181B Vertical Turbine Pumps, Header, Instrumentation, Commission ^a	2,882	642	720	0	0	1,520	+1,520
L-838, Water Feeds to 622R, 6608 Facility and 200 W Sewer Lagoons ^a	144	0	0	0	0	144	+144
L-849, Replace 200E 1.1M Gallon PW Tank ^a	1,677	802	668	62	0	207	+207
L-850, Replace 200W 1.1M Gallon PW Tank (DFLAW Priority) ^a	11,106	843	1,323	722	1,871	7,069	+5,198
L-854, 200E Sewer Consolidations (DFLAW Priority) ^a	4,968	4,968	0	840	0	0	0
L-894, Raw Water Cross Connection Isolation 200E/W ^a	6,293	6,129	0	792	0	164	+164
L-895, Fire Protection Infrastructure for Plateau Raw Water ^a	10,135	7,366	2,769	3,853	0	0	0

**Environmental Management/
Richland**

FY 2022 Congressional Budget Justification

	Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
L-906, HFD Station 92 Extension ^a	756	476	280	0	0	0	0
L-907, Fleet Complex Site Development	12,182	0	257	0	0	11,925	+11,925
L-908, Auto/Truck Shop and Storage	569	0	0	0	0	569	+569
L-909, Heavy Equipment Shop and Storage	916	0	0	0	0	916	+916
L-927, Sanitary Water Cross Line between 200E and 200W (DFLAW)	4,163	0	0	0	0	4,163	+4,163
Total, Richland	94,640	29,429	25,931	23,612	7,871	31,409	+23,538
Total, Capital Summary	94,640	29,429	25,931	23,612	7,871	31,409	+23,538

^a These capital investments represent expenditures that may be performed between FY 2021 and FY 2022 based on emerging risks.

.Richland
Construction Projects Summary (\$K)

	Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
18-D-404, Modification of Waste Encapsulation and Storage Facility							
Total Estimate Cost (TEC)	35,800	7,500	11,000	1,188	15,000	0	-15,000
Other Project Costs (OPC)	12,500	4,500	0	993	0	8,000	+8,000
Total Project Cost (TPC) 18-D-404	48,300	12,000	11,000	2,181	15,000	8,000	-7,000
22-D-401, 400 Area Fire Station							
Total Estimate Cost (TEC)	19,400	0	200	200	2,200	13,900	+11,700
Other Project Costs (OPC)	3,100	1,300	1200	1200	200	1,300	+1,100
Total Project Cost (TPC) 22-D-401^a	22,500	1,300	1,400	1,400	2,400	15,200	+12,800
22-D-402, Central Plateau Water Treatment Facility							
Total Estimate Cost (TEC)	22,200	0	200	200	10,800	7,800	-3,000
Other Project Costs (OPC)	9,800	2,000	1,200	1,200	100	5,000	+4,900
Total Project Cost (TPC) 22-D-402^a	32,000	2,000	1,400	1,400	10,900	12,800	+1,900

^aThese projects became construction line items in FY 2022. Previously, they were General Plant Projects.

18-D-404, Modification of Waste Encapsulation and Storage Facility
Hanford, Richland, WA
Project is for Design and Construction

1. Summary, Significant Changes and Schedule and Cost History

Summary:

Line Item funding is requested for Waste Encapsulation and Storage Facility (WESF) modifications to facilitate the radioactive cesium/strontium (Cs/Sr) capsule transfer system. This includes modifications for the transfer system and welding operations to seal the containers.

The FY 2022 Request for the Modification of Waste Encapsulation and Storage Facility is \$8,000,000.

The scope for this project change was approved on March 17, 2017, with a Total Project Cost of \$41,500,000. This was a change from the CD-0 approved on November 5, 2015, which reflected a preliminary cost range of \$93,000,000 to \$150,000,000. CD-2/3 was approved on January 8, 2021 and the TPC was revised to \$48,300,000.

Significant Changes:

This Construction Project Data Sheet is an update of the FY 2020 Construction Project Data Sheet and does not represent a new start for the budget year.

Line Item funding is being requested for Waste Encapsulation and Storage Facility modifications to facilitate the radioactive cesium/strontium (Cs/Sr) capsule transfer system. This Construction Project Data Sheet is an updated submittal for the design and construction funding required for Waste Encapsulation and Storage Facility modifications.

A Federal Project Director at the appropriate level has been assigned to this project and the Federal Project Director has approved this Construction Project Data Sheet.

Critical Milestone History

Fiscal Year (FY)	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4	D&D Complete
FY 2018 Request	11/5/2015	3QFY2017	4Q FY2018	TBD	TBD	TBD	TBD	N/A
FY 2019 Request	11/5/2015	4QFY2017	2QFY2018	TBD	TBD	TBD	TBD	N/A
FY 2020 Request	11/5/2015	4QFY2017	2QFY2018	1QFY2020	2QFY2019	1QFY2020	TBD	N/A
FY 2022* Request	11/5/2015	7/18/2017	2/7/2018	1/8/2021	6/17/2019	1/8/2021	3QFY2024	N/A

*FY 2021 request not submitted

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 Completion

D&D Start – Start of Decommissioning and Decontamination (D&D) work

**Environmental Management/
Richland/18-D-404 Modification of
Waste Encapsulation and Storage Facility,
Richland, WA (PBS RL-0013C)**

FY 2022 Congressional Budget Justification

D&D Complete – Completion of Decommissioning and Decontamination work

Notes:

No construction excluding approved long-lead procurement will be performed until the project's performance baseline has been updated and CD-3 has been approved.

Project Cost History

	(dollars in thousands)						
	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2018 Request	7,500	27,000	34,500	7,000	0	7,000	41,500
FY 2019 Request	7,500	27,000	34,500	7,000	0	7,000	41,500
FY 2020 Request	7,500	26,000	33,500	8,000	0	8,000	41,500
FY 2022* Request	7,500	28,300	35,800	12,500	0	12,500	48,300

*FY 2021 request not submitted

2. Project Scope and Justification

Scope:

The scope of the Management of the Cesium and Strontium Capsules Project includes the activities required to achieve safe, compliant, and cost-effective interim dry storage of the 1,936 cesium and strontium capsules currently stored at Waste Encapsulation and Storage Facility. Waste Encapsulation and Storage Facility cannot provide a continued capability to manage the capsules for an extended period of time. This line item construction project supports the mission need by equipping Waste Encapsulation and Storage Facility to remove the capsules.

The scope of the Waste Encapsulation and Storage Facility modifications line item includes the following activities to support interim dry storage of the capsules currently stored at the Waste Encapsulation and Storage Facility:

- Design and completion of modifications necessary to support capsule retrieval, packaging, and transfer of capsules from the Waste Encapsulation and Storage Facility.
- Project and construction management, preparation of any required regulatory documents/permits and safety analyses, testing and system startup.

Justification:

This project is being conducted in accordance with DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets. The modifications are needed in order to remove the capsules from the Waste Encapsulation and Storage Facility pools for safety reasons.

3. Financial Schedule

(dollars in thousands)

Appropriations	Obligations	Costs
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Total Estimated Cost (TEC)

Design			
FY 2018	6,500	6,500	6,500
FY 2019	1,000	1,000	1,000
Total, Design	7,500	7,500	7,500

Construction			
FY 2020	11,000	11,000	11,000
FY 2021	15,000	15,000	15,000
FY 2022	0	0	0
Outyears	2,300	2,300	2,300

Total, Construction	28,300	28,300	28,300
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TEC

FY 2018	6,500	6,500	6,500
FY 2019	1,000	1,000	1,000
FY 2020	11,000	11,000	11,000
FY 2021	15,000	15,000	15,000
FY 2022	0	0	0
Outyears	2,300	2,300	2,300
Total TEC	35,800	35,800	35,800

Other Project Cost (OPC)

OPC except D&D

FY 2017	2,000	2,000	2,000
FY 2018	500	500	500
FY 2019	2,000	2,000	2,000
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	8,000	8,000	8,000
Outyears	0	0	0

Total OPC except D&D	12,500	12,500	12,500
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Total Project Cost (TPC) (Line Item only)

FY 2017	2,000	2,000	2,000
FY 2018	7,000	7,000	7,000
FY 2019	3,000	3,000	3,000
FY 2020	11,000	11,000	11,000
FY 2021	15,000	15,000	15,000
FY 2022	8,000	8,000	8,000
Outyears	2,300	2,300	2,300
	48,300	48,300	48,300

**Environmental Management/
Richland/18-D-404 Modification of
Waste Encapsulation and Storage Facility,
Richland, WA (PBS RL-0013C)**

FY 2022 Congressional Budget Justification

4. Details of Project Cost Estimate

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	6,500	6,500	6,500
Contingency	1,000	1,000	1,000
Total, Design	7,500	7,500	7,500
Construction			
Equip/Construction	26,000	26,000	26,000
Contingency	2,300	0	2,300
Total, Construction	28,300	26,000	28,300
Total, TEC	35,800	33,500	35,800
Contingency, TEC	2,300	0	2,300
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Design	12,500	12,500	12,500
Support	0	0	0
Contingency	0	0	0
Total, OPC	12,500	12,500	12,500
Contingency, OPC	0	0	0
Total, TPC	48,300	46,000	48,300
Total Contingency	3,300	0	3,300

5. Schedule of Appropriation Requests

		(\$K)								
		Prior Years	FY2017	FY2018	FY2019	FY 2020	FY 2021	FY 2022	Outyears	Total
FY 2018 Request	TEC	0	0	6,500					TBD	TBD
	OPC	0	2,000	500					TBD	TBD
	TPC	0	2,000	7,000					TBD	TBD
FY 2019 Request	TEC	0	0	6,500	1,000				TBD	TBD
	OPC	0	2,000	500	0				TBD	TBD
	TPC	0	2,000	7,000	1,000				TBD	TBD
	TEC	0	0	6,500	1,000	11,000			TBD	TBD

FY 2020 Request	OPC	0	2,000	500	2,000	0			TBD	TBD
	TPC	0	2,000	7,000	3,000	11,000			TBD	TBD
FY 2022* Request	TEC	0	0	6,500	1,000	11,000	15,000	0	2,300	35,800
	OPC	0	2,000	500	2,000	0	0	8,000	0	12,500
	TPC	0	2,000	7,000	3,000	11,000	15,000	8,000	2,300	48,300

*FY 2021 request not submitted

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	FY 2024
Expected Useful Life (number of years)	2 years
Expected Future Start of D&D of this capital asset (fiscal quarter)	FY 2028

The facility housing the WESF Mods is the Waste Encapsulation and Storage Facility (WESF) that must maintain operations during the Cs/Sr capsule transfer operations.

The modifications will be used for operations to transfer the Cs/Sr capsules from the existing location in the WESF basin to a dry storage pad.

(dollars in thousands)				
	Annual Costs		Life Cycle Costs (based on 35-year period)	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Storage Operations	9,950	9,950	19,900	19,900
Utilities	0	0	0	0
Maintenance & Repair	0	0	0	0
Total	9,950	9,950	19,900	19,900

7. D&D Information

There is no new area being constructed in this construction project.

The location of this construction project is an environmental management closure site and, therefore, is exempt from the "one-for-one" requirement.

8. Acquisition Approach

To complete this project safely and in the most cost-effective manner, DOE will direct the plateau remediation prime contractor to perform and manage this work. This approach makes the best use of site expertise and efficiently uses the existing contract. Continuity of design will be ensured by making a provision in the new plateau clean-up contract for assignment of the scope, regardless of the timing of a contract turnover.

The plateau remediation contractor organization will serve as the Design Authority responsible for establishing the design requirements and ensuring that design output documents accurately reflect the design basis. The Design Authority is responsible for design control and ultimate technical adequacy of the design process. These responsibilities are applicable whether the process is conducted fully in-house, partially contracted to outside organizations, or fully contracted to outside

organizations. The Design Authority will carefully control and monitor each design tier to ensure the design inputs, design constraints, design analysis and calculations, and design requirements are identified, accurate, complete, and documented.

Subcontracts will be competitively awarded by the plateau remediation contractor for multiple work scopes to provide best value to the government. Various subcontractors will be used for support services such as technology development, permitting, and safety documentation. Subcontracting strategies for these services are to be determined based on the circumstances and work scope of each critical decision.

**22-D-401, 400 Area Fire Station
Hanford, Richland, WA
Project is for Design and Construction, Commissioning, Turnover and Readiness**

1. Summary, Significant Changes and Schedule and Cost History

Background:

Line Item funding is requested for the 400 Area Fire Station to facilitate construction of a new 400 Area Fire Station. The new fire station will allow consolidation of several facilities into a new facility to be built in the 400 Area of the Hanford Site. The facility will provide space to store and maintain six emergency vehicles and provide administrative facilities for 24/7 operations of the facilities for up to 12 individuals. This Construction Project Data Sheet (PDS) is the initial submittal for the funding required for 400 Area Fire Station.

In 2016, a Business Case Analysis was performed and documented in HNF-59746, Business Case Analysis For 400 Area Fire Station was prepared and issued. As a result of the Business Case, the Project L-888, 400 Area Fire Station was identified and initiated in FY 2018. At that time, the Project underwent a Capitalization Determination based on the scope and preliminary rough order of magnitude cost estimate generated to support Project Initiation activities. The Capital Determination documented that the L-888 Project would be minor construction.

As the Project has progressed, the cost has increased. Based on recent estimations, the Total Project Cost (TPC) for the fire station now exceeds the minor construction threshold (50 USC 2743), which requires specific authorization and management as a line item Project. This Project will be executed consistent with DOE Order 413.3B.

Summary:

This is the initial submittal of a PDS for this Project. This PDS includes actual costs of \$1,800,000 for work performed to date and the estimated cost of \$2,400,000 planned for FY 2021 as part of the reportable minor construction, which combined with the requested Line Item funding to equal the Total Project Cost (TPC) of \$22,500,000. FY 2018 through FY 2021 costs will not be part of the Line Item Request, but will be included in this PDS to reflect the complete, TPC, of this project. Only FY 2022 through Project completion estimated costs will be part of the Line Item Request.

As noted above, the Project began as a reportable minor construction project and was submitted to Congress as part of the Integrated Facilities and Infrastructure Cross Cut Budget in 2017.

This cost information provided within this PDS does not include a range because the Project was baselined while it was a minor construction project. In addition, the Project will baseline as a Capital Asset Line Item Project as part of the CD-2/3 review and approval process.

A Federal Project Director at the appropriate level has been assigned to this project since its inception as a minor construction project and the Federal Project Director has approved this Construction PDS.

Significant Changes:

This Construction PDS is an initial submittal and does not represent a new start for the budget year. It is the initial submittal as the Project initiated as a Reportable GPP but has experienced growth in the TPC and will now be managed as a Capital Asset Line Item Project.

Critical Decision History

Fiscal Year (FY)	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4	D&D Complete
FY 2022 Request	N/A - See Note below		N/A - See Note below		9/17/20	3QFY2021	6/16/24	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Completion

D&D Start – Start of Decommissioning and Decontamination (D&D) work

D&D Complete – Completion of Decommissioning and Decontamination work

Notes:

A Critical Decision Implementation Strategy has been developed and approved that requires the generation of a Decision Memorandum. The purpose of the Decision Memorandum is to obtain EM-2 approval of mission need for the 400 Area Fire Station and to designate the Project Management Executive for future Critical Decisions. In addition, the Critical Decision Implementation strategy requires the development, submittal and approval of a combined CD-2/3 package. The approved CD-2/3 package will establish the Project baseline as a Line Item Capital Project and approve the Start of Construction for the Project. The strategy identifies what the contents of a CD-2/3 and CD-4 package will be and who the PME or PMEs for CD-2/3 and 4 approval will be.

Project Cost History

FY 2022 Request	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
	200	19,200	19,400	3,100	N/A	3,100	22,500

2. Project Scope and Justification

Scope:

The scope of the 400 Area Fire Station Project has or will provide planning, design, construction, testing, commissioning and readiness for a new 400 Area Fire Station. The new fire station will accommodate 24/7 operations for the Hanford Fire Department (HFD) staff and emergency response apparatus. The fire station will provide the following:

- Vehicle bays to support six emergency response vehicles; supporting features include drive through bays, overhead apparatus water recharge, facility supplied equipment air, wireless data connections for vehicle-borne data transferal, a floor drain system and an automatically actuated vehicle exhaust system.
- An area to test, decontaminate, and maintain emergency response equipment.
- Day shift functional space. This space will include day-shift administrative offices, a combined training and conference area, an office for fire protection system Inspection, Testing and Maintenance personnel, and bathrooms compliant with the American's with Disabilities Act of 1990.
- Living areas to accommodate 24-hour shift personnel, with 12 HFD personnel per shift. This will include dormitory rooms and office/training spaces for on-shift personnel, kitchen and dining area, study/administrative work space, physical training space, showers and lavatories, and a storage area for janitorial and laundry supplies.

- Support electrical and communication equipment for continuity of station operation. This includes required emergency response, voice, and information technology communications equipment, facility electrical service, an emergency backup generator, and provisions for temporary uninterruptable power electrical supply.
- Storage to support emergency operations, including a secure and compliant environmentally controlled spaces for medical supplies, response equipment, and firefighting protective ensembles, in addition to the general storage-specific areas.
- Self-Contained Breathing Apparatus cylinder recharge area and ancillary storage of breathing air cylinders.
- Access to Hanford Site roads and parking to accommodate staff members' privately owned vehicles.

The foregoing represents the key performance parameters for this project.

Justification:

The 400 Area Fire Station supports the strategic evolution of the longer-term HFD configuration to meet the Hanford Site mission needs. Emergency response assets for this specific area of the Hanford site are currently deployed in a facility originally commissioned in 1965 that is in a rapidly deteriorating state of operational habitability. Critical facility systems, including cooling, gas boiler, and building electrical circuits, are failing, and additional failures may render the facility uninhabitable. Alarm systems are unreliable to the extent that firefighters rely on individual battery-powered radios in their sleeping quarters to alert them for a nighttime response. Supporting systems such as water piping and sewer are severely corroded, degraded, and intermittently failing, which creates sanitation problems and requires frequent cleaning. Additionally, multiple aged ancillary facilities are required to support the current fire station, and those facilities are in a state of degraded functional reliability. This project will consolidate three separate facilities and many associated temporary storage units into one purpose-built facility that complies with all current codes and standards for survivability and sustainability. The investment required to maintain the existing primary and supporting facilities is rapidly escalating due to recurring outages and failures of the heating, cooling, electrical, and drainage systems.

This Fire Station is part of the overall plan to remove deteriorating infrastructure and replace it with strategically located new facilities. Replacement enables the execution of several priorities for the site, including footprint reduction by relocating out of the 300 Area, and significantly faster response to the operational facilities and contaminated wildlands on or near the Central Plateau. In particular, the Waste Treatment and Immobilization Plant (WTP) will have a second alarm response time reduced by about 35%. It will also provide closer proximity to the primary commuting corridor, reducing average time to respond to motor vehicle crashes and medical emergencies on site.

3. Financial Schedule

(dollars in thousands)			
	Appropriations ¹	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	200	200	200
Total, Design	200	200	200
Construction			
FY 2020	300	300	300
FY 2021	2,200	2,200	2,200
FY 2022	13,900	13,900	13,900
Outyears	2,800	2,800	2,800
Total, Construction	19,200	19,200	19,200
TEC			
FY 2020	300	300	300

Environmental Management/
Richland/22-D-401 400 Area
Fire Station, Richland, WA

(dollars in thousands)			
	Appropriations ¹	Obligations	Costs
FY 2021	2,400	2,400	2,400
FY 2022	13,900	13,900	13,900
Outyears	2,800	2,800	2,800
Total TEC	19,400	19,400	19,400
Other Project Cost (OPC)			
OPC except D&D			
FY 2018	200	200	200
FY 2019	1,100	1,100	1,100
FY 2020	200	200	200
FY 2021	0	0	0
FY 2022	1,300	1,300	1,300
Outyears	300	300	300
Total OPC except D&D	3,100	3,100	3,100
Total Project Cost (TPC) (Line Item only)			
FY 2018	200	200	200
FY 2019	1,100	1,100	1,100
FY 2020	500	500	500
FY 2021	2,400	2,400	2,400
FY 2022	15,200	15,200	15,200
Outyears	3,100	3,100	3,100
	22,500	22,500	22,500

Appropriations for FY2018-2021 are Operating Expense funds.

4. Details of Project Cost Estimate

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design	200	200	200
Contingency	0	0	0
Total, Design	200	200	200
Construction	19,200	19,200	19,200
Contingency	0	0	0
Total, Construction	19,200	19,200	19,200
Total, TEC	19,400	19,400	19,400
Contingency, TEC	0	0	0
Other Project Cost (OPC)			
OPC except D&D	200	200	200
Design	1,300	1,300	1,300
Total, OPC	1,500	1,500	1,500
Contingency, OPC	1,600	1,600	1,600
Total, TPC	22,500	22,500	22,500
Total Contingency	1,600	1,600	1,600

**Environmental Management/
Richland/22-D-401 400 Area
Fire Station, Richland, WA**

FY 2022 Congressional Budget Justification

5. Schedule of Appropriation Requests

		(\$K)							
		Prior Years	FY2018	FY2019	FY2020	FY 2021	FY 2022	Outyears	Total
FY 2022 Request	TEC	0	0	0	300	2,200	13,900	2,800	19,400
	OPC	0	200	1,100	200	200	1,300	300	3,100
	TPC	0	200	1,100	500	2,400	15,200	3,100	22,500

- Note: FY 2018 – FY 2021 appropriations not previously requested as part of Capital Line Item. As noted above, project has been proceeding as a reportable minor construction project and therefore funds were provided as part of operating budget.

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4 th Quarter FY 2023
Expected Useful Life (number of years)	30 years
Expected Future Start of D&D of this capital asset (fiscal quarter)	4 th Quarter FY 2053

(dollars in thousands)

	Annual Costs		Life Cycle Costs (based on 35-year period)	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Storage Operations	649	649	35,827	35,827
Utilities	14	14	781	781
Maintenance & Repair	319	319	17,598	17,598
Total	982	982	54,206	54,206

7. D&D Information

There is no new area being constructed in this construction project.

The location of this construction project is an environmental management closure site and, therefore, is exempt from the “one-for-one” requirement.

8. Acquisition Approach

To complete this project safely and in the most cost-effective manner, DOE has directed the Hanford Infrastructure prime contractor to perform and manage this work. This approach makes the best use of site expertise and efficiently uses the existing contract.

The Hanford Infrastructure prime contractor organization has and will serve as the Design Authority responsible for establishing the design requirements and ensuring that design output documents accurately reflect the design basis. The Design Authority is responsible for design control and ultimate technical adequacy of the design process. These responsibilities are applicable whether the process is conducted fully in-house, partially contracted to outside organizations, or fully contracted to outside organizations. The Design Authority will carefully control and monitor each design tier to ensure the design inputs, design constraints, design analysis and calculations, and design requirements are identified, accurate, complete, and documented.

Subcontracts have been and continue to be competitively awarded by the Hanford Infrastructure prime contractor.

Awarded subcontracts include:

1. Design: The final design for the facility has been completed, approved and issued.
2. Subcontracting strategies for any other services will be determined based on the circumstances and work scope of each critical decision.

**22-D-402, Central Plateau Water Treatment Facility
Hanford, Richland, WA
Project is for Design and Construction, Commissioning, Turnover and Readiness**

1. Summary, Significant Changes and Schedule and Cost History

Background:

This is an existing minor construction that the cost is expected to exceed the minor construction threshold (50 USC 2743). This Project Data Sheet (PDS) is requesting Project Management authority for the entire Project (FY 2018 through Project Closeout) as a Line Item Project. In addition, the PDS is requesting Line Item Funding for FY 2022 through completion of the Project. Line Item funding is being requested for the Central Plateau Water Treatment Facility to facilitate construction of a new water treatment facility that will supply 3.5 Million gallons of treated water per day. The facility will provide treated water to the Hanford Central Plateau, supporting fire suppression, process operations, and domestic use as well as reducing operational risks to the Direct-Feed Low Activity Waste facility. This Construction Project Data Sheet is the initial submittal for the funding required for 200 Area Water Treatment Facility.

In 2016, a Business Case Analysis was performed and documented in HNF-59975, Business Case Analysis For Hanford Potable Water Treatment Technology Selection. As a result of the Business Case, recommendations were made including performing a filtration system pilot study to support final filtration technology selection and building a replacement water treatment facility.

As a result of the Business Case, the L-897 Project, Central Plateau Water Treatment Facility was identified and initiated in FY 2017. At that time, the Project underwent a Capitalization Determination based on the scope and preliminary rough order of magnitude cost estimate generated to support Project Initiation activities. The Capital Determination documented that the L-897 Project would be a Reportable General Plant Project. Since that time, the Project has completed design and has awarded a subcontract via a competitive procurement for the Construction of the facility.

As the Project has progressed, the cost has increased. Based on recent estimations, the Total Project Cost for the facility is approaching the minor construction threshold, which requires specific authorization and management as a Line Item Project. This Project will be executed consistent with DOE Order 413.3B.

Summary:

This is the initial submittal of a PDS for this Project. This PDS includes actual costs of \$3,400,000 for work performed to date and the estimated cost of \$10,900,000 planned for FY 2021 as part of the Reportable minor construction project, which combined with the requested Line Item funding to equal the Total Project Cost (TPC) of \$32,000,000. FY 2018 through FY 2021 costs will not be part of the Line Item Request, but will be included in this PDS to reflect the complete, TPC, of this project. Only FY 2022 through Project completion estimated costs will be part of the Line Item Request.

As noted above, the Project began as reportable minor construction project and was submitted to Congress as part of the Integrated Facilities and Infrastructure Cross Cut Budget in 2017.

This cost information provided within this PDS does not include a range because the Project was baselined while it was a GPP and has awarded a firm fixed price contract for construction. Further, the Project will baseline as a Capital Asset Line Item Project as part of the CD-2/3 review and approval process.

A Federal Project Director at the appropriate level has been assigned to this project since its inception as a GPP.

Significant Changes:

This Construction Project Data Sheet is an initial submittal and does not represent a new start for the budget year. It is the initial submittal as the Project initiated as a reportable minor construction project but has experienced cost growth and will now be managed as a Capital Asset Line Item Project.

Critical Decision History

Fiscal Year (FY)	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4	D&D Complete
FY 2022 Request	N/A - See Note below	4/16/2018	N/A - See Note below		4/09/2020	3QFY2021	6/19/2023	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Completion

D&D Start – Start of Decommissioning and Decontamination (D&D) work

D&D Complete – Completion of Decommissioning and Decontamination work

Project Cost History

FY 2022 Request	(dollars in thousands)						
	TEC, Design	TEC, Construction	TEC, Total	OPC, Except D&D	OPC, D&D	OPC, Total	TPC
	800	21,400	22,200	9,800	N/A	9,800	32,000

2. Project Scope and Justification**Scope:**

The scope of the 200 Area Water Treatment Facility Project has or will provide planning, design, construction, testing, commissioning and readiness for a new potable water treatment facility on the Hanford Central Plateau. This new facility has been designed and sized to be capable of producing a minimum of 3.5 million gallons per day (MGD) with the ability to expand to 5 MGD, to meet forecasted potable water demand. The new facility will use modular microfiltration hollow fiber direct feed membrane systems for filtration. Successful delivery of 3.5 MGD is the key performance parameter for this project.

Scope includes provisions for potable and export water connections, sewer, electrical, Hanford Local Area Network connection, interior and exterior lighting, fire protection/detection systems and wastewater disposal infrastructure connected to a new facility.

Justification:

The existing Water Treatment Facility (designated as 283W) provides all potable water to the Central Plateau, supporting fire suppression, process operations, and domestic use. The 283W facility was constructed in 1944, the 283W facility has undergone several extensive infrastructure repairs and upgrades to the pretreatment equipment, filter nozzles and media, effluent confirmation and monitoring equipment, chlorination systems, flocculation system and storage clear wells. Despite

these upgrades, some of the facility and internal components are those that were originally installed. The 283W facility continues to deteriorate and repairs and major upgrades are becoming more costly and complex to perform.

In addition to the deteriorating condition, sanitary water peak demands for the Central Plateau are projected to increase beyond the capacity of 283W, which is currently limited at 2.1 MGD or 1,500 gpm. The 283W facility does have the ability to increase sufficient capacity to support the throughput ramp up of WTP LAW as Direct Feed Low Activity Waste (DFLAW) activities are conducted. However, if a situation arises in which all users of sanitary water need peak demand simultaneously, 283W would not be able to meet that demand. Further, 283W has not frequently run at or near full capacity for any extended period over the last 10 years. Recently, 283W has run two short duration tests (less than 48 hours), in which the facility was operating at 80% or greater of full capacity. However, with the initiation of DFLAW operations, the facility will be required to operate near or at capacity 24 hours a day, 7 days a week.

3. Financial Schedule

(dollars in thousands)			
	Appropriations ¹	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2018	0	0	0
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	800	800	800
Total, Design	800	800	800
Construction			
FY 2020	200	200	200
FY 2021	10,000	10,000	10,000
FY 2022	7,800	7,800	7,800
Outyears	3,400	3,400	3,400
Total, Construction	21,400	21,400	21,400
TEC			
FY 2018	0	0	0
FY 2019	0	0	0
FY 2020	200	200	200
FY 2021	10,800	10,800	10,800
FY 2022	7,800	7,800	7,800
Outyears	3,400	3,400	3,400
Total TEC	22,200	22,200	22,200
Other Project Cost (OPC)			
OPC except D&D			
FY 2018	400	400	400
FY 2019	1,600	1,600	1,600
FY 2020	1,200	1,200	1,200
FY 2021	100	100	100
FY 2022	5,000	5,000	5,000
Outyears	1500	1500	1500
Total OPC except D&D	9,800	9,800	9,800
Total Project Cost (TPC) (Line Item only)			
Environmental Management/ Richland/22-D-402 200 Area Water Treatment Facility, Richland, WA			

	(dollars in thousands)		
	Appropriations ¹	Obligations	Costs
FY 2018	400	400	400
FY 2019	1,600	1,600	1,600
FY 2020	1,400	1,400	1,400
FY 2021	10,900	10,900	10,900
FY 2022	12,800	12,800	12,800
Outyears	4,900	4,900	4,900
	32,000	32,000	32,000

1. Appropriations for FY2018-2021 are Operating Expense funds.

4. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design	800	800	800
Contingency	0	0	0
Total, Design	800	800	800
Construction	21,400	21,400	21,400
Contingency	0	0	0
Total, Construction	21,400	21,400	21,400
Total, TEC	22,200	22,200	22,200
Contingency, TEC	0	0	0
Other Project Cost (OPC)			
OPC except D&D	3,500	3,500	3,500
Design	2,700	2,700	2,700
Contingency	3,600	3,600	3,600
Total, OPC	9,800	9,800	9,800
Contingency, OPC	3,600	3,600	3,600
Total, TPC	32,000	32,000	32,000
Total Contingency	3,600	3,600	3,600

5. Schedule of Appropriation Requests

		(\$K)							
		Prior Years	FY2018	FY2019	FY2020	FY 2021	FY 2022	Outyears	Total
FY 2022 Request	TEC	0	0	0	200	10,800	7,800	3,400	22,200
	OPC	0	400	1,600	1,200	100	5,000	1,500	9,800
	TPC	0	400	1,600	1,400	10,900	12,800	4,900	32,000

- Note: FY 2018 – FY 2021 appropriations not previously requested as part of Capital Line Item. As noted above, project has been proceeding as a reportable GPP and therefore funds were provided as part of operating budget.

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date) 3rd Quarter FY 2022
Expected Useful Life (number of years) 50 years
Expected Future Start of D&D of this capital asset (fiscal quarter) FY 2077

No Operations and Maintenance Funds are included in Line Item request.

(dollars in thousands)

	Annual Costs		Life Cycle Costs (based on 35-year period)	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Storage Operations	2,090	2,090	115,346	115,346
Utilities	36	36	1,967	1,967
Maintenance & Repair	383	383	21,163	121,163
Total	2,509	2,509	138,476	138,476

7. D&D Information

There is no new area being constructed in this construction project.

The location of this construction project is an environmental management closure site and, therefore, is exempt from the "one-for-one" requirement.

8. Acquisition Approach

To complete this project safely and in the most cost-effective manner, DOE has directed the Hanford Infrastructure prime contractor to perform and manage this work. This approach makes the best use of site expertise and efficiently uses the existing contract.

The Hanford Infrastructure prime contractor organization has and will serve as the Design Authority responsible for establishing the design requirements and ensuring that design output documents accurately reflect the design basis. The Design Authority is responsible for design control and ultimate technical adequacy of the design process. These responsibilities are applicable whether the process is conducted fully in-house, partially contracted to outside organizations, or fully contracted to outside organizations. The Design Authority will carefully control and monitor each design tier to ensure the design inputs, design constraints, design analysis and calculations, and design requirements are identified, accurate, complete, and documented.

Subcontracts have been and continue to be competitively awarded by the Hanford Infrastructure prime contractor. Awarded subcontracts include:

3. Design. The final design for the facility has been completed, approved and issued.
4. Construction: The construction subcontract award has been made and submittal pre-mobilization activities have begun.
5. Pall Membrane Filtration Equipment: A non-competitive procurement has been initiated. The Prime Contractor and Subcontractor are negotiating terms and conditions and final pricing prior to award.
6. Third Party Integrator: A competitive Basic Order Agreement (BOA) procurement has been placed for hardware-software integration. Release three (3) of this BOA is planned for this project in FY 2021.

Subcontracting strategies for any other services will be determined based on the circumstances and work scope of each critical decision.

River Protection

Overview

The U.S. Department of Energy, Office of River Protection supports the cleanup of radioactive and chemical waste resulting from the Manhattan Project and Cold War activities. The mission of the Department's Office of River Protection is to retrieve radioactive and chemical waste stored in underground tanks at the Hanford site, treat the waste to standards that are protective of human health and the environment, prepare the waste for permanent disposal, close the tanks, and decommission the treatment facilities. The Office of River Protection manages the cleanup of the Hanford Site associated with the Tank Farms and the Waste Treatment and Immobilization Plant, the remainder of the site cleanup, infrastructure, and services is work managed by the Richland Operations Office. The Office of River Protection and the Richland Operations Office work together to facilitate mutual mission success.

The 586-square-mile Hanford Site is located along the Columbia River in southeastern Washington State and is home to the world's first plutonium production complex. Beginning with the Manhattan Project and throughout the Cold War, Hanford played a pivotal role in providing nuclear materials for the nation's defense programs. However, more than 40 years of plutonium production also yielded a challenging nuclear waste legacy—approximately 56 million gallons of radioactive and chemical waste stored in 177 underground tanks in close proximity to the Columbia River. To date, waste has been retrieved from 17 tanks that are now transitioning towards closure. Hanford tanks contain a complex and diverse mix of radioactive and chemical waste in the form of sludge, salts, and liquids necessitating a variety of unique waste retrieval and treatment capabilities. While the radioactive nature of the waste—with 176 million curies—requires remote-operated equipment and shielded facilities, the uncertainty and diversity of the physical and chemical properties of the approximately 56 million gallons of waste also make the mission among the most challenging in the DOE complex.

The Department is committed to treating all Hanford tank waste safely and effectively and is working to construct and operate the Waste Treatment and Immobilization Plant. Due to technical issues with the Waste Treatment Plant's High-Level Waste and Pretreatment Facilities, the Department shifted to a phased approach in 2014 to the tank waste mission utilizing the Direct Feed Low Activity Waste approach, which sets an executable path forward while increasing accountability and project certainty. The Department is on track to initiate tank waste treatment via the Direct Feed Low Activity Waste approach no later than the end of calendar year 2023. This strategy allows the Department to address the most mobile tank waste in the near term by feeding low-activity waste directly from the tank farms to the Low-Activity Waste Facility, using a Tank-Side Cesium Removal system, filtration and shielded ion exchange system. Beginning some tank waste treatment in the near term will reduce environmental harms and better inform collaboration between the Department and the State of Washington on a safe, viable path forward for all of Hanford's tank waste.

The direct maintenance and repair activities at the Office of River Protection are estimated to be \$96,630,000.

Highlights of the FY 2022 Budget Request

The Office of River Protection FY 2022 budget request supports continued progress toward important cleanup required by the Amended Consent Decree and Tri-Party Agreement. The budget request is focused on the Direct Feed Low Activity Waste approach and key activities necessary to achieve Direct Feed Low Activity Waste operations no later than December 2023. This request also supports safe operations including a robust Tank Integrity Program of the tank farms to protect workers, the public, and the environment; meet regulatory commitments; and enable the development and maintenance of infrastructure necessary to enable waste treatment operations.

The FY 2022 request also includes funding for line-item project "01-D-416, the Waste Treatment and Immobilization Plant (\$666,000,000)." The mission of the Waste Treatment and Immobilization Plant Project is to construct a treatment facility to blend waste from the tank farms with molten glass, which is placed into stainless steel canisters suitable for long-term storage of high-level waste and disposal of low-level waste.

FY 2021 & FY 2022 Key Milestones

The following listing represents key milestones included in the Tri-Party Agreement and the Amended Consent Decree for performance in fiscal years 2021 and 2022.

- (October 2020) M-045-92AD; Submit Yearly Reports Summarizing the Results of Maintenance and Performance Monitoring Activities.
- (November 2020) M-062-40H; Submit System Plan to Ecology.
- (December 2020) D-00A-07; Low-Activity Waste Facility Construction Substantially Complete. ¹
- (January 2021) M-062-50; Submit to Ecology as a Secondary Document, a Mass Balance Flow.
- (March 2021) M-090-14; Submit CD-1 for Facility to Store Spent Ion Exchange Columns Prior to Direct Feed Low-Activity Waste.
- (June 2021) D-16B-03; Of the 12 Single Shell Tanks Referred to in B-1 and B-2, Complete Retrieval of Tank Wastes in at Least 5. ^{1, 2}
- (September 2021) M-045-91E4; Provide Single Shell Tank Farms Dome Deflection Survey Every 2 Years to Ecology.
- (September 2021) M-045-97; Submit to Ecology a Waste Management Area Integration Study for Waste Management Area A/AX as a Primary Document.
- (October 2021) M-045-92AE; Submit Yearly Reports Summarizing the Results of Maintenance and Performance Monitoring Activities.
- (October 2021) M-045-92Y; Complete Construction of Barrier 3 in 241-TX Farm.
- (October 2021) M-045-92Z; Submit to Ecology Design for Barrier 4 in 241-U Farm.
- (April 2022) M-062-53A; Achieve Substantial Completion of Effluent Management Facility Construction.
- (September 2022) M-045-102; Submit to Ecology a Performance Assessment Maintenance Plan for the Waste Management Area A/AX PA.
- (September 2022) M-045-15; Completion of Tank A-103 Single Shell Tank Waste Retrieval.
- (September 2022) M-045-15A; Submit a Retrieval Data Report Pursuant to Agreement Appendix I.
- (September 2022) M-045-15D; Exception to Waste Retrieval Criteria Pursuant to Agreement Appendix H.
- (September 2022) M-045-98; Submit to Ecology a RFI/CMS Work Plan for Waste Management Area A/AX as a Primary Document.

¹ Amendment proposed per Third Amended Consent Decree, State of Washington v. Dept. of Energy, No: 2:08 CV 5085 RMP (October 12, 2018)

² On December 10, 2020, the US District Court Eastern District of Washington issued order modifying amended Consent Decree in State of Washington v. Brouillette, et al., No.2:08-cv-5085-RMP (E.D. Wash.) documenting method for calculating an extension of several milestones to offset work interruptions, due to the coronavirus disease 2019 (COVID-19) concerns and resulting impacts.

Framework

The Department, the U.S. Environmental Protection Agency, and the Washington State 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 the *Resource Conservation and Recovery Act* treatment, storage, and disposal unit regulations and corrective action provisions, subject to the Department's *Atomic Energy Act* authority. The Tri-Party Agreement is a framework for implementing many of the environmental regulations that apply to Hanford. More specifically, the Tri-Party Agreement includes but is not limited to cleanup commitments and enforceable milestones to achieve regulatory compliance and remediation.

In addition, the Office of River Protection's activities must also comply with a federal court Amended Consent Decree that addresses designated Waste Treatment and Immobilization Plant construction and startup activities and retrieval of specified single shell tanks. This decree was entered into court on October 25, 2010, in the case of State of Washington and Oregon v. United States Department of Energy, No. 08-5085 (E.D. Wash.). The Consent Decree was amended in 2016 (herein the Amended Consent Decree).

Contractual Framework

Program planning and management at the Office of River Protection is conducted through the issuance and execution of contracts to large and small businesses. The Office of River Protection develops near- and long-term planning approaches in order to develop contract strategies and program/project plans at a more detailed level. Selected contractors then execute these plans to complete cleanup in accordance with the terms of the contracts.

The Environmental Management Consolidated Business Center is currently in the acquisition process to solicit and award a follow-on contract for the safe operation of nuclear facilities associated with tank waste storage, treatment, and disposal. This end state contract is known as the Integrated Tank Disposition Contract, and specific activities include management and maintenance of 177 underground waste tanks, tank waste retrieval, and construction of the Tank Side Cesium Removal and follow on technology, and delivery of feed and operations of the Waste Treatment and Immobilization Plant in the direct feed low-activity waste configuration. The Waste Treatment and Immobilization Plant operations include the integrated operation of multiple facilities including the Low-Activity Waste Facility, Analytical Laboratory, Effluent Management Facility, and Balance of Facilities (supporting buildings and utilities). A contract was recently awarded for the safe operation of the 222-S Laboratory to provide analysis of highly radioactive waste samples in support of all the Hanford projects.

Current contracts at the site include:

- Bechtel National, Inc., shall provide the personnel, materials, supplies, and services and otherwise do all things necessary and incident to designing, constructing, and commissioning the Hanford Tank Waste Treatment and Immobilization Plant. This is a Cost-Plus Award-Fee Contract, with award and multiple fee incentives. This Contract is a completion contract. The period of performance for this Contract shall extend from December 11, 2000, through December 31, 2022.
- Washington River Protection Solutions LLC, is responsible for safely managing the 56 million gallons of radioactive tank waste until it is prepared for treatment and disposal. The contract covers the period from May 29, 2008, through September 30, 2013, with option period one October 1, 2013, through September 30, 2016, and option period two October 1, 2016, through September 30, 2018. It is a Cost-Plus Award-Fee Contract. The Department has exercised both option periods and has extended the contract 36 months from October 1, 2018, through September 30, 2021. It is Hanford's intent to extend the contract up to an additional 24 months, from October 1, 2021, through September 30, 2023, to allow the acquisition team to solicit, award and transition the new ITDC.
- Hanford Laboratory Management and Integration LLC (HMLI) is responsible for safely managing the Hanford 222-S Laboratory complex that provides Hanford contractors with analytical support, including inorganic chemistry, organic chemistry, radiochemistry and scientific research for the storage and treatment of highly radiological tank waste on the Hanford Site. The 222-S Laboratory contract base period is from April 15, 2021, through January 4, 2026. Option period 1 is from January 5, 2026, through January 4, 2027, and option period 2 is from January 5, 2027, through January 4, 2028. It is a performance-based contract that includes Cost-Plus-Award-Fee (CPAF) and Cost Reimbursable (CR non-fee bearing) contract line item numbers.

Strategic Management

The Department continues to focus on treating all Hanford tank waste safely and effectively by continuing to progress the Direct Feed Low Activity Waste program. The Department is continuing to advance startup and commissioning of the Low Activity Waste Facility, along with the Effluent Management Facility, Balance of Facilities and Analytical Laboratory necessary for the Direct Feed Low Activity Waste approach.

Work continues to define and procure long-lead consumables and spare parts required to continue operations upon completion of hot commissioning. The remaining Waste Treatment and Immobilization Plant facilities, the High-Level Waste Facility and the Pretreatment Facility, will be isolated from the operational facilities and will continue preservation maintenance activities, as well as support reinitiating procurement and initial planning to restart construction activities.

The Department is in the process of finalizing an Analysis of Alternatives which will provide inputs that will be utilized by the Department to derive preferred alternative for further analyses to support decision on the approach to address the high-level waste portion of the Hanford tank waste inventory to best meet the overall mission. The Department continues to work closely with the State of Washington on options to retrieve high-level tank waste at Hanford safely and effectively.

River Protection

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Office of River Protection				
ORP Low-Level Waste Offsite Disposal				
ORP-0014A / Low-Level Waste Offsite Disposal	10,000	0	7,000	+7,000
Tank Farm Activities				
ORP-0014 / Radioactive Liquid Tank Waste Stabilization and Disposition	775,000	784,000	817,642	+33,642
Waste Treatment and Immobilization Plant				
ORP-0060 / Major Construction-Waste Treatment Plant Construction				
01-D-16D: High Level Waste Facility, RL	25,000	25,000	60,000	+35,000
01-D-16E: Pretreatment Facility, RL	15,000	0	20,000	+20,000
18-D-16: Waste Treatment and Immobilization Plant LBL/Direct Feed LAW	776,000	786,000	586,000	-200,000
ORP-0070 / Waste Treatment Plant Commissioning	15,000	50,000	50,000	0
Subtotal, Waste Treatment and Immobilization Plant	831,000	861,000	716,000	-145,000
Total, Office of River Protection	1,616,000	1,645,000	1,540,642	-104,358

River Protection
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Office of River Protection

ORP Low-Level Waste Offsite Disposal

ORP-0014A / Low-Level Waste Offsite Disposal

- The increase addresses costs to fabricate removal equipment, as well as removal and disposal of the Low-Level Waste Offsite Disposal unit and associated equipment, driven by Resource Conservation and Recovery Act permit conditions. +7,000

Tank Farm Activities

ORP-0014 / Radioactive Liquid Tank Waste Stabilization and Disposition

- The increase supports single shell tank retrieval operations to make progress toward meeting the Amended Consent Decree and Tri-Party Agreement milestones. Additionally, the increase supports replacement of the 242-A slurry lines to support the operations of the 242-A Evaporator which is an integral part of single shell tank retrieval operations and double shell tank space management. +33,642

Waste Treatment and Immobilization Plant

ORP-0060 / Major Construction-Waste Treatment Plant

- The decrease primarily reflects reduced funding required for the Direct Feed Low Activity Waste portion of the project. -145,000

ORP-0070 / Waste Treatment Plant Commissioning

- No change. 0

Total, River Protection	-104,358
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Radioactive Liquid Tank Waste Stabilization and Disposition (ORP-0014)

Overview

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

This project includes activities required to manage and stabilize approximately 56 million gallons of radioactive waste stored underground in 177 tanks, including retrieval, treatment, and disposal. Up to 61 tanks are assumed to have leaked a total of about 1 million gallons of waste into the soil. Ultimately, the majority of the waste must be processed to a form suitable for disposal.

This PBS includes planning, design, construction, and operation of new facilities and equipment necessary for waste feed delivery from tank farms to the Waste Treatment and Immobilization Plant to meet the December 31, 2023, Low-Activity Waste Facility startup milestone from the 2016 Amended Consent Decree. It also includes required operations, maintenance, and upgrades of double shell tank farms, retrieval operations in single shell tank farms, the 242-A Evaporator, the Effluent Treatment Facility, and the 222-S Laboratory to manage the waste, support safe nuclear and environmentally compliant operations at Hanford, and enable Waste Treatment and Immobilization Plant operations. The first subproject of the Low-Activity Waste Pretreatment System project (15-D-409) will consist of a tank-side cesium removal system to remove solids and cesium to produce the low-activity waste feed stream for the Low-Activity Waste Facility. The scope and funds for the tank-side cesium removal system are included in capital project 15-D-409.

This project also includes general plant projects as well as direct maintenance and repair that are applicable to these areas.

Radioactive Liquid Tank Waste Stabilization and Disposition (PBS: ORP-0014)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$784,000,000	\$817,642,000	+\$33,642,000
Effluent Treatment Facility operation <ul style="list-style-type: none"> Process 4 million gallons of liquid waste, supporting Hanford's K-Basins, Environmental Restoration Disposal Facility, tanks farms, and Waste Treatment and Immobilization Plant and free up storage for direct-feed low-activity waste. Effluent Treatment Facility upgrades to support direct-feed low-activity waste	Effluent Treatment Facility operation and maintenance <ul style="list-style-type: none"> Provide treatment of liquid waste from Hanford site nuclear waste treatment and remediation processes. to include the Hanford K-Basins, tank farms, and the Waste Treatment and Immobilization Plant. Process 4 million gallons of liquid waste to manage space in support of the Hanford mission. 	<ul style="list-style-type: none"> The increase supports single shell tank retrieval operations to make progress toward meeting the Amended Consent Decree and Tri-Party Agreement milestones. Additionally, the increase supports replacement of the 242-A slurry lines to support the operations of the 242-A Evaporator which is an integral part of single shell tank retrieval operations and double shell tank space management.

- Install and startup new processing unit to allow treatment of Acetonitrile.
- Complete upgrade to the Motor Control Centers (x4) to support increased electrical requirements to support Direct Feed Low Activity Waste.
- Construct treatment facility load in area expansion to support enhanced facility operation throughput requirements during Direct Feed Low Activity Waste operations.
- Complete installation of Liquid Effluent Retention Facility Basin 41.

222-S Laboratory operations and upgrades to support tank farms and direct-feed low-activity waste samples

- Complete laboratory upgrades and procedure development to provide analytical laboratory services to support Direct Feed Low-Activity Waste.
- Construct an ancillary equipment addition to increase radiological workspace.
- Complete site preparations for 222-S office complex building.

Tank Farm Integrity Program to prolong the lifespan of aging tanks

- Visual and ultrasonic tank inspections of double and single shell tanks and chemistry controls to maintain structure and integrity of waste storage tanks.

Maintenance of facilities

- Maintain critical facilities (including the Effluent Treatment Facility and Liquid Effluent Retention Facility, 222-S laboratory) and equipment to support tank farm and Direct Feed Low-Activity Waste operations.

- Conduct operations activities for the management and oversight of the effluent treatment facility.
- Conduct maintenance activities to support continued use of the effluent treatment facility including auxiliary buildings.

Effluent Treatment Facility upgrades to support direct-feed low-activity waste

- Complete new processing units to allow the capability to treat the Waste Treatment and Immobilization Plant waste stream during Direct Feed Low-Activity Waste. This includes:
 - Acetonitrile Treatment System.
 - Carbon Dioxide Membrane.
- Complete upgrade of systems to allow the capacity to treat the Waste Treatment and Immobilization Plant waste stream during Direct Feed Low-Activity Waste. This includes:
 - Load-In Station building expansion.
 - Continue Liquid Effluent Retention Facility Basin 41.
- Complete upgrade of systems to ensure reliability to treat the Waste Treatment and Immobilization Plant waste stream during Direct Feed Low-Activity Waste. This includes:
 - Effluent Treatment Facility Motor Control Center.

222-S Laboratory operations and upgrades to support tank farms and direct-feed low-activity waste samples

- Process industrial hygiene samples for tank farms and the vapors management program.

Waste Treatment and Immobilization Plant and Direct-Feed Low-Activity Waste Support

- Support WTP and Direct Feed Low-Activity Waste operational readiness.

Direct-Feed Low-Activity Waste Feed Delivery and Tank-Side Cesium Removal

- Complete construction and initiate tank-side cesium removal operations.

AP Farm Upgrades

- Complete modifications to AP-105 and AP-106 to provide feed to the Tank-Side Cesium Removal equipment.
- Initiate construction of AP-106 tanker truck loading and offloading station in AP farm to support Direct Feed Low Activity Waste operational flexibility.
- Initiate design and construction of a modular grout facility to support Direct Feed Low Activity Waste operational flexibility.

242 Evaporator Upgrades

- Complete installation of documented safety analysis system upgrades.
- Complete fabrication and field preparations for slurry and feed line replacement project.

AX Farm Retrievals

- Complete waste retrieval activities and final retrieval completion report for AX-104.
- Complete waste retrieval system construction and initiate waste retrieval operations for AX-103.
- Complete retrieval completion certification report for AX-102.

A Farm Retrievals

- Complete removal, packaging, and shipment for disposal of hose-in-hose transfer lines to support A Farm retrievals.

- Process tank waste samples for tank farms and other Hanford contractors.
- Process feed qualification samples for the direct-feed low-activity waste program.
- Conduct operations activities for the management and oversight of the nuclear laboratory, including highly radioactive samples.
- Conduct maintenance activities to support continued use of the nuclear laboratory and auxiliary buildings.
- Perform analytical equipment maintenance.
- Complete the ancillary equipment addition to increase radiological workspace.
- Complete the 222-S office complex office building to replace and expand degraded administrative facilities.

Tank Farm Integrity Program to prolong the lifespan of aging tanks

- Perform annual visual and ultrasonic tank inspections of double and single shell tanks and chemistry controls to maintain structure and integrity of waste storage tanks.
- Conduct additional structural analysis to ensure tanks are structurally sound and regulatory compliant.

Maintenance of Infrastructure and Aging Tanks

- Maintain functionality of critical facilities and equipment to support Direct Feed Low-Activity Waste operations and the Hanford mission until all tank farms are closed.
- Initiate cross site transfer lines (Slurry and Supernate) activities to support double shell tank Space Management and future tank farm retrievals.

Tank Closure

- Complete installation of TX Farm interim surface barrier.

Waste Treatment and Immobilization Plant and Direct-Feed Low-Activity Waste Support

- Support Direct Feed Low-Activity Waste integration and operational readiness.

Waste Feed Delivery

- Initiate AP electrical infrastructure maintenance to support Direct-Feed Low-Activity Waste operations.
- Complete the modular grout facility to support Direct Feed Low-Activity Waste operational flexibility.
- Complete construction of AP-106 tanker truck loading and offloading station in AP farm to support Direct Feed Low-Activity Waste operational flexibility.
- Conduct maintenance activities in AW Farm to support the 242-A Evaporator operations.
- Plan for mission execution strategies including the next System plan.

Tank-Side Cesium Removal Operations

- Procure and fabricate additional ion-exchange columns to support Tank Side Cesium Removal operations.
- Pretreat supernatant through Tank Side Cesium Removal R system and stage waste in AP-106 for Waste Treatment and Immobilization Plant Low-Activity Waste feed.

242-A Evaporator operations

- Continue slurry line replacement project to support operations of the 242-A Evaporator which is an integral part of single shell tank retrieval operations, and double shell tank space management.

AX Farm Retrievals

- Complete retrievals in AX-103.

- Initiate retrieval operations in AX-101.

A Farm Retrievals

- Complete retrieval in A-103.
 - Prepare A-101 and A-102 for retrieval operations.
-

Low-Level Waste Offsite Disposal (PBS: ORP-0014A)

Overview

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

Treating radioactive waste in Hanford's underground tanks and stabilizing it in glass via the Direct Feed Low Activity Waste approach is the priority. In parallel, the Low Level Waste Offsite Disposal project (previously known as Test Bed Initiative) began in 2017 with successful completion of a Laboratory Scale test. Three gallons of Hanford tank waste was treated, immobilized in grout as mixed low level waste and then transported to the Waste Control Specialists Federal Waste Facility near Andrews, Texas, for permanent disposal.

The Office of River Protection will pretreat approximately 2,000 gallons of Hanford liquid tank waste, immobilize the waste at an off-site commercial facility, and transport the immobilized mixed low-level waste to the Federal Waste Facility for disposal.

Following the treatment of 2,000 gallons, the Office of River Protection will evaluate and prepare for the treatment, immobilization, and disposal of approximately 300,000 to 500,000 gallons of tank waste. This will focus on demonstrating production level scalability of the approach, as well as firming the cost and schedule estimates for production level execution.

DOE-EM and Office of River Protection are pursuing these activities to:

- Demonstrate proof-of-concept initiatives to treat Hanford low-activity waste using commercial, licensed, permitted facilities.
- Assess existing regulatory criteria for alternative approaches to the Hanford mission.
- Address a Government Accountability Office recommendation that DOE should update performance of waste forms other than glass for supplemental Hanford Low-Activity Waste treatment and disposal methods.
- Demonstrate a supplemental treatment option in accordance with the Hanford Federal Facility Agreement and Consent Order, also referred to as the Tri-Party Agreement, to augment and accelerate the mission to disposition Hanford tank waste.
- Initiate ways to reduce cleanup costs, accelerate schedules, and maximize public-private partnerships.

Low-Level Waste Offsite Disposal (PBS: ORP-0014A)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$0	\$7,000,000	+\$7,000,000
<ul style="list-style-type: none">• None.	<ul style="list-style-type: none">• Install unit, perform 2,000 gallon test, and prepare for equipment removal and disposal.	<ul style="list-style-type: none">• The increase addresses costs to fabricate removal equipment, as well as removal and disposal of the Low-Level Waste Offsite

Disposal unit and associated equipment,
driven by Resource Conservation and
Recovery Act permit conditions.

Major Construction-Waste Treatment Plant (PBS: ORP-0060)

Overview

This Project Base Line Summary (PBS) can be found within the Defense Environmental Cleanup appropriation.

The Waste Treatment and Immobilization Plant is critical to the completion of the Hanford tank waste program; it will provide the primary treatment capability to immobilize the radioactive and mixed radioactive and hazardous tank waste at the Hanford Site. The Waste Treatment and Immobilization Plant will construct: Pretreatment Facility, High-Level Waste Facility, Low-Activity Waste Facility, Analytical Laboratory, Balance of Facilities and an Effluent Management Facility. The Pretreatment Facility will separate the radioactive tank waste into low-activity and high-level radioactive waste fractions. The high-level radioactive waste fraction will be transferred to the High-Level Waste Facility for immobilization to be made ready for placement into storage. A significant portion of the low-activity waste fraction will be immobilized in the Low-Activity Waste Facility; the Department continues to perform studies for a supplemental treatment technology to be used to immobilize the remaining low-level radioactive waste not treated in the Low-Activity Waste Facility. 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 required to support overall plant operations. The Effluent Management Facility will manage the high volume of water generated while retrieving and treating low-activity waste for disposal.

Major Construction-Waste Treatment Plant (PBS: ORP-0060)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$811,000,000	\$666,000,000	-\$145,000,000

Low-Activity Waste Facility –

Engineering Design Activities:

- Complete work to go and punch list items for all facility systems.

Construction Activities:

- Field installation of design changes associated with startup and commissioning of the facilities 94 systems.

Startup Activities:

- Complete handover to Facility Management for all facility systems. Initiate loss of power testing and system cold commissioning testing of the facility.

Commissioning Activities:

- Finalize development and implementation of operational procedures, complete refurbishments, conduct simulator training and accept handover from Startup on all 94 facility systems.
- Continue Operations and Maintenance Training.
- Continue Preventative Maintenance.

Balance of Facilities/Direct Feed Low-Activity Waste/Effluent Management Facility –

Construction Activities:

- Complete construction of Effluent Management Facility and support field installation of design changes associated with startup and commissioning facilities (133 systems).

Startup activities

- Complete walk downs and submit handover to Facility Management for all remaining systems and commission Balance Of Facilities to support Low-Activity Waste.

Commissioning Activities

- Continue facility operations and operational support of direct feed Low-Activity Waste process systems.

Low-Activity Waste Facility –

Engineering Design Activities:

- Support Waste Treatment and Immobilization Plant commissioning activities.

Startup Activities:

- Support Waste Treatment and Immobilization Plant startup activities.

Commissioning Activities:

- Start cold commissioning.
- Conduct Melter 1 Heatup.
- Conduct Melter 2 Heatup.
- Conduct cold commissioning testing - inventory simulants and complete tuning.
- Conduct cold commissioning testing - Immobilized Low-Activity Waste product qualification demonstration.
- Continue Operations and Maintenance Training.
- Continue Preventative Maintenance.

Balance of Facilities/Effluent Management Facility –

Engineering Design Activities:

- Support Waste Treatment and Immobilization Plant commissioning activities.

Commissioning Activities

- Commission Balance of Facilities to support Low-Activity Waste.
- Continue facility operations and operational support of direct feed Low-Activity Waste process systems.
- Continue Operations and Maintenance Training.
- Continue Preventative Maintenance and Corrective Maintenance..

Analytical Laboratory –

Engineering Activities:

- The decrease primarily reflects reduced funding required for the Direct Feed Low Activity Waste portion of the project.

- Continue Operations and Maintenance Training.
- Continue Preventative Maintenance and Corrective Maintenance.

Analytical Laboratory –

Engineering Activities:

- Support Waste Treatment and Immobilization Plant commissioning activities.

Startup Activities

- Support Waste Treatment and Immobilization Plant startup activities.

Commissioning

- Complete commissioning and operate Lab to support Low-Activity Waste commissioning.
- Continue Operations and Maintenance Training.
- Continue Preventative Maintenance and Corrective Maintenance.

High-Level Waste Facility and Pretreatment Facility –

Construction Activities:

- Support facility preservation activities.

- Support Waste Treatment and Immobilization Plant commissioning activities.

Commissioning

- Conduct onsite methods validation.
- Validate lab methods for commissioning completion.
- Complete commissioning and operate Lab to support Low-Activity Waste commissioning.
- Continue Operations and Maintenance Training.
- Continue Preventative Maintenance and Corrective Maintenance.

High-Level Waste Facility and Pretreatment Facility

HLW Facility:

- Continued HLW design and nuclear safety documentations.
- Reinitiating procurements to support construction.
- Perform initial planning to restart construction.

Pretreatment facility:

- Support facility preservation activities.

Waste Treatment Plant Operations (PBS: ORP-0070)

Overview

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

This PBS provides for the activities outside of line-item 01-D-416, Waste Treatment and Immobilization Plant, but are required to support the treatment of tank wastes in the plant including the implementation of the strategy of the direct feed low-activity waste approach. This is the first phase of Waste Treatment and Immobilization Plant operations. This includes the operational scope for the Low-Activity Waste Facility, the Analytical Laboratory, and the Balance of Facilities starting with hot commissioning but after project completion (Critical Decision 4) for those facilities.

This PBS also includes the procurement of necessary spare parts and consumable commodities necessary to support operations.

Waste Treatment Plant Commissioning (PBS: ORP-0070)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$50,000,000	\$50,000,000	+\$0
<ul style="list-style-type: none"> Procure long lead spare parts and miscellaneous consumables to support post host commissioning. Procure ~1300 Low-Activity Waste containers. Complete fabrication and receipt of ~36 Low-Activity Waste bubblers. Continue fabrication and assembly of two spare melters for the Low-Activity Waste facility. 	<ul style="list-style-type: none"> Procure long lead spare parts and miscellaneous consumables to support post hot commissioning. Procure ~1300 Low-Activity Waste containers. Complete fabrication and receipt of remaining ~112 Low-Activity Waste bubblers. Continue fabrication and assembly of two spare melters for the Low-Activity Waste facility. 	<ul style="list-style-type: none"> No change.

**Office of River Protection
Capital Summary (\$K)**

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Capital Operating Expenses Summary (including (Major Items of Equipment (MIE))

Capital Equipment > \$500K (including MIE)	0	0	0	0	0	0
Plant Projects (GPP and IGPP) (<\$20M)	97,960	2,240	11,050	6,336	28,923	+26,824
Total, Capital Operating Expenses	97,960	2,240	11,050	6,336	28,923	+26,824

Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <\$20M)

River Protection

Construct New Maintenance Shop ^a	12,120	1,200	3,350	996	6,670	900	-5,770
ETF Acetonitrile Treatment Upgrade ^a	16,570	0	2,700	1,764	5,320	8,550	+3,230
ETF Load in Expansion ^a	9,180	0	1,500	1,092	4,160	3,520	-640
Ancillary Equipment Addition ^a	15,414	1,040	0	0	0	14,374	+14,374
222-S Office Space Addition ^a	9,300	0	500	330	4,480	4,320	-160
AP Farm Tanker Truck Loading and Off Loading Station ^a	6,326	0	2,500	2,154	218	3,608	+3,390
Modular Grout System ^a	10,725	0	0	0	4,225	6,500	+2,275
ETF Motor Control Center Upgrades ^a	11,525	0	500	0	3,850	7,175	+3,325
ETF Brine Storage Tanks ^a	6,800	0	0	0	0	6,800	+6,800
Total, River Protection	97,960	2,240	11,050	6,336	28,923	55,747	+26,824

Total, Capital Summary

97,960	2,240	11,050	6,336	28,923	55,747	+26,824
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^a These capital investments represent expenditures that may be accelerated to FY 2021 based on emerging or identified risks.

**Office of River Protection
Construction Projects Summary (\$K)**

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Waste Treatment and Immobilization Plant, Hanford WA

*18-D-16, Waste Treatment and Immobilization Plant LBL/Direct Feed
LAW*

Total Estimate Cost (TEC)	TBD	6,324,515	776,000	606,699	786,000	586,000	-200,000
Other Project Costs (OPC)	0	0	0	0	0	0	0
<i>01-D-16D, High-Level Waste Facility</i>							
Total Estimate Cost (TEC)	TBD	2,648,318	25,000	66,169	25,000	60,000	+35,000
Other Project Costs (OPC)	0	0	0	0	0	0	0
<i>01-D-16E Pretreatment Facility</i>							
Total Estimate Cost (TEC)	TBD	3,742,050	15,000	15,806	0	20,000	+20,000
Other Project Costs (OPC)	0	0	0	0	0	0	0
Total Estimate Cost (TEC)	TBD	12,714,883	816,000	688,674	811,000	666,000	-145,000
Other Project Costs (OPC)	0	0	0	0	0	0	0
Total Project Cost (TPC) 01-D-416	TBD	12,714,883	816,000	688,674	811,000	666,000	-145,000

**01-D-416, Waste Treatment and Immobilization Plant
Hanford,
Project is for Construction**

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The fiscal year 2022 budget request for the Waste Treatment and Immobilization Plant is \$666,000,000.

On December 15, 2016, the Deputy Secretary approved the direct feed low activity waste approach, contract modification which included hot commissioning, and Project Execution Plan (Critical Decision 4a) to commence no later than August 31, 2023. Subsequent to the approval, the contract was modified to reflect the focus on direct feed low activity waste scope. The current strategy is to complete the rebaseline effort in phases, first to support direct feed low activity waste and second to rebaseline the High-Level Waste and Pretreatment facilities in the future. Upon completion of the rebaseline effort, this construction project data sheet will be formally revised and submitted to Congress.

The Department continues construction, startup testing, and commissioning of the Low-Activity Waste Facility, Analytical Laboratory, and Balance of Facilities. For the High-Level Waste and Pretreatment facilities the Department continues preservation and maintenance of the facilities, and associated equipment, components, and material to facilitate successful future ramp-up of design, procurement, and construction activities. The Department remains focused on meeting the milestones contained in the Court's March 11, 2016, Amended Consent Decree, particularly the near-term December 31, 2023, Low-Activity Waste Facility hot commissioning complete milestone.

Significant Changes

This project was initiated in fiscal year 2001. This Construction Project Data Sheet is an update of the FY 2021 Construction Project Data Sheet.

The most recent DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets, approved Critical Decision is Critical Decision 3, which was approved on April 21, 2003.

A federal project director has been assigned to this project.

Because of the technical, safety, quality, management, and issues the Department has identified the completion of the Waste Treatment and Immobilization Plant Project will exceed the currently approved Total Project Cost and the project completion date. As a result, this data sheet represents the forecasted funding needs for fiscal year 2022. Subsequent funding year needs are to be determined.

2. Critical Milestone History

	Fiscal Quarter or Date						
	CD-0	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2001	SEP 1995	SEP 1996	AUG 1998	4Q FY2005	OCT 2001	N/A	1Q FY2007
FY 2002	SEP 1995	SEP 1996	4Q FY1998	4Q FY2005	MAY 2002	N/A	1Q FY2007
FY 2003	SEP 1995	SEP 1996	4Q FY1998	4Q FY2005	MAY 2002	N/A	1Q FY2007
FY 2004	SEP 1995	SEP 1996	4Q FY1998	4Q FY2005	MAY 2002	N/A	1Q FY2007
FY 2003	SEP 1995	SEP 1996	04/21/2003	4Q FY2005	04/21/2003	N/A	3Q FY2008
Congressional Notification							
FY 2005	SEP 1995	SEP 1996	04/21/2003	4Q FY2005	04/21/2003	N/A	3Q FY2008
FY 2004	SEP 1995	SEP 1996	04/21/2003	4Q FY2005	04/21/2003	N/A	3Q FY2008
Reprogramming							
FY 2006	SEP 1995	SEP 1996	04/21/2003	4Q FY2007	04/21/2003	N/A	3Q FY2008
FY 2007	SEP 1995	SEP 1996	04/21/2003	4Q FY2007	04/21/2003	N/A	3Q FY2008
FY 2008	SEP 1995	SEP 1996	04/21/2003	4Q FY2010	04/21/2003	N/A	2Q FY2017
FY 2009	SEP 1995	SEP 1996	04/21/2003	4Q FY2013	04/21/2003	N/A	1Q FY2020
FY 2010	SEP 1995	SEP 1996	04/21/2003	1Q FY2016	04/21/2003	N/A	1Q FY2020
FY 2011	SEP 1995	SEP 1996	04/21/2003	1Q FY2016	04/21/2003	N/A	1Q FY2020
FY 2012	SEP 1995	SEP 1996	04/21/2003	1Q FY2016	04/21/2003	N/A	1Q FY2020
FY 2013	SEP 1995	SEP 1996	04/21/2003	1Q FY2016	04/21/2003	N/A	1Q FY2020
FY 2014	SEP 1995	SEP 1996	04/21/2003	1Q FY2016	04/21/2003	N/A	1Q FY2020
FY 2013	SEP 1995	SEP 1996	04/21/2003	1Q FY 2016	04/21/2003	N/A	1Q FY 2020
Reprogramming							
FY 2015	SEP 1995	SEP 1996	04/21/2003	1Q FY2016	04/21/2003	N/A	1Q FY2020
FY 2016	SEP 1995	SEP 1996	04/21/2003	1Q FY2016	04/21/2003	N/A	TBD
FY 2017	SEP 1995	SEP 1996	04/21/2003	1Q FY2016	04/21/2003	N/A	TBD
FY 2018	SEP 1995	SEP 1996	04/21/2003	TBD	04/21/2003	N/A	TBD
FY 2019	SEP 1995	SEP 1996	04/21/2003	TBD	04/21/2003	N/A	TBD
FY 2020	SEP 1995	SEP 1996	04/21/2003	TBD	04/21/2003	N/A	TBD
FY 2021	SEP 1995	SEP 1996	04/21/2003	TBD	04/21/2003	N/A	TBD
FY 2022	SEP 1995	SEP 1996	04/21/2003	TBD	04/21/2003	N/A	TBD

CD-0 – Approve Mission Need

Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

Final Design Complete – Estimated/Actual date the project design will be/was completed

CD-3 – Approve Start of Construction

D&D Complete – Completion of D&D work

CD-4 – Approve Start of Operations or Project Completion

PB – Indicates the Performance Baseline

3. Project Cost History

(dollars in thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	Total Project Cost
FY 2001	0	5,466,000	5,466,000	7,022,000	0	7,022,000	12,488,000
FY 2002	0	4,350,000	4,350,000	0	0	0	4,350,000
FY 2003	0	4,350,000	4,350,000	0	0	0	4,350,000
FY 2004	0	4,350,000	4,350,000	0	0	0	4,350,000
FY 2003 Cong. Notification	0	5,781,000	5,781,000	0	0	0	5,781,000
FY 2005	0	5,781,000	5,781,000	0	0	0	5,781,000
FY 2006	0	5,781,000	5,781,000	0	0	0	5,781,000
FY 2007	0	5,781,000	5,781,000	0	0	0	5,781,000
FY 2008	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2009	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2010	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2011	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2012	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2013	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2014	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2013 Reprogramming	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2015	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2016	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2017	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2018	0	12,263,000	12,263,000	0	0	0	12,263,000
FY 2019	TBD	TBD	0	0	0	TBD	TBD
FY 2020	TBD	TBD	0	0	0	TBD	TBD
FY 2021	TBD	TBD	0	0	0	TBD	TBD
FY 2022	TBD	TBD	TBD	0	0	TBD	TBD

The fiscal year 2001 budget request presented the contract value using a privatization approach for this project. The contract included design, construction, and commissioning (at a Total Estimated Cost of \$5,466,000,000), and 10 years of initial operations for a Total Project Cost of \$12,488,000,000. 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 2002, the Department awarded a cost-plus incentive-fee contract estimated at \$4,350,000,000 to design, construct, and commission the Waste Treatment and Immobilization Plant. In April 2003, a contract modification was negotiated with the principal change of increasing the throughput capacity of the High-Level Waste and Pretreatment facilities, with the goal of pretreating all retrieved waste during the 40-year life of the facility, immobilizing all of the high-level waste fraction and at least 40 percent of the low-activity waste fraction. The Department approved a Performance Baseline for this scope with a Total Project Cost of \$5,781,000,000. In December 2006, due to over-optimistic cost estimates and seismic and technical issues, the Department approved a new Performance Baseline with a revised Total Project Cost of \$12,263,000,000.

A project rebaselining effort was begun during the second quarter of FY 2012. In the fourth quarter of FY 2012 the Design Completion Team was initiated to resolve project technical issues. A decision was made to delay the rebaselining effort until the Design Completion Team could address the technical issues.

On December 15, 2016, the Deputy Secretary approved the direct-feed low-activity waste approach, contract modification, and Project Execution Plan, with operations to commence by August 31, 2023. The current strategy is to complete the

**Environmental Management/
River Protection/01-D-416 Waste
Treatment and Immobilization Plant,
Hanford, WA**

FY 2022 Congressional Budget Justification

rebaseline effort in phases, with the first phase complete to support direct-feed low-activity waste and second to rebaseline the High-Level Waste and Pretreatment facilities in the future.

In FY 2019 it was determined that all technical issues had been resolved to support design of the Pretreatment Facility. DOE then chartered an Analysis of Alternative to determine how best to provide tank waste feed to the High-Level Waste Facility and the Pretreatment Facility throughout the facility life cycle. Once a path forward is determined, the rebaseline effort will be initiated for the High-Level Waste Facility and the Pretreatment Facility. Upon completion of the rebaseline effort, this Construction Project Data Sheet will be formally revised and submitted to Congress.

4. Scope and Justification

Scope

The Waste Treatment and Immobilization Plant covers 65 acres and includes three major nuclear facilities – Pretreatment Facility, High-Level Waste Facility, and Low-Activity Waste Facility – along with the Analytical Laboratory and supporting buildings and utilities, collectively known as the Balance of Facilities. The Low-Activity Waste Facility will immobilize, through vitrification, a substantial portion of the low-activity waste fraction. The Department has adopted a strategy to directly feed the Low-Activity Waste Facility to support the start of waste treatment by the 2016 Amended Consent Decree milestone date of December 31, 2023.

As currently designed, the Pretreatment Facility will accomplish the separation of the wastes into low-activity and high level waste fractions. The High-Level Waste Facility will immobilize, through vitrification, the high-level waste fraction. The Waste Treatment and Immobilization Plant Key Project Performance Parameters for the Low-Activity Waste Facility are a minimum treatment capacity of 18 metric tons of glass per day and the High-Level Waste Facility are a minimum treatment capacity of 3.6 metric tons per day (average daily throughput for both facilities). The Analytical Laboratory will provide the necessary sample analysis needed throughout the processing facilities. The Balance of Facilities includes the plant infrastructure and support facilities (e.g., steam plant, electrical switch yards, chiller plant, etc.) necessary for the plant to operate.

Justification

The Waste Treatment and Immobilization Plant is the cornerstone of the Office of River Protection mission to treat and disposition the radioactive waste contained in underground storage tanks at the Hanford Site in southeastern Washington State. Approximately 56,000,000 gallons of waste containing approximately 240,000 metric tons of processed chemicals and approximately 176,000,000 curies of radionuclides are currently stored in 177 tanks (retrieval has been complete in 17 tanks). These wastes are in the form of liquids, slurries, saltcake, and sludge, and are the result of more than four decades, starting in 1944, of reactor operations and plutonium production for national defense.

One of the Department's key objectives is to design, build, and commission the Waste Treatment and Immobilization Plant. Through a vitrification process, a portion of Hanford's tank waste volume will be transformed into a sturdy, durable form by blending the waste with molten glass and pouring it into stainless steel canisters. In that form, the waste will remain stable and highly resistant to environmental degradation while its radioactivity decays.

The Waste Treatment and Immobilization Plant contractor will complete process and facility design; perform procurement and construction; 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 activities.

The final Waste Treatment and Immobilization Plant configuration will pretreat tank waste through separation into a high level waste fraction and a low-activity waste fraction. Both fractions will be immobilized. The immobilized high-level waste fraction will be temporarily stored on the Hanford Site. The vitrified low-activity waste fraction will be placed in a disposal facility on the Hanford Site.

At this time, while the project is focused on delivery of the direct feed low activity waste capability, the Department will continue preservation and maintenance activities for High Level Waste and Pretreatment facilities, focusing on, but not

limited to, management of assets, appropriate storage, configuration control, and necessary record keeping (to include quality assurance information).

The project is being conducted in accordance with the project management requirements in DOE O 413.3B.

Key Performance Parameters

The Threshold Key Performance Parameters represent the acceptable performance that the project must achieve. Achievement of the Thresholds Key Performance Parameters will be a prerequisite for approval of Critical Decision 4.

Performance Measure	Threshold
Low Activity Waste Pretreatment	2.244 MT sodium per year
High-Level Waste Pretreatment	735 MT as delivered solids per year
Liquid Waste Effluent Management Facility Efficiency	3.1 Volume Reduction
Low-Activity Waste Vitrification	18 MT glass per day
High-Level Waste Vitrification	3.6 MT glass per day

18-D-16, Waste Treatment and Immobilization Plant Low-Activity Waste Facility, Analytical Laboratory, and Balance of Facilities/Direct Feed Low-Activity Waste

Scope and Justification

The Low-Activity Waste Facility will immobilize, through vitrification, a substantial portion of the low-activity waste fraction. The Key Project Performance Parameter for the Low-Activity Waste Facility is a minimum treatment capacity of 18-metric tons of glass per day (average daily throughput). The Analytical Laboratory will provide the necessary sample analysis needed throughout waste processing. The Balance of Facilities includes the plant infrastructure and support facilities (e.g., steam plant, electrical switch yards, chiller plant, etc.). The Waste Treatment and Immobilization Plant contractor will complete process and facility design; perform procurement and construction; 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 activities.

The Department has focused the Waste Treatment and Immobilization Plant effort to accelerate construction completion and commissioning of three facilities – Low-Activity Waste Facility, Analytical Laboratory and Balance of Facilities – to meet the Amended Consent Decree requirement to begin operations by December 2023 . The waste feed for low-activity waste processing will be provided for these facilities initially by a tank-side cesium removal capability.

The Department has identified the need to construct an Effluent Management Facility to manage the high volume of water generated through the processing of low activity waste and to create double shell tank space while treating low activity waste for disposal. As originally envisioned, this capability was going to be located in the Pretreatment Facility; however, with the restructuring of the project to a phased startup, this capability is needed prior to the completion of construction for the Pretreatment Facility, requiring the construction of the Effluent Management Facility under a different, but existing, control point (01-D-416A-C). The direct cost portion of Effluent Management Facility is estimated to be approximately \$371,000,000 with planned completion in the third quarter of fiscal year 2021.

01-D-16D, High-Level Waste Facility

Scope and Justification

The High-Level Waste Facility will immobilize, through vitrification, the high-level waste fraction of the tank waste. The Key Project Performance Parameter for the High-Level Waste Facility is a minimum of 3.6 metric tons of glass per day (average daily throughput). The Waste Treatment and Immobilization Plant contractor will complete process and facility design; perform procurement and construction; conduct acceptance testing; perform startup and commissioning activities; and conduct all required environmental, safety, quality, and health activities.

01-D-16E, Pretreatment Facility

**Environmental Management/
River Protection/01-D-416 Waste
Treatment and Immobilization Plant,
Hanford, WA**

Scope and Justification

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. The main pretreatment processes include filtration to separate the high curie solids from the low activity liquids and an ion exchange system to remove cesium from the tank waste. The Waste Treatment and Immobilization Plant contractor will complete process and facility design; perform procurement and construction; conduct acceptance testing; perform startup and commissioning activities; and conduct all required environmental, safety, quality, and health activities.

5. Financial Schedule

WTP Total			18-D-16 Waste treatment and immobilization plant LBL/Direct feed LAW			01-D-16D, High-Level Waste Facility			01-D-16E, Pretreatment Facility		
Approps	Obligations	Costs	Approps	Obligations	Costs	Approps	Obligations	Costs	Approps	Obligations	Costs

Total Estimated Cost (TEC) /

Total Project Cost (TPC)

Prior Years	9,864,883	9,864,883	9,664,986	3,824,462	3,824,462	3,729,030	2,540,371	2,540,371	2,548,161	3,500,050	3,500,050	3,387,795
FY 2016	690,000	690,000	741,612	520,264	520,264	538,103	74,736	74,736	86,373	95,000	95,000	117,136
FY 2017	690,000	690,000	713,861	562,274	562,274	533,765	30,726	30,726	61,213	97,000	97,000	118,883
FY 2018	740,000	740,000	649,517	630,000	630,000	588,842	75,000	75,000	30,400	35,000	35,000	30,275
FY 2019	730,000	730,000	751,755	655,000	655,000	685,966	60,000	60,000	45,146	15,000	15,000	20,643
FY 2020	816,000	701,548	686,617	776,000	661,548	604,642	25,000	25,000	66,169	15,000	15,000	15,806
FY 2021	811,000	800,000	735,704	786,000	775,000	688,704	25,000	25,000	45,000	0	0	20,000
FY 2022	666,000	791,452	681,693	586,000	711,452	601,693	60,000	60,000	60,000	20,000	20,000	20,000
Outyears	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Grand Total	TBD	TBD	TBD	0	0	0	TBD	TBD	TBD	TBD	TBD	TBD

**Environmental Management/
River Protection/01-D-416 Waste
Treatment and Immobilization Plant,
Hanford, WA**

FY 2022 Congressional Budget Justification

6. Details of Project Cost Estimate

(dollars in Thousands)

WTP Total			18-D-16 Waste treatment and immobilization plant LBL/Direct feed LAW			01-D-16D, High-Level Waste Facility			01-D-16E, Pretreatment Facility		
Current Total Estimate	Previous Total Estimate	Original Validated Baseline	Current Total Estimate	Previous Total Estimate	Original Validated Baseline	Current Total Estimate	Previous Total Estimate	Original Validated Baseline	Current Total Estimate	Previous Total Estimate	Original Validated Baseline

Total Estimated Cost (TEC) /

Total Project Cost (TPC)

Construction

Engineering/Design	TBD	2,547,977	1,475,000	TBD	785,881	N/A	TBD	700,141	N/A	TBD	1,061,954	N/A
Equipment/Procurement	TBD	2,380,748	1,125,000	TBD	675,051	N/A	TBD	670,539	N/A	TBD	1,035,158	N/A
Facility Construction	TBD	3,720,637	2,155,000	TBD	1,241,195	N/A	TBD	913,568	N/A	TBD	1,565,874	N/A
Commissioning		1,409,428	876,000		718,454	N/A		275,217	N/A		415,757	N/A
Technical Support/Transition	TBD	185,000	50,000	TBD	56,292		TBD	42,332		TBD	86,376	
Contingency/Fee	TBD	2,019,210	100,000	TBD	414,765	N/A	TBD	570,100	N/A	TBD	1,034,346	N/A
Total, Total Project Cost	TBD	12,263,000	5,781,000	TBD	3,891,638	N/A	TBD	3,171,897	N/A	TBD	5,199,465	N/A

a) Equipment/Procurement dollars represent costs of plant equipment, bulk plant material, and acquisition services.

b) Facility construction dollars represent construction costs through system turnover.

c) Commissioning dollars represent the cost of startup and cold commissioning.

d) Technical support/transition represents the cost of federal assurance oversight support to the federal project director and project transition costs.

e) Contingency/Fee dollars represent the fee and Department project contingency.

**Environmental Management/
River Protection/01-D-416 Waste
Treatment and Immobilization Plant,
Hanford, WA**

FY 2022 Congressional Budget Justification

7. Schedule of Appropriation Requests

(Dollars in Thousands)

Request Year	Type	Prior Years	FY 2020	FY 2021	FY 2022	Outyears	Total
FY 2016	TEC/TPC	11,450,585	-	-	-	-	12,263,000
FY 2017	TEC/TPC	11,445,585	-	-	-	-	12,263,000
FY 2018	TEC/TPC	11,934,613	-	-	-	-	12,263,000
FY 2019	TEC/TPC	12,714,613	-	-	-	TBD	TBD
FY 2020	TEC/TPC	12,714,613	816,000	-	-	TBD	TBD
FY 2021	TEC/TPC	12,714,613	816,000	609,924	-	TBD	TBD
FY 2022	TEC/TPC	12,714,883	816,000	811,000	666,000	TBD	TBD

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	40
Expected Future Start of D&D of this capital asset (fiscal quarter)	TBD

Related Funding Requirements

(Budget Authority in Millions of Dollars)

	Annual Costs		Life Cycle Costs	
	Previous Total Estimate	Current Total Estimate	Previous Total Estimate	Current Total Estimate
Operations and Maintenance	TBD	TBD	TBD	TBD

Operations will start after the project is completed. These costs are included in Project Baseline Summary ORP-0070, "Waste Treatment and Immobilization Plant," and are therefore not included in this Project Data Sheet.

9. D&D Information

This project is not replacing existing facilities.

**Environmental Management/
River Protection/01-D-416 Waste
Treatment and Immobilization Plant,
Hanford, WA**

FY 2022 Congressional Budget Justification

The location of this construction project is an environmental management closure site and, therefore, is exempt from the “one-for-one” requirement.

10. Acquisition Approach

The project is being executed in accordance with the project management requirements in DOE O 413.3B. The following critical decisions were approved after the December 2000 award:

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

The following actions planned for the future were established with BCP-02 approval by the Deputy Secretary:

1. Critical Decision 4a: Approve Start of Initial Operations (hot commissioning) for Direct Feed Low Activity Waste – August 2023
2. Start of Hot Operations Direct Feed Low Activity Waste – TBD

The final Critical Decision 4 and “Final Design Complete” dates for the High-Level Waste and Pretreatment facilities will be set at an indeterminate future date.

Savannah River

Overview

The Savannah River Site will support the Department of Energy to meet the cleanup challenges of the nation's Manhattan Project and Cold War legacy responsibilities. This support has been demonstrated through the Site's successful removal of legacy transuranic waste, and high-level radioactive liquid waste removal, stabilization and disposition with subsequent closure of eight high-level waste tanks. The Savannah River Site Office of Environmental Management mission includes safely storing, treating, and disposing of a variety of radioactive and hazardous waste streams, remediating the environment, deactivating and decommissioning excessed facilities, stabilization and immobilization of high-level waste, and the secure storage of foreign and domestic nuclear materials including spent nuclear fuel and plutonium. The end-state of the Savannah River Site will be the elimination or minimization of nuclear materials, spent nuclear fuel, plutonium, and waste through safe stabilization, treatment, and/or disposition. All EM-owned facilities will be decommissioned once work scope is complete. Waste units will be remediated. Contaminated groundwater will either be remediated or undergoing remediation. Units where residual materials are left in place will be under institutional controls comprised of access restrictions and land use controls, inspections, maintenance, monitoring, and remedial measures/corrective action(s), as appropriate.

EM also has stewardship responsibilities for the Savannah River National Laboratory, a Federally Funded Research and Development Center that applies unique and specialized capabilities to assist our Nation in mitigating the hazards associated with the Cold War legacy waste; sustaining and improving our Nation's nuclear security; and advancing our Nation's ability to achieve net-zero emissions no later than 2050. The Savannah River National Laboratory leverages its competencies and capabilities to advance solutions to these critical national needs for all its customers and applies developed technologies to assist sites across the DOE complex in meeting cleanup requirements.

The direct maintenance and repair activities at Savannah River are estimated to be \$72,524,000.

The Savannah River Operations Office plans to purchase the following vehicle in FY 2022: 1 Hazmat Fire Response Truck.

Highlights of the FY 2022 Budget Request

The Nuclear Materials Stabilization and Disposition Program will meet 50 U.S. Code § 2633 that requires continued operations and maintaining a high state of readiness for H-canyon. In FY 2022, the Department will maintain safe and secure storage of special nuclear material and continue activities in K-area to down blend and package plutonium for disposal at the Waste Isolation Pilot Plant in Carlsbad, New Mexico. The Nuclear Material Stabilization and Disposition Program will provide safe storage of spent nuclear fuel in L-Basin and support receipts of research reactor spent nuclear fuel from both domestic and foreign sources.

The Solid Waste Stabilization and Disposition will continue to store, treat and dispose of 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. Continuing risk reduction efforts through consolidation of five (5) different waste tracking and reporting databases into a web-based system with capability for future mobility and providing a more robust and reliable system.

The Liquid Waste Program will achieve additional risk reduction by stabilization and immobilization of high activity radionuclides through vitrification into canisters at the Defense Waste Processing Facility and disposition of low-level waste in Saltstone Disposal Units. The Salt Waste Processing Facility, a key component in separating radionuclides from the salt waste, became operational in January 2021. This brings the whole liquid waste system into full operations, making it capable of processing the bulk of the waste stored in the tank farms over the next decade. The FY 2022 request includes other project cost and total estimated cost funding for two line-item construction projects: Saltstone Disposal Units #8 and #9 (\$73,500,000) and Saltstone Disposal Units 10-12 (\$23,900,000).

The mission of the Saltstone Disposal Units #8 and #9 project is to construct two cylindrical reinforced concrete tanks designed to contain approximately 30,000,000 gallons of Saltstone grout each. The \$73,500,000 requested for the Saltstone Disposal Units #8 and #9 includes \$68,000,000 of Line-Item funds for design and construction activities and \$5,500,000 of Other Project Costs. The mission of the Saltstone Disposal Units 10-12 Project is to construct three cylindrical reinforced concrete tanks designed to contain approximately 30,000,000 gallons of Saltstone grout each. The \$23,900,000 requested for the Saltstone Disposal Units 10-12 includes \$19,500,000 of Line-Item funds for design and construction activities and \$4,400,000 of Other Project Costs. The Other Project Cost portion of Saltstone Disposal Units 8-9 and 10-12 (\$5,500,000 and \$4,400,000, respectively) is included in the Liquid Waste Operations budget.

The Soil and Water Remediation and Facility Deactivation and Decommissioning Program will continue to remediate Savannah River Site contaminated soils, groundwater, streams (and associated wetlands), and waste sites, governed through enforceable regulatory milestones and commitments and to deactivate and decommission excessed facilities owned by the Office of Environmental Management.

The Savannah River Community and Regulatory Support Program supports the Citizens Advisory Board, the States of South Carolina and Georgia for emergency management activities, South Carolina Department of Natural Resources for maintaining the Crackerneck Wildlife Management Area and Ecological Preserve, South Carolina Department of Health and Environmental Control and the Environmental Protection Agency oversight and implementation of the Federal Facility Agreement, and South Carolina Department of Health and Environmental Control for implementation of the DOE and South Carolina Department of Health and Environmental Control Agreement in Principle for the Environmental Surveillance and Oversight Program for independent and periodic monitoring performed by South Carolina Department of Health and Environmental Control of discharges, emissions or biological parameters as necessary and required to verify the effectiveness of the DOE programs.

The Safeguards and Security Program will continue to protect nuclear materials, sensitive weapon and nuclear material production technology, equipment, information facilities, and support the Savannah River Site remediation and cleanup programs through overall site access security and protection of personnel and government property as part of EM's overall landlord responsibilities for the 310 square mile nuclear reservation. This request includes EM's share of cyber security scope to protect government information and technology systems in support of the missions executed at the Site within the existing Safeguards and Security PBS SR-0020 structure.

The Savannah River National Laboratory will continue to support EM environmental remediation efforts at Savannah River, Headquarters and across the EM complex as well as National Nuclear Security Administration Tritium Research and Development and other national security missions.

Infrastructure

EM manages a portfolio of facilities and infrastructure needed for its mission, some of which are degraded to a level that puts them at risk for supporting missions. Although many of EM's facilities and infrastructure are intended to be shut down and demolished at some point in the future, EM has been participating in Department-wide efforts to assess its infrastructure and identify investments. EM will make investments in infrastructure to reduce the consequences of failures that will impact the reliability of our safety systems, waste processing and disposal, tank closure, and other cleanup Mission completion.

Also included are line-item construction projects: 18-D-402 the Emergency Operations Center Replacement Project (\$8,999,000); and, 19-D-701, the SRS Security Replacement Project (\$5,000,000). The Emergency Operations Center Replacement project is being designed to replace existing emergency operations facilities that are in poor condition and past their design life. The SRS Security System Replacement Project is replacing the existing aging and at risk E3S security system with the DOE standard ARGUS System.

FY 2021 and 2022 Key Milestones/Outlook

- (October 2020) Salt Waste Processing Facility began Hot Commissioning
- (November 2020) Issue D Area Operable Unit Second Early Action record of decision Remedial Alternative Selection in Support of D Area Operable Unit (4 units)
- (November 2020) Submit FFA Appendix E for Fiscal Year 2021
- (November 30, 2020) Submit D-Area Operable Unit Second Early Action Land Use Control Implementation Plan (4 units)
- (December 2020) Issue Sixth Five-Year Remedy Review Report for Savannah River Site Operable Units with Engineered Cover Systems
- (January 2021) Submit 2013 Resource Conservation and Recovery Act Permit Renewal Application for the F-Area HWMF (Volume IV, Rev.0)
- (January 2021) Submit 2013 Resource Conservation and Recovery Act Permit Renewal Application for the H-Area HWMF (Volume V, Rev.0)
- (January 2021) Reduce discharge from the plume of all constituents in the surface water at seep line at the F-Area Hazardous Waste Management Facility
- (January 2021) Evaluate the performance of Phase 2 and Submit a Phase at the F-Area Hazardous Waste Management Facility
- (January 2021) Reduce the discharge of constituents in the surface water at seep line for the H-Area Hazardous Waste Management Facility
- (January 2021) Evaluate Phase II and submit Corrective Action Plan for the H-Area Hazardous Waste Management Facility
- (January 2021) Salt Waste Processing Facility began Hot Operations
- (February 2021) Issue Sixth Five-Year Remedy Report for Savannah River Site Operable Units with Groundwater Remedies
- (June 2021) Submit D-Area Ground Water Operable Unit (D-Area Upgradient Sources) Resource Conservation and Recovery Act Facility Investigation/Remedial Investigation – Work Plan
- (September 2021) Initiate D-Area Ash Basin Remedial Action Start in Support of D-Area Operable Unit (4 milestones)
- (September 2021) Submit F-Area Early Action Resource Conservation and Recovery Act Feasibility Investigation/Remedial Investigation In support of F-Area Operable Unit (14 units)
- (October 2021) Submit Lower Three Runs Integrator Operable Units Remedial Action Implementation Plan
- (October 2021) Submit Lower Three Runs Integrator Operable Units Land Use Controls Implementation Plan
- (November 2021) Submit Appendix E for Fiscal Year 2022
- (November 2021) Submit Federal Facility Compliance Act Site Treatment Plan Annual Update
- (November 2021) Issue Record of Decision for Stormwater Outfall A-013 Operable Unit
- (January 2021) Issue Lower Three Runs Integrator Operable Unit Rev. 0 Record of Decision Remedial Alternative Selection
- (February 1, 2022) Issue Sixth Five-Year Remedy Review Report for Savannah River Site Operable Units with Engineered Cover Systems
- (February 2022) Submit Early Construction and Operational Disposal Site L-3, L-Area Rubble Pits RFI/RI Work Plan
- (September 2022) Initiate Resource Conservation and Recovery Act Feasibility Investigation/Remedial Investigation Field Start for F-Area Operable Unit (Includes 14 sub-units with 14 associated milestones)
- (September 2022) Initiate Field Start of Early Construction and Operational Disposal Site L-3 and L-Area Rubble Pits (131-1L & 131-4L) Operable Unit

Regulatory Framework

The DOE-Savannah River Operations Office and its contractors will continue to work proactively with the South Carolina Department of Health and Environmental Control, the Environmental Protection Agency-Region 4, the Nuclear Regulatory Commission, the Defense Nuclear Facilities Safety Board, and stakeholders to facilitate the accomplishment of the

Environmental Management/ Savannah River

environmental cleanup and risk reduction objectives at Savannah River Site. There are several key agreements and enacted legislation to facilitate cleanup of the Site:

- The Federal Facility Agreement for the Savannah River Site.
- Resource Conservation and Recovery Act Permits.
- South Carolina Industrial and Wastewater Permits.
- Public Law 107-107, National Defense Authorization Act for Fiscal Year 2002, Section 3155, Disposition of Surplus Defense Plutonium at the Savannah River Site, Aiken, South Carolina.
- Section 3137 of the National Defense Authorization Act for Fiscal Year 2001 (Public Law 106-398) as amended by Section 3115, of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136). (50 U.S. Code § 2633 continuation of processing treatment and disposal of legacy nuclear materials.)
- The Savannah River Site Treatment Plan in accordance Section 3021(b) of the Resource Conservation and Recovery Act as added by the Federal Facility Compliance Act.
- FY 2005 Saltstone Disposal Facility Industrial Solid Waste Landfill Permit.
- Section 3116 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005.
- Nuclear Cooperation Agreements.
- Dispute Resolution Agreement for Alleged Violations of Class 3 Industrial Solid Waste Landfill Permit Facility.

Contractual Framework

Program planning and management at the Savannah River Site is conducted through the issuance and execution of contracts to large and small businesses. DOE - Savannah River Site develops near and long-term planning approaches in order to develop contract strategies and program/project plans at a more detailed level. Selected contractors then execute these plans to complete cleanup on cost and schedule. Current contracts at the Savannah River Site include:

- Savannah River Nuclear Solutions LLC: Contract is a Management and Operations contract for management and operation of the infrastructure, nuclear materials facilities, the Savannah River National Laboratory, soil and water remediation, solid waste, and deactivation and decommissioning work at the Savannah River Site. Savannah River Nuclear Solutions also manages and operates National Nuclear Security Agency activities. This contract is a cost-plus-award-fee contract. The contract covers the period August 1, 2008 - July 31, 2013, with options through July 31, 2018. DOE-Savannah River has exercised all options through July 31, 2018. Since a new contract had not been awarded prior to the end date of the period of performance, DOE extended the contract for a 14-month period with two subsequent 1-year options. The follow-on acquisition for these services is currently in the acquisition-planning phase.
- Savannah River Remediation LLC: Contract covers liquid radioactive waste storage, treatment, stabilization, and disposition and cleaning and closing of the liquid radioactive waste storage tanks at the site for the period July 1, 2009, to June 30, 2015, with a two-year option - July 1, 2015, to June 30, 2017. In addition to exercising the 2-year option, DOE invoked the contract clause cited in Federal Acquisition Regulation 52-217-8, Option to Extend Services, providing an additional 6-month extension to continue the current work through December 31, 2017, while awaiting award of the follow-on liquid waste operations contract. This contract is a cost-plus-award-fee contract. The follow-on contract award was announced in the fall of 2017; however, protests were filed with the Government Accountability Office and DOE extended the contract through May 31, 2018, to allow for the continuation of Liquid Waste services while DOE supported the Government Accountability Office process and fostered competition for award of the follow-on competitive Liquid Waste services procurement. In February 2018, Government Accountability Office sustained one of the protests and recommended further evaluation of proposals. This resulted in an additional 10-month extension of the Savannah River Remediation contract through March 31, 2019, to allow for the continuation of Liquid Waste services while DOE supports the Government Accountability Office process. In April 2018, a revised Request for Proposals was released and revised proposals were received in May 2018. In February 2019, this solicitation was cancelled, and a new Savannah River Site Integrated Mission Completion Sources Sought Notice was issued May 30, 2019, that included Liquid Waste Stabilization/Disposition and Nuclear Materials. This resulted in DOE extending the current contract by 18 months through September 30, 2020, to allow for the continuation of Liquid Waste services while awaiting award of the follow-on Integrated Mission Completion contract. Since the Savannah River Site Integrated Mission Completion Contract acquisition process is still in progress, DOE has extended the Savannah River Remediation contract from October 1, 2020, to September 30, 2021, followed by three 4-month options to extend through September 30, 2022.

- Centerra Group, LLC: Contract covers the protective services at the Savannah River Site for a period of performance through June 7, 2021, and an option from June 8, 2021, through October 7, 2021. It is a cost-plus-award-fee contract. The follow-on acquisition for these services is currently in the acquisition-planning phase.
- Parsons Government Services, Inc.: Contract covers design, construction, commissioning, and the first year of operations of the Salt Waste Processing Facility. The contract was awarded on September 17, 2002, with the anticipated completion Critical Decision-4 date of November 2013. Subsequent contract changes and realized project risks moved the Critical Decision-4 date, as approved by the DOE Deputy Secretary, to January 2021. Construction was declared complete on May 26, 2016; with Critical Decision-4 achieved on August 17, 2020. Hot Commissioning began October 5, 2020. Completion of commissioning and start of radioactive One Year of Operations began January 18, 2021. This contract is a cost-plus-incentive-fee contract.
- Ameresco Federal Solutions: Contract is for the construction and operation of the Biomass Cogeneration Facility and Heating Plant. This delivery order is for the period May 15, 2009 - April 14, 2031. Ameresco will operate and maintain all constructed facilities until Delivery Order completion. It is a third-party financed Energy Savings Performance contract to produce steam and electricity in support of site missions.
- Battelle Savannah River Alliance: Contract is a Management and Operation contract for the management and operation of the Savannah River National Laboratory. It is a Cost-Plus-Award-Fee contract. It was awarded in December of 2020, contract transition was initiated in February of 2021 and transition will complete in June 2021. The contract base term is 5 years with 5 one-year award term periods. The contractor is expected to provide all necessary technical, operational, and management functions to manage and operate Savannah River National Laboratory and perform the DOE missions assigned to Savannah River National Laboratory.

Strategic Management

The Savannah River Site cleanup strategy is to eliminate or minimize nuclear materials, spent nuclear fuel, plutonium, and waste through safe stabilization, treatment, and/or disposition. The goal is also to reduce costs of continuing operations, surveillance and maintenance, decommissioning facilities, and remediating groundwater and contaminated soils consistent with regulatory agreements. DOE's completion strategy provides a comprehensive risk-based approach to the legacy cleanup project, such as dispositioning of radioactive liquid waste through vitrification of high activity component at the Defense Waste Processing Facility, use of existing Savannah River Site facilities to receive, store, and disposition aluminum-clad spent nuclear fuel, and decommissioning of all facilities not identified for continuing missions.

The Site's facility footprint has been steadily reduced through execution of the Site's cleanup strategy. The objective of soils and groundwater cleanup and facility decommissioning is to achieve an end state with risk levels compatible with future non-residential use of the Savannah River Site.

The following present the highest risks to timely achievement of the program's strategic goals:

- Start and ramp-up of operations in the Salt Waste Processing Facility.
- Maintaining and operating deteriorating facilities.

Savannah River

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Savannah River Site				
Radioactive Liquid Tank Waste Stabilization and Disposition				
SR-0014C / Radioactive Liquid Tank Waste Stabilization and Disposition-2035				
Operating	820,106	910,832	890,865	-19,967
Construction				
05-D-405: Salt Waste Processing Facility, SR	21,200	0	0	0
17-D-402: Saltstone Disposal Unit #7, SR (SR-0014C)	40,034	10,716	0	-10,716
18-D-402: Saltstone Disposal Unit #8/9, SR (SR-0014C)	20,000	65,500	68,000	+2,500
20-D-401: Saltstone Disposal Unit 10 11 12	500	562	19,500	+18,938
	901,840	987,610	978,365	-9,245
Savannah River Legacy Pensions				
SR-0101 / Savannah River Legacy Pensions	0	0	130,882	+130,882
Savannah River Risk Management Operations				
SR-0011C / NM Stabilization and Disposition	360,558	349,724	312,760	-36,964
SR-0013 / Solid Waste Stabilization and Disposition	43,825	50,071	45,968	-4,103
SR-0030 / Soil and Water Remediation & Facility Deactivation and Decommissioning	65,508	56,412	55,439	-973
SR-0041 / Surveillance, Maintenance, and Deactivation	26,324	27,264	21,000	-6,264
SR-0042 / Infrastructure and Land Management				
Operating	10,151	16,529	17,557	+1,028
Construction				
18-D-402: Emergency Operations Center	6,792	6,500	8,999	+2,499
19-D-701: SR Security System Replacement	4,525	1,000	5,000	+4,000
20-D-402: Advanced Manufacturing Collaborative Facility (AMC)	25,000	25,000	0	-25,000
	46,468	49,029	31,556	-17,473
Subtotal, Savannah River Risk Management Operations	542,683	532,500	466,723	-65,777

SR Community and Regulatory Support

SR-0100 / Savannah River Community and Regulatory Support

Total, Savannah River Site**Safeguards and Security**

SR-0020 / Safeguards and Security

Total, Defense Environmental Cleanup

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
11,249	11,549	5,805	-5,744
1,455,772	1,531,659	1,581,775	+50,116
174,152	171,211	164,444	-6,767
1,629,924	1,702,870	1,746,219	+43,349

The FY 2022 budget request supports the establishment of a new Congressional control point within the Savannah River site to support the direct funding of Savannah River Legacy Pensions.

The funding table below provides a comparable display of the impacted activities and a comparable display will be continued throughout this budget chapter to aid in budget review.

Savannah River

Funding (\$K)

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Defense Environmental Cleanup

Savannah River Site

Radioactive Liquid Tank Waste Stabilization and Disposition

SR-0014C / Radioactive Liquid Tank Waste Stabilization and Disposition-2035

Operating	763,520	834,693	890,865	+56,172
Construction				
05-D-405: Salt Waste Processing Facility, SR	21,200	0	0	0
17-D-402: Saltstone Disposal Unit #7, SR (SR-0014C)	40,034	10,716	0	-10,716
18-D-402: Saltstone Disposal Unit #8/9, SR (SR-0014C)	20,000	65,500	68,000	+2,500
20-D-401: Saltstone Disposal Unit 10 11 12	500	562	19,500	+18,938
	845,254	911,471	978,365	+66,894

Savannah River Legacy Pensions

SR-0101 / Savannah River Legacy Pensions	98,657	127,465	130,882	+3,417
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Savannah River Risk Management Operations

SR-0011C / NM Stabilization and Disposition	333,135	316,579	312,760	-3,819
SR-0013 / Solid Waste Stabilization and Disposition	40,608	45,724	45,968	+244
SR-0030 / Soil and Water Remediation & Facility Deactivation and Decommissioning	60,589	50,487	55,439	+4,952
SR-0041 / Surveillance, Maintenance, and Deactivation	24,285	24,771	21,000	-3,771
SR-0042 / Infrastructure and Land Management				
Operating	10,151	16,529	17,557	+1,028
Construction				

Environmental Management/ Savannah River

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
18-D-402: Emergency Operations Center	6,404	5,822	8,999	+3,177
19-D-701: SR Security System Replacement	4,266	896	5,000	+4,104
20-D-402: Advanced Manufacturing Collaborative Facility (AMC)	25,000	25,000	0	-25,000
	45,821	48,247	31,556	-16,691
Subtotal, Savannah River Risk Management Operations	504,438	485,808	466,723	-19,085
SR Community and Regulatory Support				
SR-0100 / Savannah River Community and Regulatory Support	11,249	11,549	5,805	-5,744
Total, Savannah River Site^a	1,459,598	1,536,293	1,581,775	+45,482
Safeguards and Security				
SR-0020 / Safeguards and Security	170,326	166,577	164,444	-2,133
Total, Defense Environmental Cleanup	1,629,924	1,702,870	1,746,219	+43,349

^a FY 2020 and FY 2021 totals do not match the enacted levels due to the portion of Safeguards and Security funding allocated for pension comparability.

Savannah River
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Savannah River Site

Radioactive Liquid Tank Waste Stabilization and Disposition

SR-0014C / Radioactive Liquid Tank Waste Stabilization and Disposition-2035

There were several changes in the Liquid Waste Program in FY 2022.

- Liquid Waste increased by \$29,622,000 as a result of additional Defense Waste Processing Facility operations costs for work on Failed Equipment Storage Vault, Melter #5, and the last facility modification to support ramp up in Salt Waste Processing Facility operations; an increase in number of tanks and preparation activities for Defense Waste Processing Facility sludge feed; and an increase in share of site-wide services and landlord support functions, program support and fee for the liquid waste contractor.
- Salt Waste Processing Operations increased by \$19,542,000 due to the transition to the Liquid Waste contractor and the procurement of long lead critical equipment, increased number of tanks and preparation activities for Salt Waste Processing Facility feed, and increase in other project cost costs to support multiple Salt Disposal Units being built in FY2022.
- Saltstone Disposal Unit Projects increased by \$10,722,000 to support continued construction of Saltstone Disposal Unit 8 and starting tank construction in Saltstone Disposal Unit 9 following completion of floor liner and mud mat in FY 2021; construction on Saltstone Disposal Unit is also expected to commence in FY 2021; completion of design and start of site preparation for Saltstone Disposal Unit 10-12 following Critical Decision-2 approval in FY 2021. This was offset by expected completion of Saltstone Disposal Unit 7 in FY 2021.
- Regulatory Commitments increased by \$7,008,000 due to scheduled closure work being completed in FY 2022 for Diversion Boxes 5 and 6 in F-Tank Farm, performing heel removal and annulus cleaning in Tank 15 preparing for closure, and a full year of Tank Closure Cesium Removal operations.

+66,894

Savannah River Legacy Pensions

SR-0101 / Savannah River Legacy Pensions

- Expected legacy pension obligation increased.

+3,417

Savannah River Risk Management Operations

SR-0011C / NM Stabilization and Disposition

- No significant change.

-3,819

SR-0013 / Solid Waste Stabilization and Disposition

- No significant change.

+244

SR-0030 / Soil and Water Remediation & Facility Deactivation and Decommissioning

- Increase is due to continued D Area deactivation and decommissioning for the development of Regulatory documents, Engineering documents, and procurement documents to support the deactivation (asbestos abatement, universal waste removal). +4,952

SR-0041 / Surveillance, Maintenance, and Deactivation

- Decrease is due to reduced surveillance and maintenance costs associated with deactivation activities in Building 235-F and reduced maintenance required in F-Canyon. -3,771

SR-0042 / Infrastructure and Land Management

The FY2022 request include the following changes:

- Increase in the direct funded scope with U.S. Forest Service and the Savannah River Ecology Laboratory. (+\$1,810,000)
- Emergency Operations Center project (+2,499,000) –Increase is to complete final design in FY 2022.
- Security System Replacement Project (+4,000,000) –Supports construction start for K Area Argus. Design is expected to complete in FY2022.
- The remaining total project cost for the Advanced Manufacturing Collaborative Facility was funded in FY 2021 (-\$25,000,000). -16,691

SR Community and Regulatory Support

SR-0100 / Savannah River Community and Regulatory Support

- The decrease reflects elimination of payment in lieu of tax payments. -5,744

Defense Environmental Cleanup

Safeguards and Security

SR-0020 / Safeguards and Security

- Decrease is due to the National Nuclear Security Administration contribution for cyber security thus off setting EM funding requirements. -2,133

Total, Savannah River	+43,349
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Solid Waste Stabilization and Disposition (PBS: SR-0013)

Overview

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

The scope of this PBS supports storage, treatment and disposal functions for transuranic, low-level radioactive waste, mixed low-level radioactive waste, hazardous, and sanitary waste, as well as pollution prevention, waste minimization, waste certification, and other waste management support functions including updating the five (5) waste tracking and reporting databases into one more robust and reliable web-based system.

This PBS also includes direct maintenance and repair that are applicable to these areas.

The Solid Waste Management program is responsible for the disposition of the Savannah River Sites' solid wastes, which include sanitary, construction and demolition, hazardous, low-level radioactive waste and mixed low-level radioactive waste and transuranic wastes. Sanitary waste is household-like waste that is recycled or disposed at the Three Rivers Landfill. Construction and demolition wastes are generated by construction activities onsite and are disposed in a South Carolina Department of Health and Environmental Control-permitted landfill located onsite. Examples include slightly contaminated soil, deactivation and decommissioning debris, protective clothing, job-control waste, equipment, tools, filters, rags and papers. This type of radioactive waste is disposed onsite in engineered facilities. This type of waste is subject to regulations governing both waste types. Mixed low-level radioactive waste requires treating prior to disposal at a commercial disposal facility or a federal disposal facility at the Nevada National Security Site. Transuranic waste can include equipment, protective clothing and tools used in the production and management of these radionuclides. The inventory of transuranic waste is packaged, characterized/certified and shipped to the Waste Isolation Pilot Plant for disposal.

The Solid Waste Management program is responsible for the disposal of the legacy waste as well as the newly generated waste. The Site generates approximately 5,000 cubic meters of low-level waste annually. As of June 2021, no legacy low-level waste was in storage. The Site generates approximately 30 cubic meters of hazardous and mixed low-level waste annually. As of June 2021, no legacy hazardous or mixed low-level radioactive waste is in storage. For transuranic waste, the Site generates approximately 30 cubic meters per year. Savannah River Site has, as of June 2021, 640 cubic meters of transuranic waste (legacy and newly generated) in storage. Over 100 shipments to the Waste Isolation Pilot Plant will be required to dispose of the transuranic waste in storage.

DOE waste generator sites fund their respective site transuranic waste characterization activities such as visual examination, real time radiography, nondestructive assay, dose-to-curie conversion, and flammable gas analysis. PBS Central Characterization Project (CB-0081) funds certification of waste characterization activities of legacy and newly generated transuranic waste at Savannah River Site, Oak Ridge National Laboratory, Lawrence Livermore National Laboratory, and Los Alamos National Laboratory, whereas the Idaho National Laboratory funds its waste characterization certification. Transportation certification is funded by PBS Central Characterization Project (CB-0081).

Solid Waste Stabilization and Disposition (PBS: SR-0013)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$45,724,000	\$45,968,000	+\$244,000
<p><u>Solid Waste Management Program (\$45,724,000)</u></p> <ul style="list-style-type: none"> • Maintain Solid Waste management facilities to support site operation, including the construction debris landfill. In addition, the support of Waste Acceptance assessment needed to enable shipment to Waste Isolation Pilot Plant. • Ship 7 m³ contact-handled transuranic waste to the Waste Isolation Pilot Plant, dependent on availability to accept by the Waste Isolation Pilot Plant at the Carlsbad Field Office. • Increase number of contact-handled transuranic waste shipments to the Waste Isolation Pilot Plant. • Support treatment/storage/disposal of up to 7,103 m³ of newly generated low-level radioactive waste. • Support treatment/storage/disposal of up to 57 m³ of mixed low-level radioactive waste. • Support treatment/storage/disposal of up to 52 m³ of hazardous waste. • Support treatment/storage/disposal of sanitary waste and upgrade of waste tracking reporting database. • Update the Performance Assessment of E Area to demonstrate appropriate long-term 	<p><u>Solid Waste Management Program (\$45,968,000)</u></p> <ul style="list-style-type: none"> • Maintain Solid Waste management facilities to support site operation, including the construction debris landfill. In addition, the support of Waste Acceptance assessment needed to enable shipment to Waste Isolation Pilot Plant. • Ship 7 m³ contact-handled transuranic waste to the Waste Isolation Pilot Plant, dependent on availability to accept by the Waste Isolation Pilot Plant at the Carlsbad Field Office. • Increase number of contact-handled transuranic waste shipments to the Waste Isolation Pilot Plant. • Support treatment/storage/disposal of up to 7,103 m³ of newly generated low-level radioactive waste. • Support treatment/storage/disposal of up to 57 m³ of mixed low-level radioactive waste. • Support treatment/storage/disposal of up to 52 m³ of hazardous waste. • Support treatment/storage/disposal of sanitary waste and upgrade of waste tracking reporting database. • Update the Performance Assessment of E Area to demonstrate appropriate long-term 	<ul style="list-style-type: none"> • No significant change.

protection of the public and environment
following closure of the facilities.

protection of the public and environment
following closure of the facilities.

Soil and Water Remediation & Facility Deactivation and Decommissioning (PBS: SR-0030)

Overview

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

The scope of this PBS includes remediation of the Savannah River Site contaminated soils, groundwater, streams (and associated wetlands) and waste sites, which are governed through enforceable regulatory milestones and commitments in accordance with Resource Conservation and Recovery Act and other Permits; Comprehensive Environmental Response, Compensation, and Liability Act; and the Federal Facility Agreement to reduce risk and to protect groundwater aquifers and surface waters from the spread of contamination by addressing sources of contamination using an Area Completion Approach.

This PBS also includes direct maintenance and repair that are applicable to these areas.

Soil and Water Remediation

The Soil and Water Remediation program includes the operation and maintenance of three (3) active soil and groundwater remedial systems, and the monitoring of 35 passive (natural attenuation) regulatory required soil and groundwater remedial systems to contain contaminant plumes within the Savannah River Site boundary, and to protect human health and the environment. Also included is the continuing post-closure and post-Record of Decision care, and surveillance and maintenance at 73 closed waste sites (approximately 900 acres) and at 42 surplus facilities to prevent deterioration, environmental releases, or structural failure. The program also monitors, performs analysis and reports on over 2,000 groundwater wells (approximately 4,300 sampling activities) and five (5) major streams, the Savannah River Floodplain Swamp and the Savannah River to demonstrate effectiveness of remedial systems. Included is operation and maintenance of the Phytoremediation System operated by the US Forest Service via an interagency agreement and located at the Mixed Waste Management Facility. Provides financial assistance to the City of Savannah, Georgia for monitoring of tritium levels in the Savannah River upstream of the city's water intake facility.

Federal Facility Agreement

The FY 2022 Request also supports the next phase of regulatory projects from the rolling three-year commitments in the Federal Facility Agreement that is agreed to by the Department, South Carolina Department of Health and Environmental Control, and the Environmental Protection Agency. Included are activities performed under the financial assistance award issued to the Savannah River Ecology Laboratory for independent studies in support of the integrated operable unit program.

Area Completion

An integral part of the cleanup mission is the decommissioning of facilities constructed in support of nuclear materials production. This work was initially performed under PBS SR-0040C, Nuclear Facility Decontamination and Decommissioning - 2035, but has been combined with the work scope in PBS SR-0030, Soil and Water Remediation.

Cleanup and decommissioning will continue until all areas at the Savannah River Site are completed. Units at which waste is left are placed under post-closure care with institutional controls including access and land use restrictions, inspections, maintenance, long-term monitoring, and reporting. Groundwater corrective actions and effectiveness monitoring are performed as appropriate.

This PBS also includes direct maintenance and repair that are applicable to these areas

Soil and Water Remediation & Facility Deactivation and Decommissioning (PBS: SR-0030)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$50,487,000	\$55,439,000	+\$4,952,000
<p><u>Soil and Water Remediation (\$46,333,000)</u></p> <ul style="list-style-type: none"> • Soil and Water Remediation & Facility Deactivation and Decommissioning Program will continue to remediate Savannah River Site contaminated soils, groundwater, streams (and associated wetlands), and waste sites. • Achieve compliance with over 67 enforceable Federal Facility Agreement (Resource Conservation and Recovery Act/ Comprehensive Environmental Response, Compensation, and Liability Act) milestones and Resource Conservation and Recovery Act permit commitments. • Operate and maintain 39 regulatory-required soil and groundwater remedial systems (6 active & 33 passive) to protect groundwater aquifers, site streams, and the Savannah River. • Conduct post-closure and post-Record of Decision care, surveillance, and maintenance at 73 closed waste sites (approximately 900 acres) to prevent deterioration, and environmental releases. • Monitor, analyze, and report on over 2,000 groundwater wells and 5 major streams, the Savannah River Floodplain Swamp, and the 	<p><u>Soil and Water Remediation (\$49,439,000)</u></p> <ul style="list-style-type: none"> • Achieve compliance with over 75 enforceable Federal Facility Agreement (Resource Conservation and Recovery Act/ Comprehensive Environmental Response, Compensation, and Liability Act) milestones and Resource Conservation and Recovery Act permit commitments. • Operate and maintain 41 regulatory-required soil and groundwater remedial systems (3 active & 37 passive) to protect groundwater aquifers, site streams, and the Savannah River. • Conduct post-closure and post-Record of Decision care, surveillance, and maintenance at 73 closed waste sites (approximately 900 acres) to prevent deterioration, and environmental releases. • Monitor, analyze, and report on over 2,000 groundwater wells and 5 major streams, the Savannah River Floodplain Swamp, and the Savannah River to demonstrate effectiveness of remedial systems. • Perform surveillance and maintenance of Area Completion Projects' inactive facilities to maintain safe and stable facility conditions. 	<ul style="list-style-type: none"> • Increase is due to continued D Area deactivation and decommissioning for the development of Regulatory documents, Engineering documents, and procurement documents to support the deactivation (asbestos abatement, universal waste removal).

- Savannah River to demonstrate effectiveness of remedial systems.
 - Perform surveillance and maintenance of Area Completion Projects' inactive facilities to maintain safe and stable facility conditions.
 - Continue D-Area Coal Storage Yard Area Removal Action.
 - Initiate D-Area Operable Unit Remedial Action Start.
 - Implement activities defined in the Lower Three Runs Record of Decision.
- D Area Operable Unit (\$4,154,000)
- Initiate D-Area Operable Unit Start.
- Conduct oversight of activities performed under financial assistance awards with City of Savannah and Savannah River Ecology Laboratory, and the interagency agreement with US Forest Service.
 - Initiate Field Start for Facilities in the F-Area Operable Unit (14 milestones).
 - Issue Record of Decision for A-013 Outfall Operable Unit.
 - Initiate Field Start for the Early Constructions and Operational Disposal Site L-3 and L-Area Rubble Pits (131-1L & 131-4L) Operable Unit.
 - Prepare to implement activities defined in the Lower Three Runs Record of Decision.
- D Area Operable Unit (\$6,000,000)
- Continue D&D activities of inactive facilities.
-

Surveillance, Maintenance and Deactivation (PBS: SR-0041)

Overview

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

This PBS covers scope for the surveillance and maintenance of non-operating nuclear facilities (currently consisting of F-Area Complex Facilities, as well as the Receiving Basin for Off-Site Fuels Facility in H-Area), deactivation of the F-Area Materials Storage Facility (235-F), and future deactivation of nuclear facilities currently operating at the Savannah River Site. The surveillance and maintenance end-state will be accomplished when the capabilities of the facilities are no longer needed (all remaining materials have been dispositioned), and deactivation has been completed and are ready to be turned over for decommissioning.

F-Area Complex

The F-Area Complex is comprised of the deactivated F Canyon building including the FB-Line, Building 235-F, large storage tanks used to hold various chemical solutions, industrial support facilities, administrative buildings, sand filter facilities, and supporting utilities including water, steam, electricity, industrial air, conditioned air, underground transfer piping, and sanitary waste. Like the H Canyon, the F Canyon was also built in the 1950s and is approximately the same size as H Canyon (1,028 feet long, 122 feet wide and 71 feet tall) with FB-Line located on top of the F Canyon. Although similar in size and capabilities to H Canyon, the missions for these two facilities were different with F Canyon focused on plutonium production and H Canyon focused on uranium recovery.

This PBS supports all general area maintenance, as well as emergency preparedness, firewater, utilities, lighting, building and grounds maintenance. The safety envelope includes surveillance and maintenance activities for the F-Area Complex that include:

- Maintaining an operating staff to meet staffing levels identified in safety requirements.
- Maintaining and operating facility ventilation, electrical, fire detection pull stations, and air monitoring systems.
- Maintaining operator qualifications to include continuing training and emergency response.
- Maintaining safety basis documents and operating procedures (including compliance with Documented Safety Analysis).
- Conducting preventive and corrective maintenance on equipment required to maintain the safety posture of facilities in a deactivated state.
- Servicing critical infrastructure to maintain the safety envelope.
- Maintaining compliance with the Site Fire Protection, Nuclear Criticality Safety, Configuration Control, Radiation Protection, Quality Assurance, Equipment Maintenance, Chemical Control, Radioactive and Hazardous Materials Shipping/Receiving, Work Control, Waste Management, Environmental Compliance, and Industrial Hygiene Programs.
- Performing periodic inspection entries into facilities which require detailed planning and hazards analysis by engineering, operations, and radiological protection due to the nature of radiological contamination.

Receiving Basin for Offsite Fuels Facility

A project was initiated in 1997 to de-inventory the Receiving Basin for Off-Site Fuels Facility due to size limitations that would not support increased off-site receipts and transfer the spent nuclear fuel to L-Basin. This effort was completed in 2006 with the complete de-inventory and shutdown of the Receiving Basin for Off-Site Fuels Facility.

The Receiving Basin for Offsite Fuels surveillance and maintenance activities include periodic rounds, inspections, and maintenance to ensure the facility does not pose risk to the environment, site workers, or the general public; activities needed to maintain the facility in accordance with safety basis requirements; maintenance of operating procedures, continued operator training, and support for housekeeping and safety initiatives to comply with Department of Labor, Office of Occupational Safety and Health Administration requirements; and activities necessary for cost-effective management, planning, and oversight.

Building 235-F

Building 235-F at the Savannah River Site was part of the original construction in the early 1950s. The facility is a blast resistant, windowless, two-story, reinforced concrete structure about 222 feet long, 109 feet wide, and 28 feet high located in F-Area near the F Canyon.

Building 235-F houses several partially deactivated processing lines including the Plutonium Fuel Form facility, Actinide Billet Line, Plutonium Experimental Facility, and the old metallography lab glovebox.

A project to deactivate the 235-F facility was started in FY2020 with plan to complete deactivation in FY2022. The deactivation project involves the shutdown of all active structures, systems and components (SSCs) in Building 235-F along with electrical/mechanical isolation of the building. As currently scoped, the deactivation project would not include large-scale dismantlement and removal (D&R) of equipment or demolition of structures.

Surveillance, Maintenance, and Deactivation (PBS: SR-0041)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$24,771,000	\$21,000,000	-\$3,771,000
<u>Facility Surveillance and Maintenance (\$19,205,000)</u> <ul style="list-style-type: none"> Continue surveillance and maintenance of the F-Area Complex Facilities as well as the Receiving Basin for Off-Site Fuels Facility. <u>235-F Deactivation (\$5,566,000)</u>	<u>Facility Surveillance and Maintenance (\$19,764,000)</u> <ul style="list-style-type: none"> Continue surveillance and maintenance of the F-Area Complex Facilities including F-Canyon, FB Line, and 235-F, as well as the Receiving Basin for Off-Site Fuels Facility. 	<ul style="list-style-type: none"> Decrease is due to reduced surveillance and maintenance costs associated with deactivation activities in Building 235-F and reduced maintenance required in F-Canyon.

- Implement 235-F Facility deactivation safety documented controls.

235-F Deactivation (\$1,236,000)

- Complete 235-F facility ventilation modifications.
-

Infrastructure and Land Management (PBS: SR-0042)

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

The scope of this PBS supports general Site functions including land management activities to sustain natural resources and maintenance of Site's roads, bridges, and dams and supports the Savannah River Site forest timber management program to maintain and sustain a healthy forest that produces a marketable timber crop for harvesting and sales. Also covered in the scope of this PBS are general site infrastructure projects. The scope of this PBS will continue in support of all other Savannah River PBSs and will not conclude until after completion of all area closures.

General Site Infrastructure

This PBS supports the capital investment in the general site infrastructure which is defined as infrastructure that is non-program specific. The type of infrastructure includes utilities that connect to the various areas onsite; transportation systems between the various areas; communications systems connecting the various areas; health, safety, and environmental systems that serve the entire site, and emergency operations services.

The deteriorating infrastructure has increasingly resulted in reduced operational capability and higher repair or replacement costs. As a result, cannibalization of parts, costly piecemeal maintenance, temporary modifications, and in some cases, work-arounds have been performed in order to sustain functional performance of many facilities, equipment and systems. These practices have resulted in an excessive, expensive, and inefficient utilization of resources and increased the cost of future capital infrastructure investment.

The Emergency Operations Center Replacement Line Item Project (18-D-402) relocates the primary and alternate Savannah River Site Operations Center (site 911 and communications center), and the Emergency Operations Center (Emergency Operations Center command and support center), from their current locations. The primary Savannah River Site Operations Center and Emergency Operations Center are located in the basement of an abandoned, 70-year-old, 150,000 sf administrative building, which is past its design life. The facility is on the Savannah River Site Decommissioning and Demolition list and will be turned over for closure once the emergency operations functions are relocated. The facility has a history of mold and mildew issues, water intrusion, sewer, and asbestos hazards. These hazards have already caused 90% of the facility to be condemned and continue to affect the health and wellbeing of the current occupants.

The Savannah River Security System Replacement Line Item Project (19-D-701) replaces the Electronic Safeguards & Security System, which has exceeded its useful life, with the DOE standard ARGUS system. Components of the existing system are no longer commercially available, impacting system reliability and increasing security costs.

The Advanced Manufacturing Collaborative Line item Project, proposed in FY 2020, is to support design and construction of a modern research and development facility accessible by commercial industry and academia. It will focus on developing safer, faster, and more cost effective nuclear chemical manufacturing and cleanup technologies and expertise to tackle the remaining challenges in the cleanup of radioactive and chemical waste from Cold War activities, nuclear research, and non-proliferation missions.

Land Management

Through an Interagency Agreement with the Savannah River Site Operations Office, the United States Forest Service, Savannah River manages approximately 170,000 acres of onsite natural resources and forest. This includes:

- Implementation of the Savannah River Site Natural Resource Management Plan for compliance with federal and other regulations associated with natural and cultural resource management.
- Managing 65,000 acres for red-cockaded woodpecker habitat. The Forest Service aided in the growth of the endangered red-cockaded woodpecker population, which started with four birds in 1986 and now stands at approximately 330.
- Completing over 20,000 acres of prescribed burns annually. Prescribed burns help reduce accumulations of forest fuel, improve the forestland health, manage habitats of threatened and endangered species, and restore native environments for trees such as the longleaf pine.
- Reintroducing native plants to enhance the restoration of the native savanna.
- Controlling non-native invasive plants and animals, such as feral hogs.
- Improving watershed conditions through restoring vegetation in old borrow pits and spoil piles, stabilizing stream channels, and restoring Carolina Bays and wetlands in swamp areas on the Savannah River Site.
- Partnering with the DOE, Savannah River Site contractors, and national conservation programs to host the annual Wounded Warrior/Mobility Impaired Ultimate Turkey Hunt and the Wounded Warrior/Mobility Impaired Fishing Challenge.
- Maintaining the Savannah River Site's secondary roads, boundary, and wellness trails.
- Managing, maintaining, and sustaining a healthy forest that produces a marketable timber crop that is harvested and sold.

Through a Cooperative Agreement with the Savannah River Site, the Savannah River Ecology Laboratory operated by the University of Georgia conducts an interdisciplinary program of field and laboratory research onsite to enhance the understanding of the environment by acquiring and communicating knowledge that contributes to sound environmental stewardship, and to provide the public with an independent evaluation of the ecological effects of Savannah River Site operations on the environment. The Savannah River Ecology Laboratory was established in 1951 by the Atomic Energy Commission, which had concerns about the environmental impacts resulting from construction of the Savannah River Site and its operations. This Laboratory also continues to manage the Savannah River Site National Environmental Research Park which was established in 1972.

The scope of this PBS also supports other governmental organizations that supply cultural and natural resource management services to the Savannah River Site. The relationship of the following governmental organizations to the Site is through DOE awarded financial assistance (i.e., grants and cooperative agreements). The Federal Energy Regulatory Commission inspects all of the onsite earthen dams, which were built to create cooling water reservoirs for the former five reactors. The South Carolina Institute of Archaeology and Anthropology performs archaeology resource management and curation of archaeological artifacts for the Savannah River Site. The contractor provides cultural resource management and preservation from the period of the Cold War to present day.

Infrastructure and Land Management (PBS: SR-0042)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$48,247,000	\$31,556,000	-\$16,691,000
<p><u>Land Management (\$14,935,000)</u></p> <ul style="list-style-type: none"> Conduct all general area maintenance, as well as emergency preparedness, firewater, utilities, lighting, building and grounds maintenance. The safety envelope includes surveillance and maintenance activities for the F-Area Complex. Conduct general Site functions including general site infrastructure projects, land management activities to sustain natural resources and maintenance of Site's roads, bridges, and dams. Manage 65,000 acres for red-cockaded woodpecker habitat. The Forest Service aided in the growth of the endangered red-cockaded woodpecker population which started with four birds in 1986 and now stands at approximately 330. Complete over 20,000 acres of prescribed forest fire burns. Prescribed burns help reduce accumulations of forest fuel, improve the forestland health, manage habitats of threatened and endangered species, and restore native environments for trees such as the longleaf pine. Reintroduce native plants to enhance the restoration of the native savanna. 	<p><u>Land Management (\$16,745,000)</u></p> <ul style="list-style-type: none"> Implement site Natural Resource Management Plan and comply with applicable regulations. Manage 65,000 acres for red-cockaded woodpecker habitat. The Forest Service aided in the growth of the endangered red-cockaded woodpecker population which started with four birds in 1986 and now stands at approximately 330. Complete over 20,000 acres of prescribed forest fire burns. Prescribed burns help reduce accumulations of forest fuel, improve the forestland health, manage habitats of threatened and endangered species, and restore native environments for trees such as the longleaf pine. Reintroduce native plants to enhance the restoration of the native savanna. Control non-native invasive plants and animals, such as feral hogs. Improve watershed conditions through the restoration of vegetation in old borrow pits and spoil piles, the stabilization of stream channels, and the restoration of Carolina Bays and wetlands in swamp areas on the Savannah River Site. 	<p>The FY2022 request include the following changes:</p> <ul style="list-style-type: none"> Increase in the direct funded scope with U.S. Forest Service and the Savannah River Ecology Laboratory. (+\$1,810,000) Emergency Operations Center project (+2,499,000) –Increase is to complete final design in FY 2022. Security System Replacement Project (+4,000,000) –Supports construction start for K Area Argus. Design is expected to complete in FY2022. The remaining total project cost for the Advanced Manufacturing Collaborative Facility was funded in FY 2021 (-\$25,000,000).

- Control non-native invasive plants and animals, such as feral hogs.
- Improve watershed conditions through the restoration of vegetation in old borrow pits and spoil piles, the stabilization of stream channels, and the restoration of Carolina Bays and wetlands in swamp areas on the Savannah River Site.
- Partner with the Department of Energy, Savannah River Site contractors, and national conservation programs to host the annual Wounded Warrior/Mobility Impaired Ultimate Turkey Hunt and the Wounded Warrior/Mobility Impaired Fishing Challenge.
- Maintain the Savannah River Site's secondary roads, boundary, and wellness trails.
- Manage the Site timber assets.
- Provide sound environmental stewardship and serve the public through an independent evaluation of the ecological effects of Savannah River Site operations on the environment.

Advanced Manufacturing Collaborative Project (\$25,000,000)

- Continue activities required for Critical Decision documentation and construction activities.

Historical Preservation (\$812,000)

- Maintain program activities including curatorial activities, State Historical Preservation Office and Citizen Advisory Board interface, Curation Facility operation and maintenance, and fulfilling National Historic Preservation Act requirements.

Capital Projects (7,500,000)

- Continue to support the construction of ARGUS.
- Continue to support construction of the Emergency Operations Center.

- Partner with the Department of Energy, Savannah River Site contractors, and national conservation programs to host the annual Wounded Warrior/Mobility Impaired Ultimate Turkey Hunt and the Wounded Warrior/Mobility Impaired Fishing Challenge.
- Maintain the Savannah River Site's secondary roads, boundary, and wellness trails.
- Manage, maintain, and sustain a healthy forest that produces a marketable timber crop that is harvested and sold. Provide sound environmental stewardship and serve the public through an independent evaluation of the ecological effects of Savannah River Site operations on the environment.
- Continue to manage the SRS National Environmental Research Park.

Historical Preservation (\$812,000)

- Maintain program activities including curatorial activities, State Historical Preservation Office and Citizen Advisory Board interface, Curation Facility operation and maintenance, and fulfilling National Historic Preservation Act requirements.

19-D-701 - Savannah River Site Security System Replacement Project (\$5,000,000)

- Start K Area ARGUS installation and construction.

18-D-402 – Emergency Operations Center Replacement Project (\$8,999,000)

- Complete Final Design and award construction contract.

NM Stabilization and Disposition (PBS: SR-0011C)

Overview

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

This PBS includes the management and disposition of nuclear materials and spent nuclear fuel, primarily located in H-, K-, and L- Areas at the Savannah River Site. The H-Area facilities continue to stabilize and disposition legacy EM-owned nuclear materials through the operation of H Canyon with Savannah River National Laboratory providing analytical support. This PBS also includes surveillance and maintenance of HB Line. Programmatic and physical support activities related to safe receipt, inventory management, and disposition of special nuclear materials residing in K-Area and disposition of spent fuel residing in L-Area Basin will continue. The end-state will be accomplished when the capabilities of the facilities are no longer needed (all remaining materials have been dispositioned), and when the facilities have been deactivated and turned over for final disposition.

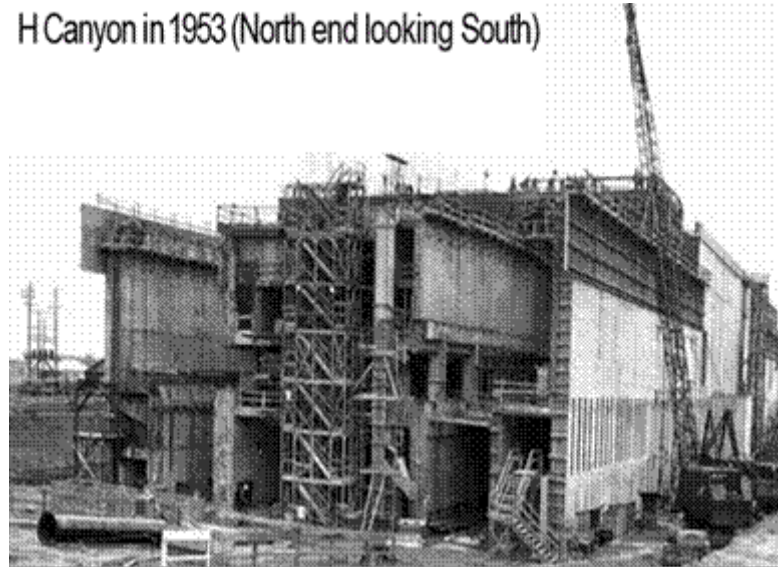
H-Area

H-Area supports the DOE complex by reducing proliferation risks of nuclear materials in storage throughout the world. H-Area is comprised of the H Canyon building including the HB-Line glovebox facility, large storage tanks containing various chemical solutions, industrial support facilities, administrative buildings, sand filter facility, and supporting utilities including water, steam, electricity, industrial and conditioned air systems, underground transfer piping, and sanitary waste.

H Canyon, constructed in the early 1950s, has been in continuous operation since 1955. It is 1,028 feet long, 122 feet wide and 71 feet tall, with several levels to accommodate the various stages of material stabilization, including control rooms to operate and maintain equipment and processes necessary to maintain the safety envelope, equipment and piping gallery for solution transport, storage, and disposition. Due to high levels of radiation, work in the canyon (including maintenance) is remotely performed by overhead bridge cranes. The HB-Line is located on top of H Canyon and was built in the early 1980s to support the nation's deep space exploration program and to recover legacy materials stored in H Canyon. HB Line is a shielded glovebox processing facility that allows hands on activities on a small scale compared to H Canyon operations and contains three process lines, which are in a reversible lay-up state.

H Canyon, the nation's only hardened production scale, chemical separation facility remaining in the United States of America is integral to DOE's efforts to minimize and eliminate nuclear materials through safe dissolution and chemical separation, allowing removal and separation of specific isotopes for reuse if required or proper disposition of the material thereby reducing proliferation risks and long-term costs associated with storage of the materials.

H Canyon in 1953 (North end looking South)



K-Area

K-Area provides for the handling and interim storage of excess plutonium and other special nuclear materials and fulfills the U.S. commitment to international nonproliferation efforts in a safe and environmentally sound manner. The K-Area Material Storage Facility, built in the 1950s, was one of the five production reactors at the Savannah River Site. It was repurposed at the end of the Cold War to be the DOE Complex consolidated storage location for stabilized non-pit plutonium materials, which were declared surplus to the nation's defense needs, pending final disposition. The facility also receives and stores plutonium from foreign countries to support the National Nuclear Security Administration's Nuclear Nonproliferation Initiative and serves as an International Atomic Energy Agency control protocol facility for plutonium oxide. It is DOE EM's only Category 1 storage facility designated for interim safe storage of plutonium. It currently has a capacity for approximately 8,500 drums of special nuclear materials. In FY 2016, the capability to down blend, dilute through blending with an inert material, and package approximately 6 metric tons of plutonium was established. The final disposition path for this material after down blend is the Waste Isolation Pilot Plant in Carlsbad, New Mexico.

The EM operational mission end-state will be accomplished when all remaining Office of Environmental Management owned inventories of special nuclear materials have been down blended and packaged for shipment to the Waste Isolation Pilot Plant in Carlsbad, New Mexico. K-Area facilities are being used by the National Nuclear Security Administration for expedited Pu removal from the State of South Carolina, so all activities are carefully coordinated between EM and National Nuclear Security Administration. Final disposition will be determined by EM and the National Nuclear Security Administration at the completion of the EM operation mission.



KIS Glovebox



Storage in KAMS

L-Area

L-Area provides for the wet storage of spent nuclear fuel. The L Reactor was one of the five production reactors at Savannah River Site. In 1996 the disassembly basin of L Reactor (an underwater storage facility), referred to as L-Basin, was repurposed to safely handle and securely store spent nuclear fuel originating from Atomic Energy Commission and DOE activities, as well as spent nuclear fuel originating from foreign and domestic research reactors pending disposition. These fuel receipts support the United States government's policy on minimizing highly enriched uranium around the world and programmatic missions of the Office of Nuclear Energy, Office of Science, and the National Nuclear Security Administration.

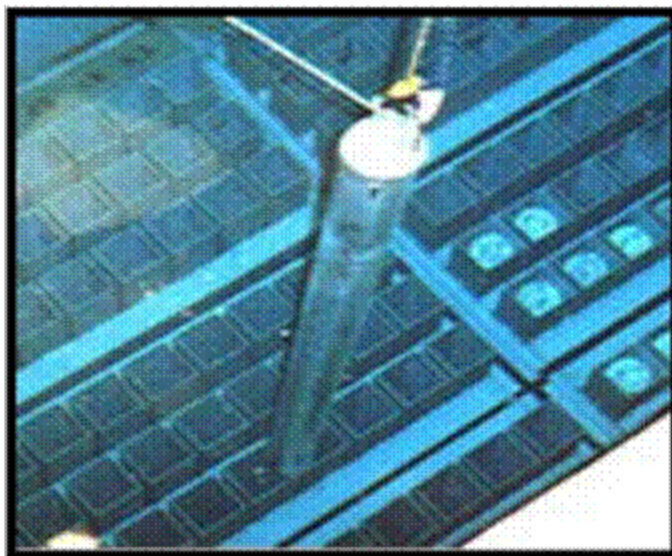
L-Basin has concrete walls and holds approximately 3,500,000 gallons of water with pool depths of 17 to 30 feet. All spent fuel assemblies have low enough radioactivity to be safely stored without an active basin water cooling system. The basin water provides shielding to protect workers from radiation. Racks were installed in the L-Basin to store the spent nuclear fuel in a vertical position.

L-Basin has the capacity to receive, bundle, and store Material Test Reactor type fuels (3,650 bundle positions) and High Flux Isotope Reactor fuels (120 full cores) which supports the National Nuclear Security Administration nonproliferation program, Office of Nuclear Energy's domestic research program, along with the Office of

Science's research programs and also the Department of Commerce (National Institute of Standards and Technology reactor). As of January 2021, L-Basin is approximately 88 percent full for Material Test Reactor type fuel storage, and 89 percent full for High Flux Isotope Reactor fuels.

The end-state will be accomplished when all remaining Savannah River Site inventories of spent nuclear fuel have been disposed and operating nuclear facilities have been turned over to PBS SR-0041 for final disposition.





Heavy Water

This PBS also includes the safe storage and eventual disposition of over 500,000 gallons of legacy heavy water remaining from production activities. The heavy water is currently stored in L-, K-, and C- Areas currently stored in both drums and tanks.



NM Stabilization and Disposition (PBS: SR-0011C)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$316,579,000	\$312,760,000	-\$3,819,000
<p><u>Surveillance and Maintenance– H-Area (\$195,386,000)</u></p> <ul style="list-style-type: none"> • Maintain a high state of readiness at the H Canyon facility. • Provide portion of deactivation costs for F&H Analytical Laboratories based on historical usage by H-Canyon and HB Line. These analytical services are being consolidated from 772-F to Savannah River National Laboratory. <p><u>Surveillance and Maintenance – K-Area (\$76,614,000)</u></p> <ul style="list-style-type: none"> • Maintain K-Area to store safely and securely special nuclear material. • Perform critical maintenance on facility perimeter intrusion system. • Continue to receive Gap plutonium from foreign countries in support of the National Nuclear Security Administration’s nonproliferation program. • Support DOE’s commitment regarding expedited removal of Pu from the State of South Carolina. <p><u>Surveillance and Maintenance – L-Area (\$44,579,000)</u></p> <ul style="list-style-type: none"> • Provide safe storage for EM-owned spent nuclear fuel in L-Area Basin. 	<p><u>Surveillance and Maintenance– H-Area (\$190,524,000)</u></p> <ul style="list-style-type: none"> • Operate and maintain a high state of readiness of the H Canyon facility required by 50 United States Code § 2633. • Maintains HB Line in reversible lay-up condition. • Provide portion of deactivation costs for F&H Analytical Laboratories based on historical usage by H-Canyon and HB Line. These analytical services have been consolidated from 772-F to Savannah River National Laboratory. <p><u>Surveillance and Maintenance – K-Area (\$77,251,000)</u></p> <ul style="list-style-type: none"> • Maintain K-Area to safely and securely Store special nuclear material. • Perform critical maintenance on facility perimeter intrusion system. • Continue to receive Gap plutonium from foreign countries in support of the National Nuclear Security Administration’s nonproliferation program. • Support DOE’s commitment regarding expedited removal of plutonium from the State of South Carolina. 	<ul style="list-style-type: none"> • No significant change.

- Perform critical maintenance on facility perimeter intrusion system.
- Perform surveillance and maintenance of legacy heavy water to ensure safe storage.
- Support receipts of research reactor spent nuclear fuel.

- Characterization and storage of material for Waste Isolation Pilot Plant disposal.

Surveillance and Maintenance – L-Area (\$44,985,000)

- Provide safe and secure storage for EM-owned spent nuclear fuel in L-Area Basin.
 - Perform surveillance and maintenance of legacy heavy water to ensure safe storage.
 - Support receipts of research reactor spent nuclear fuel.
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Radioactive Liquid Tank Waste Stabilization and Disposition (PBS: SR-0014C)

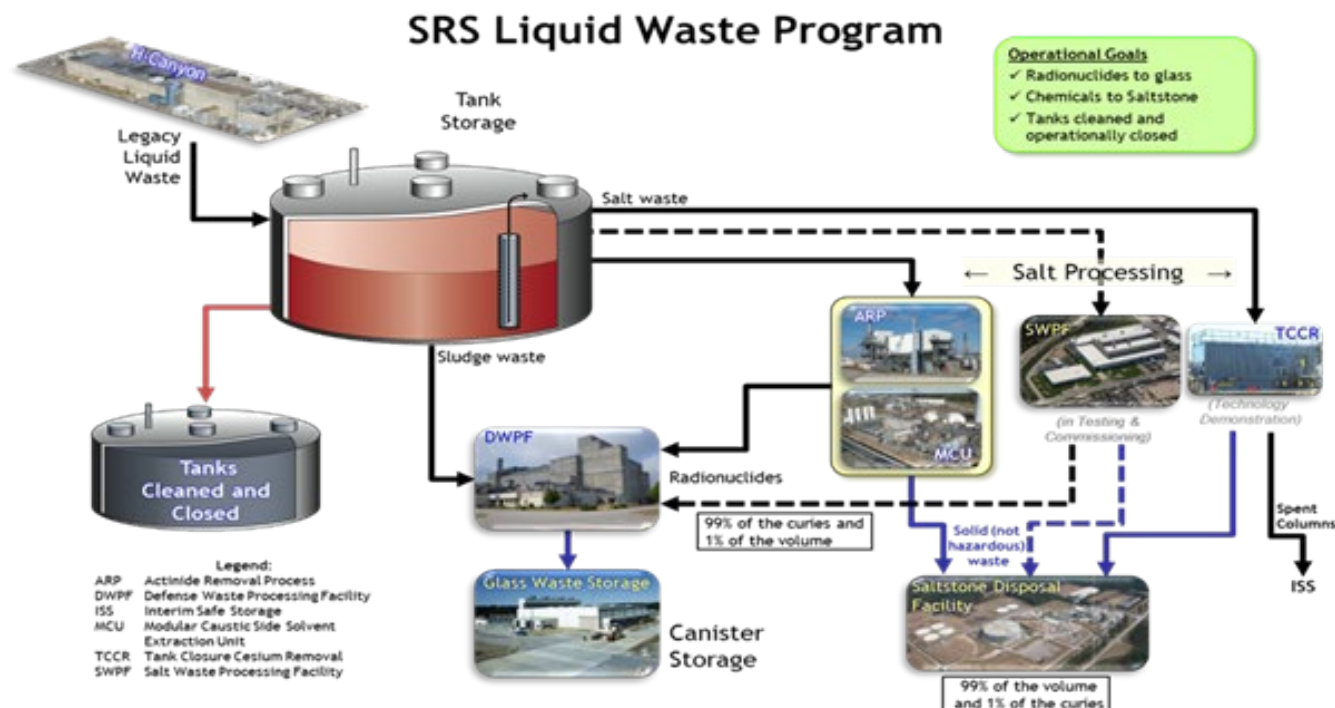
Overview

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

This PBS supports the mission of the liquid waste program at the Savannah River Site to safely and efficiently treat, stabilize, and dispose of approximately 35,450,000 gallons of legacy liquid radioactive waste containing approximately 239,790,000 curies currently stored in 43 underground storage tanks (as of June 2020).

The Liquid Waste Program has reduced risk so far by:

- Producing 4,244 canisters with 62,340,158 curies immobilized in glass through the Defense Waste Processing Facility;
- Processing 7,453,836 gallons of salt waste through the Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit;
- Processing 862,056 gallons of salt waste through the Salt Waste Processing Facility;
- Processing 299,455 gallons of salt waste through Tank Closure Cesium Removal;
- Disposing over 19,351,621 gallons of low-activity waste in the Saltstone Disposal Units; and
- Emptying, cleaning, grouting, and removing from service 8 non-compliant high-level waste storage tanks, as required by the enforceable commitments in the Federal Facility Agreement.



Liquid Waste Operations

Since the Savannah River Site became operational, the separation of fissionable nuclear material from irradiated targets and fuels in the F and H Canyons resulted in the generation of over 164,039,661 gallons of radioactive waste. As of March 2021, approximately 35,484,000 gallons of radioactive waste are currently stored onsite in large underground waste storage tanks at the Savannah River Site. Most of the tank waste inventory is a complex mixture of chemical and radioactive waste generated during the acid-side separation of special nuclear materials and enriched uranium from irradiated targets and spent (used) fuel. Eight waste storage tanks have been closed to date. The remaining 43 waste storage tanks located in two separate locations—H-Tank Farm (27 tanks) and F-Tank Farm (16 tanks)—were placed into operation between 1954 and 1986.

The Savannah River Site plans to continue reducing the volume of tank waste using waste processing activities such as preparing tanks for waste removal by installing necessary equipment and infrastructure; removing, pre-treating, and batching remaining radioactive sludge and salt waste; vitrifying sludge and high curie/high actinide radioactive component in the salt waste at the Defense Waste Processing Facility into canisters and then storing the canisters in glass waste storage buildings; treating and disposing of low-level waste (decontaminated salt solution coming from salt waste processing) as saltstone; evaporating liquids to ensure storage tank space is available to receive additional legacy waste from ongoing nuclear material stabilization then treating and discharging evaporator overheads through the Effluent Treatment Facility; emptying and permanently closing in place, all liquid radioactive waste storage tanks and support systems. These actions ensure risks to the environment and human health and safety from tank waste operations are eliminated or reduced to acceptable levels.

The use of evaporation has assisted in reducing the current volume of waste to about 35,484,000 gallons. The Savannah River Site evaporators are a major factor in the treatment of liquid waste. Of the five installed evaporators, there are currently two operational evaporators onsite—2H and 3H Evaporators are found in H-Area and began operations in 1982 and 2000, respectively. The evaporators reduce the volume of the salty liquid waste such that space within storage tanks is available for continuing liquid waste operations. This supports cleaning and closure of the tanks, as well as other missions. The evaporators boil the salty waste-water, causing the water to separate from the waste. The separation of the water from the waste reduces the waste volume to about 25-30 percent of the original volume.

The Department started operating the Defense Waste Processing Facility in March 1996 to vitrify (convert) the high-level radioactive liquid waste into a stable solid glass form suitable for long-term storage and eventual off-site disposal. This reduces the risks associated with the continued storage of liquid waste at the Savannah River Site and prepares the waste for final disposal. As of March 2021, the Defense Waste Processing Facility has produced 4,244 canisters immobilizing 62,340,158 curies in glass. It is projected that the Defense Waste Processing Facility will produce, in total, approximately 8,121 canisters to immobilize more than 99% of all the radionuclides contained in the radioactive liquid waste store in the waste tanks. Each canister is moved, one at a time, from the Defense Waste Processing Facility by a specially designed shielded vehicle to one of two glass waste storage buildings adjacent to the facility. At the storage buildings, each canister is lowered into an underground reinforced concrete vault. The Savannah River Site has the capacity to store safely about 6,864 canisters, which includes double stacking in Glass Waste Storage Building 1. Engineering evaluation to perform canister double stacking in Glass Waste Storage Building 2 has been completed concluding that it is feasible to double stack. The Department intends to proceed with implementation. The combined total of both facilities with double stacking is 9,204 canisters, eliminating the need for construction of additional storage.

Closure activities for the tanks begin several years before the actual operational closing of the tanks. The bulk of the radioactive waste must be removed for treatment and stabilization using Savannah River Site processing facilities. This process is known as Bulk Waste Removal Efforts. Sludge is removed from the tank and transferred to one of two feed preparation tanks, ensuring sludge waste batches are available for treatment at the Defense Waste Processing Facility without interruption. Following completion of bulk waste removal in a tank, the complex closure activities begin with removal of the remaining heel waste material using either mechanical or chemical cleaning methods to the extent practical, in accordance with requirements and closure plans established with the South Carolina Department of Health and Environmental Control and the Environmental Protection Agency. The final closure activity begins with workers pouring specially formulated grout (a cement-

like substance) into the tanks. This special grout stabilizes the tank and is used to impede the leaching and migration of any waste residuals remaining in the tank. Over the course of several weeks, the tanks are filled with grout and tank top penetrations are sealed.

Salt Waste Processing

The ability to safely process the salt component of waste stored in underground storage tanks at the Savannah River Site is a crucial prerequisite for completing liquid radioactive waste disposal, as salt waste constitutes 92% of the 35,450,000 gallons of liquid radioactive waste stored in the tank farms. The waste inventory requires dissolution with water to allow transfer from tanks to processing facilities and to meet processing parameters. It is expected that the salt waste inventory of about 32,000,000 gallons will become at least 107,000,000 gallons of salt solution requiring treatment and processing. In order to relieve tank space shortages and assure vitrification of the high-activity component or radionuclides in the liquid waste to continue uninterrupted, the Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit began operation in April 2008. The Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit facilities provide an interim processing capability to remove and treat salt waste from the tank farms and an effective opportunity to provide lessons learned and proof of technology for the Salt Waste Processing Facility. In preparation for the Salt Waste Processing Facility startup (i.e., processing of radioactive salt solution), the operations in the Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit were suspended in June 2019 as planned. De-inventory and flush of the facilities are complete allowing final tie-ins of the Salt Waste Processing Facility to proceed. Decontamination and decommissioning of the Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit will be performed under PBS-0030.

The Salt Waste Processing Facility Hot Commissioning began in October 2020 after obtaining approval of Critical Decision-4 on August 17, 2020. Hot Operations commenced on January 18, 2021 operating at 6 million gallons per year rate with a volume of 4.5 million gallons available to process. The Salt Waste Processing Facility will safely separate the waste into two streams – a small amount of high-activity radioactive waste sent to the Defense Waste Processing Facility for vitrification and poured into canisters and a very large amount of low-activity radioactive waste called decontaminated salt solution sent to Saltstone to be grouted and permanently disposed in the Saltstone Disposal Units. The Salt Waste Processing Facility was designed and constructed utilizing the same treatment technology used in the existing Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit. Nominal capacity of the Salt Waste Processing Facility will be 6,000,000 to 9,000,000 gallons processing rates per year after implementing the Next Generation Solvent. Processing salt waste through the Salt Waste Processing Facility is needed to disposition the majority of the waste stored in the tank farms (about 107 million gallons after dissolution), while maintaining adequate tank space required to optimize Defense Waste Processing Facility operations. It will also ensure that the site meets the South Carolina Department of Health and Environmental Control Dispute Resolution Agreement for Alleged Violations of Class 3 Industrial Solid Waste Landfill Permit Facility and, will be the basis for new negotiations with the State of South Carolina and the Environmental Protection Agency of suspended milestones per the Minor Modification for the 2019 Suspension Agreement of Federal Facility Agreement High-Level Waste Tank Milestones. Salt Waste Processing Facility operations will also reduce delays in meeting the Site Treatment Plan milestone.

In 2021, the Liquid Tank Waste Stabilization and Disposition program fully operated with the start of Salt Waste Processing Facility hot operations. Liquid Waste facilities modifications required to support increase in Salt Waste Processing Facility operating rates after the first year of operations continued in FY2021. This was required to ensure proper integration to support the Salt Waste Processing Facility increase of salt processing rates after the second year of operations. In 2022, the Salt Was Processing Facility is planned to operate at 6 million gallons per year rate and process 4.5 million gallons of available feed. The facility will also be transitioned from the current contractor to the Liquid Waste contractor.

The program will also be preparing several tanks for waste removal to feed Salt Waste Processing Facility and Defense Waste Processing Facility. It takes 3 years to prepare tank waste for feed to Salt Waste Processing Facility and 4.5 years to prepare tanks for feed to Defense Waste Processing Facility. Waste removal preparation activities are required on multiple tanks at a time to support feeding Salt Waste Processing Facility at planned operational rates.

The Liquid Waste Program is now preparing to meet the processing rates soon to be realized with the startup of the Salt Waste Processing Facility. It is expected that Salt Waste Processing Facility processing rates will be a factor of nine greater than the rate experienced with the operation of the Actinide Removal Process and Modular Caustic Side Solvent Extraction Facility. The Defense Waste Processing Facility will process at a rate approximately three times its current rate to receive and vitrify the product from the Salt Waste Processing Facility. To meet the operational needs of the Salt Waste Processing Facility and coincident increase in the Defense Waste Processing Facility processing, several tanks will be undergoing some level of preparation and transfer of material at any one time.

The program also needs to build Saltstone Disposal Units on schedule to dispose of the decontaminated salt solution produced by the Salt Waste Processing Facility. These actions are required not only to meet the Salt Dispute Resolution Agreement, but also to provide the basis for new negotiations with the State of South Carolina and the Environmental Protection Agency of suspended milestones per the Minor Modification for the 2019 Suspension Agreement of Federal Facility Agreement High-Level Waste Tank Milestones, and will reduce delays in meeting the Site Treatment Plan milestone of processing waste out of all tanks by 2028.

Saltstone Disposal

The Saltstone Production Facility began operations in 1990. Decontaminated salt solution from salt processing is sent to the Saltstone Production Facility, where it is treated, stabilized and permanently disposed of by mixing the salt solution with cement, flyash and furnace slag forming a “grout.” The grout is poured into above-ground, cylindrical concrete cells called Saltstone Disposal Units where it solidifies into saltstone, a non-hazardous low-level waste form.

A new design is being utilized for the Saltstone Disposal Units #6 through #13. This new design is a 375-foot diameter 43-foot tall cylindrical shape tank, which is 10 times larger than the previous five Saltstone Disposal Units and will hold 30,000,000 gallons of grouted decontaminated salt solution. The construction of Saltstone Disposal Unit #6 was completed in the third quarter of FY 2017 and Saltstone Disposal Unit #7 will become operational in FY21. Construction activities of Saltstone Disposal Units 8 and 9 were initiated in FY20 and construction will continue in FY22. Saltstone Disposal Unit 8 is forecast to become operational in FY23 and SDU 9 in FY 2024. Saltstone Disposal Units 10-12 are forecast to complete Critical Decision-2/3 development in FY21 and begin site preparation activities in FY 2022. It takes 4 years to construct a Saltstone Disposal Unit and 16 to 18 months to fill it and the program will require one Saltstone Disposal Unit about every 16 months to support Salt Waste Processing Facility. Once all units are filled, they will be capped with an engineered cover consisting of several layers of impermeable materials, isolating it from the environment (which will be performed under PBS SR-0030).

The scope of this PBS includes the design, construction, and operation of the Saltstone Disposal Units for the final and permanent disposal in a saltstone waste form of the decontaminated salt solution (low-level waste) resulting from the salt waste processing. The Saltstone Disposal Units will provide the benefits of lower disposal costs for decontaminated salt solutions, with the grout itself providing primary containment of the waste, while the walls, floor, and roof of the Saltstone Disposal Units are providing secondary containment.

Regulatory Compliance

The Liquid Tank Waste Stabilization and Disposition program at the Savannah River Site has several Regulatory drivers that dictate the program execution schedule:

- The Federal Facility Agreement between DOE, the Environmental Protection Agency, and the South Carolina Department of Health and Environmental Control, which requires waste removal from, and closure of, old-style (i.e. non-compliant) liquid radioactive waste tanks on an approved schedule, with the last tank closed by September 30, 2022.

- Savannah River Site's Site Treatment Plan between DOE-Savannah River and the South Carolina Department of Health and Environmental Control that requires processing of all radioactive liquid waste by September 30, 2028.
- South Carolina Department of Health and Environmental Control's Dispute Resolution Agreement for Alleged Violations of Class 3 Industrial Solid Waste Landfill Permit Facility that requires processing of 36,750,000 gallons of liquid salt solution between FY 2016 and FY 2022 and processing salt waste at a rate of 8 Mgal per year thereafter.

Minor Modification for the 2019 Suspension Agreement of Federal Facility Agreement High-Level Waste Tank Milestones. This agreement replaces the 2017 Suspension Agreement and suspends all remaining operational closure and bulk waste removal milestones for the old-style high-level waste tanks. Negotiations of new milestones will be initiated after the Integrated Mission Completion contract is awarded with an expectation of the parties to complete the negotiation by 9/30/2022.

Radioactive Liquid Tank Waste Stabilization and Disposition-2035 (PBS: SR-0014C)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$911,471,000	\$978,365,000	+\$66,894,000
<u>Liquid Waste Operations (\$693,535,000)</u> <ul style="list-style-type: none"> • Provide site-wide services and landlord support functions for day-to-day operations. Site-wide and landlord support services are pro-rated across the PBSs. • Maintain Tank Farms, including evaporators, Defense Waste Processing Facility, including melter, and Saltstone Production Facility, in a safe configuration, staffed and ready for operations. • Liquid Waste Operations supports a rotating training shift and support attrition in Tank Farms, Defense Waste Processing Facility, and Saltstone Facility and hiring of critical personnel to support greater salt waste preparation and processing operations. 	<u>Liquid Waste Operations (\$723,157,000)</u> <ul style="list-style-type: none"> • Pay PBS share of site-wide services and landlord support functions for day-to-day operations. Maintain Tank Farms, including evaporators, Defense Waste Processing Facility, including Melter, and Saltstone Production Facility, in a safe configuration, staffed and ready for operations. • Modify spaces of additional 300 canisters for double stacking effort in Glass Waste Storage Building #1. • Perform Tank Farm operations activities, including waste removal and. • Operate Defense Waste Processing Facility to produce 125-150 canisters (dependent on salt processing) of vitrified high-level waste. 	<p>There were several changes in the Liquid Waste Program in FY 2022.</p> <ul style="list-style-type: none"> • Liquid Waste increased by \$29,622,000 as a result of additional Defense Waste Processing Facility operations costs for work on Failed Equipment Storage Vault, Melter #5, and the last facility modification to support ramp up in Salt Waste Processing Facility operations; an increase in number of tanks and preparation activities for Defense Waste Processing Facility sludge feed; and an increase in share of site-wide services and landlord support functions, program support and fee for the liquid waste contractor.

- Perform Tank Farm operations activities, including waste transfers and removals.
- Continue processing Sludge Batch 9 in Defense Waste Processing Facility; and qualify Sludge Batch 10.
- Prepare and feed Salt Waste Processing Facility Batches 1-5 dependent on SWPF operations.
- Operate Defense Waste Processing Facility to produce up to 118 canisters (dependent on Salt Waste Processing Facility operations) of vitrified high-level waste.
- Modify spaces of additional 300 canisters for double stacking effort in Glass Waste Storage Building #1.
- Operate Saltstone to treat 4.6 million gallons of low-level waste (dependent on Salt Waste Processing Facility operations).
- Continue preparation of Tank 33, 35 and 39 for future Sludge Batches to support Defense Waste Processing Facility operations. Provide portion of deactivation costs for F&H Analytical Laboratories based on historical usage by H-Canyon and HB Line. These analytical services are being consolidated from 772-F to Savannah River National Laboratory.

Salt Waste Processing Operations (\$126,743,000)

- Initiated Salt Waste Processing Facility Hot Operations January 2021.
- Operate Salt Waste Processing Facility at a nominal rate of 6 million gallons per year.
- Continue Defense Waste Processing Facility modifications and complete Saltstone Facility modifications to support increased operation rates in the Salt Waste Processing Facility.
- Initiate salt dissolution in Tanks 27 and 44 to prepare salt batches to feed the Salt Waste Processing Facility.

[Defense Waste Processing Facility will undergo 3-month outage to implement glycolic acid flowsheet (alternate reductant) required to support Salt Waste Processing Facility operations @ 7.2 Mgal/year].

- Complete design for Failed Equipment Storage Vault. Initiate design preparation of Tank 35. Continue preparation of Tanks 33, 35 and 39, and complete preparation of Tank 35 for Sludge Batches to feed the Defense Waste Processing Facility.
- Complete preparation Sludge Batch 10 for feed to Defense Waste Processing Facility. Initiate compilation of sludge for Sludge Batch 11.

Salt Waste Processing Operations (\$146,285,000)

- Operate Salt Waste Processing Facility up to a 6 million gallons per year rate and process available feed of 4.5 million gallons. No operation of Salt Waste Processing Facility during the Defense Waste Processing Facility 3-month outage to implement glycolic acid flowsheet (alternate reductant) required to support Salt Waste Processing Facility operations @ 7.2Mgal/year. Continue preparation for implementation of the next generation solvent that will enable operations above 7.2 million gallons per year processing rate.
- Complete installation of commercial slurry mixing jets in Tank 3 to expedite salt dissolution and accelerate installation of commercial slurry mixing jets in Tank 44 to expedite salt dissolution needed for salt batches to feed the Salt Waste Processing Facility.
- Continue salt dissolution in Tank 27 using low volume mixing jets and complete installation of commercial slurry mixing jets to expedite salt

- Salt Waste Processing Operations increased by \$19,542,000 due to the transition to the Liquid Waste contractor and the procurement of long lead critical equipment, increased number of tanks and preparation activities for Salt Waste Processing Facility feed, and increase in other project cost costs to support multiple Salt Disposal Units being built in FY2022.
- Saltstone Disposal Unit Projects increased by \$10,722,000 to support continued construction of Saltstone Disposal Unit 8 and starting tank construction in Saltstone Disposal Unit 9 following completion of floor liner and mud mat in FY 2021; construction on Saltstone Disposal Unit is also expected to commence in FY 2021; completion of design and start of site preparation for Saltstone Disposal Unit 10-12 following Critical Decision-2 approval in FY 2021. This was offset by expected completion of Saltstone Disposal Unit 7 in FY 2021.
- Regulatory Commitments increased by \$7,008,000 due to scheduled closure work being completed in FY 2022 for Diversion Boxes 5 and 6 in F-Tank Farm, performing heel removal and annulus cleaning in Tank 15 preparing for closure, and a full year of Tank Closure Cesium Removal operations.

- Complete Tank 42 modifications as a blend tank to support Salt Waste Processing Facility at 9Mgal/yr.
- Continue preparation of Tanks 3, 28, 31 and 47 needed for salt batches to feed the Salt Waste Processing Facility.
- Continue the East Hill utilities upgrade to remove temporary modifications and continue work on transfer systems, processing tanks ventilation and critical spare parts to support Salt Waste Processing Facility planned operations.
- SDU Line Item OPC funded scope.

Saltstone Disposal (\$76,778,000)

- Complete Saltstone Disposal Unit 7 construction and become operational.
- Continue construction of Saltstone Disposal Units 8/9.
- Support Saltstone Production Facility operations to support Salt Waste Processing Facility production rates.

Regulatory Commitments (\$14,415,000)

- Initiate preparation of Tank 2 and 14 to provide basis for negotiation of new Federal Facility Agreement milestones required by the Minor Modification for the 2019 Suspension Agreement of Federal Facility Agreement High-Level Waste Tank Milestones and provide feed for Salt Waste Processing Facility and Tank Closure Cesium Removal effort.
- Operate Tank Closure Cesium Removal Unit #1 in Tank 9 to gather operational data to determine path forward for the procurement of a second Tank Closure Cesium Removal Unit

dissolution needed for salt batches to feed the Salt Waste Processing Facility. Initiate preparation of Tanks 2, 36 and 46 and continue preparation of Tank 28, 31 and 47 for salt dissolution needed for salt batches to feed the Salt Waste Processing Facility.

- Continue the East Hill utilities upgrade to remove temporary modifications and continue work on transfer systems and processing tanks ventilation to support Salt Waste Processing Facility planned operations.
- Funds Other Project Cost scope for Salt Disposal Unit Line Item.

Saltstone Disposal (\$87,500,000)

- Continue construction of Saltstone Disposal Units 8/9.
- Commence site preparation activities for Saltstone Disposal Unit 10-12.
- Support Saltstone Production Facility operations to support Salt Waste Processing Facility production rates.

Regulatory Commitments (\$21,423,000)

- Initiate Tank 15 heel removal and annulus cleaning design needed to proceed with tank closure to provide basis for negotiation of new Federal Facility Agreement milestones required by the Minor Modification for the 2019 Suspension Agreement of Federal Facility Agreement High-Level Waste Tank Milestones.
- Continue operation of Tank Closure Cesium Removal Unit #1 in Tank 9 to meet commitments in South Carolina Department of Health and Environmental Control's Dispute Resolution Agreement for Alleged Violations of Class 3 Industrial Solid Waste Landfill Permit Facility.

that supports use of this technology to meet commitments in South Carolina Department of Health and Environmental Control's Dispute Resolution Agreement for Alleged Violations of Class 3 Industrial Solid Waste Landfill Permit Facility.

- Complete heel removal from tank 15 to support Sludge batch 10 readiness in FY2021.
 - Initiate closure activities in F-Tank Farm diversion boxes 5 and 6 scheduled to complete in FY22 to meet FFA commitment for closure as part of the newly approved Minor Modification for the 2019 Suspension Agreement of Federal Facility Agreement High-Level Waste Tank Milestones.
 - Complete the closure activities in F-Tank Farm diversion boxes 5 and 6 to meet Federal Facilities Agreement commitment for closure as part of the newly approved Minor Modification for the 2019 Suspension Agreement of Federal Facility Agreement High-Level Waste Tank Milestones.
-

Savannah River Legacy Pensions (PBS: SR-0101)

Overview

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

The scope of this PBS enables Savannah River Site to meet its legacy pension obligations. These obligations are necessary to meet contributions to address legacy pension liability.

This is strictly the EM portion of the legacy pension. National Nuclear Security Administration will contribute with their own funding source.

Savannah River Legacy Pensions (PBS: SR-0101)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$127,465,000	\$130,882,000	+\$3,417,000
<ul style="list-style-type: none">Funds EM’s share of Savannah River Site’s legacy pension obligation.	<ul style="list-style-type: none">Funds EM’s share of Savannah River Site’s legacy pension obligation.	<ul style="list-style-type: none">Expected legacy pension obligation increased.

Savannah River Community and Regulatory Support (PBS SR-0100)

Overview

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

The scope of this PBS is to provide support to enable the Savannah River Site to perform its missions and cleanup objectives. Activities include support to the Citizens Advisory Board (includes facilitators, technical advisors, meeting rooms, and other expenses); support to the States of South Carolina and Georgia for emergency management activities; and support to the South Carolina Department of Health and Environmental Control, and the Environmental Protection Agency for oversight and implementation of the Federal Facility Agreement and support for Workforce Opportunities in Regional Careers grant.

The scope of this PBS also supports geological surveys and natural resource management, and DOE lease agreements (including those with the U.S. Army Corps of Engineers).

Savannah River Community and Regulatory Support (PBS: SR-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$11,549,000	\$5,805,000	-\$5,744,000
<ul style="list-style-type: none"> Provides payments in Lieu of Taxes to Aiken, Allendale, and Barnwell counties (\$6,475,000). Provide support to South Carolina Department of Natural Resources for technical expertise in the conduct of geological surveys and natural resource management (\$137,000). Provide support to South Carolina Department of Health and Environmental Control for 	<ul style="list-style-type: none"> Provide support to South Carolina Department of Natural Resources for technical expertise in the conduct of geological surveys and natural resource management (\$160,000). Provide support to South Carolina Department of Health and Environmental Control for oversight of environmental monitoring, Federal 	<ul style="list-style-type: none"> The decrease reflects elimination of payment in lieu of tax payments.

oversight of environmental monitoring, Federal Facility Agreement, Agreement in Principle, and Site Treatment Plan (\$3,486,000).

- Provide support to Georgia and South Carolina Emergency Management Support (\$438,000).
- Support Interagency Agreement for the Environmental Protection Agency, Region 4 oversight of the Federal Facility Agreement (\$286,000).
- Provide support to the Site Specific Advisory Board (Savannah River Citizen's Advisory Board) (\$372,000).
- Support DOE lease agreements, including those with the U.S. Army Corps of Engineers (\$17,000).
- Support Workforce Opportunities in Regional Careers grant (\$338,000).

Facility Agreement, Agreement in Principle, and Site Treatment Plan (\$3,965,000).

- Provide support to Georgia and South Carolina Emergency Management Support (\$438,000).
- Support Interagency Agreement for the Environmental Protection Agency, Region 4 oversight of the Federal Facility Agreement (\$300,000).
- Provide support to the Site-Specific Advisory Board (Savannah River Citizen's Advisory Board) (\$372,000).
- Support DOE lease agreements, including those with the U.S. Army Corps of Engineers (\$17,000).
- Support Workforce Opportunities in Regional Careers grant (\$553,000).

Safeguards and Security (PBS: SR-0020)

Overview

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

This PBS funds the Safeguards and Security Program, which provides security support services for the 310 square-mile Savannah River Site, and the Cyber Security Program, which protects the networks, computers, programs and data within the Savannah River Site from attack, damage or unauthorized access.

Safeguards and Security Program

The scope of the Safeguards and Security Program provides total security services, including access control, property protection, law enforcement, criminal investigations, traffic control, canine explosives and drug detection, aviation support, river patrol, alarm equipment monitoring, and a Special Response Team.

This PBS provides for a trained protective force 24 hours a day seven days a week to perform the various necessary activities to protect Government property and the employees who work onsite.

The scope covered under this PBS will continue until DOE's mission at the Savannah River Site is complete.

These activities include:

- Control access to the General Site by operating perimeter barricades controlling personnel and vehicular access/egress, operating and maintaining special vehicle inspection equipment, and providing vendor/visitor escort requirements.
- Staff security posts and patrol designated areas within the 198,000 plus acres comprising the Savannah River Site.
- Protect Special Nuclear Material and vital facilities against unauthorized access, theft, loss of custody, or destruction of components for nuclear weapons; and espionage.
- Protect classified matter or Governmental property from loss or theft.
- Protect against other hostile acts that may affect national security, or the health and safety of employees, the public or the environment.
- Enforce the law and conduct criminal investigations.
- Operate alarm-monitoring centers. Monitor critical Savannah River Site facilities security alarm systems and dispatch response personnel for alarm assessment.
- Coordinate and provide security for the transport of nuclear material.
- Maintain a Special Response Team available at all times capable of resolving incidents that require force options that exceed the capabilities of Security Police personnel and/or existing physical security systems. Special Response Team personnel shall be ready to execute both defensive and offensive operations.
- Maintain tactical, explosive, and chemical/biological response teams to effectively respond to bomb or explosive incidents onsite and offsite. Have on staff a full-time Explosive Ordnance Disposal Technician.
- Provide aviation operations to include Federal Aviation Administration certified pilots and aircraft maintenance personnel necessary to effectively maintain and operate the two DOE helicopters. The primary mission of the aviation operations is to provide rapid transportation for the Special Response Team. Additional responsibilities include providing an airborne intelligence gathering/relay station, escort/response vehicle, routine patrol of the general site and law enforcement support.

- Provide canine operations. Provide care for DOE-supplied canines, which are trained and qualified in explosives detection and narcotics detection. Ensure that all assigned canine teams are certified annually by the United States Police Canine Association and pass annual Odor Recognition Proficiency Tests.
- Protect all on-site nuclear material movement. Responsible for operating shipment vehicles for classified offsite shipments.
- Maintain a professional training staff to provide basic and specialized security training, physical conditioning, weapons training and qualification, and area-specific field training. Facilities include classrooms, rifle and pistol ranges, multi-media learning laboratory, and specialized outdoor training sites. The security forces must train and maintain certifications and qualifications in security force competencies.

This scope of this PBS also supports the issuance and maintenance of the personnel badging program, issuing badges to over 11,000 onsite federal and contractor personnel as well as all site visitors.

Cyber Security Program

The Cyber Security Program at the Savannah River Site protects government information and technology systems in support of DOE missions executed at the Site.

Safeguards and Security (PBS: SR-0020)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$166,577,000	\$164,444,000	-\$2,133,000
<p><u>Safeguards and Security Program (\$148,443,000)</u></p> <ul style="list-style-type: none"> • Supports required security force and resources necessary to guard and safely maintain Special Nuclear Material in accordance with DOE policy. <p><u>Cyber Security (\$18,134,000)</u></p> <ul style="list-style-type: none"> • Protects government information and technology systems in support of DOE missions executed at the Site. • Maintains the Savannah River Cyber Security capability in accordance with DOE Order 205.1B and emerging DOE cyber requirements. • Support identification, assessment and protection of mission critical information and information systems according to current threat vectors and risk posture. • Support Headquarters cyber initiatives. 	<p><u>Safeguards and Security Program (\$148,443,000)</u></p> <ul style="list-style-type: none"> • Supports required security force and resources necessary to guard and safely maintain Special Nuclear Material in accordance with DOE policy. • Ensures appropriate levels of protection for Department of Energy Savannah River Site facilities against theft or diversion of Special Nuclear Materials. • Prevents acts of radiological, chemical and biological sabotage. • Prevents theft or loss of classified matter and government property. • Prevents other hostile acts that may cause unacceptable impacts to national security, the health and safety of employees, the public or the environment. • Support infrastructure maintenance and upgrades. <p><u>Cyber Security (\$16,011,000)</u></p> <ul style="list-style-type: none"> • Protects government information and technology systems in support of DOE missions executed at the Site. • Maintains the Savannah River Cyber Security capability in accordance with DOE Order 205.1B and emerging DOE cyber requirements. 	<ul style="list-style-type: none"> • Decrease is due to the National Nuclear Security Administration contribution for cyber security thus off setting EM funding requirements.

- Support identification, assessment and protection of mission critical information and information systems according to current threat vectors and risk posture.
 - Support Headquarters cyber initiatives.
-

Savannah River National Laboratory Crosscut
(dollars in thousands)

Savannah River National Laboratory	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY2021 Enacted
Environmental Management			
Defense Environmental Cleanup			
Direct Funding -			
Savannah River	117,760	108,000	-9,760
EM Headquarters	19,000	19,000	0
Office of River Protection	15,000	12,000	-3,000
Paducah / Portsmouth	1,100	500	-600
Carlsbad	1,000	500	-500
Oak Ridge	1,000	1,500	500
Richland	2,500	2,000	-500
Los Alamos National Laboratory	500	1000	500
Idaho	1,200	2,100	900
Total	159,060	146,600	-12,460

¹ Numbers are estimates only.

The Savannah River National Laboratory executes approximately \$300,000,000 per year supporting EM, other DOE organizations such as the National Nuclear Security Administration, other DOE offices such as Science, Energy Efficiency and Renewable Energy, and Nuclear Energy, and other federal agencies outside entities such as the Federal Bureau of Investigation. The FY 2022 numbers noted above are estimates based on executed FY 2020 work scope.

Specifically, for the Savannah River Site, the Savannah River National Laboratory provides support for environmental remediation and risk reduction; development of processes to remediate high- and low-level wastes; technical oversight of test programs; the conduct of studies and development of mitigation strategies to address deleterious effects on materials used in environmental waste processes; technical advice and technology development to address soil and groundwater radiological and chemical contamination; flowsheet development for spent (used) fuel processing; development of innovative processes to recycle or dispose spent fuel and targets, apply the collaborative innovation process to develop next generation nuclear materials processing system and technology development for all aspects of nuclear materials management and disposition. For National Nuclear Security Administration and other federal agencies, the laboratory provides key technical and planning input crucial to national security. Specifically, for National Nuclear Security Administration's national security mission, Savannah River National Laboratory is responsible for Tritium Research and Development, Gas Transfer Research and Development, stockpile stewardship and tritium sustainment, rare isotope production, removal of weapons usable materials to advance nuclear security, development of materials disposition paths and supporting security initiatives related to denuclearization. The laboratory currently performs work related to climate change and risks/vulnerabilities to DOE operations and infrastructure and the environment. Examples include Savannah River National Laboratory's meteorological assets that are applied to forestry management, and support for Office of Science initiatives that monitor atmospheric carbon and carbon uptake. Growth in climate Research and Development is anticipated under the new Savannah River National Laboratory independent Management and Operations contract.

In addition to the direct support for the Office of Environmental Management at the Savannah River Site, the Savannah River National Laboratory also supports DOE Headquarters and other Environmental Management sites (Hanford, Paducah, Carlsbad, Oak Ridge, Los Alamos, and Idaho).

The physical scope of Savannah River National Laboratory facilities includes more than 50 major research and support structures and facilities, including commercially leased facilities supporting research activities. The majority of Savannah River National Laboratory's facilities are located within the 39-acre Laboratory Technical Area in A-Area near the north boundary of Savannah River Site. The Laboratory facilities are comprised of facilities designated as Nuclear Hazard Category II and III, Radiological, Chemical Hazard, Other Industrial facilities, and office space. All these facilities comprise approximately 860,000 gross square feet of laboratory, work, and office space, including over 200,000 gross square feet of radiologically controlled laboratory and process space. Most of the major infrastructure supporting these facilities is deteriorated and in need of restoration or replacement. To address climate risks associated with working in South Carolina (e.g., hurricanes, heat) and contribute to carbon reductions needed to address climate change, DOE's plans for the enduring mission of the Laboratory include the replacement of aged, energy inefficient facilities and infrastructure with modern, energy efficient and low carbon/carbon neutral facilities that can obviate the effects of severe weather and protect the mission of the Laboratory to address the challenges of Environmental Cleanup and Legacy Management , National Security, and Science and Energy Security.

Activities Supported by Savannah River National Laboratory Funding

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
<u>Savannah River</u>		
\$117,760,000	\$108,000,000	-\$9,760,000
<ul style="list-style-type: none"> • Develop and demonstrate flowsheets to enable Savannah River Site canyon processing. • Flowsheet development and alternatives evaluations for tank waste program. • Develop and deploy Soil and Groundwater remediation technologies. • Used fuel evaluations. • Plutonium Surveillance Program – destructive and non-destructive characterization of 3013 canisters to determine national standards are being met. • General operational facility support including material characterization, statistical analyses, equipment troubleshooting, evaluation of chemical processing issues, etc. 	<ul style="list-style-type: none"> • Develop and demonstrate flowsheets to enable Savannah River Site canyon processing. • Flowsheet development and alternatives evaluations for tank waste program. • Develop and deploy Soil and Groundwater remediation technologies. • Used fuel evaluations. • Plutonium Surveillance Program – destructive and non-destructive characterization of 3013 canisters to determine national standards are being met. • General operational facility support including material characterization, statistical analyses, equipment troubleshooting, evaluation of chemical processing issues, etc. 	<ul style="list-style-type: none"> • Decrease reflects completion of some short-term activities for Nuclear Materials that did not carryover to scope in FY2022 and also includes completion of the Performance Assessment for E-Area and completion of some soil and groundwater remediation scope.

Environmental Management/
Savannah River

FY 2022 Congressional Budget Justification

- Support for 235-F deactivation and assessment activities.
- Tank waste technology development including means to separate the high activity radionuclides in order to disposition the high-level waste along with various unit operations such as filtering, grouting, retrieval, etc.
- Nuclear materials packaging development and documentation.
- Waste characterization including sludge and salt characterization to support facility operations and tank closure analysis.
- Waste qualification and demonstration.
- Waste form development.
- Mixing studies including modeling and testing in order to demonstrate waste tanks and processing tanks are adequately mixed.
- Analytical support for operations and technical development for Nuclear Materials processing.
- Support waste certification program.
- Support waste disposal activities.
- Revise low-level waste performance assessment activities.
- Develop and execute life extension and surveillance programs for Tank Farms.
- Startup support to Salt Waste Processing Facility.
- Provide statistical support and analyses for the materials control and accountability program for special nuclear material.

- Support for 235-F deactivation and assessment activities.
- Tank waste technology development including means to separate the high activity radionuclides in order to disposition the high-level waste and the low concentration radionuclide streams along with various unit operations such as filtering, grouting, retrieval, etc.
- Nuclear materials packaging development and documentation.
- Waste characterization including sludge and salt characterization to support facility operations and tank closure analysis.
- Waste qualification and demonstration.
- Waste form development.
- Mixing studies including modeling and testing in order to demonstrate waste tanks and processing tanks are adequately mixed.
- Analytical support for operations and technical development for Nuclear Materials processing.
- Support waste certification program.
- Support waste disposal activities.
- Revise low-level waste performance assessment activities.
- Develop and execute life extension and surveillance programs for Tank Farms.
- Support to Salt Waste Processing Facility operations to include troubleshooting.
- Provide statistical support and analyses for the materials control and accountability program for special nuclear material.

EM Headquarters

\$19,000,000

- Nuclear Materials Packaging development and certifications.

\$19,000,000

- Nuclear Materials Packaging development and certifications.

+\$0

- No Change.
-

- Support to Headquarters on revisions to DOE Order 435.1 and in support of the International Atomic Energy Agency.
- Technology development for used fuel management including dry storage.
- Conceptual development of next generation nuclear materials processing and disposition systems.
- Technical studies for Headquarters including independent technical reviews, Technology Readiness Assessments, etc.
- Long-term performance/durability studies of high- and low-level waste forms.
- Development and deployment of soil and groundwater remediation strategies and monitoring approaches.
- Development of deactivation and decommissioning facility assessment and in-situ decommissioning tools.
- Flowsheet Development – definition and testing of flowsheets for the processing of high-level waste including specific focused programs for troublesome components.
- Independent review and strategic development of remediation approaches at Legacy Management sites.
- Coordinate Minority Serving Institutions Partnership grants.
- Develop and verify protectiveness levels of alternative waste forms for management of nuclear materials (EM-managed Plutonium).
- Support to Headquarters on revisions to DOE Order 435.1 and in support of the International Atomic Energy Agency.
- Technology development for used fuel management including dry storage.
- Conceptual development of next generation nuclear materials processing and disposition systems.
- Technical studies on DOE-EM's excess/orphaned nuclear materials with no identified disposition path.
- Technical studies for Headquarters including independent technical reviews, Technology Readiness Assessments, etc.
- Long-term performance/durability studies of low-level waste forms.
- Technology Development and deployment of soil and groundwater remediation strategies and monitoring approaches.
- Development of deactivation and decommissioning facility assessment and in-situ decommissioning tools.
- Flowsheet Development – definition and testing of flowsheets for the processing of high-level waste including specific focused programs for troublesome components.
- Transfer and coordination of remediation approaches to Legacy Management sites.
- Coordinate Minority Serving Institutions Partnership grants.
- Develop response and framework in coordination with recommendations of the National Academy of Science, Science and Technology study.
- Provide engineering assessment resources to process/approach issues and events across the complex through Savannah River National Laboratory decision support tools.

- Perform a Technical Assessment of Radioactive Waste Classification versus potential Disposal Options.
- Follow-on activities to implement Competency Review Recommendations.
- Provide technical support to DOE-Headquarters and field offices for implementation of end-state contracts.
- Support for integration of the Technology Development and Deployment program across Science, EM, and Legacy Management; engineering assessment resources to process/approach issues and events across the complex; technical support to review of end-state contracts; and follow-on activities to maintain lab competencies.
- Help with Indefinite Delivery/Indefinite Quantity contract evaluations.

Office of River Protection

\$15,000,000

- Waste form development and qualification – formulation of grouts and glass and the development of strategies to demonstrate compliance.
- Mixing and sampling studies of tanks in the Tank Farm and Waste Treatment Plant to ensure adequate mixing of waste prior to and during processing of waste.
- Flowsheet Development and evaluation – definition and testing of flowsheets, operating parameters, etc. for the processing of high-level waste.
- Develop strategies for staging and preparing waste to meet facility acceptance criteria.
- Provide representation on tank integrity panel and provide consultation on materials corrosion and compatibility.

\$12,000,000

- Waste form development and qualification – formulation of grouts and glass and the development of strategies to demonstrate compliance.
- Mixing and sampling studies of tanks in the Tank Farm to ensure adequate mixing of waste prior to and during processing of waste.
- Flowsheet Development and evaluation – definition and testing of flowsheets, operating parameters, etc. for the processing of high-level waste.
- Implement strategies for staging and preparing waste to meet facility acceptance criteria.
- Provide representation on tank integrity panel and provide consultation on materials corrosion and compatibility.

-\$3,000,000

- Decrease reflects completion of previous year activities.

- | | |
|--|--|
| <ul style="list-style-type: none"> • Tank Farm safety basis technical issue resolution (vapors). • Support for startup testing for Direct Feed Low Activity Waste. • Development of alternative treatment methods and flowsheets to reduce the life cycle for the Hanford Mission. • Consultation and technical support to the development of performance assessments and strategies for Tank Closure. • Development of sludge retrieval and tank farm sampling technologies to reduce water load and minimize worker exposure. | <ul style="list-style-type: none"> • Tank Farm safety basis technical issue resolution (mixing and operations). • Support for startup testing for Direct Feed Low Activity Waste. • Development of alternative treatment methods and flowsheets to reduce the life cycle for the Hanford Mission. • Consultation and technical support to the development of performance assessments and strategies for Tank Closure. • Development of sludge retrieval and tank farm sampling technologies to reduce water load and minimize worker exposure. • Develop flowsheets and processing strategies for direct feed High-Level Waste processing. |
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Paducah / Portsmouth

- | \$1,100,000 | \$500,000 | -\$600,000 |
|---|--|---|
| <ul style="list-style-type: none"> • Deploy models and technologies for remediation and closure. • Deactivation and decommissioning technology development and deployment. • Develop site specific hazard and risk profiles to enhance work planning, such as improving appropriate selection of tools, techniques, and workforce training. It also includes stakeholder engagement. • Support resolution of subsurface contamination issues. • Participate in developing material recovery (Nickel) worksheets during the deactivation and decommissioning of cascades. | <ul style="list-style-type: none"> • Deploy models and technologies for remediation and closure. • Deactivation and decommissioning technology development and deployment. • Develop site specific hazard and risk profiles to enhance work planning, such as improving appropriate selection of tools, techniques, and workforce training. It also includes stakeholder engagement. • Support resolution of subsurface contamination issues. • Provide packaging and transportation technical support. | <ul style="list-style-type: none"> • Reflects same suite of scope areas but with reduced scope for FY 2022 with some scope taken up by Technology Development program. |
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Carlsbad

\$1,000,000

- Provide remote inspection and robotics applications.
- Support operations of Waste Isolation Pilot Plant including assessments of modified procedures and protocols.
- Provide engineering and chemistry support for waste packaging and storage.

\$500,000

- Provide remote inspection and robotics applications.
- Support operations of Waste Isolation Pilot Plant including assessments of modified procedures and protocols, as well as coordination of shipments and assessment of materials acceptable for disposal.
- Provide engineering and chemistry support for waste packaging and storage.
- Provide technical and program management support to the Office of the National Transuranic Waste Program.

-\$500,000

- Reflects completion of drum recovery work to support return of Waste Control Specialist stored drums.

Oak Ridge

\$1,000,000

- Deploy waste remediation technologies.
- Provide engineering consultation and support for EM waste treatment missions.

\$1,500,000

- Deploy waste remediation technologies.
- Provide engineering consultation and support for EM waste treatment missions.
- Provide assistance with various technology deployments to support deactivation and decommissioning and mercury abatement/treatment and also provide technical support to regulatory strategies for facility deactivation and decommissioning. Key will be Savannah River National Laboratory technologies for identifying the locations and amounts of contamination to improve deactivation and decommissioning safety and efficiency.

+\$500,000

- Reflects an increase in support for deactivation and demolition planning and remote inspection, including mercury treatment.

Richland

\$2,500,000

\$2,000,000

-\$500,000

- Member of the DOE Low-Level Waste Disposal Facility Federal Review Group for the Environmental Restoration Disposal Facility Performance Assessment.
- Materials consultation.
- Deactivation and decommissioning technology development and deployment.
- Develop enhanced characterization approaches for facility maintenance and planning for deactivation and decommissioning.
- Implement enhanced approaches to in-situ groundwater management.
- Provide planning input to management and remediation of Inactive Miscellaneous Underground Storage Tank program, including regulatory framework for accelerated closure.

- Member of the DOE Low-Level Waste Disposal Facility Federal Review Group for the Environmental Restoration Disposal Facility Performance Assessment.
- Materials consultation.
- Deactivation and decommissioning technology development and deployment.
- Develop enhanced characterization approaches for facility maintenance and planning for deactivation and decommissioning.
- Implement enhanced approaches to in-situ groundwater management.
- Provide planning input to management and remediation of excess facilities and storage units, including regulatory framework for accelerated closure.
- Develop a closure strategy for Hanford to include soil and groundwater and excess facilities with Richland and their contractors.

- Reduction in independent review support activities.

Los Alamos National Laboratory

\$500,000

- Nuclear materials packaging studies.
- Technical assistance for groundwater remediation.
- Technical consultation to new Los Alamos National Laboratory EM Office.

\$1,000,000

- Nuclear materials packaging studies, including disposition of drums at waste control specialist.
- Technical assistance for groundwater remediation.
- Technical consultation to new Los Alamos National Laboratory EM Office.
- Implement enhanced approaches to in-situ groundwater management.

+\$500,000

- Reflects an increase in support with chromium plume and treatment following discovery of additional chromium bearing waste disposed to the ground. Increase also supports options analysis for preparing drums stored at Waste Control Specialist for long term disposition at the Waste Isolation Pilot Plant.

Idaho National Laboratory

\$1,200,000

\$2,100,000

+\$900,000

- Nuclear Materials Packaging Studies.
 - Provide technical support to the Integrated Waste Treatment Unit facility in treatment of the Sodium Bearing Waste.
 - Support for disposition of other waste streams and nuclear materials.
- Nuclear Materials Packaging and disposition Studies.
 - Provide technical support to the Integrated Waste Treatment Unit facility in treatment of the Sodium Bearing Waste.
 - Support for disposition of other waste streams and nuclear materials.
- Reflects an increase in support for waste form qualification and rad analysis qualification for Integrated Waste Treatment Unit as the contractor proceeds with startup activities leading to radioactive operations. Increase also supports analysis of concrete storage structures containing radioactive materials.
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**Savannah River
Capital Summary (\$K)**

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Capital Operating Expenses Summary (including (Major Items of Equipment (MIE))

Capital Asset Projects > \$20M	0	0	0	0	0	+0
Plant Projects (GPP and IGPP) (<\$20M)	45,987	11,895	4,600	8,710	6,000	+2,500
Total, Capital Operating Expenses	45,987	11,895	4,600	8,710	6,000	+2,500

Plant Projects (GPP and IGPP) (Total Project Cost (TPC) <\$20M)

Savannah River

SRNL IGPPs ^a	17,895	11,895	0	4,328	0	6,000	+6,000
Replacement of Barricade 9	2,500	0	0	0	0	2,500	+2,500
Diesel Generator Replacement, 503-2A	375	0	375	427	0	0	0
Lab B 126/130 Renovation 773A	700	0	700	0	0	0	0
HVAC unit 735-A	375	0	375	247	0	0	0
Relocate Glass Apparatus Fabrication Laboratory to C-Wing, 735-A	1,100	0	1,100	803	0	0	0
Upgrade SRNL Limited Area Public Address System	100	0	100	136	0	0	0
Renovate Laboratory C-155 Hood and Gloveboxes, 773-A	750	0	750	46	0	0	0
Y-760, Relocate Glass Apparatus Fab. Lab.	300	0	0	0	300	0	-300
Y-794, Replacement HVAC Sys. 735-11A	925	0	0	717	925	0	-925
Replace B&C CHEX Diversion Fans and Dampers, 773-A	1,175	0	0	21	0	0	0
Design and Install the Delta V Control Room C-041 System Upgrade, 773-A	8,767	0	0	113	0	0	0
Construct Shop for SRNL Project Support	1,050	0	0	405	0	0	0
Renovate Lab B067/067 for High Accuracy Isotope Ratio Measurement	4,000	0	0	22	0	0	0
Y-710, Renovate Lab C-159/163	1,075	0	0	261	1,075	0	-1,075

**Environmental Management/
Savannah River**

Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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773-A Collaboration Room Expansion	600	0	600	402	0	0	0
Renovate 773-A Entryway	600	0	600	782			
Construct Advanced Characterization Bldg. (TEM)	1,000	0	0	0	1,000	0	-1,000
TIMS Installation	1,500	0	0	0	1,500	0	-1,500
SRNL Delta V Control System Upgrade	1,200	0	0	0	1,200	0	-1,200
Total, Savannah River	45,987	11,895	4,600	8,710	6,000	8,500	+2,500

Total, Capital Summary	45,987	11,895	4,600	8,710	6,000	8,500	+2,500
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^a Projects and allocation of the FY 2021 and FY 2022 IGPP request are preliminary. Final FY 2021 and FY 2022 projects will reflect emerging or identified risks. When the scope of these project is definitized, Congressional notification will be provided as required.

Savannah River
Construction Summary (\$K)

	Total	Prior Years	FY 2020 Enacted	FY 2020 Actuals	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
18-D-401, Saltstone Disposal Unit #8 and #9, SR (SR-0014C)							
Total Estimate Cost (TEC)	247,771	8,077	19,709	19,709	65,500	68,000	+2,500
Other Project Costs (OPC)	32,229	3,750	2,999	2,999	5,750	5,500	-250
Total Project Cost (TPC) 18-D-401	280,000	11,827	22,708	22,708	71,250	73,500	+2,250
18-D-402, Emergency Operations Center, SR (SR-0042)							
Total Estimate Cost (TEC)	TBD	1,759	6,792	1,265	6,500	8,999	+2,499
Other Project Costs (OPC)	TBD	4,000	0	0	0	0	0
Total Project Cost (TPC) 18-D-402	TBD	5,759	6,792	1,265	6,500	8,999	+2,499
19-D-701, SR Security Replacement System, SR (SR-0042)							
Total Estimate Cost (TEC)	TBD	10,000	4,525	7830	1,000	5,000	+4,000
Other Project Costs (OPC)	TBD	0	0	0	0	0	0
Total Project Cost (TPC) 19-D-701	TBD	10,000	4,525	7,830	1,000	5,000	+4,000
20-D-401, Saltstone Disposal Unit #10, #11 and #12, SR (SR-0014C)							
Total Estimate Cost (TEC)	TBD	0	500	47	562	19,500	+19,500
Other Project Costs (OPC)	TBD	0	400	656	950	4,400	+3,700
Total Project Cost (TPC) 20-D-401	TBD	0	900	703	1,512	23,900	+23,200

**18-D-401, Saltstone Disposal Units 8/9
Savannah River Site, Aiken, SC
Project is for Design and Construction**

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2022 Request for the Saltstone Disposal Units 8/9 project is \$73,500,000 (Includes \$68,000,000 in Design and Construction costs and \$5,500,000 in Other Project Costs).

The most recent DOE Order 413.3B approved Critical Decision is Critical Decision 2/3, which was approved on May 1, 2019, with a Performance Baseline of \$280,000,000 and Critical Decision 4 of September 30, 2024.

Saltstone Disposal Units 8/9 will be designed and constructed based on successful completion of Saltstone Disposal Unit 6, and incorporation of Lessons Learned. To facilitate a streamlined approach, approval of Approve Project Performance Baseline (Critical Decision 2) and Approve Start of Construction (Critical Decision 3) was combined. Saltstone Disposal Units 8/9 will be designed and constructed as close to parallel as feasible to take advantage of efficiencies in mobilization and use of resources.

Significant Changes

This Construction Project Data Sheet is an update of the FY 2021 Congressional Construction Project Data Sheet and does not include a new start for the budget year.

In accordance with DOE Order 413.3B, the Federal Project Director has been assigned.

Critical Milestone History

(Fiscal Quarter or Date)

	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2018	3/17/2017		4QFY2017	TBD	TBD	TBD	N/A	TBD
FY 2019	3/17/2017		12/11/2017	TBD	TBD	TBD	N/A	TBD
FY 2020	3/17/2017		12/11/2017	2QFY2019	TBD	2QFY2019	N/A	TBD
FY 2021	3/17/2017		12/11/2017	05/01/2019	TBD	05/01/2019	N/A	4Q2024
FY 2022	3/17/2017		12/11/2017	05/01/2019	N/A	05/01/2019	N/A	4Q2024

CD-0 – Approve Mission Need

Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

Final Design Complete – Estimated/Actual date the project design will be /was completed

D&D Complete – Completion of D&D work (see Section 5)

CD-4 – Approve Start of Operations or Project Completion

Environmental Management/

Savannah River/18-D-401 Saltstone

Disposal Unit #8/9

FY 2022 Congressional Budget Justification

Project Cost History

(\$ in thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2018	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2019	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2021	7,200	240,571	247,771	32,229	N/A	32,229	280,000
FY 2022	7,200	240,571	247,771	32,229	N/A	32,229	280,000

2. Project Scope and Justification

Scope

The Saltstone Disposal Units are required to provide the primary containment of Saltstone grout with sufficient capacity to support site closure goals and salt waste projections identified in the Liquid Waste System Plan. The mission need addressed by this project is critical for the final disposition of the decontaminated salt solution that is produced by the liquid waste system and without which the commitments made in the Federal Facilities Agreement with the State of South Carolina and the Environmental Protection Agency cannot be achieved.

The Saltstone Disposal Units 8/9 are the next in a series of projects that contain and disposition decontaminated salt solution (in the form of Saltstone grout) generated by the treatment of liquid nuclear waste at the Savannah River Site. Saltstone Disposal Units 8/9 project will construct two (2) 375 feet in diameter, 43 feet high, 32,000,000 gallon cylindrical large tank disposal cells based on American Water Works Association design. This will include all infrastructure necessary to accept Saltstone grout produced by the Saltstone Production facility with sufficient capacity to meet the estimated production rates identified in the Savannah River Site 'Liquid Waste System Plan.'

Justification

Built in the 1980s, the Z-Area Saltstone Facility applies a process that immobilizes low-level radioactive salt solution waste in grout. Dry materials are unloaded from dry bulk pneumatic trailers and conveyed to storage silos. The dry solids (fly ash, slag, and cement), are then discharged from the silos, weighed, and blended to produce a premix dry feed. Salt solution which is received from H-Area Waste Tank 50 through the Inter-area Transfer System through the Salt Feed Tank and premix are proportionally measured and fed to a mixer in the 210-Z process room to produce a Saltstone grout, which is pumped to the disposal units for permanent disposal. The grout hardens to form Saltstone that is a leach-resistant, non-hazardous solid waste form as defined by South Carolina Department of Health and Environmental Control regulations. The combination of the monolithic non-hazardous solid Saltstone waste form, concrete vault cell, and closure cap system controls migration of chemical and radioactive constituents to the environment. The Saltstone Disposal Unit projects have been initiated to provide landfill capacity for receipt of Low Activity Treated Waste grout. The need for the Saltstone Disposal Unit is driven by the Savannah River Site Liquid Waste Disposition Program Plan to accomplish cleanup objectives. Saltstone Disposal Unit projects provide the benefits of lower disposal cost for decontaminated salt solutions. The grout itself provides primary containment of the waste, and the walls, floor, and roof of the Disposal Units provide secondary containment. Saltstone Disposal Unit will be constructed in coordination with salt processing production rates.

The need date for all Saltstone Disposal Units is recorded in the Savannah River Site Liquid Waste System Plan, Revision 21. This plan documents the strategy of dispositioning the liquid waste in the Savannah River Site tank farm and meeting the Federal Facility Agreement for tank closure. It is a living document that is routinely updated to account for any changes that may affect the liquid waste system (e.g., funding fluctuations, changes in technology, facility availability, etc.).

The project contingency is based upon previous experience and risks associated with the successful construction of Saltstone Disposal Unit 6, which adapted a commercial reinforced concrete tank to a nuclear grade low-level waste disposal cell.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets.

Key Performance Parameters

The Threshold Key Performance Parameters represent the acceptable performance that the project must achieve. Achievement of the Threshold Key Performance Parameters will be a prerequisite for approval of Critical Decision 4, Project Completion. The Objective Key Performance Parameters represent the desired project performance.

Performance Measure	Threshold	Objective
Capacity	Provide saltstone grout containment capacity of no less than 30,000,000 gallons.	N/A
Throughput	Provide infrastructure capable of delivering saltstone grout at 100 gallons per minute minimum.	N/A
Leak Detection	Install a leak detection system in accordance with the Z-Area Industrial Solid Waste Landfill Permit requirements.	N/A

3. Project Cost and Schedule

Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design			
FY 2018	500	500	500
FY 2019	1,328	1,328	1,328
FY 2020	2,999	2,999	2,999
FY 2021	2,460	2,460	2,460
FY 2022	204	204	204
Outyears	0	0	0
Total, Design	7,491	7,491	7,491
Construction			
FY 2019	6,249	6,249	6,249
FY 2020	17,001	17,001	17,001
FY 2021	63,040	63,040	63,040

Environmental Management/
Savannah River/18-D-401 Saltstone
Disposal Unit #8/9

FY 2022 Congressional Budget Justification

(dollars in thousands)

	Appropriations	Obligations	Costs
FY 2022	67,796	67,796	67,796
Outyears	93,768	93,768	93,768
Total, Construction	247,854	247,854	247,854
TEC			
FY 2018	500	500	500
FY 2019	7,577	7,577	7,577
FY 2020	20,000	20,000	20,000
FY 2021	65,500	65,500	65,500
FY 2022	68,000	68,000	68,000
Outyears	93,768	93,768	93,768
Total, TEC	255,345	255,345	255,345
OPC			
FY 2018	2,409	2,409	2,409
FY 2019	3,250	3,250	3,250
FY 2020	3,250	3,250	3,250
FY 2021	4,155	4,155	4,155
FY 2022	5,500	5,500	5,500
Outyears	6,091	6,091	6,091
Total, OPC	24,655	24,655	24,655
Total Project Cost (TPC)	280,000	280,000	280,000
FY 2018	2,909	2,909	2,909
FY 2019	10,827	10,827	10,827
FY 2020	23,250	23,250	23,250
FY 2021	69,655	69,655	69,655
FY 2022	73,500	73,500	73,500
Outyears	99,859	99,859	99,859
Total, TPC	280,000	280,000	280,000

Details of Project Cost Estimate

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Design	5,907	5,907	5,907
Contingency	1,293	1,293	1,293
Total, Design	7,200	7,200	7,200
Construction			
Site Preparation	N/A	N/A	N/A
Equipment	N/A	N/A	N/A
Other Construction	208,239	208,239	208,239
Contingency	32,332	32,332	32,332
Total, Construction	240,571	240,571	240,571
Total, TEC	214,146	214,146	214,146
Contingency, TEC	33,625	33,625	33,625
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	N/A	N/A	N/A
Conceptual Design	N/A	N/A	N/A
Start-up	N/A	N/A	N/A
Contingency	10,104	10,104	10,104
Other OPC	22,125	22,125	22,125
Total, OPC except D&D	32,229	32,229	32,229
	22,125	22,125	22,125
Total, OPC			
Total, Contingency	10,104	10,104	10,104
Total, TPC	280,000	280,000	280,000
Total, Contingency	43,729	43,729	43,729

Schedule of Appropriation Requests

Request		Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Outyears	Total
FY 2018	TEC	0	500						500
	OPC	0	2,409						2,409
	TPC	0	2,909						2,409
FY 2019	TEC	0	500	7,577					8,077
	OPC	0	2,409	3,250					5,659
	TPC	0	2,909	10,827					13,736
FY 2020	TEC	0	500	7,577	20,000				28,077
	OPC	0	2,409	3,250	3,250				8,909
	TPC	0	2,909	10,827	23,250				36,985
FY 2021	TEC	0	500	7,577	20,000	65,500			93,577
	OPC	0	2,409	3,250	3,250	5,750			14,659
	TPC	0	2,909	10,827	23,250	71,250			108,236
FY 2022	TEC	0	500	7,577	20,000	65,500	68,000	93,768	255,345
	OPC	0	2,409	3,250	3,250	4,155	5,500	6,091	24,655
	TPC	0	2,909	10,827	23,250	69,655	73,500	99,859	280,000

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1QFY2025
Expected Useful Life (number of years) (per Saltstone Disposal Unit)	3-5
Expected Future Start of D&D	N/A

Related Funding Requirements

(Dollars in Thousands)

COST ESTIMATED PER SALTSTONE DISPOSAL UNIT	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	100	N/A	500	N/A
Maintenance	200	N/A	1,000	N/A
Total, Operations & Maintenance	300	N/A	1,500	N/A

5. D&D Information

Project licensed by the State of South Carolina as a landfill. D&D is not applicable for this project.

The new area being constructed in this project is not replacing existing facilities.

The location of this construction project is an environmental management closure site and, therefore, is exempt from the “one-for-one” requirement.

6. Acquisition Approach

Currently, the approach assumes that the liquid waste Prime Contractor will be used to create the design, provide engineering and project management support, or other services required to execute the project. This project will be designed and constructed consistent with the successful execution of the Saltstone Disposal Unit 6 and 7 projects, incorporating best practices.

**18-D-402, Emergency Operations Center Replacement
Savannah River Site, Aiken, South Carolina
Project is for Design and Construction**

1. Summary, Significant Changes and Schedule and Cost History

Summary

The FY 2022 Request for Emergency Operations Center Replacement is \$8,999,000.

The most recent DOE Order 413.3B approved Critical Decision is Critical Decision-1, which was approved on June 23, 2020 with a total cost range of \$83,000,000 to \$93,000,000 and Critical Decision -4 range of FY 2022 to FY 2026.

Significant Changes

This Construction Project Data Sheet is an update of the FY 2020 Congressional Budget Request and does not include a new start for the budget year.

A Federal Project Director has been assigned to this project.

Critical Milestone History

(Fiscal Quarter or Date)

	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2018	01/05/2017	3Q FY2018	4Q FY2018	TBD	TBD	TBD	N/A	TBD
FY 2019	01/05/2017	3Q FY2018	4Q FY2018	TBD	TBD	TBD	N/A	TBD
FY 2020	01/05/2017	2Q FY2020	2Q FY2020	TBD	TBD	TBD	N/A	TBD
FY 2022	01/05/2017	2Q FY2020	06/23/2020	2Q FY2022	1Q FY2022	TBD	N/A	TBD

CD-0 – Approve Mission Need

Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

Final Design Complete – Estimated/Actual date the project design will be /was completed

D&D Complete – Completion of D&D work (see Section 5)

CD-4 – Approve Start of Operations or Project Completion

PB – Indicates the Performance Baseline

Project Cost History

(Dollars in thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2018	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2019	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2022	16,550	TBD	TBD	TBD	N/A	TBD	TBD

Note: No construction, excluding for approved long-lead procurement and site preparation, will be performed until the project performance baseline has been validated and Critical Decision -3 has been approved.

2. Project Scope and Justification

Scope

The scope of this project is to design and construct modern, code-compliant emergency management facilities necessary to respond to emergency event scenarios. The primary and alternate Savannah River Site Operations Center facilities (Emergency Communications Centers) are required to support all emergency and non-emergency communications 24 hours per day, 365 days per year. The Emergency Operations Center is a required facility in which designated command staff are centralized to manage all site emergencies when formally activated.

The primary and alternate Savannah River Site Operations Center facilities and the Emergency Operations Center will be relocated from their current locations through a design-bid-build construction project.

Justification

Savannah River Site currently maintains a marginally habitable primary Savannah River Site Operations Center and Emergency Operations Center in the basement of a building that is past its useful life and on the Site's Decontamination and Decommissioning list. Once the new facilities are relocated, the building will be turned over for closure.

Because the existing primary facility is on the Decontamination and Decommissioning list, the facility is only minimally supported by site maintenance services, which has resulted in mold and mildew formation causing some employees to become sick and removed from their post. Asbestos is found throughout the facility, the majority of which has been roped off and vacated. The facility has experienced several failures related to water intrusion due to its below ground location and has ongoing utility failures due to the age of the utilities and deferred maintenance. The entire facility must continue to be heated and cooled to reduce the mold and mildew growth. The cost of replacing a Heating Ventilation and Air Conditioning unit for a facility of this size with only minimal occupancy is prohibitive. For the safety of the employees that work in these facilities, it is imperative they be relocated to a safer, healthier environment.

The risk of losing functionality in the primary and/or alternate facilities is high, the consequence of which would cause the Site to be in a minimal (essential personnel only) state of operations for an undetermined amount of time until the facilities could be returned to service.

DOE Order 151.1D requires the Site to maintain an emergency command center at all times, as well as equivalent alternate facilities. Nuclear Fire Protection Association 1221 requires the site's communications/dispatch center (Savannah River Site Operations Center) to be manned 24 hours per day and identifies other specialized requirements. In its current state the facilities cannot comply with all requirements. In order to bring the facilities into compliance, all facilities must be relocated from their existing locations.

The project is being executed in accordance with the project management requirements in DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets.

**Environmental Management/
Savannah River/18-D-402 Emergency
Operations Center**

FY 2022 Congressional Budget Justification

Key Performance Parameters (Preliminary at Critical Decision-1)

The Key Performance Parameters represent the acceptable performance that the project must achieve. Achievement of the Key Performance Parameters will be a prerequisite for approval of Critical Decision -4, Project Completion.

3. Project Cost and Schedule**Financial Schedule**

(Dollars in thousands)

Budget Authority (Appropriations)	Obligations	Costs
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Total Estimated Cost (TEC)

Design

FY 2018	500	0	0
FY 2019	1,259	0	0
FY 2020	6,792	1,000	1,000
FY 2021	1,000	1,000	1,000
FY 2022	6,999	6,999	6,999
Total, Design	16,550	8,999	8,999

Construction

FY 2021	5,500	5,500	5,500
FY 2022	2,000	2,000	2,000
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD

TEC

FY 2018	500	0	0
FY 2019	1,259	0	0
FY 2020	6,792	0	0
FY 2021	6,500	6,500	6,500
FY 2022	8,999	8,999	8,999
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD

OPC

**Environmental Management/
Savannah River/18-D-402 Emergency
Operations Center**

FY 2022 Congressional Budget Justification

	Budget Authority (Appropriations)	Obligations	Costs
FY 2018	500	500	500
FY 2019	3,500	3,500	1,000
FY 2020	0	0	500
FY 2021		TBD	TBD
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD

Total Project Cost (TPC)

FY 2018	1,000	1,000	500
FY 2019	4,759	3,500	1,000
FY 2020	6,792	11,551	500
FY 2021	6,500	6,500	6,500
FY 2022	8,999	8,999	8,999
Outyears	TBD	TBD	TBD
Total	TBD	TBD	TBD

Note: Funds for long-lead equipment may be requested prior to project baseline validation if approved by the Acquisition Executive.

Details of Project Cost Estimate

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
Site Preparation	TBD	TBD	TBD
Equipment	TBD	TBD	TBD
Other Construction	TBD	TBD	TBD
Contingency	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Contingency, 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
Contingency	TBD	TBD	TBD
Other OPC	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Contingency, OPC	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD
Total, Contingency	TBD	TBD	TBD

Request	FY 2022	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Outyears	Total
FY 2018	OPC	0	500						500
	TEC	0	500						500
	TPC	0	1,000						1,000
FY 2019	OPC	0	500	3,500					4,000
	TEC	0	500	1,259					1,759
	TPC	0	1,000	4,759					5,759
FY 2020	OPC	0	500	3,500	0				4,000
	TEC	0	500	1,259	6,792				8,551
	TPC	0	1,000	4,759	6,792				12,551
FY 2022	OPC	0	500	3,500	0	0	0	TBD	TBD
	TEC	0	500	1,259	6,792	6,500	8,999	TBD	TBD
	TPC	0	1,000	4,759	6,792	6,500	8,999	TBD	TBD

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	TBD
Expected Future Start of D&D	N/A

Related Funding Requirements

(Dollars in Thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	TBD	TBD	TBD	TBD
Maintenance	TBD	TBD	TBD	TBD
Total, Operations & Maintenance	TBD	TBD	TBD	TBD

5. D&D Information

The new area being constructed in this project is replacing existing facilities; however, the costs of decommissioning and decontamination of the facilities that are being replaced are not included in the costs of this construction project.

Once the Savannah River Site Operations Center and Emergency Operations Center are relocated, the existing facility will be available for decommissioning and decontamination.

The location of this construction project is an environmental management closure site and, therefore, is exempt from the “one-for-one” requirement.

6. Acquisition Approach

A project execution alternative on which to complete a conceptual design was selected during FY 2018 by the Project Management Executive based on the Independent Analysis of Alternatives completed. The approved conceptual design package will be the basis for the Final Design. DOE will use the contractor to develop Final Design and will make a determination prior to Critical Decision-2 on the acquisition path for construction. The acquisition approach will be in alignment with the Acquisition Strategy approved at Critical Decision-1.

**19-D-701, SR Security System Replacement Project
Savannah River Site, Aiken, South Carolina
Project is for Design and Construction**

1. Summary, Significant Changes and Schedule and Cost History

Summary

This project was originally executed as an operating expense funded project to replace the existing aging and at risk security system at the Savannah River Site Category I and II nuclear facilities and the balance of the site where Electronic Safeguards and Security is utilized. Beginning in FY 2019, during execution of Phase I final design, Congress requested that the Total Estimated Cost of this project be appropriated in a capital line item construction account. This data sheet includes a full accounting of the total project cost expended in prior years, including the initial \$15M in operating expense cost funding (PBS 20) prior to FY 2019.

The FY 2022 Request for the Savannah River Site Security System Replacement project is \$5,000,000.

A Federal Project Director has been assigned to this project.

The most recent DOE Order 413.3B milestone approved for the project in its entirety is Critical Decision 1, which was approved on June 28, 2016 with a cost range of \$49,423,000 to \$91,470,000 and a Critical Decision 4 range of FY 2022 to FY 2028.

This project is tailored, as allowed by DOE Order 413.3B, to be managed as four distinct subprojects within the overall cost range established at Critical Decision 1. Each of four subprojects will have their own baseline, total project cost, and independent Critical Decision 2, 3, and 4 approvals. The final Critical Decision 4 approval will constitute project completion.

The first subproject, H Area ARGUS, received combined Critical Decision 2 and 3 approvals on May 29, 2018 with a Total Project Cost of \$17.9M. CD-4 for this subproject was officially approved on May 12, 2020. The second subproject, K Area ARGUS, is actively developing final design and has a forecast for Critical Decision 2/3 approval of FY 2022.

Significant Changes

This Construction Project Data Sheet is an update of the FY 2020 Construction Project Data Sheet and does not include a new start for the budget year.

2. Critical Milestone History

Overall Project 19-D-701

(Fiscal Quarter or Date)

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3A	CD-3	D&D Complete	CD-4
2019	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	N/A	TBD	N/A	TBD
2020	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	N/A	TBD	N/A	TBD
2022	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD

H Area Subproject

(Fiscal Quarter or Date)

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3A	CD-3	D&D Complete	CD-4
FY 2019 PB	8/26/2015	8/08/2016	8/08/2016	5/29/2018	5/29/2018	8/28/2017	5/29/2018	N/A	4/30/2020
FY 2020 PB	8/26/2015	8/08/2016	8/08/2016	5/29/2018	5/29/2018	8/28/2017	5/29/2018	N/A	4/30/2020

K Area Subproject

**Environmental Management/
Savannah River/20-D-401 Saltstone
Disposal Unit 10 11 12**

(Fiscal Quarter or Date)

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3A	CD-3	D&D Complete	CD-4
FY 2019	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD
FY 2020	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD
FY 2022	8/26/2015	8/08/2016	8/08/2016	4Q FY2022	4Q FY2022	4Q FY2021	4Q FY2022	N/A	TBD

L Area Subproject

(Fiscal Quarter or Date)

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3A	CD-3	D&D Complete	CD-4
FY 2019	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD
FY 2020	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD
FY 2022	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD

Savannah River National Laboratory/General Site Subproject

(Fiscal Quarter or Date)

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3A	CD-3	D&D Complete	CD-4
FY 2019	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD
FY 2020	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD
FY 2022	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD

CD-0 – Approve Mission Need

Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

Final Design Complete – Estimated/Actual date the project design will be /was completed

D&D Complete – Completion of D&D work (see Section 5)

CD-4 – Approve Start of Operations or Project Completion

PB – Indicates the Performance Baseline

3. Project Cost History

Overall Project 19-D-701

Fiscal Year	OPEX, Total	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019	15,000	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	15,000	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2022	15,000	2,829	TBD	TBD	TBD	N/A	TBD	TBD

H Area Subproject

Environmental Management/
Savannah River/20-D-401 Saltstone
Disposal Unit 10 11 12

FY 2022 Congressional Budget Justification

Fiscal Year	OPEX, Total	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019 PB	15,000	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020 PB	15,000	TBD	TBD	TBD	TBD	N/A	TBD	TBD*

*The total project cost for the H Area Subproject is \$17,205, which includes \$15,000 of operating expense cost (PBS 20) costs. These costs supported H Area execution prior to the project's line item status, which was directed in FY 2019.

K Area Subproject

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2022	9,033	TBD	TBD	TBD	N/A	TBD	TBD

L Area Subproject

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019	TBD	TD	TBD	TBD	N/A	TBD	TBD
FY 2020	TBD	TD	TBD	TBD	N/A	TBD	TBD
FY 2022	TBD	TD	TBD	TBD	N/A	TBD	TBD

SRNL / General Site Subproject

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019	TBD	TD	TBD	TBD	N/A	TBD	TBD
FY 2020	TBD	TD	TBD	TBD	N/A	TBD	TBD
FY 2022	TBD	TD	TBD	TBD	N/A	TBD	TBD

Note: No construction, excluding for approved long-lead procurement and site preparation, will be performed until the project performance baseline has been validated and Critical Decision -3 has been approved.

4. Project Scope and Justification

Scope

The scope of this project is to replace the existing Electronic Safeguards and Security system with the DOE Standard ARGUS System at Savannah River Site in the following areas: H-Area, K-Area, L-Area, and the remaining portion of the Savannah River National Laboratory and general site areas.

Justification

The Savannah River Site Electronic Safeguards and Security system has exceeded its useful life. Field installation of the Electronic Safeguards and Security began in the late-1980's with the first subsystem operational in H-Area (December 1991). The last Electronic Safeguards and Security area to become operational was F-Area in 1994. Since then a number of

**Environmental Management/
Savannah River/20-D-401 Saltstone
Disposal Unit 10 11 12**

FY 2022 Congressional Budget Justification

major upgrades have been implemented to improve the system and address issues with obsolescence. Although upgrades have been made, Electronic Safeguards and Security components, including those installed during the last upgrade, are no longer commercially available, making it difficult to maintain Electronic Safeguards and Security reliability. The existing Electronic Safeguards and Security system has experienced an increased failure rate, which has resulted in additional costly compensatory measures, including use of additional protective force resources, increased maintenance, and increased overtime costs.

The risk of catastrophic failure of the Electronic Safeguards and Security system poses critical operational risks to H-Area, L-Area, K-Area, and Savannah River National Laboratory. If there is an Area-wide failure of Electronic Safeguards and Security, additional security forces would need to be deployed and additional compensatory measures would need to be implemented that would severely slow down or stop operations in the Cat I/II facilities.

Key Performance Parameters

The Key Performance Parameters represent the acceptable performance that the project must achieve. Achievement of the Key Performance Parameters will be a prerequisite for approval of Critical Decision -4, Project Completion.

Performance Measure	Threshold	Objective
Replacement	Replace the vintage Electronic Safeguards and Security systems in H-Area, L-Area, K-Area and the SRNL and general site areas with the ARGUS security system that has been adopted by the Department as meeting the Safeguards and Security Alarm Management and Control System Standard.	Replace the current, obsolete Electronic Safeguards and SecurityE3S security system with the DOE Standard system, ARGUS.
Installation	Integrate crossover or tie-ins during the replacement of the Electronic Safeguards and Security systems with the associated Central Alarm Stations.	Complete installation with appropriate integration with other systems and facilities with minimal impacts of cost and schedule to other programs and missions.
Installation	Minimize interruptions and impact to Category II facility missions during installation, system tie-ins and operations of H-Area, L-Area, and K-Area and designated sections of Savannah River National Laboratory and the general site.	Project will not disrupt Category II facility operations schedules.

5. Project Cost and Schedule

Financial Schedule

Funding is appropriated at the Overall Project level and is allocated to the subprojects as indicated in the tables below.

H Area Subproject

(Dollars in thousands)

Budget Authority (Appropriations)	Obligations	Costs
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Total Estimated Cost (TEC)

Design

FY 2019	0	0	0
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Environmental Management/
Savannah River/20-D-401 Saltstone
Disposal Unit 10 11 12

FY 2022 Congressional Budget Justification

	Budget Authority (Appropriations)	Obligations	Costs
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	0	0	0
Total, Design	0	0	0

Construction

FY 2019	2,937	2,937	987
FY 2020	0	0	1,550
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	0	0	0
Total, Construction	2,937	2,937	2,538

TEC

FY 2019	2,937	2,937	987
FY 2020	0	0	1,550
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	0	0	0
Total, TEC	2,937	2,937	2,538

OPC

FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	0	0	0
Total, OPC	0	0	0

OPEX^a

FY 2015	10,000	10,000	221
FY 2016	0	0	1,234
FY 2017	0	0	2,916
FY 2018	5,000	5,000	1,887
FY 2019	0	0	5,771
FY 2020	0	0	2,639
FY 2021	0	0	0
FY 2022	0	0	0
Total, OPEX*	14,843*	14,843*	14,667

	Budget Authority (Appropriations)	Obligations	Costs
Total Project Cost (TPC)			
FY 2015 ^a	10,000	10,000	221
FY 2016	0	0	1,234
FY 2017	0	0	2,916
FY 2018 ^a	5,000	5,000	1,886
FY 2019	2,937	2,937	6,758
FY 2020	0	0	4,190
FY 2021	-157	-157	0
FY 2022	0	0	0
Outyears	0	0	0
Total, TPC	17,780	17,780	17,205

Note: Funds for long-lead equipment may be requested prior to project baseline validation if approved by the Project Management Executive.

a Funded by PBS SR-0020

* \$15M operating expense costs funding was originally provided in 2015 (\$10M) and 2018 (\$5M) as part of a PBS 20 operating expense funded project. The project was later determined by Congress to be a line item construction project in FY19 and all funding thereafter is either other project cost or total estimated cost. Most of the H Area Subproject was funded through PBS 20 operating expense costs.

K Area Subproject

(Dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2019	7,063	7,063	715
FY 2020	2,970	2,970	3,591
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	0	0	0
Total, Design	10,033	10,033	4,306
Construction			
FY 2019	0	0	0
FY 2020	1,555	1,555	0
FY 2021	1,000	1,000	1,000
FY 2022	18,857	18,857	18,857
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD

TEC

FY 2019	7,063	7,063	715
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**Environmental Management/
Savannah River/20-D-401 Saltstone
Disposal Unit 10 11 12**

	Budget Authority (Appropriations)	Obligations	Costs
FY 2020	4,525	4,525	3,591
FY 2021	1,000	1,000	1,000
FY 2022	5,000	5,000	5,000
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD

OPC

FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD

Total Project Cost (TPC)

FY 2019	7,063	7,063	715
FY 2020	4,525	4,525	3,591
FY 2021	1,000	1,000	1,000
FY 2022	5,000	5,000	5,000
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Note: Funds for long-lead equipment may be requested prior to project baseline validation if approved by the Project Management Executive.

L Area Subproject

(Dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
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Total Estimated Cost (TEC)

Design

FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD

Construction

Environmental Management/
Savannah River/20-D-401 Saltstone
Disposal Unit 10 11 12

FY 2022 Congressional Budget Justification

	Budget Authority (Appropriations)	Obligations	Costs
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears (total project)	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Note: Funds for long-lead equipment may be requested prior to project baseline validation if approved by the Project Management Executive.

SRNL/General Site Subproject

(Dollars in thousands)

Budget Authority (Appropriations)	Obligations	Costs
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Total Estimated Cost (TEC)

	Budget Authority (Appropriations)	Obligations	Costs
Design			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Note: Funds for long-lead equipment may be requested prior to project baseline validation if approved by the Project Management Executive.

Overall Project (19-D-701)

(Dollars in thousands)			
	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2019	7,063	7,063	715
FY 2020	2,970	2,970	3,591
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2019	2,937	2,937	987
FY 2020	1,555	1,555	1,551
FY 2021	1,000	1,000	1,000
FY 2022	5,000	5,000	5,000
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2019	10,000	10,000	1,702
FY 2020	4,525	4,525	5,142
FY 2021	1,000	1,000	1,000
FY 2022	5,000	5,000	5,000
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC			
FY 2019	0	0	0
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	0	0	0
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
OPEX^a			
FY 2015	10,000	10,000	221
FY 2016	0	0	1,234

Environmental Management/
Savannah River/20-D-401 Saltstone
Disposal Unit 10 11 12

	Budget Authority (Appropriations)	Obligations	Costs
FY 2017	0	0	2,916
FY 2018	5,000	5,000	1,886
FY 2019	0	0	5,771
FY 2020	0	0	2,639
Outyears	0	0	0
Total, OPEX	15,000	15,000	14,667

Total Project Cost (TPC)

FY 2015	10,000	10,000	221
FY 2016	0	0	1,234
FY 2017	0	0	2,916
FY 2018	5,000	5,000	1,886
FY 2019	10,000	10,000	7,473
FY 2020	4,525	4,525	7,781
FY 2021	843	843	843
FY 2022	5,000	5,000	5,000
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

6. Details of Project Cost Estimate

H Area Subproject

(dollars in thousands)

Current Total Estimate	Previous Total Estimate	Original Validated Baseline
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Total Estimated Cost (TEC) ^a

Design			
Design	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, Design	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Construction			
Site Preparation	N/A	N/A	N/A
Equipment	N/A	N/A	N/A
Other Construction	2,937	N/A	2,937
Contingency	N/A	N/A	N/A
Total, Construction	2,937	N/A	2,937
Contingency	N/A	N/A	N/A
Total, TEC	2,937	N/A	2,937
Contingency, TEC	N/A	N/A	N/A

(dollars in thousands)

Current Total Estimate	Previous Total Estimate	Original Validated Baseline
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Other Project Cost (OPC)

OPC except D&D			
Conceptual Planning	N/A	N/A	N/A
Conceptual Design	N/A	N/A	N/A
Start-Up	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Other OPC	N/A	N/A	N/A
Total, OPC	N/A	N/A	N/A
Contingency, OPC	N/A	N/A	N/A

Operating Expense Costs (OPEX) H Area Subproject Only ^b

Conceptual Planning	221	275	221
Conceptual Design	1,234	1,924	1,234
Start-Up	3,473	412	3,473
Contingency	232	137	232
Design	1,753	5,063	1,753
Design Contingency	0	984	0
Other Project Costs	926	0	926
Site Preparation	0	0	0
Equipment	230	213	230
Other Construction ^a	4,074	11,489	4,074
Construction Contingency	2,857	2,943	2,857
Total, OPEX	15,000	23,440	15,000
Total H Area, TPC	17,937	23,440	17,937
Total H Area Contingency	3,089	4,064	3,089

^a H Area was provided \$15M in OPEX funding to complete \$18M TPC baseline scope. \$2.937M TEC funding will be used from FY 2019 line item funding to execute construction scope for H Area and remaining prior year OPEX funding will be used to complete installation and close out the H Area Argus subproject.

^b OPEX funding from PBS SR-0020 in prior years will be used to complete installation and close out the H Area Argus subproject. \$15M of OPEX funding from PBS SR-0020 was used to fund the H Area Argus subproject baseline from FY15 – FY18. \$2.937M of FY 2019 TEC will be obligated to complete H Area construction scope and will fully fund the subproject baseline. No further funding requests will be needed to complete the H Area subproject.

K Area Subproject

(dollars in thousands)

Current Total Estimate	Previous Total Estimate	Original Validated Baseline
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Total Estimated Cost (TEC) ^a

Design

**Environmental Management/
Savannah River/20-D-401 Saltstone
Disposal Unit 10 11 12**

FY 2022 Congressional Budget Justification

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Design	7,620	N/A	TBD
Contingency	1,413	N/A	TBD
Total, Design	9,033	N/A	TBD
Contingency	TBD	N/A	TBD
Construction			
Site Preparation	TBD	N/A	TBD
Equipment	TBD	N/A	TBD
Other Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, TEC	TBD	N/A	TBD
Contingency, TEC	TBD	N/A	TBD

Other Project Cost (OPC)

OPC except D&D			
Conceptual Planning	TBD	N/A	TBD
Conceptual Design	TBD	N/A	TBD
Start-Up	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Other OPC	TBD	N/A	TBD
Total, OPC	TBD	N/A	TBD
Contingency, OPC	TBD	N/A	TBD

Total K Area, TPC	TBD	N/A	TBD
Total K Area, Contingency	TBD	N/A	TBD

L Area Subproject

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC) ^a			
Design			
Design	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Design	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Construction			

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Site Preparation	TBD	N/A	TBD
Equipment	TBD	N/A	TBD
Other Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, TEC	TBD	N/A	TBD
Contingency, TEC	TBD	N/A	TBD

Other Project Cost (OPC)

OPC except D&D			
Conceptual Planning	TBD	N/A	TBD
Conceptual Design	TBD	N/A	TBD
Start-Up	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Other OPC	TBD	N/A	TBD
Total, OPC	TBD	N/A	TBD
Contingency, OPC	TBD	N/A	TBD

Total L Area, TPC	TBD	N/A	TBD
Total L Area, Contingency	TBD	N/A	TBD

SRNL/General Site Subproject

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC) ^a			
Design			
Design	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Design	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Construction			
Site Preparation	TBD	N/A	TBD
Equipment	TD	N/A	TBD
Other Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD

Environmental Management/
Savannah River/20-D-401 Saltstone
Disposal Unit 10 11 12

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total, TEC	TBD	N/A	TBD
Contingency, TEC	TBD	N/A	TBD

Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	N/A	TBD
Conceptual Design	TBD	N/A	TBD
Start-Up	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Other OPC	TBD	N/A	TBD
Total, OPC	TBD	N/A	TBD
Contingency, OPC	TBD	N/A	TBD

Total SRNL/Gen Site, TPC	TBD	N/A	TBD
Total SRNL/Gen Site, Contingency	TBD	N/A	TBD

Overall Project (19-D-701)

(dollars in thousands)			
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC) ^a			
Design			
Design		N/A	TBD
Contingency	TBD	N/A	TBD
Total, Design	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Construction			
Site Preparation	TBD	N/A	TBD
Equipment	TBD	N/A	TBD
Other Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, TEC	TBD	N/A	TBD
Contingency, TEC	TBD	N/A	TBD

(dollars in thousands)

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

Other Project Cost (OPC)

OPC except D&D

Conceptual Planning

Conceptual Design

Start-Up

Contingency

Other OPC

TBD

N/A

TBD

TBD

N/A

TBD

TBD

N/A

TBD

TBD

N/A

TBD

TBD

N/A

TBD

Total, OPC

TBD

N/A

TBD

Contingency, OPC

TBD

N/A

TBD

Operating Expense Costs (OPEX) H Area Subproject Only ^b

Conceptual Planning

221

275

221

Conceptual Design

1,234

1,924

1,234

Start-Up

3,473

412

3,473

Contingency

232

137

232

Design

1,753

5,063

1,753

Design Contingency

0

984

0

Other Project Costs

926

0

926

Site Preparation

0

0

0

Equipment

230

213

230

Other Construction

4,074

11,489

4,074

Construction Contingency

2,857

2,943

2,857

Total, OPEX**15,000****23,440****15,000****Contingency, OPEX****3,089****4,064****3,089****Total Project, TPC**

TBD

N/A

TBD

Total Project, Contingency

TBD

N/A

TBD

7. Schedule of Appropriation Requests (\$K)

Environmental Management/
Savannah River/20-D-401 Saltstone
Disposal Unit 10 11 12

FY 2022 Congressional Budget Justification

Request	Type	Prior Years	FY 2019	FY 2020	FY 2021	FY 2022	Outyears	Total
FY 2019	TEC	0	10,000				TBD	TBD
	OPC	0					TBD	TBD
	OPEX	15,000					TBD	TBD
	TPC	15,000	10,000				TBD	TBD
FY 2020	TEC	0	10,000	4,525			TBD	TBD
	OPC	0					TBD	TBD
	OPEX	15,000					TBD	TBD
	TPC	15,000	10,000				TBD	TBD
FY 2021	TEC	0	10,000	0	0		TBD	TBD
	OPC	0		0			TBD	TBD
	OPEX	15,000			0		TBD	TBD
	TPC	15,000	10,000	0	0		TBD	TBD
FY 2022	TEC	0	10,000	4,525	1,000	5,000	TBD	TBD
	OPC	0	0	0	0	0	TBD	TBD
	OPEX	15,000	0	0	-157	0	TBD	TBD
	TPC	15,000	10,000	4,525	1,000	5,000	TBD	TBD

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	TBD
Expected Future Start of D&D	N/A

Related Funding Requirements

(Dollars in Thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	TBD	N/A	TBD	N/A
Maintenance	TBD	N/A	TBD	N/A
Total, Operations & Maintenance	TBD	N/A	TBD	N/A

9. D&D Information

The EM ARGUS project is a one-for-one replacement project of the EM Security System associated with the Cat I/II Nuclear Facilities at SRS. There are no plans in place to D&D the system. D&D will occur commensurate with the D&D schedule for the facilities in which the system is installed.

10. Acquisition Approach

The site Management and Operations contractor was determined to be the best contract alternative. The Management and Operations has security cleared personnel already trained and qualified to perform work in the various areas and facilities associated with the project, the ability to use resources interchangeably between areas, and the ability to “turn off” the resources if funding issues arise without losing the resources by having to renegotiate or sever a fixed price contract. The Management and Operations would simply redeploy the resources within the Management and Operations entity. The Management and Operations has also successfully installed the ARGUS system in other areas on site.

**20-D-401, Saltstone Disposal Units 10-12
Savannah River Site, Aiken, SC
Project is for Design and Construction**

1. Summary, Significant Changes, and Schedule and Cost History

Summary

The FY 2022 Request for the Saltstone Disposal Units 10-12 project is \$23,900,000 (includes \$19,500,000 of total estimated cost and \$4,400,000 of other project cost funds).

The most recent DOE Order 413.3B approved Critical Decision is Critical Decision 1, which was approved on December 21, 2018, with a cost range of \$410,000,000 to \$600,000,000 and Critical Decision 4 range of June 2028 to March 2030.

Saltstone Disposal Units 10-12 will be designed and constructed based on successful completion of Saltstone Disposal Unit 6, and incorporation of Lessons Learned. To facilitate a streamlined approach, approval of Approve Project Performance Baseline (Critical Decision 2) and Approve Start of Construction (Critical Decision 3) will be combined. Saltstone Disposal Units 10-12 will be designed and constructed as close to parallel as feasible to take advantage of efficiencies in mobilization and use of resources.

Significant Changes

This Construction Project Data Sheet is an update of the FY 2020 Congressional Construction Project Data Sheet and does not include a new start for the budget year.

In accordance with DOE Order 413.3B, the Federal Project Director has been assigned.

Critical Milestone History

		(Fiscal Quarter or Date)						
	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2020	9/11/2017	N/A	12/21/2018	TBD	TBD	TBD	N/A	TBD
FY 2022	9/11/2017	N/A	12/21/2018	TBD	TBD	TBD	N/A	TBD

CD-0 – Approve Mission Need

Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

Final Design Complete – Estimated/Actual date the project design will be /was completed

D&D Complete – Completion of D&D work (see Section 5)

CD-4 – Approve Start of Operations or Project Completion

PB – Indicates the Performance Baseline

Project Cost History

(\$ in thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2020	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2022	TBD	TBD	TBD	TBD	N/A	TBD	TBD

2. Project Scope and Justification

Scope

The Saltstone Disposal Units are required to provide the primary containment of Saltstone grout with sufficient capacity to support site closure goals and salt waste projections identified in the Liquid Waste System Plan. The mission need addressed by this project is critical for the final disposition of the decontaminated salt solution that is produced by the liquid waste system and without which the commitments made in the Federal Facilities Agreement with the State of South Carolina and the Environmental Protection Agency cannot be achieved.

The Saltstone Disposal Units 10-12 are the next in a series of projects that contain and disposition decontaminated salt solution (in the form of Saltstone grout) generated by the treatment of liquid nuclear waste at the Savannah River Site. Saltstone Disposal Units 10-12 project will construct three (3) 375 feet in diameter, 43 feet high, 32,000,000 gallon cylindrical large tank disposal cells based on American Water Works Association design. This will include all infrastructure necessary to accept Saltstone grout produced by the Saltstone Production facility with sufficient capacity to meet the estimated production rates identified in the Savannah River Site 'Liquid Waste System Plan.'

Justification

Built in the 1980s, the Z-Area Saltstone Facility applies a process that immobilizes low-level radioactive salt solution waste in grout. Dry materials are unloaded from dry bulk pneumatic trailers and conveyed to storage silos. The dry solids (fly ash, slag, and cement), are then discharged from the silos, weighed, and blended to produce a premix dry feed. Salt solution which is received from H-Area Waste Tank 50 through the Inter-area Transfer System through the Salt Feed Tank and premix are proportionally measured and fed to a mixer in the 210-Z process room to produce a Saltstone grout, which is pumped to the disposal units for permanent disposal. The grout hardens to form Saltstone that is a leach-resistant, non-hazardous solid waste form as defined by South Carolina Department of Health and Environmental Control regulations. The combination of the monolithic non-hazardous solid Saltstone waste form, concrete vault cell, and closure cap system controls migration of chemical and radioactive constituents to the environment. The Saltstone Disposal Unit projects have been initiated to provide landfill capacity for receipt of Low Activity Treated Waste grout. The need for the Saltstone Disposal Unit is driven by the Savannah River Site Liquid Waste Disposition Program Plan to accomplish cleanup objectives. Saltstone Disposal Unit projects provide the benefits of lower disposal cost for decontaminated salt solutions. The grout itself provides primary containment of the waste, and the walls, floor, and roof of the Disposal Units provide secondary containment. Saltstone Disposal Unit will be constructed in coordination with salt processing production rates.

The need date for all Saltstone Disposal Units is recorded in the Savannah River Site Liquid Waste System Plan, Revision 20. This plan documents the strategy of dispositioning the liquid waste in the Savannah River Site tank farm and meeting the Federal Facility Agreement for tank closure. It is a living document that is routinely updated to account for any changes that may affect the liquid waste system (e.g., funding fluctuations, changes in technology, facility availability, etc.).

The project contingency is based upon previous experience and risks associated with the successful construction of Saltstone Disposal Unit 6, which adapted a commercial reinforced concrete tank to a nuclear grade low level waste disposal cell.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets.

Key Performance Parameters

The Threshold Key Performance Parameters, represent the acceptable performance that the project must achieve. Achievement of the Threshold Key Performance Parameters will be a prerequisite for approval of Critical Decision 4, Project Completion. The Objective Key Performance Parameters represent the desired project performance.

Performance Measure	Threshold	Objective
Capacity	Provide saltstone grout containment capacity of no less than 30,000,000 gallons.	TBD
Throughput	Provide infrastructure capable of delivering saltstone grout at 100 gallons per minute minimum.	TBD
Leak Detection	Install a leak detection system in accordance with the Z-Area Industrial Solid Waste Landfill Permit requirements.	TBD

3. Project Cost and Schedule

Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design			
FY 2020	500	500	500
FY 2021	562	562	562
FY 2022	10,798	10,798	10,798
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
FY 2020	0	0	0
FY 2021	0	0	0
FY 2022	8,702	8,702	8,702
Out years	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2020	500	500	500
FY 2021	562	562	562
FY 2022	19,500	19,500	19,500
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC			
FY 2020	400	400	400

(dollars in thousands)

	Appropriations	Obligations	Costs
FY 2021	950	950	950
FY 2022	4,400	4,400	4,400
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2020	900	900	900
FY 2021	1,512	1,512	1,512
FY 2022	23,900	23,900	23,900
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

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
Contingency	TBD	N/A	N/A
Total, Design	TBD	N/A	N/A
Construction			
Site Preparation	N/A	N/A	N/A
Equipment	N/A	N/A	N/A
Other Construction	TBD	N/A	N/A
Contingency	TBD	N/A	N/A
Fee	TBD	N/A	N/A
Total, Construction	TBD	N/A	N/A
Total, TEC	TBD	N/A	N/A
Contingency, TEC	TBD	N/A	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	N/A	N/A	N/A
Conceptual Design	TBD	N/A	N/A
Start-up	N/A	N/A	N/A
Contingency	TBD	N/A	N/A
Other OPC	TBD	N/A	N/A
Total, OPC except D&D	TBD	N/A	N/A
Total, OPC	TBD	N/A	N/A
Total, Contingency			

Total, TPC
Total, Contingency

(dollars in thousands)		
Current Total Estimate	Previous Total Estimate	Original Validated Baseline
TBD	N/A	N/A
TBD	N/A	N/A

Schedule of Appropriation Requests

Request		Prior Years	FY 2020	FY 2021	FY 2022	Outyears	Total
FY 2020	TEC		500			TBD	TBD
	OPC	1,686	500			TBD	TBD
	TPC	1,686	1,000			TBD	TBD
FY 2021	TEC			562		TBD	TBD
	OPC	1,686		950		TBD	TBD
	TPC	1,686		1,512		TBD	TBD
FY 2022	TEC		500	562	19,500	TBD	TBD
	OPC	1,686	500	950	4,400	TBD	TBD
	TPC	1,686	1,000	1,512	23,900	TBD	TBD

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years) (per Saltstone Disposal Unit)	TBD
Expected Future Start of D&D	N/A

Related Funding Requirements

COST ESTIMATED PER SALTSTONE DISPOSAL UNIT	(Dollars in Thousands)			
	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	N/A	N/A	N/A	N/A
Maintenance	N/A	N/A	N/A	N/A
Total, Operations & Maintenance	N/A	N/A	N/A	N/A

5. D&D Information

Project licensed by the State of South Carolina as a landfill. D&D is not applicable for this project.

The new area being constructed in this project is not replacing existing facilities.

The location of this construction project is an environmental management closure site and, therefore, is exempt from the “one-for-one” requirement.

6. Acquisition Approach

Currently, the approach assumes that the liquid waste Prime Contractor will be used to create the design, provide engineering and project management support, or other services required to execute the project. This approach will be reevaluated prior to Critical Decision 2. This project will be designed and constructed consistent with the successful execution of the Saltstone Disposal Unit 6, 7, and 8/9 projects, incorporating best practices and lessons learned.

Lawrence Livermore National Laboratory

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. Cleanup of the Lawrence Livermore National Laboratory Main Site led to the final disposition of legacy waste inventories and the build-out of the Lawrence Livermore National Laboratory Livermore Site Environmental Restoration Project. The Lawrence Livermore National Laboratory Hazardous Waste Management Program and Long-Term Stewardship associated with the Lawrence Livermore National Laboratory Main Site Environmental Restoration Project transferred from EM to the National Nuclear Security Administration under Long-Term Stewardship at the end of FY 2006. The EM-managed Lawrence Livermore National Laboratory Excess Facilities decommissioning and demolition effort commenced in 2018.

Lawrence Livermore National Laboratory Site 300 is a remote experimental testing facility where the Department conducts research, development, and testing of high explosives and integrated non-nuclear weapons components. The site was placed on the U.S. Environmental Protection Agency's National Priority List in 1990 due to legacy contamination from past operations. Remedial action selection and build-out is complete for Operable Units 1 through 8, with the exception of perchlorate groundwater contamination at Building 850 (which is part of Operable Unit 5).

The responsibility for Long-Term Stewardship for the implemented cleanup remedies in Operable Units 1-8 has been transferred to the National Nuclear Security Administration. The remaining perchlorate contamination in Building 850 groundwater and characterization and/or remedy selection and implementation for Building 865, Building 812 Firing Table and Building 812 Wastewater Outflow within Operable Unit 9 is the responsibility of EM. Upon completion of characterization and/or remedy selection and implementation for perchlorate contamination in Building 850 groundwater and for Building 865, these areas will be incorporated into Operable Units 5 and 8, respectively, and responsibility will be transferred to the National Nuclear Security Administration. Within the nine Operable Units, there are 73 contaminant release sites at Site 300, of which 69 have been completed.

Twenty-one groundwater and soil vapor extraction and treatment facilities at Lawrence Livermore National Laboratory Site 300 have been constructed and are operational. The remedy selection and implementation for soil and groundwater for Building 865/Operable Unit 8, Building 812/Operable Unit 9 (Firing Table and Wastewater Outflow), and the remaining perchlorate contamination in Building 850/Operable Unit 5 groundwater are currently scheduled for completion by the end of FY 2030. Other activities associated with this cleanup work at Lawrence Livermore National Laboratory Site 300 are support for site investigations, hydrogeologic studies, and stakeholder liaisons; and payment of state grants.

The remaining EM investigations and actions at Lawrence Livermore National Laboratory Site 300 are required by the Lawrence Livermore National Laboratory Site 300 Federal Facility Agreement; the Comprehensive Environmental Response, Compensation and Liability Act; and the National Contingency Plan. The Federal Facility Agreement describes remedial investigations and action requirements and establishes a procedural framework for developing, implementing, and monitoring appropriate remedial actions. The Comprehensive Environmental Response, Compensation and Liability Act and the National Contingency Plan provide the federal statutory and regulatory requirements for cleanup of legacy contamination.

The benefits of completing the remaining EM restoration work at Lawrence Livermore National Laboratory Site 300 include the overall reduction of potential human health and ecological risk by focusing on 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 cleanup soil and groundwater using a risk-based methodology.

The Consolidated Appropriations Act, 2018 (Public Law 115-141), directed DOE to decommission and demolish the B280 Pool Type Reactor and other excess facilities at Lawrence Livermore National Laboratory. The Department annually screens excess facilities to identify the highest risks to missions, the workforce, the public, and the environment to support risk-informed decisions by senior leadership. The Department identified five of the top 10 list of the highest risk excess facilities

at Lawrence Livermore National Laboratory. Continued deterioration of these facilities has increased the risks posed and has complicated the work necessary to dispose of the facilities.

Highlights of the FY 2022 Budget Request

Using FY 2020 and FY 2021 enacted appropriations, Building 175 demolition to slab and Building 280 reactor removal will be completed. In addition, demolition and characterization work supporting planning efforts for decommissioning and demolition work will continue on National Nuclear Security Administration-owned high-risk contaminated excess facilities.

The majority of activities scheduled for FY 2022 for Site 300 support the development of remedial solutions for contamination at Building 812 (Firing Table and Wastewater Outflow), Building 850, and Building 865.

FY 2021 - FY 2022 Key Milestones/Outlook

- (September 2021) Complete Building 175 demolition to slab
- (December 2021) Complete Building 280 Reactor Removal.
- (September 2022) Final Remedial Investigation/Feasibility Study for Building 865 part 2 – Metals in Soil.

Regulatory Framework

- Federal Facility Agreement with the U.S. Environmental Protection Agency and two State of California Regulatory Agencies (1992).
- Comprehensive Environmental Response, Compensation and Liability Act.

Contractual Framework

The current contract with Lawrence Livermore National Security, LLC, for the operation of Lawrence Livermore National Laboratory is a Management and Operating contract under the management and oversight of the National Nuclear Security Administration. The current contract began in 2007 with a seven-year base and up to 13 one-year option award terms. Program planning and management at Lawrence Livermore National Laboratory is conducted through the issuance and execution of subcontracts to large and small businesses. Lawrence Livermore National Laboratory utilizes near- and long-term planning approaches in order to develop contract strategies and program/project plans at a more detailed level. Selected subcontractors then execute these plans to support the Site 300 cleanup project.

EM work is typically executed through work authorizations under the National Nuclear Security Administration's Management and Operating contract, with cleanup work typically performed by Lawrence Livermore National Security and its subcontractors. However, for the National Nuclear Security Administration-owned high-risk contaminated excess facilities, EM is using multiple contracting avenues to facilitate decommissioning and demolition. EM is partnering with the U.S. Army Corps of Engineers to accomplish the Building 280 reactor removal and issuing work authorizations under the National Nuclear Security Administration's Management and Operating contract to decommission and demolish Building 175 and characterize Building 251. EM will use a Nationwide Deactivation, Decommissioning and Removal Indefinite Delivery-Indefinite Quantity contract for future building demolition.

Strategic Management

Position the Department of Energy to meet the challenges of the nation's Manhattan Project and Cold War legacy responsibilities:

- Prevent contamination of water supply wells and associated risk to human health and loss of beneficial uses of groundwater.
- Prevent exposure of onsite workers to contaminants and reduce the current risk.
- Control and prevent further offsite plume migration.
- Reduce contaminant concentration and mass in the vadose zone and groundwater.
- Control contaminant sources.

The following factors could have significant impacts on individual projects and may impact the overall cleanup scope, schedule, and cost. Potential impacts are as follows:

- The U.S. Environmental Protection Agency and the State of California Water Board regulators for the Site 300 project have been performing in-depth reviews of previously addressed areas and revisiting past cleanup decisions.
- The major uncertainty is the remediation of the depleted uranium contaminated soil at the Building 812 Firing Table (Operable Unit 9).
- The challenges of the project include the excavation of soil from very steep terrain, large volumes of soil to be remediated, and potential impacts to endangered species habitat and surface water drainage ways in the area during excavation and remediation.

Lawrence Livermore National Laboratory

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
NNSA Sites				
Lawrence Livermore National Laboratory				
VL-FOO-0013B-D / Solid Waste Stabilization and Disposition Support - Lawrence Livermore National Laboratory (Defense)	415	425	416	-9
VL-LLNL-0031 / Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300	1,312	1,339	1,390	+51
Subtotal, Lawrence Livermore National Laboratory	1,727	1,764	1,806	+42
LLNL Excess Facilities D&D				
CBC-LLNL-0040 / LLNL Excess Facilities D&D	65,000	35,000	35,000	0
Total, NNSA Sites	66,727	36,764	36,806	+42

**Lawrence Livermore National Laboratory
Explanation of Major Changes (\$K)**

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

NNSA Sites

Lawrence Livermore National Laboratory

VL-FOO-0013B-D / Solid Waste Stabilization and Disposition Support - Lawrence Livermore National Laboratory (Defense)

- No significant change. -9

VL-LLNL-0031 / Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300

- The increase reflects the increase in resources needed to complete the Remedial Investigation/Feasibility Study for Building 865 part 2
– Metals in Soil. +51

LLNL Excess Facilities D&D

CBC-LLNL-0040 / LLNL Excess Facilities D&D

- No change. 0

Total, Lawrence Livermore National Laboratory	+42
--	------------

Solid Waste Stabilization and Disposition Support (PBS:VL-FOO-0013B-D)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

The activities in this PBS support the EM cleanup activities at Site 300 that will be completed with build out for perchlorate in groundwater at the Building 850 firing table in Operable Unit 5; remedy selection and/or build out at Building 865 in Operable Unit 8; and remediation of contaminated soil and build out of the remedy for remediation of groundwater at the Building 812 Firing Table in Operable Unit 9. Activities performed in this project will continue to provide funding for:

- Grants to the State of California Regional Water Quality Control Board and the California Department of Toxic Substances Control to provide Comprehensive Environmental Response, Compensation, and Liability Act oversight. This funding is mandated by the Federal Facility Agreement signed by DOE, the U.S. Environmental Protection Agency, and the State of California.
- Site investigations, hydrogeologic studies, regulatory review, and stakeholder liaisons are also managed within this project through wide applicability of these restoration activities. This project will end when the EM environmental restoration activities at Site 300 (as described above) are completed, and the areas turned over to the National Nuclear Security Administration under Long-Term Stewardship currently projected for FY 2030.

Solid Waste Stabilization and Disposition Support - Lawrence Livermore National Laboratory (Defense) (PBS: VL-FOO-0013B-D)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$425,000	\$416,000	-\$9,000
<ul style="list-style-type: none"> • Provide grants to the State of California to support Comprehensive Environmental Response, Compensation, and Liability Act oversight. 	<ul style="list-style-type: none"> • Support the Lawrence Livermore National Laboratory Site 300 Environmental Restoration Project and the grants with the State of California Regional Water Quality Control Board and Department of Toxic Substances. 	<ul style="list-style-type: none"> • No significant change.

Soil and Water Remediation (PBS: VL-LLNL-0031)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

The remedial actions required by regulatory decision documents will reduce the risks, overall liability, and mortgage at Site 300 associated with the four remaining EM contaminant release sites:

- Release Site 0035: Building 865 (Advanced Test Accelerator)
- Release Site 0038: Building 812 Firing Table (Operable Unit 9)
- Release Site 0040: Building 850 Firing Table Groundwater Project (Building 850 portion of Operable Unit 5)
- Release Site 0049: Building 812 Wastewater Outflow (Operable Unit 9)

Remedial investigation and remedial buildout at the Building 812/Operable Unit 9, Building 865/Operable Unit 8, and for perchlorate in Building 850/Operable Unit 5 groundwater remain the responsibility of EM. When remedial investigations and remedial action selection buildout in these areas are complete, responsibility for the management and funding of Long-Term Stewardship activities required by the Comprehensive Environmental Response Compensation and Liability Act will be transferred from EM to the National Nuclear Security Administration.

Waste characterization at DOE waste generator sites will be funded by their respective site and includes activities such as visual examination, real time radiography, nondestructive assay, dose to curie conversion, and flammable gas analysis. Certification of waste characterization activities of legacy transuranic waste at Savannah River Site, Oak Ridge National Laboratory, Lawrence Livermore National Laboratory, and Los Alamos National Laboratory will be funded by PBS Central Characterization Project (CB-0081), whereas the Idaho National Laboratory funds its waste characterization certification. Transportation certification is funded by PBS Central Characterization Project (CB-0081).

Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300 (PBS: VL-LLNL-0031)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$1,339,000	\$1,390,000	+\$51,000
<ul style="list-style-type: none"> • Complete the background investigation in support of the Building 812 and Building 865 Remedial Investigations/Feasibility Studies. 	<ul style="list-style-type: none"> • Finalize the Remedial Investigation/Feasibility Study for metals and radionuclides in soil at Building 865. • Draft the Remedial Investigation/Feasibility Study for Building 812. 	<ul style="list-style-type: none"> • The increase reflects the increase in resources needed to complete the Remedial Investigation/Feasibility Study for Building 865 part 2 – Metals in Soil.

- Continue the Treatability Study for Enhanced In Situ Bioremediation of Perchlorate in Ground water at Building 850/Operable Unit 5.
-

LLNL Excess Facilities D&D (PBS: CBC-LLNL-0040)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS includes the characterization, deactivation and demolition of high-risk excess facilities. The Consolidated Appropriations Act, 2018 (Public Law 115-141), directed DOE to decommission and demolish excess facilities at the Lawrence Livermore National Laboratory. The Department identified the following facilities as among the top ten highest risks to missions, the workforce, the public, and the environment.

- Pool-Type Reactor, Building 280
- MARS-E Beam Facility, Building 175
- Rotating Target Neutron Source Facility, Building 292
- Heavy Element Facility, Building 251
- Pluto Project Testing and Fabrication Facility, Building 241

This project will end when demolition of these facilities are completed.

LLNL Excess Facilities D&D (PBS: CBC-LLNL-0040)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$35,000,000	\$35,000,000	+\$0
<ul style="list-style-type: none"> • Complete demolition of Building 175 to slab. • Commence characterization of Building 251. • Commence reactor demolition in Building 280. 	<p>Continue demolition and characterization:</p> <ul style="list-style-type: none"> • Commence Building 175 slab and soil characterization. • Commence demolition of Building 280. • Commence demolition of Building 251 to slab. 	<ul style="list-style-type: none"> • No change.

Los Alamos National Laboratory

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. In addition to mixed and low-level radioactive waste needing off-site disposal, transuranic waste has accumulated and been staged in preparation for off-site disposition to the Waste Isolation Pilot Plant.

Since 1989, the Environmental Management program at Los Alamos National Laboratory has been responsible for addressing the characterization and cleanup of environmental media (i.e., soil, groundwater and landfills known as Material Disposal Areas); deactivation, decommissioning and demolition of process-contaminated facilities; and disposition of legacy waste. The Environmental Management Los Alamos Field Office's highest priorities for the cleanup mission are: safety, transparency, and efficiency. The key regulatory drivers are the renegotiated Compliance Order on Consent (June 2016, Modified February 2017) (Consent Order) that was signed on June 24, 2016, by DOE and the New Mexico Environment Department; DOE's radiological requirements; and the February 2009 National Pollutant Discharge Elimination System Individual Permit issued by the U. S. Environmental Protection Agency, which permits discharge of storm water runoff from solid waste management units and areas of concern on Los Alamos National Laboratory and non-Los Alamos National Laboratory property.

The Environmental Management program at the Los Alamos site is executed by the Environmental Management Los Alamos Field Office.

Highlights of the FY 2022 Budget Request

In FY 2022, the Site will:

- Plan and execute retrieval and repackaging of the below-grade transuranic waste to include readiness activities and infrastructure needs in order to manage the processing and packaging of the waste at Area G.
- Continue to characterize and certify transuranic waste and support shipments to Waste Isolation Pilot Plant.
- Operate remediation lines to repackage waste that does not meet the Waste Isolation Pilot Plant Waste Acceptance Criteria.
- Support the ongoing storage and removal efforts of transuranic waste stored at Waste Control Specialists LLC commercial radioactive waste treatment and disposal facility.
- Remediate Middle DP Road Site based on FY 2021 investigation after identification of newly discovered legacy contamination.
- Complete cleanup of several aggregate areas under Consent Order cleanup campaigns.
- Complete the Supplemental Investigation Report Consent Order Campaign
- Continue characterization, investigation and cleanup associated with Building 21-257, the Industrial Waste Lines, and the DP West Slabs at Technical Area 21.
- Continue to focus on surface water and groundwater management, consistent with the priorities established by the Environmental Protection Agency and New Mexico Environment Department in the 2016 Consent Order, cleanup activities.
- Continue the Chromium Plume Control Interim Measures to control migration of a hexavalent chromium plume beneath the Mortandad and Sandia canyons.
- Continue Plume-Center Characterization activities to investigate and develop a Corrective Measures Evaluation for remediation of the hexavalent chromium plume, and initiate design for the proposed remedies.
- Continue investigation and modelling for the Royal Demolition Explosives plume in Cañon de Valle and begin development of proposed remedy (Corrective Measures Evaluation).
- Continue compliance with National Pollutant Discharge Elimination System Individual Permit, which permits discharge of a total 405 solid waste management units and areas of concern and designated 250 Site Monitoring Areas as sampling locations for monitoring purposes.

- Initiate planning on Deactivation and Decommissioning of proposed National Nuclear Security Administration high-risk excess facilities.

The FY 2022 request will also support technical discussions with the regulators, additional documentation that may be required, possible public meetings, and other support to obtain the decision of the regulator to allow going forward with remedy project development of Material Disposal Area C and continue technical documentation and collaboration on Material Disposal Areas A and T.

FY 2021 and FY 2022 Key Milestones/Outlook

- (January 2021) Continue planning for retrieval and processing of below grade transuranic waste at Area G.
- (January 2021) Continue shipments of transuranic waste from Technical Area 54-Area G to the Waste Isolation Pilot Plant.
- (April 2021) Continue Radiological Risk Assessments for Material Disposal Areas.
- (May 2022) Complete Supplemental Investigation Reports Campaign.
- (September 2021) Continue investigation and characterization activities of Technical Area 21 Building 257, industrial waste lines and DP West slabs under nuclear safety envelope created in FY 2021.
- (September 2021) Continue to segregate, package, and ship mixed/low level waste for offsite disposal.
- (September 2021) Complete three aggregate area investigations and cleanup, and initiate investigation and cleanup of the fourth aggregate area for the second major Consent Order Campaign for Southern External Boundary.
- (September 2022) Complete Building 231 transuranic waste processing and Glove bag Drill and Drain Project.
- (March 2022) Complete readiness activities for Corrugated Metal Pipe project.
- (January 2022) Continue remediation activities of transuranic waste at Area G.
- (April 2022) Continue planning, retrieval, remediation of Corrugated Metal Pipes.
- (January 2022) Continue shipments of transuranic waste from Technical Area 54- Area G to Waste Isolation Pilot Plant.
- (December 2021) Complete Characterization of the Middle DP Road Site.
- (January 2022) Initiate the remediation phase of the Middle DP Road Site.
- (February 2022) Complete installation and collect first sample from Chromium Plume monitoring well R-71.
- (December 2021) Complete installation and collect first sample from Chromium Plume well R-72.
- (December 2022) Complete installation and collect first sample from Chromium Plume well R-73.
- (September 2021) Complete disposition of Transition Materials.

Regulatory Framework

The primary regulatory drivers for Environmental Management at Los Alamos National Laboratory have been the Consent Order and the National Pollutant Discharge Elimination System Individual Permit. The Consent Order provides the primary requirements for the environmental cleanup efforts at Los Alamos National Laboratory. The Consent Order established an enforceable scope, schedule, and milestones for corrective actions. The New Mexico Environment Department filed suit in February 2021 alleging the Department is not progressing sufficiently with the cleanup at Los Alamos and is asking the court for relief. The National Pollutant Discharge Elimination System individual permit regulates storm water discharge from a total of 405 solid waste management units and areas of concern (Sites) and designated 250 Site Monitoring Areas as sampling locations for compliance monitoring purposes. As previously mentioned, the Department, under the Atomic Energy Act of 1957, regulates the radiological contaminant under its regulations. Both regulatory drivers are used in the planning and execution of the legacy cleanup scope.

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; the Federal Facility Compliance Order; the Toxic Substances Control Act; the Resource Conservation and Recovery Act; the Clean Air

Act; the Settlement Agreement and Stipulated Final Order (chromium) 2007; and the settlement of the Administrative Compliance Order with New Mexico Environment Department.

In an effort to meet the Department's 2014 commitments (regarding removal of above ground waste) in the Framework Agreement, a decision was made to ship transuranic waste to Waste Control Specialists LLC in Andrews, Texas, for interim storage pending the reopening of the Waste Isolation Pilot Plant. After it was determined that a drum from Los Alamos was the cause of the 2014 radiological event at the Waste Isolation Pilot Plant, shipments were curtailed. This stranded this waste at Waste Control Specialists and the Texas Commission on Environmental Quality has since asked for a plan for the removal of this waste from Waste Control Specialists. The Department's implemented approach has been to separate the inventory into waste containers that can be shipped directly to the Waste Isolation Pilot Plant for disposal, and waste containers that will require treatment or repackaging before being disposed. Over three hundred containers of transuranic waste have been successfully relocated to the Waste Isolation Pilot Plant, removing all but 74 containers (containing 262 inner drums) of below grade transuranic waste from Waste Control Specialists. EM- Los Alamos will continue with storage, and disposition, of waste at Waste Control Specialists through FY 2022, while working to meet Waste Isolation Pilot Plant waste acceptance criteria. EM- Los Alamos anticipates that the waste inventory at Waste Control Specialists will remain into FY 2022 and require treatment or special accommodation to be dispositioned if WIPP prohibited waste codes cannot be removed.

Contractual Framework

Since its inception, EM work at Los Alamos was executed through work authorizations under the National Nuclear Security Administration's Management & Operating contractor and its subcontractors. However, a Secretarial decision to have direct EM oversight of the contractor, resulted in establishing a Federal Acquisition Regulations-based bridge contract with Los Alamos National Security, LLC. The contract performance period ended in FY 2018. In December 2017, the Department awarded the Los Alamos Legacy Cleanup Contract to Newport News Nuclear BWXT Los Alamos, LLC. The contract was transitioned on April 30, 2018, followed by five base years, then a three-year option to another two-year option, for a total of 10 years.

Strategic Management

Position the Department of Energy to meet the challenges of the nation's Cold War legacy responsibilities.

The EM-Los Alamos cleanup strategy at the Los Alamos National Laboratory involves the following activities:

- Continued retrieval and disposition of legacy transuranic waste, deactivation and decommissioning of excess facilities at Technical Area 21 and Technical Area 54, and final remedy and site completion at remaining Solid Waste Management Units and other areas of concern will drive the critical path for completion of the EM mission at Los Alamos. The soil remediation, closure of Material Disposal Areas, and groundwater remediation fall under the regulatory jurisdiction of a renegotiated (2016) Consent Order between DOE and the New Mexico Environment Department. The New Mexico Environment Department has since filed suit (February 2021) contending that the Department is not meeting its obligation under the Consent Order and has asked the court to require the Department to enter into court mediated renegotiation of the Consent Order, or pay a fine of \$330,000 and comply with the cleanup activities and deadlines requested by the New Mexico Environment Department as listed in the compliant.
- Assessments and corrective actions at contaminated sites to reduce unacceptable human health and ecological risks and reduce the inventory of legacy transuranic and low-level radioactive waste.
- Continued deactivation and decommissioning of process-contaminated facilities at Technical Area 21 and waste management facilities at Technical Area 54 allows for the characterization and cleanup of Solid Waste Management Units and areas of concern that are co-located in the footprint of the structures.

The following factors and assumptions could have significant impacts on individual projects and may impact the overall cleanup scope, schedule, and costs identified:

- In most cases, it is assumed that some form of active treatment for some period to address groundwater contaminants will be accepted as the remedy rather than monitored natural attenuation. Current characterization and testing activities indicated that an active remediation process may be implemented for potentially significant durations for chromium contamination, however the Royal Demolition Explosives contamination area may fall into monitored natural attenuation as the final remedy.
- It is assumed that 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.
- It is also assumed that National Environmental Policy Act documents adequately bound the possibility of uncovering additional cultural sites on Los Alamos National Laboratory plateaus without further impacts on project schedules.

Los Alamos National Laboratory

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
NNSA Sites				
Los Alamos Excess Facilities D&D				
CBC-LANL-0040 / Los Alamos Excess Facilities D&D	0	0	58,381	+58,381
Los Alamos National Laboratory				
VL-FAO-0101 / Miscellaneous Programs and Agreements in Principle	3,394	3,394	3,394	0
VL-LANL-0013 / Solid Waste Stabilization and Disposition-LANL Legacy	84,556	101,579	105,059	+3,480
VL-LANL-0030 / Soil and Water Remediation-LANL	132,050	121,027	166,666	+45,639
Subtotal, Los Alamos National Laboratory	220,000	226,000	275,119	+49,119
Total, NNSA Sites	220,000	226,000	333,500	+107,500

**Los Alamos National Laboratory
Explanation of Major Changes (\$K)**

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Los Alamos

EMLA Cleanup Activities

VL-LANL-0013 / Solid Waste Stabilization and Disposition-LANL Legacy

- The increase is due to the acceleration, initiation, startup and operations of contact handled transuranic waste retrieval, treatment and disposition activities. +3,480

VL-LANL-0030 / Soil and Water Remediation-LANL

- The increase is due to installation of three chromium plume characterization groundwater monitoring wells; acceleration of aggregate area work under the Southern Boundary and Pajarito Watershed Campaigns; and vapor monitoring at Material Disposal Areas C and L and remediation of the Middle DP Road site. Remediation necessary at the Middle DP Road site will be executed in FY 22. +45,639

EMLA Community and Regulatory Support

VL-FAO-0101 / Miscellaneous Programs and Agreements in Principle

- No significant change. 0

Los Alamos Excess Facilities D&D

CBC-LANL-0040 / Los Alamos Excess Facilities D&D

- This increase supports the decontamination and decommissioning of high-risk excess nuclear facilities (Ion Beam Facility). +58,381

Total, Los Alamos National Laboratory	+107,500
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Solid Waste Stabilization and Disposition-LANL Legacy (PBS: VL-LANL-0013)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

The Solid Waste Stabilization and Disposition PBS, also known as the Legacy Waste Disposition PBS, is comprised of the characterization, treatment, storage, transportation, and ultimate disposition of legacy transuranic and mixed low-level waste generated between 1970 and 1999 at the Los Alamos National Laboratory. The end-state of this project is the safe disposal of legacy waste from Los Alamos National Laboratory.

This PBS scope is integrated with the Soil and Water Remediation PBS (PBS-VL-LANL-0030), which includes compliance activities associated with the New Mexico Environment Department renegotiated Compliance Order on Consent that was signed on June 24, 2016. The other drivers requiring disposition of this waste are DOE Order 435.1, Radioactive Waste Management and 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 Baseline Summary includes disposition of legacy transuranic, mixed, and low-level waste.

Solid Waste Stabilization and Disposition-LANL Legacy (PBS: VL-LANL-0013)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$101,579,000	\$105,059,000	+\$3,480,000
<ul style="list-style-type: none"> • Maintain safe storage of above grade transuranic waste inventory. • Continue management and disposition of transuranic, mixed low-level and low-level radioactive waste. • Continue activities to certify legacy transuranic waste for shipments to the Waste Isolation Pilot Plant. • Complete disposition of Transition Materials. 	<ul style="list-style-type: none"> • Continue Solid Waste Stabilization and activities at Los Alamos National Laboratory. • Continue management and disposition of mixed low-level radioactive waste/low-level radioactive waste and transuranic waste. • Continue Nuclear Safety activities required at Technical Area 54 Area G. • Continue safe operations of transuranic waste processing lines at Technical Area 54 Area G. • Continue activities to certify legacy transuranic waste for shipments to the Waste Isolation Pilot Plant. • Support transuranic waste characterization activities such as Visual Examination, Real Time 	<ul style="list-style-type: none"> • The increase is due to the acceleration, initiation, startup and operations of contact handled transuranic waste retrieval, treatment and disposition activities.

Radiography, Non Destructive Assay, Dose to Curie Conversion, and Flammable Gas Analysis.

- Support continued staging of a portion of transuranic waste inventory at an offsite commercial facility, pending possible shipments to the Waste Isolation Pilot Plant.
 - Continue planning and processing of corrugated metal pipes.
-

Soil and Water Remediation-LANL (PBS: VL-LANL-0030)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

The Los Alamos National Laboratory Soil and Water Remediation PBS scope includes identification, investigation and remediation of chemical and/or radiological contamination attributable to past Laboratory operations and practices. The remaining scope of the Project Baseline Summary includes characterization, monitoring, and protection of the surface and groundwater at the Laboratory and approximately 860 Solid Waste Management Units and Areas of Concern (Potential Release Sites), of the original 2,129, left to be investigated, remediated or closed by evaluation and assessment of human health and ecological risks. Included in the scope for the 860 Potential Release Sites remaining to be addressed are: 1) characterization and final remedy of eight priority material disposal areas which are to follow the Resource Conservation and Recovery Act corrective measures study and implementation process (one of the material disposal areas, at Technical Area-54, is the former and active radioactive waste disposal area for the Laboratory); 2) protection and monitoring of groundwater resources and storm water to ensure protection of drinking water supplies; and 3) remediation of Technical Area-21, including two of the eight material disposal areas and over 100 Solid Waste Management Units and Areas of Concern.

In addition to the investigation and closure of solid waste management units, this PBS also implements a storm water mitigation and management program that is compliant with the February 2009 National Pollutant Discharge Elimination System Individual Permit issued by the Environmental Protection Agency which permits discharge of storm water runoff from a total of 405 solid waste management units and areas of concern (Sites) and designated 250 Site Monitoring Areas as sampling locations for compliance monitoring purposes.

Beginning in FY 2018, activities previously included in the Project Baseline Summary for deactivation and decommissioning have been integrated into this PBS, consistent with the integrated, campaign approach reflected in the Consent Order renegotiation. This integration with the remediation addresses the problem of facility demolition exposing otherwise covered contaminants that would unnecessarily expose public receptors to significant hazardous materials until remediation could be effective.

Soil and Water Remediation-LANL (PBS: VL-LANL-0030)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$121,027,000	\$166,666,000	+\$45,639,000
<ul style="list-style-type: none"> Complete the 13 agreed upon Annual Consent Order milestones. Continue to operate chromium plume interim measures (pump-and-treat system). Continue 	<ul style="list-style-type: none"> Continue groundwater monitoring and reporting requirements consistent with the renegotiated Compliance Order on Consent (Consent Order) signed on June 24, 2016; install several 	<ul style="list-style-type: none"> The increase is due to installation of three chromium plume characterization groundwater monitoring wells; acceleration of aggregate area work under the Southern Boundary and

chromium plume characterization activities through modeling and hydrology studies, and installation of additional wells.

- Continue investigation and characterization activities at TA-21. Discoveries in FY20 indicated higher hold-up in both Building 257 and the Industrial Waste Lines, requiring additional characterization and replanning of the effort.
- Continue groundwater monitoring and reporting requirements required to remain compliant with the Hazardous Waste Permit and Individual Permit.
- Continue activities associated with implementation of final remedy for the RDX (high explosives) plume in Cañon de Valle.

monitoring wells under the renegotiated Consent Order; continued operation and evaluation of sediment transport mitigation measures implemented under the Consent Order to protect the surface water drinking water supplies (City of Santa Fe and Santa Fe County).

- Continue to provide critical database management and infrastructure support to meet renegotiated Consent Order requirements.
- Conduct authorization basis surface inspections at several Nuclear Environmental Sites and required repairs.
- Continue storm water runoff discharge monitoring, mitigation and reporting requirements at 250 Site Monitoring Areas consistent with the National Pollutant Discharge Elimination System Individual Permit.
- Continue chromium plume control Interim Measure.
- Continue chromium plume center characterization activities through modeling and hydrology studies, installation of monitoring wells in support of the Corrective Measures Evaluation report to New Mexico Environment Department for approval.
- Continue investigation and closure activities at Technical Area 21.
- Prepare Corrective Measures Evaluation Report or a long-term monitoring plan for deep groundwater high explosives plume beneath Cañon de Valle.
- Continue Supplemental Investigation Reports Campaign.
- Continue decommissioning of Technical Area 21 Building 21-257 and industrial waste line.

Pajarito Watershed Campaigns; and vapor monitoring at Material Disposal Areas C and L and remediation of the Middle DP Road site. Remediation necessary at the Middle DP Road site will be executed in FY 22.

- Continue Delta Prime West Slabs remediation at Technical Area 21.
 - Complete field work and submit Investigation Reports for three Aggregate Areas and prepare and submit an Investigation Work Plan for a fourth Aggregate Area under the Southern External Boundary Campaign.
 - Prepare and submit an investigation work plan for one Aggregate Area under the Pajarito Watershed Campaign.
 - Initiate the remediation phase of the Middle DP Road Site.
 - Install three chromium plume characterization groundwater monitoring well; accelerate Aggregate Area work under the Southern Boundary and Pajarito Watershed Campaigns; and vapor monitoring at Material Disposal Areas C and L.
-

Miscellaneous Programs and Agreements in Principle (PBS: VL-FAO-0101)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS includes continued community, Tribal, and site wide programs including the Natural Resource Damage Assessment Program at Los Alamos National Laboratory. The pre-assessment screening and the Natural Resource Damage Assessment Plan for the Los Alamos National Laboratory site were completed in FY 2014. The Los Alamos National Laboratory Natural Resource Trustee Council is continuing assessment activities.

Miscellaneous Programs and Agreements in Principle (PBS: VL-FAO-0101)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$3,394,000	\$3,394,000	+\$0
<ul style="list-style-type: none"> Fund and serve as co-lead for Natural Resource Damage Assessment activities in coordination with the Los Alamos National Laboratory Trustee Council. Continue the Los Alamos Pueblo Program to support Pueblo environmental monitoring programs. 	<ul style="list-style-type: none"> Support the New Mexico Agreement in Principle including Regional Coalition activities. Support the Natural Resource Damage Assessment including preliminary assessment development and Trustee Council activities. Support the Los Alamos Pueblo Project. 	<ul style="list-style-type: none"> No significant change.

Excess Facilities D&D (PBS: CBC-LANL-0040)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS includes the characterization, decontamination and demolition of high-risk excess facilities. The Department identified the following facilities as among the top ten highest risks to missions, the workforce, the public, and the environment.

- Ion Beam Facility, Building 03-0016

This project will end when demolition of these facilities is completed.

Los Alamos Excess Facilities D&D (PBS: CBC-LANL-0040)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$0	\$58,381,000	+\$58,381,000
<ul style="list-style-type: none">• No activities.	<ul style="list-style-type: none">• Initiate planning for characterization, decontamination, and demolition of the Ion Beam Facility.	<ul style="list-style-type: none">• This increase supports the decontamination and decommissioning of high-risk excess nuclear facilities (Ion Beam Facility).

Nevada

Overview

The Office of Environmental Management (EM) Nevada Program is comprised of soil and groundwater remediation, operation of waste disposal facilities, and community and regulatory support activities. Soil and groundwater remediation activities include assessment and completion of corrective actions for surface and near-surface soil contamination locations, and former underground test area locations and decontamination and decommissioning at industrial-type locations in accordance with the Federal Facility Agreement and Consent Order. Operation of waste disposal facilities supports the completion of cleanup at sites across the Department of Energy (DOE) complex. Community and regulatory support activities provide stakeholder and tribal entity support in the State of Nevada for EM activities on the Nevada National Security Site and the Nevada Test and Training Range.

The EM Nevada Radioactive Waste Management Complex is an essential asset for the DOE. This one-of-a-kind waste disposal facility is the only federally owned location where low-level radioactive waste, mixed low-level radioactive waste (includes hazardous and radioactive waste components), and classified waste can be disposed from off-site generators. Without this facility, many DOE sites and DOE-related facilities would be unable to remediate legacy nuclear testing and research facilities and dispose of the contaminated materials.

Highlights of the FY 2022 Budget Request

The EM Nevada Program FY 2022 budget supports continued progress towards risk-informed closure of 82 remaining subsurface contaminated groundwater and 13 contaminated industrial-type sites; continued post-closure monitoring and maintenance; operation of the Radioactive Waste Management Complex; continued support for the State of Nevada regulatory oversight of EM activities; environmental and natural resource planning as it pertains to the site; and funding for the low-level radioactive waste fee agreement with the State of Nevada. In addition, the EM Nevada Program will accelerate the decontamination and decommissioning of Corrective Action Unit 572 Test Cell C Ancillary Buildings and Structures and Corrective Action Unit 114 Engine Maintenance Assembly and Disassembly Facility.

FY 2021 and FY 2022 Key Milestones/Outlook

PBS VL-NV-0030:

- (December 2020) Submitted Corrective Action Unit 97 Yucca Flat/Climax Mine Closure Monitoring Report, Rev 0 to the State of Nevada.
- (April 2021) Submit Corrective Action Unit 99 Rainier Mesa/Shoshone Mountain CY 2020 Annual Closure Monitoring Report, Rev 0 to the State of Nevada.
- (June 2021) Submit Corrective Action Unit (CAU) 572 Test Cell C Ancillary Buildings and Structures Streamlined Approach for Environmental Restoration Plan to the State of Nevada.
- (June 2021) Submit CY 2020 (Final) Tonopah Test Range and Annual Nevada Test and Training Range Post-Closure Regulatory Inspection Report to the State of Nevada.
- (June 2021) Submit CY 2020 Annual Post-Closure Inspection Report for the Nevada National Security Site sites to the State of Nevada.
- (June 2021) Submit CY Corrective Action Unit 98 Frenchman Flat CY 2020 Annual Closure Monitoring Report, Rev 0 CY 2020 Annual Post-Closure Groundwater Monitoring Report to the State of Nevada.
- (August 2021) Submit Corrective Action Units 101 Central Pahute Mesa CY 2020 Annual Groundwater Sampling Report to the State of Nevada.
- (August 2021) Submit Corrective Action Unit 102 Western Pahute Mesa CY 2020 Annual Groundwater Sampling Report to the State of Nevada.
- (September 2021) Provide Corrective Action Unit 101 Central Pahute Mesa Phase II Data Completion Presentation #7 to the State of Nevada.
- (September 2021) Provide Corrective Action Unit 102 Western Pahute Mesa Phase II Data Completion Presentation #7 to the State of Nevada.
- (September 2021) Submit Corrective Action Unit 577 Area 5 Chromium Containing Waste Disposal Cells Closure Report to the State of Nevada.

**Environmental Management/
Nevada**

FY 2022 Congressional Budget Justification

- (December 2021) Provide Corrective Action Unit 101 Central Pahute Mesa Phase II Final Well Installation Presentation #1 to the State of Nevada.
- (December 2021) Provide Corrective Action Unit 102 Western Pahute Mesa Phase II Final Well Installation Presentation #1 to the State of Nevada.
- (June 2022) Submit Corrective Action Unit 101 Central Pahute Mesa Phase II Flow and Transport Model to the State of Nevada.
- (June 2022) Submit Corrective Action Unit 102 Western Pahute Mesa Phase II Flow and Transport Model to the State of Nevada.
- (June 2022) Submit Final CY 2021 Post-Closure Report to the State of Nevada.
- (August 2022) Submit Corrective Action Unit 101 Central Pahute Mesa CY 2021 Annual Groundwater Sampling Report to the State of Nevada.
- (August 2022) Submit Corrective Action Unit 102 Western Pahute Mesa CY 2021 Annual Groundwater Sampling Report to the State of Nevada.
- (September 2022) Provide Corrective Action Unit 101 Central Pahute Mesa Phase II Data Completion Presentation #8 to the State of Nevada.
- (September 2022) Provide Corrective Action Unit 102 Western Pahute Mesa Phase II Data Completion Presentation #8 to the State of Nevada.

PBS VL-NV-0080:

- (September 2021) Continue disposal of low-level radioactive waste and mixed low-level radioactive waste; continue audits and certification programs; and maintain facilities and documents.
- (September 2022) Continue disposal of low-level radioactive waste and mixed low-level radioactive waste; continue audits and certification programs; and maintain facilities and documents.

PBS VL-NV-0100:

- (September 2021) Continue funding to the State of Nevada.
- (September 2022) Continue funding to the State of Nevada.

Regulatory Framework

EM Nevada Program work at the Nevada National Security Site and the Nevada Test and Training Range follows all applicable federal level regulations:

- Federal Facility Agreement and Consent Order
- Resource Conservation and Recovery Act
- Safe Drinking Water Act
- Agreements in Principle with the state of Nevada
- Executive Order 12088
- DOE Order 435.1, Radioactive Waste Management
- DOE Order 458.1 Change 3 (Admin Change), Radiation Protection of the Public and the Environment

Contractual Framework

Program planning and management for the EM Nevada Program is conducted through the issuance and execution of contracts to large and small businesses. The EM Nevada Program develops near-term and long-term planning approaches in order to develop contract strategies and program/activity plans at a more detailed level. Selected contractors then execute these plans to complete cleanup on schedule.

The current prime National Nuclear Security Administration contract at the Nevada National Security Site is a Management and Operating contract with Mission Support and Test Services, LLC. The contract has a base performance period of 2017 to 2024 with award term options through November 30, 2027. This contract includes the EM-funded operation of the waste disposal facilities and infrastructure support for the environmental cleanup scope. Work Authorizations are placed to cover EM work under the Management and Operating contract.

Navarro Research and Engineering, Inc. (Navarro) was awarded the new EM Nevada Environmental Program Services (EPS) **Environmental Management/ Nevada**

contract on June 17, 2020. Navarro previously held the incumbent contract. Navarro will provide a variety of cleanup services at the Nevada National Security Site. EM competed the contract using the End State Contracting Model, which is expected to significantly reduce risk and environmental liability to provide the best overall solution to EM Nevada's mission at NNSS to accelerate completion and closure.

Strategic Management

The EM Nevada Program positions the Department of Energy to meet the challenges of the nation's Manhattan Project and Cold War legacy responsibilities by:

- Planning and conducting environmental restoration activities in a risk-informed and cost-effective manner in order to complete cleanup of legacy contamination and fulfill legal and regulatory commitments.
- Providing safe, compliant and cost-effective disposal for DOE-generated low-level radioactive waste and mixed low-level radioactive waste streams including classified waste, supporting the reduction in both the Nevada National Security Site contaminated site footprint, as well as the cleanup of other DOE sites' contaminated footprint.

The following activities directly support the Department's mission and goals to enhance nuclear security through environmental efforts:

- Environmental restoration scope addresses surface and shallow subsurface radiological soil contamination on the Nevada National Security Site and the Nevada Test and Training Range. It includes activities required to assess and perform appropriate corrective actions at approximately 900 former underground test locations, approximately 100 surface or near-surface soil contamination locations and more than 1,100 other industrial-type sites. Industrial-type site restorations address facility decontamination and decommissioning, various legacy systems, structures and sites (e.g., septic systems, mud pits, storage tanks, disposal sites), and conventional weapons disposition including unexploded ordnance. Groundwater activities involve geologic and hydrologic characterization, contaminated groundwater transport modeling, and contaminant boundary definition and establishment of a monitoring system to protect against the inadvertent use of contaminated groundwater.
- Waste management scope supports the nation's national security mission and completion of cleanup at DOE sites across the United States including the Nevada National Security Site, by maintaining the capability to dispose of 1.2 million cubic feet of low-level radioactive waste, mixed low-level radioactive waste and classified waste annually.

Nevada

Funding (\$K)

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Defense Environmental Cleanup

NNSA Sites

Nevada

VL-NV-0030 / Soil and Water Remediation-Nevada

35,134 34,859 33,326 -1,533

VL-NV-0080 / Operate Waste Disposal Facility-Nevada

20,862 20,813 22,269 +1,456

VL-NV-0100 / Nevada Community and Regulatory Support

4,741 5,065 5,142 +77

Subtotal, Nevada

60,737 60,737 60,737 0

Nevada
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

NNSA Sites

Nevada

VL-NV-0030 / Soil and Water Remediation-Nevada

- The FY 2022 funding decrease supports increased efforts planned under VL-NV-0080 below. -1,533

VL-NV-0080 / Operate Waste Disposal Facility-Nevada

- Increase reflects new waste cell construction and cell closure activities. +1,456

VL-NV-0100 / Nevada Community and Regulatory Support

- No significant change. +77

Total, Nevada	0
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Soil and Water Remediation-Nevada (PBS: VL-NV-0030)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

The overall objective of this PBS is to provide for appropriate risk-based remediation of contaminated support facilities and soils, and groundwater modeling on the Nevada National Security Site and the U.S. Air Force's Nevada Test and Training Range surface and subsurface contamination of industrial and soil contaminated sites. The contamination is the result of atmospheric and underground nuclear tests. The cleanup is complex due to the number of sites, nature and extent of contamination, and site size/location. The surface contamination includes approximately 1,100 industrial-type sites and approximately 100 soil contamination sites on the Nevada National Security Site and the Nevada Test and Training Range. The subsurface contamination includes approximately 900 groundwater contamination sites on the Nevada National Security Site. The industrial-type release sites mainly support facilities and structures that were left after conducting aboveground and underground nuclear tests, surface nuclear engine and reactor experiments, and weapons delivery systems.

Starting in FY 2022, activities at approximately 2,000 contaminated soil, industrial-type and groundwater sites have been closed and activities at approximately 95 remaining sites are in progress.

Soil and Water Remediation-Nevada (PBS: VL-NV-0030)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$34,859,000	\$33,326,000	-\$1,533,000
Groundwater Remediation: Corrective Action Units 101/102 Pahute Mesa: <ul style="list-style-type: none"> Complete Source Term Models. Continue annual groundwater data collection and sampling. Continue Flow and Transport Model development and Initiate External Peer Review Panel Selection. Corrective Action Unit 97 Yucca Flat/Climax Mine: <ul style="list-style-type: none"> Receive State of Nevada Closure Approval. Industrial Sites: Corrective Action Unit 114 Engine Maintenance Assembly & Disassembly Facility:	Groundwater Remediation: <ul style="list-style-type: none"> Continue annual groundwater data collection and sampling for Corrective Action Units 101/102 Pahute Mesa. Complete Flow and Transport Model development for Corrective Action Units 101/102 Pahute Mesa. Initiate External Peer Review for Corrective Action Units 101/102 Pahute Mesa. Industrial Sites: Corrective Action Unit 114 Engine Maintenance Assembly & Disassembly Facility:	<ul style="list-style-type: none"> The FY 2022 funding decrease supports increased efforts planned under VL-NV-0080 below.

- Continue pre-closure facility surveillance and maintenance.
 - Receive State of Nevada approval of SAFER Plan Rev #1.
 - Initiate Pre Demolition “Decommissioning and Decontamination” Activities.
- Corrective Action Unit 572 Test Cell C Ancillary Buildings and Structures
- Receive State of Nevada approval of SAFER Plan.
 - Initiate Pre Demolition “Decommissioning and Decontamination” Activities.
- Post-Closure Long-term Monitoring:
- Continue post-closure monitoring of soils and industrial-type NNSS sites.
 - Continue post-closure sampling and monitoring for closed groundwater sites.
- Continue pre-closure facility surveillance and maintenance.
 - Complete Pre Demolition “Decommissioning and Decontamination” Activities.
 - Corrective Action Unit 572 Test Cell C Ancillary Buildings and Structures.
 - Initiate Demolition “Decontamination and Decommissioning” Activities.
- Post-Closure Long-term Monitoring:
- Continue post-closure monitoring of soils and industrial-type Nevada National Security Site sites.
 - Continue annual post-closure sampling and monitoring for closed groundwater sites.
-

Operate Waste Disposal Facility-Nevada (PBS: VL-NV-0080)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS provides low-level radioactive waste, mixed low-level radioactive waste and classified material disposal capability to meet the needs of all DOE sites through FY 2030 for waste that requires offsite disposal and in instances where commercial disposal is not available or cost effective. The funding requested in this PBS supports EM's allocated share of annual disposal costs and therefore is dependent upon total waste volumes from all DOE programs. Continuing the practice that began in FY 2009, non-EM programs will fund a share of this activity based on each program's share of the waste disposed at the Nevada National Security Site. The Site maintains the capability to dispose of low-level radioactive waste and mixed low-level radioactive waste (as allowed under permit conditions as administered by the State of Nevada), and dispose of classified material from approved generators throughout the DOE complex. Preservation of this capability is vital to DOE missions because some DOE waste streams cannot be disposed of at the site of generation or at commercial facilities.

Operate Waste Disposal Facility-Nevada (PBS: VL-NV-0080)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$20,813,000	\$22,269,000	+\$1,456,000
<ul style="list-style-type: none"> Continue developing and maintaining plans, permits, safety basis, and technical and regulatory support for activities such as the Nevada National Security Site Resource Conservation and Recovery Act Part B Permit and DOE Order 435.1 Continue audits and waste certification reviews in support of generator programs to ensure compliance with the NNSS Waste Acceptance Criteria Waste Acceptance Criteria. Continue operation of Resource Conservation and Recovery Act mixed low-level waste disposal cell. 	<ul style="list-style-type: none"> Continue developing and maintaining plans, permits, safety basis, and technical and regulatory support for activities such as the Nevada National Security Site Resource Conservation and Recovery Act Part B Permit and DOE Order 435.1. Continue audits and waste certification reviews in support of generator programs to ensure compliance with the Nevada National Security Site Waste Acceptance Criteria. Continue operation of Resource Conservation and Recovery Act mixed low-level waste disposal cell. 	<ul style="list-style-type: none"> Increase reflects new waste cell construction and cell closure activities.

- Support cleanup activities across the DOE complex by providing disposal capacity and services for approximately 1.2M cubic feet (34,000 cubic meters) of low-level radioactive, mixed low-level radioactive waste, and classified waste.
 - Submit Corrective Action Unit 577 Area 5 Chromium Containing Waste Disposal Cells Closure Report to the State.
-
- Support cleanup activities across the DOE complex by providing disposal capacity and services for approximately 1.2M cubic feet (34,000 cubic meters) of low-level radioactive, mixed low-level radioactive waste, and classified waste.
 - Initiate cell closure activities for CAU 577 Area 5 Chromium Containing Waste Disposal Cells.
 - Construct one new low-level waste disposal cell.

Nevada Community and Regulatory Support (PBS: VL-NV-0100)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS provides support for Agreements-in-Principle with two state agencies: the Nevada Division of Emergency Management and the Nevada Division of Environmental Protection. This PBS also includes funding for the following: the annual Federal Facility Agreement and Consent Order fee; and a grant with the State of Nevada to perform programmatic oversight and environmental and natural resource planning. The Nevada Site Specific Advisory Board is chartered by the DOE as an EM Site-Specific Advisory Board.

Nevada Community and Regulatory Support (PBS: VL-NV-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$5,065,000	\$5,142,000	+\$77,000
<ul style="list-style-type: none">• Provide support for State of Nevada regulatory oversight of EM Nevada Program work at the Nevada National Security Site.• Provide support for the State of Nevada grant to perform programmatic oversight and to carry out environmental and natural resources planning as it pertains to the Site.• Continue outreach and stakeholder programs such as Nevada Site Specific Advisory Board and low-level waste stakeholder forum.	<ul style="list-style-type: none">• Provide support for State of Nevada regulatory oversight of the Nevada National Security Site.• Provide support for the State of Nevada grant to perform programmatic oversight and to carry out environmental and natural resources planning as it pertains to the Nevada National Security Site.	<ul style="list-style-type: none">• No significant change.

Sandia National Laboratories

Overview

Sandia National Laboratories is a multi-mission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration. The Sandia National Laboratories-New Mexico site is adjacent to Albuquerque, New Mexico, on Kirtland Air Force Base. The Sandia National Laboratories-New Mexico Environmental Restoration Operations Project scope includes the remediation of inactive waste disposal and release sites. These sites have known releases of hazardous, radioactive, and mixed waste.

Sandia National Laboratories' approach to Environmental Restoration is to work closely with the New Mexico Environment Department to complete Resource Conservation and Recovery Act corrective actions at the last three Environmental Restoration sites using cost effective approaches that meet regulatory requirements. The remaining cleanup scope consists of three areas with contaminated groundwater in various stages of corrective action that require final remedies. All Environmental Restoration activities are regulated by the 2004 Compliance Order on Consent signed by DOE, the Sandia Corporation, and the New Mexico Environment Department.

Highlights of the FY 2022 Budget Request

In FY 2022, Resource Conservation and Recovery Act corrective action activities will continue at the three locations with contaminated groundwater: the Burn Site Groundwater Area of Concern, the Technical Area-V Groundwater Area of Concern, and the Tijeras Arroyo Groundwater Area of Concern. Additional groundwater characterization, which may require the installation of new monitoring wells, may be implemented at the Burn Site Area of Concern. DOE is working to submit the Corrective Measures Implementation Plan to the New Mexico Environment Department for review in FY 2022. At the Technical Area-V Groundwater Area of Concern, FY 2022 funding will support the Interim Measure/Treatability Study using In-Situ Bioremediation.

FY 2021 and FY 2022 Key Milestones/Outlook

- (FY 2021) Support a public hearing associated with the selection of the final remedy for the Tijeras Arroyo Groundwater Area of Concern.
- (FY 2021) Continue Performance Monitoring, Analysis & Validation at the Technical Area-V Groundwater Area of Concern.
- (FY 2021) Finish installation of injection wells 2 and 3 at the Technical Area-V Groundwater Area of Concern.
- (FY 2021) Start Phase 2 full scale injection in well 2 at the Technical Area-V Groundwater Area of Concern.
- (FY 2021) Complete National Environmental Policy Act approval process for two contingency wells at Burn Site Groundwater Area of Concern.
- (FY 2021) Install two contingency wells at the Burn Site Groundwater Area of Concern.
- (FY 2021) Quarterly analysis of first four wells at the Burn Site Groundwater Area of Concern.
- (FY 2022) Submit the Corrective Measures Implementation Plan to New Mexico Environment Department for review for the Tijeras Arroyo Groundwater Area of Concern.
- (FY 2022) Perform full scale injection in well 2 at the Technical Area-V Groundwater Area of Concern.
- (FY 2022) Conduct Performance Monitoring in well 2 at the Technical Area-V Groundwater Area of Concern.
- (FY 2022) Quarterly analysis of wells at the Burn Site Groundwater Area of Concern.
- (FY 2022) Complete National Environmental Policy Act approval process for two additional contingency wells at Burn Site Groundwater Area of Concern.
- (FY 2022) Install two additional contingency wells at the Burn Site Groundwater Area of Concern.

Regulatory Framework

The regulatory driver for completing this work is the Compliance Order on Consent signed in 2004 by DOE, the Sandia

Corporation, and the New Mexico Environment Department. To date, 308 of 314 sites have been approved by the New Mexico Environment Department as being "corrective action complete," including the Mixed Waste Landfill. Three of the remaining six sites are considered "deferred active-mission" sites and bring a future cleanup liability.

The remaining three areas of groundwater contamination are being characterized to determine the remedial action to implement and are in various stages of the Resource Conservation and Recovery Act corrective action process. Each of the three areas of groundwater contamination (Burn Site, Tijeras Arroyo, and Technical Area-V) have unique hydro-geologic complexity, and all three have contamination levels that are above the maximum contaminant level drinking water standards. There are no near-term risks to public health. Delivery of final Corrective Measure Evaluation reports for each of the three areas to the New Mexico Environment Department are considered enforceable agreement milestones.

A phased, in-situ bioremediation Treatability Study/Interim Measure has been initiated at the Technical Area-V Groundwater Area of Concern. An updated Corrective Measures Evaluation Report and Current Conceptual Model Report for Tijeras Arroyo Groundwater, recommending monitored natural attenuation, was submitted to the New Mexico Environment Department on February 15, 2018. Up to 8 additional monitoring wells were planned to be installed at Tijeras Arroyo in FY 2018. However, based on an August 16, 2017 meeting with the New Mexico Environment Department, these additional wells are likely unneeded.

A phased characterization program, including an aquifer pumping test, is ongoing at the Burn Site Groundwater Area of Concern. Based on the results of the pumping test, and a verbal recommendation from the New Mexico Environment Department, there is a potential need to install up to six additional monitoring wells, with eight quarters of characterization data/reports. An updated Conceptual Model Report and a Corrective Measures Evaluation Report will be prepared and submitted to move towards formal regulatory closure.

Contractual Framework

The current Management and Operating contractor at Sandia National Laboratories is the National Technology & Engineering Solutions of Sandia, a wholly owned subsidiary of Honeywell International, Inc. This contract is overseen and managed by the National Nuclear Security Administration.

EM work at Sandia National Laboratories-New Mexico is performed under Work Authorizations against the National Nuclear Security Administration's Management and Operating contract with National Technology & Engineering Solutions of Sandia.

Strategic Management

Sandia National Laboratories-New Mexico's Environmental Restoration Operations mission is to complete all necessary corrective actions at the three groundwater areas of concern. Three additional soil release sites are considered "deferred active-mission" sites.

The status and closure goals are:

- (1) Burn Site Groundwater Area of Concern - four monitoring wells were installed at the Burn Site Groundwater Area of Concern at the end of FY 2019 and the beginning of FY 2020 to meet an enforceable agreement milestone, per New Mexico Environment Department's letter dated February 12, 2019;
- (2) Tijeras Arroyo Groundwater Area of Concern - it is estimated that the New Mexico Environment Department will approve the revised and updated Current Conceptual Model and Corrective Measures Report in FY 2021 and move forward with the Corrective Action Complete regulatory closeout process, including a public hearing in FY 2021; and
- (3) Technical Area-V Groundwater Area of Concern, Phase 1 injection was completed in FY 2019 as a part of the phased Interim Measure/Treatability Study and Performance Monitoring has begun. Phase 2 is scheduled to begin in FY 2021.

Sandia Site Office

Funding (\$K)

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Defense Environmental Cleanup

NNSA Sites

Sandia National Laboratories

VL-SN-0030 / Soil and Water Remediation-Sandia

2,652 4,860 4,576 -284

Sandia Site Office
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

NNSA Sites

Sandia National Laboratories

VL-SN-0030 / Soil and Water Remediation-Sandia

- No significant change.

-284

Total, Sandia Site Office

-284

Soil and Water Remediation-Sandia (PBS: VL-SN-0030)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

The Sandia National Laboratories-New Mexico Environmental Restoration Operations mission in FY 2021-2022 is to pursue completion of all necessary corrective actions at the three groundwater areas of concern. The three groundwater areas (Burn Site, Tijeras Arroyo, and Technical Area-V) are expected to transition to long-term stewardship following completion of characterization/evaluation, remedy selection via public hearing, and implementation of the determined remedy.

Soil and Water Remediation-Sandia (PBS: VL-SN-0030)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$4,860,000	\$4,576,000	-\$284,000
<ul style="list-style-type: none"> Install additional groundwater wells and continue characterization at Burn Site Groundwater Area. Burn Site Groundwater updated Conceptual Model Report and a Corrective Measures Evaluation Report will be prepared and submitted to move towards formal regulatory closure. Continue field work implementation of the Interim Measure/Treatability Study at Technical Area-V Groundwater Area. Submit the Corrective Measures Implementation Plan to New Mexico Environment Department for review for Tijeras Arroyo Groundwater Area. 	<ul style="list-style-type: none"> Install additional groundwater wells and continue characterization at Burn Site Groundwater Area. Continue field work implementation of the Interim Measure/Treatability Study at Technical Area-V Groundwater Area. Submit the Corrective Measures Implementation Plan for Tijeras Arroyo Groundwater Area to New Mexico Environment Department for review. 	<ul style="list-style-type: none"> No significant change.

Separations Process Research Unit

Overview

The Separations Process Research Unit site supports cleanup of radioactive and chemical waste resulting from Manhattan Project and Cold War activities.

The Separations Process Research Unit is an inactive pilot plant used to research and develop chemical processes to separate plutonium from other radioactive material and is located at the Knolls Atomic Power Laboratory, Niskayuna, New York. The Separations Process Research Unit operated from 1950 to 1953. During operations, it contaminated nuclear facilities and approximately thirty acres of land where waste containers were managed. Groundwater immediately adjacent to the nuclear facilities and in an area where containers were once stored, was contaminated with radioactivity. The scope of the Separations Process Research Unit project was to decontaminate and remove the nuclear facilities (including the sub-grade building foundations and tank vaults), remediate the land areas, and ship the resulting waste to the appropriate off-site disposal facilities, and transfer the areas back to the landlord, the Office of Naval Reactors.

The decommissioning contractor, AECOM (formerly URS Energy and Construction, Inc.), was awarded the demolition contract December 2007 and completed all site physical work in July 2019. Closeout reports were completed by the fourth quarter of FY 2020, and the land areas were transferred to Naval Reactors in December 2020.

The remaining scope of work at the Separations Process Research Unit site consists of obtaining State acceptance of the final project Resource Conservation and Recovery Act report, contract claims resolution, and contract closeout. In addition, there are other work items conducted under the Separations Process Research Unit project, including:

1. Cleanup of F-yard, with expected completion in FY 2021.
2. Procurement actions to transport, treat, and dispose of Separations Process Research Unit transuranic waste.
3. Continuing obligations under consent order with New York State to manage mixed (Resource Conservation and Recovery Act) transuranic waste, including finalizing a RCRA storage permit.
4. Obligation for future (2029) sampling of Mohawk River sediment to assess residual radioactivity, unless obligation transferred to Naval Reactors.

Highlights of the FY 2022 Budget Request

The FY 2022 budget request of \$15,000,000 enables the Separations Process Research Unit site to support work associated with closing out the demolition contract, complete cleanup of F-yard, and continuation of the effort to transport, treat, and dispose of Separations Process Research Unit transuranic waste.

FY 2021- FY 2022 Key Milestones/Outlook

- (FY 2021) Award a contract for commercially processing some of the Separations Process Research Unit transuranic contaminated waste. In addition, the contract will include revising a Type B shipping container safety analysis to allow for shipment of Separations Process Research Unit remote-handled and contact-handled transuranic waste compliant with federal rules.
- (FY 2021) Complete the cleanup of F-yard and return the work area to Naval Reactors.

Regulatory Framework

The Separations Process Research Unit project has generated 24 waste containers that are potential transuranic waste -- 22 of which are mixed Resource Conservation and Recovery Act hazardous waste and are regulated by the New York State Department of Environmental Conservation. The Separations Process Research Unit applied for a Resource Conservation and Recovery Act Part B permit during FY 2018 as part of a Consent Order and Agreement for long-term (greater than 90 days) storage of this waste. The storage permit application is with the New York State Department of Environmental Conservation. The Separations Process Research Unit transuranic Waste Storage area project is operating in compliance under the consent order.

Contractual Framework

The cleanup of F-yard was awarded to ARS, a Native-Alaskan owned company. Work is being conducted under a Fixed Price contract. Treatment, processing, certification, and shipping of one-third to one-half of the transuranic waste is planned to be part of a nationwide IDIQ basic ordering agreement (BOA) for waste treatment. The task order for treatment of SPRU transuranic waste is expected to be in place in FY 2021.

Strategic Management

The strategy for the site includes completion of remaining cleanup activities and continuing support until all EM post-closure administrative activities are completed and the site is transitioned to the Naval Reactors Program for their continued mission.

The following factors present the strongest challenges to the overall achievement of the Separations Process Research Unit site's strategic goals:

- Currently, transuranic waste (and suspect transuranic waste) is temporarily stored at the Separations Process Research Unit site in outdoor conex boxes. Waste that is determined not to be transuranic after treatment will be disposed as low-level waste. The remaining transuranic waste is expected to be disposed at the DOE Waste Isolation Pilot Plant facility.
- Separations Process Research Unit transuranic waste is currently planned to be processed and packaged at Idaho National Laboratory in the FY24 and FY25 timeframe. The Idaho settlement agreement presents challenges to processing and certification within agreement timeframes.

Separations Process Research Unit

Funding (\$K)

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Defense Environmental Cleanup

NNSA Sites

Separations Processing Research Unit

VL-SPRU-0040 / Nuclear Facility D&D-Separations Process Research Unit

15,300

15,000

15,000

0

Separations Process Research Unit
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted
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Defense Environmental Cleanup

NNSA Sites

Separations Processing Research Unit

VL-SPRU-0040 / Nuclear Facility D&D-Separations Process Research Unit

- No change. 0

Total, Separations Process Research Unit	0
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Nuclear Facility D&D-Separations Process Research Unit (PBS: VL-SPRU-0040)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

The project objectives are to remove the inactive nuclear facilities and disposition the chemical and radioactive contamination in land areas and return the land and facilities to the Knolls Atomic Power Laboratory for continued mission use by the Naval Reactors Program.

The contractor physically completed demolition of building and restored the land in FY 2019. Resolution of Contract Claims, and contract closeout continues. In addition, funding in FY 2021 and FY 2022 support cleanup of F-yard and transportation, treatment, and further processing of Separations Process Research Unit transuranic waste.

Nuclear Facility D&D-Separations Process Research Unit (PBS: VL-SPRU-0040)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$15,000,000	\$15,000,000	+\$0
<ul style="list-style-type: none"> • Install additional groundwater wells and continue characterization at Burn Site Groundwater Area. • Burn Site Groundwater updated Conceptual Model Report and a Corrective Measures Evaluation Report will be prepared and submitted to move towards formal regulatory closure. • Continue field work implementation of the Interim Measure/Treatability Study at Technical Area-V Groundwater Area. • Submit the Corrective Measures Implementation Plan to New Mexico Environment Department for review for Tijeras Arroyo Groundwater Area. 	<ul style="list-style-type: none"> • Surveillance and maintenance activities to support storage for transuranic waste. • Support treatment of a portion of the transuranic waste based on selected treatment alternative. 	<ul style="list-style-type: none"> • No change.

West Valley

Overview

Cleanup of the West Valley Demonstration Project will support the Department of Energy to meet the challenges of the nation's Manhattan Project and Cold War legacy responsibilities. The West Valley Demonstration Project is responsible for stabilizing and dispositioning low-level radioactive waste and transuranic waste and decontaminating and decommissioning of excess facilities, tanks, and equipment.

The West Valley Demonstration Project is conducted at the site of the only commercial nuclear fuel reprocessing facility to have operated in the United States. The Department's principal mission at the site is to satisfy the mandates established by the West Valley Demonstration Project Act of 1980 (Public Law 96-368):

- Solidify the high-level radioactive waste in a form suitable for transportation and disposal;
- Develop containers suitable for permanent disposal of the solidified high-level radioactive waste;
- Transport, in accordance with applicable law, high-level radioactive waste canisters to an appropriate Federal repository for permanent disposal;
- Dispose of low-level radioactive waste and transuranic waste produced by high-level radioactive waste solidification activities; and
- Decontaminate and decommission tanks and facilities used for solidification of high-level radioactive waste, as well as any material and hardware used in connection with the Project, in accordance with Nuclear Regulatory Commission requirements.

The Office of Environmental Management will work aggressively to reduce the footprint at the West Valley Demonstration Project site. This involves treating, packaging and disposal of low-level radioactive waste and transuranic waste, cleaning up the environment, and removing or deactivating excess facilities.

Highlights of the FY 2022 Budget Request

The major activities planned for the West Valley Demonstration Project for FY 2022 focus on the ongoing demolition of the Main Plant Process Building; continuing site operations and maintenance; and disposition of newly generated waste.

FY 2021 and FY 2022 Key Milestones/Outlook

- (2021) Continue Deactivation activities.
- (2021) Begin Demolition of Main Plant Process Building.
- (2021) Complete Armoring and Protecting the Toe of the Nuclear Regulatory Commission Licensed Disposal Area.
- (2021) Balance of Site Facilities- Schoolhouse Demo/Removal/Restoration.
- (2021) Process, ship and dispose of newly generated mixed low-level radioactive waste, meeting requirements as specified in the Site Treatment Plan.
- (2022) Continue Demolition of Main Plant Process Building.
- (2022) Continue Nitrocision process as part of decontamination efforts.
- (2022) Process, ship and dispose of newly generated mixed low-level radioactive waste, meeting requirements as specified in the Site Treatment Plan.

Regulatory Framework

Cleanup and environmental remediation activities at the West Valley Demonstration Project are governed by the following statutes, regulations, and agreements:

- The West Valley Demonstration Project Act (Public Law 96-368) requires the Secretary of Energy to carry out a high-level radioactive waste management project at the Western New York Nuclear Services Center.
- Cooperative Agreement between DOE and New York State Energy Research and Development Authority (1980, amended 1981) provides for the 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.

- Memorandum of Understanding between DOE and Nuclear Regulatory Commission (1981) identifies roles, responsibilities, terms and conditions regarding the Nuclear Regulatory Commission review and consultation during the Project. In accordance with this Memorandum of Understanding, the Nuclear Regulatory Commission reviewed and issued a Technical Evaluation Report supporting the DOE's submittal of the Decommissioning Plan in February 2010.
- Stipulation of Compromise Settlement agreement (1987) represents the legal compromise reached between the Coalition on West Valley Nuclear Waste and Radioactive Waste Campaign and DOE regarding development of a comprehensive Environmental Impact Statement for the Project and for on-site and off-site disposal of low-level radioactive waste.
- Resource Conservation and Recovery Act 3008(h) Administrative Order on Consent (1992) 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 regarding Resource Conservation and Recovery Act.
- Cooperative Agreement between the Seneca Nation of Indians and the West Valley Demonstration Project (1996) establishes a framework for inter-governmental relationships between the Seneca Nation of Indians and the Department with respect to project activities.
- The Final Environmental Impact Statement for Decommissioning and/or Long-Term Stewardship and the associated Record of Decision issued in April 2010. The Record of Decision was "Phased Decision-making" in which the decommissioning will be completed in two phases. Phase 1 activities are expected to take fourteen to seventeen years to complete.
- Third Supplemental Agreement to the Cooperative Agreement between DOE and the New York State Research and Development Authority to Support Phase 2 Decision-making for the Decommissioning and/or Long-term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center (dated July 20, 2015).
- Phase 1 Decommissioning Plan for the West Valley Demonstration Project describes decontamination and decommissioning activities that are expected to occur during Phase 1 decommissioning under the Phased Decision-making Alternative.
- A Phase 2 decision will be made following completion of the Supplemental Environmental Impact Statement. The Department will issue a Record of Decision and New York State Energy Research and Development Authority will issue a Finding Statement. The decisions will address the high-level radioactive waste tanks, the non-source area of the strontium 90 plume, the Nuclear Regulatory Commission Licensed Disposal Area, and State Licensed Disposal Area.

Contractual Framework

Program planning and management at the West Valley Demonstration Project is conducted through the issuance and execution of contracts to large and small businesses. The major contracts at the West Valley Demonstration Project include:

- Phase 1 Decommissioning – Facility Disposition contract, which was awarded to CH2M Hill BWXT West Valley, LCC, has a contract period of performance from August 29, 2011, through an estimated completion date of June 29, 2023. There are no options on this cost plus award fee contract.
- Probabilistic Performance Assessment contract was awarded in September 2015 to a small business for a time and materials contract to perform a probabilistic analysis to support Phase 2 decision making for the West Valley Demonstration Project and New York State Energy Research and Development Authority.
- The West Valley Technical Assistance Contract was awarded in the fourth quarter of FY 2015 as an indefinite delivery/indefinite quantity contract from which task orders will be issued on either a time and materials or fixed-price basis. The contractor will provide technical and administrative services in support of the Department's West Valley Demonstration Project location.
- DOE and New York State Energy Research and Development Authority contract was awarded to SC&A in FY 2017 for development of a Supplemental Environmental Impact Statement to evaluate alternatives for completing DOE's mission at West Valley Demonstration Project and bringing the site to closure.

Strategic Management

The Department has completed the first two mandates of the West Valley Demonstration Project Act - solidification of the liquid high-level radioactive waste and development of containers suitable for permanent disposal of the high-level radioactive waste. There are currently 278 high-level radioactive waste canisters that have been produced that are in safe storage in a cask storage system. The remaining work to be completed by DOE at West Valley includes: (1) storage and shipment of the high-level radioactive waste canisters for off-site disposal; (2) disposal of Project-generated low-level radioactive waste and transuranic waste; and (3) facility decontamination and decommissioning.

The technical, schedule, and cost elements associated with decommissioning of the West Valley Demonstration Project were considered during development of the Decommissioning and/or Long-Term Management Environmental Impact Statement. A Record of Decision was issued in April 2010 outlining the Department's plan for completing its remaining responsibilities. To that end, DOE will continue to focus on low-level radioactive waste and transuranic waste disposition, decontamination and removal of the Main Plant Process Building and the Vitrification Facility, and removal of non-essential facilities. In addition, the Department has installed a permeable treatment wall to mitigate the spread of a ground water plume and has installed a Tank and Vault Drying System to safely manage the high-level radioactive waste tanks until their final closure pathway is determined. The Department has relocated the 278 high-level radioactive waste canisters that were stored in the Main Plant Process Building (the original reprocessing facility) to an on-site interim storage facility. The Main Plant Process Building will be deactivated and demolished consistent with the Environmental Impact Statement Record of Decision. The Vitrification Facility has been deactivated and demolished to grade-level. Below-grade removal of the Vitrification Facility will be consistent with the Environmental Impact Statement Record of Decision. To date, 44 of 47 other unneeded buildings and facilities (balance of site facilities or BOSFs) have been removed.

The following assumptions will impact the overall achievement of the program's strategic goal:

- The Project will be able to disposition higher activity low-level radioactive 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.
- The Project's non-defense transuranic waste has been included within the Department's Final Environmental Impact Statement for the Disposal of Greater-Than-Class C Low-Level Radioactive Waste and Greater-Than-Class-C-Like Waste that was published in February 2016. The non-defense transuranic waste will be packaged and stored until a disposition path is available.

West Valley Demonstration Project

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Safeguards and Security				
OH-WV-0020 / Safeguards and Security-West Valley	4,196	4,298	4,298	0
Non-Defense Environmental Cleanup				
Community, Regulatory and Program Support				
OH-WV-0100 / West Valley Site Services	200	0	0	0
West Valley Demonstration Project				
OH-WV-0013 / Solid Waste Stabilization and Disposition-West Valley	3,110	9,110	24,901	+15,791
OH-WV-0040 / Nuclear Facility D&D-West Valley	72,105	79,003	63,219	-15,784
Subtotal, West Valley Demonstration Project	75,215	88,113	88,120	+7
Total, Non-Defense Environmental Cleanup	75,415	88,113	88,120	+7
Total, West Valley Demonstration Project	79,611	92,411	92,418	+7

**West Valley Demonstration Project
Explanation of Major Changes (\$K)**

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Safeguards and Security

OH-WV-0020 / Safeguards and Security-West Valley

- No change.

0

Non-Defense Environmental Cleanup

West Valley Demonstration Project

OH-WV-0013 / Solid Waste Stabilization and Disposition-West Valley

- Increase supports additional waste processing, shipping and disposal of demolition debris created by the Main Plant Processing Building demolition.

+15,791

OH-WV-0040 / Nuclear Facility D&D-West Valley

- Decrease supports lessons learned from demolition activities across the complex to manage demolition debris piles to keep them as small as possible.

-15,784

Total, West Valley Demonstration Project

+7

Safeguards and Security-West Valley (PBS: OH-WV-0020)

Overview

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

The Safeguards and Security Program at the West Valley Demonstration Project protects government assets, information, and technology systems to support the cleanup of this spent fuel reprocessing facility. These activities provide for overall site access security and protection of personnel and government property.

This scope will continue until DOE's mission at the West Valley Demonstration Project is complete. The Cyber Security Program at West Valley Demonstration Project protects government information and technology systems to support the cleanup of this spent fuel reprocessing facility.

Safeguards and Security-West Valley (PBS: OH-WV-0020)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$4,298,000	\$4,298,000	+\$0
<ul style="list-style-type: none"> • Provide physical security with an on-site guard force to ensure the Department's information resources are identified and protected. • Continue to oversee the security program including cybersecurity, training and qualifications for the West Valley Demonstration Project. 	<ul style="list-style-type: none"> • Provide physical security with an on-site guard force to ensure The Department's information resources are identified and protected. • Continue program management to oversee the security program including cybersecurity, training and qualifications for the West Valley Demonstration Project. 	<ul style="list-style-type: none"> • No change.

Solid Waste Stabilization and Disposition-West Valley (PBS: OH-WV-0013)

Overview

This PBS is 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 radioactive waste and transuranic waste produced as a result of high-level radioactive waste solidification activities. When this project is completed, all West Valley Demonstration Project-generated, low-level radioactive waste 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. Transuranic waste will be packaged and interim stored until a disposition path is available.

Solid Waste Stabilization and Disposition-West Valley (PBS: OH-WV-0013)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$9,110,000	\$24,901,000	+\$15,791,000
<ul style="list-style-type: none"> Store legacy transuranic waste and newly generated transuranic waste. Ship and dispose of all other newly generated waste. 	<ul style="list-style-type: none"> Store legacy transuranic waste. Store newly generated transuranic waste. Ship and dispose of all other newly generated waste, primarily the demolition debris created by the Main Plant Process Building. 	<ul style="list-style-type: none"> Increase supports additional waste processing, shipping and disposal of demolition debris created by the Main Plant Processing Building demolition.

Nuclear Facility D&D-West Valley (PBS: OH-WV-0040)

Overview

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

The decontamination and decommissioning program at the West Valley Demonstration Project encompasses the facilities, tanks and hardware used during high-level radioactive waste solidification efforts. Decontamination and decommissioning activities were subject to a Final Environmental Impact Statement which was completed in January 2010 and a Record of Decision was issued in April 2010. DOE has selected a phased approach for decommissioning activities at the West Valley Demonstration Project. In August 2011, DOE awarded a contract to CH2M Hill-B&W West Valley, LLC to conduct the first phase of decommissioning (Phase I Decommissioning - Facility Disposition) at the West Valley Demonstration Project. The decontamination and decommissioning will be performed consistent with the Nuclear Regulatory Commission criteria per the approved decommissioning plan. The decommissioning plan includes the relocation of 278 high-level radioactive waste canisters from the 50-year old Main Plant Process Building to a new on-site interim storage facility, and the removal of the Main Plant Process Building, the Vitrification Facility, and the Water Treatment Lagoons (Waste Management Areas 1 and 2). To support decontamination and decommissioning efforts, safety management and maintenance at the site are in compliance with federal and state statutes, as well as DOE orders and requirements.

Nuclear Facility D&D-West Valley (PBS: OH-WV-0040)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$79,003,000	\$63,219,000	-\$15,784,000
<ul style="list-style-type: none"> • Maintain Site Services. • Begin demolition of the above grade portion of the Main Plant Process Building. • Continue removal of excess ancillary facilities and Balance of Site Facilities. • Maintain the underground storage tanks, the Nuclear Regulatory Commission-Licensed Disposal Area, and the Permeable Treatment Wall. • Manage and maintain site infrastructure. • Conduct environmental monitoring. • Begin Main Plant Processing Building demolition. 	<ul style="list-style-type: none"> • Maintain Site Services. • Continue demolition of the above grade portion of the Main Plant Process Building. • Complete removal of the remaining ancillary support facilities. • Maintain the underground storage tanks, the Nuclear Regulatory Commission-Licensed Disposal Area, and the Permeable Treatment Wall. • Manage and maintain site infrastructure. • Continue removal of Balance of Site Facilities. • Conduct environmental monitoring. 	<ul style="list-style-type: none"> • Decrease supports lessons learned from demolition activities across the complex to manage demolition debris piles to keep them as small as possible.

- Continue Main Plant Processing Building demolition.
-

Energy Technology Engineering Center

Overview

Cleanup at the Energy Technology Engineering Center supports the Department's cleanup of radioactive and chemical waste resulting from the Manhattan Project and Cold War activities. Cleanup activities at the Energy Technology Engineering Center involve completion of site characterization; completion of a court-ordered Environmental Impact Statement; deactivation, decommissioning, and demolition of excess facilities; remediation of contaminated groundwater and soil; and disposition of resulting radioactive and hazardous waste.

The Energy Technology Engineering Center is a collection of DOE facilities within Area IV of the Santa Susana Field Laboratory. The Boeing Company is the landowner. At the beginning of 2021, there were six numbered DOE-owned structures remaining, consisting of two sodium facilities and other miscellaneous structures. Current and planned activities at the site involve decontamination and decommissioning of the remaining structures; remediation of soil and groundwater contamination; and closure.

The Energy Technology Engineering Center site priorities are driven by several compliance agreements, which drive both the timing and sequence of cleanup priorities as follows:

1. Issue Records of Decision.
2. Install final groundwater remedies.
3. Decontaminate and decommission remaining DOE-owned buildings in Area IV.
4. Initiate cleanup of contaminated soil and groundwater in Area IV and the Northern Buffer Zone to a level that is protective of human health and the environment at the Santa Susana Field Laboratory.

Highlights of the FY 2022 Budget Request

The Energy Technology Engineering Center's FY 2022 request will enable the site to continue progress toward completion of cleanup, including planning of the soil remediation. The site will submit the final required Corrective Measures Implementation to support its final recommendations regarding groundwater. Additionally, the site will initiate the Groundwater Interim Measures for areas that exceed 1,000 parts per billion for trichloroethylene. Once the Record of Decision for soils is published, soils remediation will be initiated.

FY 2021 & FY 2022 Key Milestones/Outlook

- (FY 2021) Complete the required Corrective Measures Study based on Department of Toxic Substances Control approval to support its final recommendations regarding groundwater.
- (FY2021) Issue Groundwater Record of Decision.
- (FY2022) Issue Soil Remediation Record of Decision.
- (FY 2022) Complete decontamination and decommissioning of remaining structures and remediation based on the Record of Decision.

Regulatory Framework

Prior decontamination and demolition activities of the radiologically contaminated facilities at the Energy Technology Engineering Center were conducted under Atomic Energy Act authority. In May 2007, the U.S. District Court for the Northern District of California directed DOE to complete an Environmental Impact Statement and Record of Decision for Area IV of the Santa Susana Field Laboratory in accordance with the National Environmental Policy Act, and for the State of California to complete an Environmental Impact Report in accordance with the California Environmental Quality Act. A Notice of Intent to prepare an Environmental Impact Statement was published in the Federal Register in May 2008. Since the Notice of Intent, DOE and the U.S. Environmental Protection Agency have conducted extensive studies of the site for radiological and chemical contamination.

The Resource Conservation and Recovery Act groundwater cleanup is regulated by the California Department of Toxic Substance Control consistent with a signed Consent Order issued by the California Department of Toxic Substances Control in August 2007. DOE completed negotiation of an Administrative Order on Consent with the California Department of Toxic Substance Control in December 2010 for all remaining soil characterization and remediation. Neither the cleanup of groundwater or soils will begin until the completion of the Final Environmental Impact Statement, Record of Decision, and California Environmental Impact Report.

The Department published an Amended Notice of Intent to prepare an Environmental Impact Statement in February 2014, and issued the Draft Environmental Impact Statement in January 2017. California issued a Draft Program Environmental Impact Report in September 2017. The Final Environmental Impact Statement was issued in December 2018. The Record of Decision for Building Demolition was published in September 2019.

In May 2020, DOE and the California Department of Toxic Substances Control executed an Order on Consent for Interim Actions that provided the framework for building demolition and an agreement to demolish 10 of the remaining buildings. In October 2020, the DOE and California Department of Toxic Substances Control executed an Amendment to the Order on Consent which allowed for the demolition the eight remaining DOE-owned buildings. By the end of CY 2020, the demolition of 12 buildings had been completed.

Contractual Framework

North Wind Inc. is performing general environmental monitoring, surveillance and maintenance. Under the Firm-Fixed Price contract, there are options for the 18 DOE buildings that will need decontamination and decommissioning, which have been exercised since the Record of Decision was published. The North Wind contract expires in December 2021. A remedial contractor will need to be established for the remaining work and DOE is in the process of completing this action.

CDM is the contractor supporting the development of the National Environmental Policy Act and other regulatory documentation. The CDM contract expires in June 2021.

Strategic Management

The Department will work to reduce the footprint at the Energy Technology Engineering Center. This involves planning and characterization activities required for cleaning up the environment and removing or deactivating unneeded facilities.

Energy Technology Engineering Center

Funding (\$K)

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Non-Defense Environmental Cleanup

Small Sites

Energy Technology Engineering Center

CBC-ETEC-0040 / Nuclear Facility D&D-Energy Technology Engineering Center	18,200	12,000	21,340	+9,340
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Energy Technology Engineering Center
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted
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Non-Defense Environmental Cleanup

Small Sites

Energy Technology Engineering Center

CBC-ETEC-0040 / Nuclear Facility D&D-Energy Technology Engineering Center

- Increase supports soil and groundwater cleanup.

+9,340

Total, Energy Technology Engineering Center

+9,340

Nuclear Facility D&D-Energy Technology Engineering Center (PBS: CBC-ETEC-0040)

Overview

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

The purpose of this PBS scope is to: 1) clean up contaminated release sites; 2) decontaminate, decommission, and demolish radioactively and chemically contaminated facilities for eventual release of the property to The Boeing Company (the site owner); 3) perform 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, decontamination, decommissioning, and demolition are complete except for the Sodium Pump Test Facility, Building 4024, Hazardous Waste Management Facility, Radioactive Materials Handling Facility complex, and a number of other miscellaneous structures. Soil and groundwater characterization is being performed. The scope of this PBS also includes direct maintenance and repair that are applicable to these areas.

In 2007, DOE received Court-ordered direction to prepare an Environmental Impact Statement regarding the cleanup of the Energy Technology Engineering Center facilities. Additionally, the State of California issued an Administrative Order on Consent in 2007 for groundwater remediation and a Consent Order in 2010 for cleanup of soils to a background level established by the State by 2017.

The end-state is to complete cleanup for both radiological and chemical contamination, and demolition of remaining structures. The site will then be transferred to The Boeing Company, which owns the land. The completion of the State Environmental Impact Report will affect some of the decontamination and decommissioning activities at ETEC.

Nuclear Facility D&D-Energy Technology Engineering Center (PBS: CBC-ETEC-0040)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$12,000,000	\$21,340,000	+\$9,340,000
<ul style="list-style-type: none"> Perform ongoing program support and operational services. Continue decontamination and decommissioning of remaining structures. Continue planning groundwater remediation in support of a Record of Decision on Groundwater. 	<ul style="list-style-type: none"> Complete decontamination and decommissioning of remaining structures. Complete soils and groundwater planning activities. Initiate soil remediation after Record of Decision is published. Initiate ground water remediation after Record of Decision is published. 	<ul style="list-style-type: none"> Increase supports soil and groundwater cleanup.

- Publish the soils ROD to support soils remediation.
 - Complete the draft Corrective Measures Implementation based on Department of Toxic Substances Control approval to support its final recommendations regarding groundwater.
-

Moab

Overview

The Moab Uranium Mill Tailings Remedial Action Project supports the Department's cleanup of radioactive and chemical waste resulting from the Manhattan Project and Cold War activities. The Floyd D. Spence National Defense Authorization Act of 2001 assigned DOE the 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. The project involves the excavation and transportation of a 16 million ton pile of uranium mill tailings from near the Colorado River at the Moab, Utah site, and placement/disposal at an engineered disposal cell constructed at Crescent Junction, Utah. Through the end of calendar year 2020, the Project has shipped more than 11 million tons of material.

Direct maintenance and repair at the Moab Uranium Mill Tailings Remedial Action Project is estimated to be \$523,000.

Highlights of the FY 2022 Budget Request

The FY 2022 request supports safely excavating, transporting, and placing mill tailings from the Moab site to the disposal cell at Crescent Junction, Utah; replacing and maintaining equipment as needed for a safe work environment; placing a portion of the interim cover on the disposal cell; and extracting contaminated groundwater and injecting freshwater to protect the Colorado River. EM's request provides the Moab Project the resources to purchase new heavy duty railcars to increase the capacity of material shipped to the disposal cell in Crescent Junction. EM anticipates being able to obtain 80 additional railcars, which will increase rail transport by 20 percent. EM's request also provides the resources to add additional staffing to increase shipments at the site. EM's FY 2022 request supports efforts to complete work at the Moab site at least two years before the current projected end date (FY 2029).

FY 2021 & FY 2022 Key Milestones/Outlook

- (September 2021) Excavate, transport, and dispose of over 990,000 tons of tailings.
- (September 2022) Excavate, transport, and dispose of over 1,250,000 tons of tailings.

Regulatory Framework

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.

Contractual Framework

The prime contracts for the Moab Uranium Mill Tailings Remedial Action Project include the Remedial Action Contract performed by North Wind-Portage. This is a firm-fixed price and cost-plus fixed fee contract for a five-year period from October 2016 to September 2021. DOE is in the process of conducting a procurement for a follow-on contract. There is also the Technical Assistance Contract performed by S&K Logistics Services on a firm-fixed-price and time-and-materials basis for a five-year period starting in late FY 2017.

Strategic Management

The Department will work aggressively to address cleanup at the Moab site. This involves the transport of uranium mill tailings away from its current location near the Colorado River and Arches National Park to a DOE disposal facility in Crescent Junction, Utah.

Moab

Funding (\$K)

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Non-Defense Environmental Cleanup

Small Sites

Moab

CBC-MOAB-0031 / Soil and Water Remediation-Moab

45,000

47,833

85,000

+37,167

Moab
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Non-Defense Environmental Cleanup

Small Sites

Moab

CBC-MOAB-0031 / Soil and Water Remediation-Moab

- Increase supports obtaining 80 additional railcars, which will increase disposal rates by 20 percent.

+37,167

Total, Moab

+37,167

Soil and Water Remediation-Moab (PBS: CBC-MOAB-0031)

Overview

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

The project scope includes remediating radioactive uranium mill tailings, mill debris, contaminated ground water, and contaminated vicinity properties at the former Atlas Minerals Corporation uranium ore processing site. The Department became responsible for this mission upon enactment of the Floyd D. Spence National Defense Authorization Act of 2001. A Record of Decision issued in September 2005 requires relocation of the mill tailings away from the Colorado River to a DOE-constructed disposal facility near Crescent Junction, Utah, primarily via rail transportation. The site is of particular public interest due to its unique setting on the banks of the Colorado River and its proximity to Arches National Park.

The scope of this PBS also includes direct maintenance and repair that are applicable to these areas.

Soil and Water Remediation-Moab (PBS: CBC-MOAB-0031)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$47,833,000	\$85,000,000	+\$37,167,000
<ul style="list-style-type: none"> Conduct Moab and Crescent Junction sites operation and maintenance. Operate interim remedial action for contaminated groundwater including extracting 4 million gallons and diverting/injecting 6.5 million gallons of freshwater. Excavate tailings and transport (4 trains/week) from mill site to the disposal cell (over 950,000 tons). Perform operations and maintenance of the materials handling system and infrastructure. Place tailings into the disposal cell. Continue equipment maintenance/replacement. Place a portion of the interim cover. Excavate a portion of the disposal cell. 	<ul style="list-style-type: none"> Conduct Moab and Crescent Junction sites operation and maintenance. Operate interim remedial action for contaminated groundwater including extracting 4 million gallons and diverting/injecting 6.5 million gallons of freshwater. Excavate tailings and transport (4 trains/week) from mill site to the disposal cell (over 990,000 tons). Purchase additional heavy duty railcars and make improvements to implement the cars. Add additional staff to accommodate increase shipping. Perform operations and maintenance of the materials handling system and infrastructure. Upgrade infrastructure to prepare for the heavy duty and additional railcars. 	<ul style="list-style-type: none"> Increase supports obtaining 80 additional railcars, which will increase disposal rates by 20 percent.

- Place tailings into the disposal cell.
 - Continue equipment maintenance/replacement.
 - Place a portion of the interim cover.
-

Other Sites

Overview

In supporting the Department of Energy (DOE) to meet the challenges of the Nation's Manhattan Project and Cold War environmental legacy responsibilities, the Environmental Management (EM) Program manages scope that includes closure and post-closure administrative activities at a number of geographic sites across the nation. Some of the sites described in this section of the budget have continuing EM mission requirements; however, some may have no funding requirements in FY 2022. The sites included in this section are in the final stages of cleanup and closure or have actually transitioned to the post-closure phase. These sites have contributed to the Department's footprint reduction and now only require continuing administrative support until all EM post-closure administrative activities are completed and the site can fully transition to other DOE programs (Office of Science, Legacy Management). Additionally, this account includes a site/facility for which DOE has no liability or mission requirement, but for which Congress has provided funds.

Lawrence Berkeley National Laboratory

The Consolidated Appropriations Act Conference Report, 2012 (Public Law 112-331) directed DOE to utilize \$10,000,000 of the Non-Defense Environmental Cleanup funds to "improve health and safety by cleaning up existing contamination and improving the seismic standards of buildings within Department laboratory grounds." Over the past eight years, Congress has provided \$170,300,000 in funding. DOE will utilize these funds to deactivate, decommission and demolish various facilities in the Old Town and Bayview areas of Lawrence Berkeley National Laboratory and remove associated contaminated soil to fulfill this Congressional mandate. As funds become available, additional cleanup will be performed in the Old Town and Bayview areas. There is no FY 2022 funding requested.

EM Consolidated Business Center

The EM Consolidated Business Center (EMCBC) is located in Cincinnati, Ohio, and provides a wide range of activities supporting DOE's national environmental cleanup mission, from financial management, contracting, technical support and information resource management. EMCBC also assumed responsibility for administrative closure and post-closure activities at EM defense and non-defense sites, which includes contract closeout, litigation and litigation support within this Other Sites budget. EMCBC serves as the lead EM office for new cleanup contract acquisitions required to support the EM program mission. Respectively, EMCBC administers Closure Sites activities for Rocky Flats, Fernald, Mound and provides technical, project controls, cybersecurity and legal/litigation support for the Separations Process Research Unit, Nevada, West Valley, Moab, Energy Technology Engineering Center, and EM work at Lawrence Berkeley National Laboratory and Brookhaven National Laboratory. EMCBC provides oversight of the EM cleanup efforts ongoing at Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory (excess facilities and soil and groundwater remediation), Sandia National Laboratory (soil and groundwater), the Moab Uranium Mill Tailings Remedial Action Project, the West Valley Demonstration Project, the Nevada National Security Site, the Separations Process Research Unit, and the Energy Technology Engineering Center.

Highlights of the FY 2022 Budget Request

Continue regulatory support of the Fernald Closure Project, the ongoing Rocky Flats Closure Project's legal requirements, and small sites' litigation requirements.

Strategic Management

The EM program will conduct closure and post-closure administrative activities at a number of sites across the nation.

Other Sites

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Closure Sites				
Closure Sites Administration				
CBC-0100-EM / Litigation Support	1,987	2,087	2,329	+242
CBC-0100-FN / CBC Post Closure Administration - Fernald	1,100	1,100	1,076	-24
CBC-0100-RF / CBC Post Closure Administration - Rocky Flats	1,900	1,800	582	-1,218
Subtotal, Closure Sites Administration	4,987	4,987	3,987	-1,000
Non-Defense Environmental Cleanup				
Small Sites				
Closure Sites Administration				
CBC-ND-0100 / CBC - Non-Defense Post Closure Administration and Program Support	0	0	11,997	+11,997
Lawrence Berkeley National Laboratory				
CBC-LBNL-0040 / Decontamination and Decommissioning-Lawrence Berkeley National Laboratory	31,000	30,100	0	-30,100
Other Sites				
CBC-0040-EF / Excess Office of Science Facilities	10,000	10,000	0	-10,000
Total, Small Sites	41,000	40,100	11,997	-28,103
Total, Other Sites	45,987	45,087	15,984	-29,103

Other Sites
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Closure Sites

Closure Sites Administration

CBC-0100-EM / Litigation Support

- No significant change. +242

CBC-0100-FN / CBC Post Closure Administration - Fernald

- No significant change. -24

CBC-0100-RF / CBC Post Closure Administration - Rocky Flats

- Decrease reflects the reduction in anticipated litigation support/activities associated with the Rocky Flats site as the support requirements associated with the Cook case and other related litigation closes out. -1,218

Non-Defense Environmental Cleanup

Small Sites

Closure Sites Administration

CBC-ND-0100 / CBC - Non-Defense Post Closure Administration and Program Support

- Increase reflects the requirement to repay the Department of Treasury Judgment Fund for URS Energy and Construction Settlement litigation. +11,997

Lawrence Berkeley National Laboratory

CBC-LBNL-0040 / Decontamination and Decommissioning-Lawrence Berkeley National Laboratory

- No funding requested in FY 2022. -30,100

Other Sites

CBC-0040-EF / Excess Office of Science Facilities

- No funding requested in FY 2022. -10,000

Total, Other Sites	-29,103
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Litigation Support (PBS: CBC-0100-EM)

Overview

EMCBC has responsibility to provide ongoing litigation support for all sites, which it supports. The PBS scope is to provide litigation support related to Closure Sites (Rocky Flats, Fernald, and Mound) but also to provide legal/litigation support for all active EMCBC sites. These sites include Separations Process Research Unit, Nevada, West Valley, Moab, Energy Technology Engineering Center, and EM work at Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory (excess facilities and soil and groundwater), Sandia National Laboratory (soil and groundwater), Brookhaven National Laboratory, and any other site brought under EMCBC's purview.

Litigation Support (PBS: CBC-0100-EM)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$2,087,000	\$2,329,000	+\$242,000
<ul style="list-style-type: none"> Provide ongoing litigation support to sites supported by the EM Consolidated Business Center. 	<ul style="list-style-type: none"> Provide ongoing litigation support to sites supported by the EM Consolidated Business Center. 	<ul style="list-style-type: none"> No significant change.

CBC Post Closure Administration – Fernald (PBS: CBC-0100-FN)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This Post-Closure Administration PBS scope includes the Fernald Closure Project post closure administration and litigation support.

CBC Post Closure Administration - Fernald (PBS: CBC-0100-FN)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$1,100,000	\$1,076,000	-\$24,000
<ul style="list-style-type: none">Fund the Fernald Workers II class action lawsuit and contract closeout at the Fernald closure site.	<ul style="list-style-type: none">Fund the Fernald Workers II class action lawsuit and contract closeout at the Fernald closure site.	<ul style="list-style-type: none">No significant change.

CBC Post Closure Administration – Rocky Flats (PBS: CBC-0100-RF)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

The Rocky Flats Closure Project achieved site closure in FY 2006. However, ongoing litigation support will continue until all litigation involving DOE or former Rocky Flats contractors is resolved. EMCBC has assumed responsibility for the litigation associated with the Rocky Flats Site. The PBS scope is to provide site litigation support related to the continuing class actions and other civil litigation activities of former site contractors. This PBS also funds the records management vault and labor for the vault classifiers.

CBC Post Closure Administration - Rocky Flats (PBS: CBC-0100-RF)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$1,800,000	\$582,000	-\$1,218,000
<ul style="list-style-type: none"> Support Rocky Flats Closure Project’s legal requirements, records vault lease and records management costs, and pay/reimburse workers’ compensation claims and support contract closeout. 	<ul style="list-style-type: none"> Support Rocky Flats Closure Project’s legal requirements. Support records vault lease and records management costs. Pay/Reimburse Workers’ Compensation claims and support Contract Closeout. 	<ul style="list-style-type: none"> Decrease reflects the reduction in anticipated litigation support/activities associated with the Rocky Flats site as the support requirements associated with the Cook case and other related litigation closes out.

CBC – Non-Defense Post Closure Administration and Program Support (PBS: CBC-ND-0100)

Overview

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

This Post-Closure Administration PBS scope includes contract closeout, litigation support, settlement claims, Freedom of Information Act/Privacy Act compliance, and contractor workman's compensation claims for Non-Defense contracts in closeout. The Judgment Fund paid \$11,997,000 for the URS Energy and Construction, Inc. judgment for the use and benefit of the secured creditors of Ground Improvement Technologies, Inc. Funds for repayment to the Treasury are requested in FY 2022 .

CBC - Non-Defense Post Closure Administration and Program Support (PBS: CBC-ND-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$0	\$11,997,000	+\$11,997,000
<ul style="list-style-type: none">No activities.	<ul style="list-style-type: none">Supports the repayment of Treasury Judgment Fund for URS Energy and Construction Settlement litigation.	<ul style="list-style-type: none">Increase reflects the requirement to repay the Department of Treasury Judgment Fund for URS Energy and Construction Settlement litigation.

Mission Support

Overview

EM's Mission Support activities encompass an array of functions that support the overall cleanup mission. These activities are typically managed through the Headquarters office(s) since they are supportive of various crosscutting EM and DOE initiatives.

Policy, Management, and Technical Support

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. This program also 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.

Strategic Sourcing Initiative

In FY 2012, EM embarked on the Strategic Sourcing Initiative led by the EM Consolidated Business Center in cooperation with the National Nuclear Security Administration. The Strategic Sourcing Initiative is an effort whereby materials are located and purchased corporately, netting EM economies of scale savings. Tools such as e-Sourcing, Commodity Savings Agreements, and e-Catalog are utilized by contractors to achieve the savings. The savings are calculated monthly by the Supply Chain Management Center (a division of Honeywell in Kansas City), based on spend analytics data pulled from the EM prime contractors. Savings are reported monthly to the prime contractors, the DOE Office of Acquisition Management, EM Headquarters, and the EM Consolidated Business Center. In FY 2020, EM achieved a total cost savings of \$94,300,000 against the goal of \$60,000,000. EM's Strategic Sourcing Initiative savings goal for FY 2021 is \$49,400,000. As of March 2021, EM has achieved a total cost savings of \$33,500,000 against the FY 2021 goal.

Minority Serving Institutions Partnership Program

EM recognizes that successfully completing its legacy environmental cleanup mission will require maintaining a well-trained, technically skilled, and diverse workforce. DOE-EM has mission-specific workforce needs, requiring an education and training beyond the traditional classroom coursework. Engagement with universities and colleges provides an opportunity to inform students on the real challenges of the EM mission, and position a future workforce "pipeline." This innovative program was designed to help address DOE's future workforce needs by partnering with academic, government, and DOE contractor organizations to mentor future minority scientists and engineers in the research, development, and deployment of new technologies addressing DOE's environmental cleanup challenges. Minority representation in critical science and engineering fields is an important part of EM's vision for this future workforce. EM has created and designed the Minority Serving Institutions Partnership Program, which supports science, technology, engineering, and mathematics (STEM) activities at Minority Serving Institutions engaged in research and related STEM efforts supporting EM's needs. Opportunities are provided to institutions of higher education that have been identified by the U.S. Department of Education as having a significant percentage of undergraduate minority students and those that serve certain populations of minority students under various programs created by Congress. These include:

- Historically Black Colleges and Universities;
- Hispanic-serving institutions;
- Tribal colleges and universities;
- Alaska Native-serving institutions or Native Hawaiian-serving institutions;
- Predominantly Black Institutions;
- Asian American or Native American Pacific Islander-serving institutions; and
- Native American-serving nontribal institutions.

EM is developing a Minority Serving Institution STEM, Manufacturing, and Cybersecurity Consortium.

- This consortium will build on the program's success, and expand activities to create jobs, job training and advancing education in STEM, cybersecurity, manufacturing, health and environmental science, and technology development.
- Primarily focused on academic institutions that are near to EM sites, the consortium supports infrastructure investments such as laboratory facilities and information technology upgrades. Also, given the recent new contract award at the SRNL, EM is exploring new synergies with the new contract team and partnerships with Historically Black Colleges and Universities and other Minority Serving Institutions.

Technology Development

In FY 2022, the Technology Development Program will focus its efforts on facilitating the use of innovative solutions and state-of-the-art technology to reduce costs, accelerate schedules, protect human health and environment, and mitigate vulnerabilities. The infusion of new technology and innovative solutions are necessary to fill science and technology-rooted mission gaps and to improve or optimize baseline technologies.

The FY 2022 budget request is structured to address the need for near-term innovations and mission-enabling technologies. Near-term innovations represent new technologies and innovative solutions that are needed to address current operational challenges, including emergency response and preparedness. Mission enablers represent new and novel technologies and innovative solutions that allow EM to execute its mission activities safer and smarter. The technology program also includes investments that could impact the cost, risk, and duration of the overall lifecycle of the program.

Recognizing that many mission enabling technologies are commercially available in non-nuclear industry sectors, have been developed and exist in federal agencies to support highly specialized and mission-specific objectives, EM will seek to transfer these technologies to support nuclear cleanup. Technical assistance will look to leverage the technical expertise used at one site to other sites across the DOE complex with similar technical challenges.

EM collaborates and partners with technologists in other U.S. executive departments and independent agencies to leverage highly specialized expertise, government assets and facilities, and publicly funded programs. Access to non-DOE national laboratories and technology centers, non-DOE federally funded research and development centers, non-DOE testing facilities and proving grounds, as well as university affiliated research centers, can greatly increase opportunities for cleanup innovation and enhances cleanup capabilities.

Mercury Storage Facility

The Mercury Export Ban Act of 2008 (Public Law 110-414) as amended by the Frank R. Lautenberg Chemical Safety for the 21st Century Act (Public Law 114-182), which banned the export of elemental mercury generated in the United States beginning in 2013, prohibits federal agencies from either selling or distributing mercury, and instructs DOE to provide long-term management and storage for elemental mercury generated within the United States. The Act, as amended, requires that a storage facility be operational by January 1, 2019. Additionally, DOE's mercury storage operations will be subject to the requirements of the Resource Conservation and Recovery Act. EM is responsible for designating a DOE facility for the long-term management and storage of elemental mercury and the Office of Legacy Management is responsible for operation of the facility. DOE began preparation of an Environmental Impact Statement in May 2009 to identify a location for a long-term elemental mercury management and storage facility. The final Environmental Impact Statement was issued in January 2011. In June 2012, DOE announced its intention to evaluate additional locations near the Waste Isolation Pilot Plant in Carlsbad, New Mexico, and developed a Supplemental Environmental Impact Statement. The final Supplement to the Environmental Impact Statement was issued in October 2013. EM published a Supplement Analysis in June 2019 that analyzed changes that have occurred since 2011. EM published the Record of Decision, designating Waste Control Specialists LLC in Andrews, Texas, and the final rule on Mercury Management and Storage fees in December 2019. Nevada Gold Mines and Coeur Mining filed lawsuits in opposition to the fee rule and designation. DOE settled the Nevada Gold Mines lawsuit and entered into a settlement agreement that remanded the fee rule and removed the designation. The facility is operational for the storage of elemental mercury to which DOE accepts the conveyance of title pursuant to the Nevada Gold Mines legal settlement. DOE is performing additional National Environmental Policy Act environmental analyses. A designation and revised fee rule will follow the environmental analyses, enabling the acceptance of elemental

mercury from domestic sources.

Reimbursement and Financial Review of Claims for Uranium and Thorium Licensees

Pursuant to Title X of the Energy Policy Act of 1992 (Public Law 102-486, as amended) and 10 CFR Part 765, the Title X Uranium and Thorium Reimbursement Program, provides reimbursements to uranium and thorium licensees for the portion of the environmental cleanup costs attributable to nuclear material sold to the federal government during the Cold War Era. Title X authorizes the Department to reimburse eligible costs to Title X licensees. The Department will conduct financial reviews to ensure eligible costs have been submitted to the Department by the Title X licensees.

The intent of Title X is to reimburse eligible costs previously incurred by licensees, and does not relieve licensees of their liability to complete environmental restoration of their former mill sites. Through April 2021, three of the fourteen sites have completed remediation and have transferred their disposal facilities to DOE for long-term stewardship; one of these sites is still eligible for reimbursements. One site, Moab, was transferred to DOE by Public Law 106-398 and is no longer within the Title X program. Ten sites have continuing remediation programs.^[1]

^[1] DOE has fulfilled its reimbursement obligation to two of the ten sites, Rio Algom Mining LLC, and Western Nuclear, Inc. These companies will continue to complete their remediation efforts.

Mission Support

Funding (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Defense Environmental Cleanup				
Innovation and Technology Development				
Mission Support				
HQ-TD-0100 / Technology Development	25,000	30,000	25,000	-5,000
Program Support				
Mission Support				
EM-HBCU-0100 / Minority Serving Institution Partnerships Program	6,000	6,000	56,000	+50,000
HQ-MS-0100 / Policy, Management, and Technical Support	6,979	6,979	6,979	0
Subtotal, Mission Support	12,979	12,979	62,979	+50,000
Total, Defense Environmental Cleanup	37,979	42,979	87,979	+45,000
Non-Defense Environmental Cleanup				
Mercury Storage Receipts				
Mission Support				
HQ-MSF /	0	3,000	0	-3,000
Management and Storage of Elemental Mercury				
Mission Support				
HQ-MSF-0100 / Management and Storage of Elemental Mercury	1,200	2,100	2,100	0
Total, Non-Defense Environmental Cleanup	1,200	5,100	2,100	-3,000
Uranium Enrichment Decontamination and Decommissioning Fund				
U/Th Reimbursements				
Mission Support				
HQ-UR-0100 / Reimbursements to Uranium/Thorium Licensees	5,250	5,000	33,500	+28,500
Total, Mission Support	44,429	53,079	123,579	+70,500

Mission Support
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Innovation and Technology Development

Mission Support

HQ-TD-0100 / Technology Development

- The decrease reflects the planned scope of work such as the test bed programs at various sites, technical assistance, and enhancement and deployment of technologies across the complex.

-5,000

Program Support

Mission Support

EM-HBCU-0100 / Minority Serving Institution Partnerships Program

- Increase supports funding for a Minority Serving Institution STEM, Manufacturing, and Cybersecurity Consortium.

+50,000

HQ-MS-0100 / Policy, Management, and Technical Support

- No change.

0

Non-Defense Environmental Cleanup

Management and Storage of Elemental Mercury

Mission Support

HQ-MSF-0100 / Management and Storage of Elemental Mercury

- No change.

0

Mercury Storage Receipts

Mission Support

HQ-MSF /

- Decrease reflects \$0 funding requested in FY 2022.

-3,000

Uranium Enrichment Decontamination and Decommissioning Fund

U/Th Reimbursements

Mission Support

HQ-UR-0100 / Reimbursements to Uranium/Thorium Licensees

- Increase supports reimbursement of new and past claims.

+28,500

FY 2022 Request vs FY 2021 Enacted

Total, Mission Support	+70,500
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Policy, Management, and Technical Support (PBS: HQ-MS-0100)

Overview

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

This PBS scope includes management and direction for various crosscutting EM and DOE programs and 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.

Policy, Management, and Technical Support (PBS: HQ-MS-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$6,979,000	\$6,979,000	+\$0
<ul style="list-style-type: none"> Continue support for DOE's Strategic Sourcing Initiative to purchase commodities through a supply chain framework, which results in cost avoidance on purchases. Continue support for various Secretarial and Departmental initiatives, including the Defense Contracts Audit Agency audits, Government Industry Data Exchange Program and Consolidated Accounting Investment System. Continue to provide expertise in the areas of safety, health and security, emergency management, quality assurance, nuclear criticality safety, and risk management. Continue to provide support to 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. 	<ul style="list-style-type: none"> Continue support for DOE's Strategic Sourcing Initiative to purchase commodities through a supply chain framework, which results in cost avoidance on purchases. Continue support for various Secretarial and Departmental initiatives, including the Defense Contracts Audit Agency audits, Government Industry Data Exchange Program and Consolidated Accounting Investment System. Continue to provide expertise in the areas of safety, health and security, emergency management, quality assurance, nuclear criticality safety, and risk management. Continue to provide support to 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. 	<ul style="list-style-type: none"> No change.

- Continue to 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.
 - Continue to provide support to packaging and transportation stakeholders outreach grants.
 - Continue to provide rapid response from technical experts or “External/Internal” review teams to address emerging, imminent technical issues impeding site cleanup and closure.
 - Continue to provide technical solution projects designed to reduce near-term technical risks and technical assistance to include site troubleshooting, consulting, scientific or technical problem solving.
-
- Continue to 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.
 - Continue to provide support to packaging and transportation stakeholders outreach grants.
 - Continue to provide rapid response from technical experts or “External/Internal” review teams to address emerging, imminent technical issues impeding site cleanup and closure.
 - Continue to provide technical solution projects designed to reduce near-term technical risks and technical assistance to include site troubleshooting, consulting, scientific or technical problem solving.

Minority Serving Institutions Partnership Program (PBS: EM-HBCU-0100)

Overview

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

The Office of Environmental Management supports the Minority Serving Institutions Partnership Program to attract, develop, and retain the technical workforce at its national laboratories, field sites, and offices required to execute its mission. The Program supports development of a future-focused workforce whereby improvements are sought in the technical training of the atomic energy workforce as well as in filling pipeline of the next generation of nuclear cleanup professionals through science, technology, engineering, and mathematics (STEM) education, experiential learning and apprenticeships.

Current Minority Serving Institutions Partnership Program: EM Minority Serving Institutions Partnership Program was originally designed to address DOE's future workforce needs by partnering with academic, government and DOE contractor organizations to mentor future minority scientists and engineers in the research, development and deployment of new technologies.

- The Savannah River National Laboratory manages this program for EM and serves as a pipeline for diverse talent. This program has provided many students, who eventually became Federal employees in the EM program.
- The program has supported 194 students through research internships at 6 national laboratories and at EM Headquarters.
- One hundred sixteen (116) students have participated in Savannah River Environmental Sciences Field Station Internships, with hands-on educational studies.
- EM has issued a total of \$24,000,000 in 87 competitive research awards, which included a total of 450 undergraduates, graduates, and post-doctoral students.

Proposed Expansion of Minority Serving Institutions Partnership Program: EM is developing a Minority Serving Institution STEM, Manufacturing, and Cybersecurity Consortium.

- This consortium will build on the program's success, and expand activities to create jobs, job training and advancing education in STEM, cybersecurity, manufacturing, health and environmental science, and technology development.
- Primarily focused on academic institutions that are near to EM sites, the consortium supports infrastructure investments such as laboratory facilities and information technology upgrades. Also, given the recent new contract award at the SRNL, EM is exploring new synergies with the new contract team and partnerships with Historically Black Colleges and Universities and other Minority Serving Institutions.

Current Partnership with Florida International University: EM has a cooperative agreement with Florida International University's Applied Research Center, to execute two activities: Science and Technology Workforce Development Program and the DOE Fellows Program.

- These programs are creating a pipeline of minority students trained to enter jobs in the EM workforce that are historically difficult to fill. Additionally, the EM program has several outstanding technical challenges to address and will require new employees versed in new technologies.

- Focus areas include environmental remediation, radioactive waste processing, facility deactivation and decommissioning, information technology, artificial intelligence, and cybersecurity.
- Florida International University will be increasing its focus on robotics, artificial intelligence, and cyber security, including a new state-of-the-art robotics and artificial intelligence learning laboratory where students can work directly on EM technical challenges. This laboratory should house up to 20 students a year.

Minority Serving Institution Partnerships Program (PBS: EM-HBCU-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$6,000,000	\$56,000,000	+\$50,000,000
<ul style="list-style-type: none"> • Continue support for the Department’s Minority Serving Institution Partnerships Program to attract, develop, and retain the technical workforce at its national laboratories, field sites, and offices required to execute its mission. 	<ul style="list-style-type: none"> • Continue support for the Department’s Minority Serving Institution Partnerships Program to attract, develop, and retain the technical workforce at its national laboratories, field sites, and offices required to execute its mission. • Develop a Minority Serving Institution STEM, Manufacturing, and Cybersecurity Consortium. 	<ul style="list-style-type: none"> • Increase supports funding for a Minority Serving Institution STEM, Manufacturing, and Cybersecurity Consortium.

Technology Development (PBS: HQ-TD-0100)

Overview

This program is within the Defense Environmental Cleanup appropriation.

The Technology Development Program will facilitate the use of innovative solutions and state-of-the-art technology to reduce costs, accelerate schedules, and mitigate vulnerabilities. The infusion of new technology and innovative solutions are necessary to fill science and technology-rooted mission gaps and to improve or optimize baseline technologies.

The Technology Development Program provides the opportunity to reduce the aggregate cleanup cost, complete cleanup and close sites sooner and, more importantly, perform work and operate facilities more effectively and in a manner that assures public, worker and environmental safety. New and novel technologies as well as innovative solutions are needed to address the significant challenges associated with the remaining nuclear cleanup work that will span the next five decades. The program encompasses the entire maturation lifecycle of technology which includes transfer of technologies from other nuclear and non-nuclear industry sectors. The program addresses issues related to: (1) public, worker, facility/asset, and environmental safety and security, (2) radioactive liquid and solid waste treatment, storage and disposal, (3) soil and groundwater remediation, (4) nuclear materials and spent fuel management and disposition, and (5) facility deactivation and decommissioning.

The FY 2022 Budget addresses strategic investing in fundamental research and seeking high-payoff, game-changing technologies and solutions that are smart and positively impact EM's lifecycle by: (1) reducing costs; (2) accelerating schedules; (3) mitigating mission uncertainties, vulnerabilities, and risks; and (4) minimizing the mortgage associated with long-term, post-closure and post-completion stewardship. High-payoff technologies are aimed at those that are outside the day-to-day program, target big challenges, and could result in breakthroughs. This includes continued pursuit of options to resolve high-payoff areas needing near-term solutions.

In FY 2022, existing technologies and innovative approaches used in other industry sectors will be evaluated and adapted as needed to clean up DOE-EM sites, which will save money by requiring minimal research and development, and potentially accelerate cleanup. Research and development will continue where appropriate for addressing the EM cleanup mission, particularly when basic phenomena are not adequately understood or there is a very high level of technical uncertainty. Early-stage applied research may lead to high-pay-off, game-changing solutions and may also provide insight on ways to improve existing environmental processes and facility operations. As such, EM will continue its activities in early-stage applied research as it serves as basis for new technological development, deployment on mission-relevant work, and technology transfer and commercialization.

In FY 2022, EM will continue to develop solutions and technologies that enable work to be performed safer, with better quality, and more efficiently, while focused on site closure. Mission-enabling and mission-enhancing technologies serve to equip EM with advanced tools. These technologies will improve quality, enhance environmental and facility operations, and reduce the environmental liability of legacy nuclear cleanup. They aim to enhance worker, nuclear, facility, industrial, and environmental safety. As the state-of-the-art in many other technology areas continue to advance, they offer alternatives or improvements to current baseline technologies.

Technology Development (PBS: HQ-TD-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$30,000,000	\$25,000,000	-\$5,000,000
<ul style="list-style-type: none"> Continue to establish test bed programs at various sites, across the EM complex, which will allow innovative technologies and approaches to be evaluated to determine their usefulness for clean-up. Continue to provide technical assistance for the sites utilizing the technical subject matter experts that reside at DOE's national laboratories, academia, private industry, and other Federal agencies. Continue to enhance and deploy technologies and workforce advancements in areas of worker safety, tank waste cleanup, soil/groundwater remediation, and facility decommissioning and decontamination. 	<ul style="list-style-type: none"> Continue to establish test beds programs at various sites, across the EM complex, that will allow evaluation of innovative technologies and approaches addressing the highest site priority needs. Provides technical assistance for the sites to address unique challenges for which there is currently no solution or a proposed solution which needs improvement. These technical subject matter experts reside at DOE's national laboratories, academia, private industry, international facilities, and other Federal agencies. Continue to enhance and deploy technologies and workforce advancements in areas of worker safety, tank waste cleanup, soil/groundwater remediation, and facility decommissioning and decontamination. 	<ul style="list-style-type: none"> The decrease reflects the planned scope of work such as the test bed programs at various sites, technical assistance, and enhancement and deployment of technologies across the complex.

Management and Storage of Elemental Mercury (PBS: HQ-MSF-0100)

Overview

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

In accordance with 42 U.S.C. 6939f, DOE is directed to designate and operate a facility or facilities for the purpose of long-term management and storage of elemental mercury generated within the United States.

Management and Storage of Elemental Mercury (PBS: HQ-MSF-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$2,100,000	\$2,100,000	+\$0
<ul style="list-style-type: none">Begin receipt of elemental mercury from domestic sources.	<ul style="list-style-type: none">Continue receipt of elemental mercury from domestic sources.	<ul style="list-style-type: none">No change.

Uranium/Thorium Reimbursements (PBS: HQ-UR-0100)

Overview

The Office of Environmental Management implements DOE's statutory responsibilities pursuant to Title X of the Energy Policy Act of 1992, Public Law 102-486, as amended, and 10 CFR Part 765. This Title X Program includes reimbursements to uranium and thorium processing site licensees for the portion of environmental cleanup costs attributable to nuclear material sold to the federal government during the Cold War Era. Title X authorizes the Department to reimburse eligible costs to licensees. The Department will conduct financial reviews to ensure eligible costs have been submitted to the Department by Title X licensees.

The intent of Title X is to reimburse eligible costs previously incurred by licensees, and does not relieve licensees of their liability to complete environmental restoration of their former mill sites. Through April 2021, three of the fourteen sites have completed remediation and have transferred their disposal facilities to DOE for long-term stewardship; one of these sites is still eligible for reimbursements. One site, Moab, was transferred to DOE by Public Law 106-398 and is no longer within the Title X program. Ten sites have continuing remediation programs. [1]

[1] DOE has fulfilled its reimbursement obligation to two of the ten sites, Rio Algom Mining LLC and Western Nuclear Inc. These companies will continue to complete its remediation efforts.

Reimbursements to Uranium/Thorium Licensees (PBS: HQ-UR-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$5,000,000	\$33,500,000	+\$28,500,000
<ul style="list-style-type: none"> Continue to implement statutorily required program to reimburse eligible uranium and thorium licensees for a portion of remediation costs attributable to nuclear material sold to the federal government during the Cold War Era. Continue to provide payment to licensees of approved but unpaid claims from FY 2020 and prior. 	<ul style="list-style-type: none"> Continue to implement statutorily required program to reimburse eligible uranium and thorium licensees for a portion of remediation costs attributable to nuclear material sold to the federal government during the Cold War Era. Continue to provide payment to licensees of approved claims for FY 2022 and prior. 	<ul style="list-style-type: none"> Increase supports reimbursement of new and past claims.

Title X of the Energy Policy Act of 1992: Uranium/Thorium Reimbursement Program
Status of Payments through Fiscal Year 2020 and Estimated Maximum Program Liability

(\$ Thousands)

	Total Payments FY 1994- FY 2020	Approved but Unpaid Claim Balances After FY 2020 Payments	Maximum Remaining Program Liability Including Estimated Costs in Approved Plans for Subsequent Remedial Action
<u>Licensees</u>			
Uranium			
American Nuclear Corp. Site			
American Nuclear Corporation	820	0	0
State of Wyoming	1,485	0	671
Atlantic Richfield Company ^a	32,306	0	0
Atlas Corporation/Moab Mill Reclamation Trust ^a	9,694	0	0
Cotter Corporation/Colorado Legacy Land	3,507	246	3,372
Dawn Mining Company	15,841	3,309	3,309
Homestake Mining Company	98,837	2,319	48,590
Pathfinder Mines Corporation/Areva/Orano	10,790	0	310
Petrotomics Company ^a	2,850	0	0
Rio Algom Mining LLC ^b	48,081	0	0

	Total Payments FY 1994- FY 2020	Approved but Unpaid Claim Balances After FY 2020 Payments	Maximum Remaining Program Liability Including Estimated Costs in Approved Plans for Subsequent Remedial Action
<u>Licensees</u>			
Tennessee Valley Authority	20,762	4,368	4,368
Umetco Minerals Corporation-CO	64,942	13,307	25,911
Umetco Minerals Corporation-WY	25,514	0	1,440
Western Nuclear, Incorporated	33,636	0	0
Subtotal, Uranium	369,067	23,549	87,971
Thorium			
West Chicago ^c	399,170	742	468
Subtotal, Thorium	399,170	742	468
Total, Uranium and Thorium	768,237	24,291	88,439

^a Reimbursements have been completed to the Atlantic Richfield Company, the licensees of the Moab site, the Petrochemicals Company, the Rio Algom LLC, and the Western Nuclear, Inc. site.

^b Formerly Quivira Mining Company.

^c Includes former licensees, Kerr-McGee Chemical Corp. & Tronox, LLC. Effective 2011, the thorium site license was transferred to the West Chicago Environmental Response Trust. The remaining program liability for the thorium site is the total of the remaining reimbursement authority allowed under Title X plus the unpaid claim balance.

Program Direction

Overview

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 cleanup of the environmental legacy of decades of nuclear weapons production and government-sponsored nuclear energy research 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) requiring 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., footprint reduction goals). 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 supporting EM activities for DOE.

Highlights of the FY 2022 Budget Request

EM maintains a safe and secure posture in the EM complex, while maximizing the investment in cleanup activities. The FY 2022 budget request supports:

- Activities to maintain a safe, secure, and compliant posture in the EM complex;
- Radioactive tank waste stabilization, treatment, and disposal;
- Spent (used) nuclear fuel storage, receipt, and disposition;
- Nuclear material consolidation, stabilization, and disposition;
- Transuranic and mixed/low-level waste disposition;
- Soil and groundwater remediation; and,
- Excess facilities deactivation and decommissioning.

In FY 2022, EM will work aggressively to ensure our programs have the appropriate expertise to meet mission requirements in the most efficient and effective manner possible. Although EM has seen a significant reduction in Federal full-time equivalents, EM is working very aggressively to ensure key positions in various stages of the hiring process are filled and will focus on building core leadership skills at all levels of the organization.

EM also plans to:

- Participate with DOE's Office of Human Capital on utilizing the direct hire authority for mission critical occupations across the Department. EM will focus on ensuring that it has the technical talent to provide effective results for the program. This includes having acquisition professionals to deliver on end-state contracting, Federal project directors, nuclear engineers, and general engineers and scientists.
- Relaunch the EM Pathways Programs and bringing in mission critical talent at lower grade levels in engineering and science and growing the technical skill sets to the mission challenges.
- Hire interns to help mitigate the potential loss of talent with more than 36 percent of the current EM workforce available to retire in FY 2022.
- Enhance partnerships with Minority Serving Institutions (Historically Black Colleges and Universities, Hispanic Serving Institutions, and Tribal Colleges and Universities) having curricula in mission critical occupations is an excellent opportunity for students to gain experience in their academic disciplines and afford EM an opportunity to groom potential employees for its workforce. By participating in these programs, EM hopes to increase the

number of talented underrepresented students pursuing science and technology degrees and to help establish the next generation of creative and committed leaders in meeting the demands of our mission.

In the FY 2022 Budget Request, funding for EM's share of the Working Capital Fund is partially funded in Program Direction and the remainder in program dollars. Program Direction funds include services such as building occupancy, corporate business systems (only payroll services segment), corporate training services, health services, overseas presence, supply, and telecommunications. Program dollars fund other activities including A-123/internal controls, copy services, corporate business systems (all segments except payroll services), financial statement audits, interagency transfers, mail and transportation, pension studies, printing and graphics, project management career development program, and procurement management, reflecting the close connection between these activities and program activities.

Funding (\$K)
Program Direction Summary

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Carlsbad				
Salaries and Benefits	7,977	10,613	11,015	+402
Travel	182	200	488	+288
Support Services	200	220	220	0
Other Related Expenses	749	790	750	-40
Total, Carlsbad	9,108	11,823	12,473	+650
Idaho				
Salaries and Benefits	6,070	7,832	8,155	+323
Travel	62	60	194	+134
Support Services	65	160	200	+40
Other Related Expenses	1,689	1,752	1,390	-362
Total, Idaho	7,886	9,804	9,939	+135
Oak Ridge				
Salaries and Benefits	11,688	11,095	11,475	+380
Travel	117	110	158	+48
Support Services	1,747	2,265	2,265	0
Other Related Expenses	1,596	1,556	1,250	-306
Total, Oak Ridge	15,148	15,026	15,148	+122
Portsmouth/Paducah Project Office				
Salaries and Benefits	9,280	9,222	9,566	+344
Travel	115	110	420	+310
Support Services	2,655	2,660	2,660	0
Other Related Expenses	2,289	2,365	1,965	-400
Total, Portsmouth/Paducah Project Office	14,339	14,357	14,611	+254
Richland				
Salaries and Benefits	32,486	38,009	39,309	+1,300
Travel	192	190	578	+388
Support Services	858	800	800	0
Other Related Expenses	3,788	3,195	2,500	-695
Total, Richland	37,324	42,194	43,187	+993
River Protection				
Salaries and Benefits	23,791	20,100	20,812	+712
Travel	121	120	525	+405
Support Services	1,099	389	389	0
Other Related Expenses	3,473	2,596	2,300	-296
Total, River Protection	28,484	23,205	24,026	+821

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Savannah River

Salaries and Benefits	34,788	38,962	40,251	+1,289
Travel	171	170	473	+303
Support Services	300	322	322	0
Other Related Expenses	2,260	2,597	2,300	-297
Total, Savannah River	37,519	42,051	43,346	+1,295

Small Sites

Salaries and Benefits	3,930	3,885	3,969	+84
Travel	64	65	158	+93
Support Services	592	420	420	0
Other Related Expenses	541	500	450	-50
Total, Small Sites	5,127	4,870	4,997	+127

Nevada Site Office

Salaries and Benefits	2,939	2,251	2,298	+47
Travel	25	25	68	+43
Support Services	100	100	100	0
Other Related Expenses	364	245	230	-15
Total, Nevada Site Office	3,428	2,621	2,696	+75

Los Alamos Site Office

Salaries and Benefits	4,091	6,171	6,321	+150
Travel	61	60	131	+71
Support Services	295	1,450	1,450	0
Other Related Expenses	571	600	550	-50
Total, Los Alamos Site Office	5,018	8,281	8,452	+171

Field

Salaries and Benefits	137,040	148,140	153,171	+5,031
Travel	1,110	1,110	3,193	+2,083
Support Services	7,911	8,786	8,826	+40
Other Related Expenses	17,320	16,196	13,685	-2,511
Total, Field	163,381	174,232	178,875	+4,643

Headquarters Operations

Salaries and Benefits	54,641	50,490	51,945	+1,455
Travel	696	600	1,785	+1,185
Support Services	23,333	21,638	18,253	-3,385
Other Related Expenses	1,365	1,000	690	-310
Total, Headquarters Operations	80,035	73,728	72,673	-1,055

Headquarters Working Capital Fund

Other Related Expenses	10,548	11,867	11,869	+2
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	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Consolidated Business Center

Salaries and Benefits	20,799	24,326	25,008	+682
Travel	164	80	400	+320
Support Services	3,922	2,415	2,415	0
Other Related Expenses	2,270	2,352	1,866	-486
Total, Consolidated Business Center	27,155	29,173	29,689	+516

Environmental Management

Salaries and Benefits	212,480	222,956	230,124	+7,168
Travel	1,970	1,790	5,378	+3,588
Support Services	35,166	32,839	29,494	-3,345
Other Related Expenses	31,503	31,415	28,110	-3,305
Total, Environmental Management	281,119	289,000	293,106	+4,106
Full Time Equivalents	1,182	1,275	1,290	+15

Support Services and Other Related Expenses

	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Support Services			
Technical Support			
Feasibility of Design Considerations	3,600	3,093	-507
System Definition	80	85	+5
Economic and Environmental Analysis	4,859	4,179	-680
Test and Evaluation Studies	80	84	+4
Surveys or Reviews of Technical Operations	8,600	7,272	-1,328
Total, Technical Support	17,219	14,713	-2,506
Management Support			
Directives Management Studies	1,900	1,672	-228
Automatic Data Processing	2,000	2,846	+846
Training and Education	166	150	-16
Analysis of DOE Management Processes	1,000	919	-81
Reports and Analyses Management and General Administrative Support	10,554	9,194	-1,360
Total, Management Support	15,620	14,781	-839
Total, Support Services	32,839	29,494	-3,345
Other Related Expenses			
Rent to GSA	3,739	2,760	-979
Rent to Others	1,300	1,167	-133
Communication, Utilities, Misc.	2,547	2,125	-422
Printing and Reproduction	10	10	-
Other Services	6,363	5,355	-1,008
Training	1,318	1,318	-
Purchases from Gov. Accounts	481	345	-136
Operation and Maintenance of Equipment	395	282	-113

**Environmental Management/
Program Direction**

	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Supplies and Materials	1,200	1,094	-106
Equipment	2,195	1,785	-410
Working Capital Fund	11,867	11,869	+2
Total, Other Related Expenses	31,415	28,110	-3,305

Program Direction (PBS: HQ-PD-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$277,133,000	\$281,237,000	+\$4,104,000
Salaries and Benefits	\$222,956,000	\$230,124,000
		+\$7,168,000
<ul style="list-style-type: none"> Supports Federal salaries and benefits for EM's full-time equivalent level. 	<ul style="list-style-type: none"> Supports Federal salaries and benefits for EM's full-time equivalent level. 	<ul style="list-style-type: none"> Increase is based on projected payroll requirements and includes 2.7% pay raise and increase for Federal benefits.
Travel	\$1,790,000	\$5,378,000
		+\$3,588,000
<ul style="list-style-type: none"> Funding supports costs of transportation of persons, subsistence of travelers, incidental travel expenses, as well as funding to support permanent change of duty station in accordance with federal travel regulations. In addition, travel costs associated for detail assignments at EM sites and training and participation at professional conferences. 	<ul style="list-style-type: none"> The Request funds costs of transportation of persons, subsistence of travelers, incidental travel expenses, as well as funding to support permanent change of duty station in accordance with federal travel regulations. In addition, travel costs associated for detail assignments at EM sites and training and participation at professional conferences. 	<ul style="list-style-type: none"> Increase supports Federal travel requirements associated with oversight of safe cleanup, construction, and test activities at EM facilities.
Support Services	\$32,839,000	\$29,494,000
		-\$3,345,000
<ul style="list-style-type: none"> Funding supports services in the areas of administrative, procurement and human capital support; technical oversight support; information technology to support modernization of current systems; operation and maintenance of equipment; and operation and maintenance of facilities occupied by EM staff. 	<ul style="list-style-type: none"> The Request will fund services in the areas of administrative, procurement and human capital support; technical oversight support; information technology to support modernization of current systems; operation and maintenance of equipment; and operation and maintenance of facilities occupied by EM staff. 	<ul style="list-style-type: none"> Decrease aligns resources with planned support services requirements.
Other Related Expenses	\$19,548,000	\$16,241,000
		-\$3,307,000
<ul style="list-style-type: none"> Funding supports fixed requirements associated with rent, utilities, and telecommunications; building and grounds maintenance; computer/video maintenance 	<ul style="list-style-type: none"> The Request will support fixed requirements associated with rent, utilities, and telecommunications; building and grounds maintenance; computer/video maintenance 	<ul style="list-style-type: none"> Decrease aligns resources with planned expenses.

and support; IT equipment leases, purchases, and maintenance. Also funds miscellaneous purchases such as supplies, materials, and subscriptions.

and support; IT equipment leases, purchases, and maintenance. Funds miscellaneous purchases such as supplies, materials, and subscriptions.

WCF Program Direction (PBS: HQ-PDWCF-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$11,867,000	\$11,869,000	+\$2,000
Other Related Expenses \$11,867,000	\$11,869,000	+\$2,000
<ul style="list-style-type: none"> Funding supports EM’s share of the Working Capital Fund in Program Direction’s other related expenses for services such as building occupancy, corporate business systems (only payroll services segment), corporate training services, health services, overseas presence, supply, and telecommunications. 	<ul style="list-style-type: none"> The Request funds EM’s share of the Working Capital Fund in Program Direction’s other related expenses for services such as building occupancy, corporate business systems (only payroll services segment), corporate training services, health services, overseas presence, supply, and telecommunications. 	<ul style="list-style-type: none"> The increase will align with requirements in FY 2022 for the Departments Working Capital Fund.

**Environmental Management
Facilities Maintenance and Repair**

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

Costs for Direct-Funded Maintenance and Repair (including Deferred Maintenance Reduction)

	(\$K)			
	FY 2020 Actual Cost	FY 2020 Planned Cost	FY 2021 Planned Cost	FY 2022 Planned Cost
Carlsbad	23,598	26,180	11,500	11,890
Idaho National Laboratory	27,198	25,106	25,608	26,120
Moab	447	484	515	523
Oak Ridge	36,607	42,436	64,586	114,123
Pacific Northwest National Laboratory	0	0	0	0
Paducah	23,004	31,655	32,849	27,885
Portsmouth	31,344	45,569	47,995	42,502
Richland Operations Office	104,427	141,074	228,312	190,991
Office of River Protection	94,559	101,823	73,899	96,630
Savannah River	179,938	183,308	180,262	72,524
Total, Direct-Funded Maintenance and Repair	521,122	597,635	665,526	583,188

Costs for Indirect-Funded Maintenance and Repair (including Deferred Maintenance Reduction)

	(\$K)			
	FY 2020 Actual Cost	FY 2020 Planned Cost	FY 2021 Planned Cost	FY 2022 Planned Cost
Carlsbad	0	0	0	0
Idaho National Laboratory	0	0	0	0
Moab	0	0	0	0
Oak Ridge	0	0	0	0
Pacific Northwest National Laboratory	6,411	6,462	7,667	6,600
Paducah	0	0	0	0
Portsmouth	0	0	0	0
Richland Operations Office	0	0	0	0
Office of River Protection	0	0	0	0
Savannah River	52,009	57,629	53,566	53,566
Total, Indirect-Funded Maintenance and Repair	58,420	64,091	61,233	60,166

**Environmental Management Research and Development
Research and Development (\$K)**

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 vs FY 2021
Basic	0	0	0	0
Applied	9,900	11,550	9,240	-2,310
Development	20,100	23,450	18,760	-4,690
Subtotal, R&D	30,000	35,000	28,000	-7,000
Equipment	0	0	0	0
Construction	0	0	0	0
Total, R&D	30,000	35,000	28,000	-7,000

**Environmental Management
Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)**

	FY 2020 Enacted Transfer	FY 2021 Projected Transfer	FY 2022 Request Projected Transfer	FY 2022 vs FY 2021
Technology Development and Deployment				
SBIR	913	1,095	912	-183
STTR	0	0	0	0
Oak Ridge				
SBIR	182	183	110	-73
STTR	0	0	0	0
Total, SBIR	1,095	1,278	1,022	-256
Total, STTR	0	0	0	0

Safeguards and Security by Activity (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Carlsbad				
Protective Forces	4,344	4,418	4,418	0
Physical Security Systems	704	716	716	0
Security Investigations	62	63	63	0
Program Management	268	273	273	0
Subtotal, Carlsbad	5,378	5,470	5,470	0
Cyber Security	1,314	1,336	1,336	0
Total, Carlsbad	6,692	6,806	6,806	0
Oak Ridge				
Protective Forces	5,024	4,285	5,553	+1,268
Physical Security Systems	908	1,850	2,397	+547
Information Security	508	600	778	+178
Personnel Security	600	700	907	+207
Security Investigations	379	200	259	+59
Material Control and Accountability	395	405	525	+120
Program Management	206	220	285	+65
Subtotal, Oak Ridge	8,020	8,260	10,704	+2,444
Cyber Security	980	1,000	1,296	+296
Total, Oak Ridge	9,000	9,260	12,000	+2,740
Paducah				
Protective Forces	5,309	5,462	5,619	+157
Physical Security Systems	614	632	650	+18
Information Security	817	841	865	+24
Personnel Security	567	583	600	+17
Security Investigations	223	229	236	+7
Security Infrastructure/Construction	4,435	5,105	5,006	-99
Program Management	1,824	1,877	1,931	+54
Subtotal, Paducah	13,789	14,729	14,907	+178
Cyber Security	2,000	1,477	1,299	-178
Total, Paducah	15,789	16,206	16,206	0

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Portsmouth				
Protective Forces	9,226	7,290	7,109	-181
Physical Security Systems	1,544	1,180	1,180	0
Information Security	885	690	692	+2
Personnel Security	648	613	616	+3
Security Investigations	299	242	242	0
Security Infrastructure/Construction	249	594	1,182	+588
Program Management	911	800	815	+15
Subtotal, Portsmouth	13,762	11,409	11,836	+427
Cyber Security	2,728	5,281	4,854	-427
Total, Portsmouth	16,490	16,690	16,690	0
Richland				
Protective Forces	58,019	61,266	61,266	0
Physical Security Systems	7,128	8,847	8,847	0
Information Security	1,077	1,090	1,090	0
Personnel Security	2,698	2,047	2,047	0
Security Investigations	0	857	857	0
Material Control and Accountability	1,053	1,069	1,069	0
Program Management	7,025	10,226	10,226	0
Subtotal, Richland	77,000	85,402	85,402	0
Cyber Security	9,778	10,898	10,898	0
Total, Richland	86,778	96,300	96,300	0
Savannah River				
Protective Forces	108,596	102,209	101,650	-559
Physical Security Systems	15,822	15,279	12,952	-2,327
Information Security	1,646	2,690	2,473	-217
Personnel Security	8,077	8,704	8,257	-447
Security Investigations	0	65	65	0
Material Control and Accountability	2,815	5,702	5,223	-479
Security Infrastructure/Construction	0	3,189	3,189	0
Program Management	12,151	12,040	11,407	-633
Transportation	120	215	215	0
Subtotal, Savannah River	149,227	150,093	145,431	-4,662
Cyber Security	24,925	21,118	19,013	-2,105

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Total, Savannah River	174,152	171,211	164,444	-6,767
West Valley Demonstration Project				
Protective Forces	3,039	3,642	3,642	0
Program Management	377	306	306	0
Subtotal, West Valley Demonstration Project	3,416	3,948	3,948	0
Cyber Security	780	350	350	0
Total, West Valley Demonstration Project	4,196	4,298	4,298	0
Total, Safeguards and Security	313,097	320,771	316,744	-4,027

Safeguards and Security (\$K)

	FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
Protective Forces	193,557	188,572	189,257	+685
Physical Security Systems	26,720	28,504	26,742	-1,762
Information Security	4,933	5,911	5,898	-13
Personnel Security	12,590	12,647	12,427	-220
Security Investigations	963	1,656	1,722	+66
Material Control and Accountability	4,263	7,176	6,817	-359
Security Infrastructure/Construction	4,684	8,888	9,377	+489
Program Management	22,762	25,742	25,243	-499
Transportation	120	215	215	0
Subtotal, Safeguards and Security	270,592	279,311	277,698	-1,613
Cyber Security	42,505	41,460	39,046	-2,414
Total, Safeguards and Security	313,097	320,771	316,744	-4,027

UED&D Fund Deposit

Overview

Established in 1992, the Uranium Enrichment Decontamination and Decommissioning Fund (UED&D Fund) pays, subject to appropriation, the decontamination and decommissioning costs of the Department of Energy's gaseous diffusion plants in Tennessee, Ohio, and Kentucky. The Energy Policy Act of 1992 authorized annual UED&D Fund contributions that came from both fees on domestic utilities and annual Congressional defense appropriations. The authorization of these fees and Government contributions to the Fund expired in 2007. The Department of Energy's UED&D Fund report to Congress (May 2021) provided the most recent fund analysis. At the end of FY 2020, the UED&D Fund balance was \$886 million. In May 2021, The Department's analysis concluded that the UED&D Fund would have a shortfall of up to \$42.2 billion based on best available information on total remaining cleanup costs and expected deposits. Without additional deposits, the Department estimates that the UED&D Fund will be exhausted in FY 2021.

There are two inactive, legacy accounts with unavailable balances from DOE's commercial uranium enrichment activities: Uranium Supply and Enrichment Activities (\$861 million) and the United States Enrichment Corporation Fund (\$1.3 billion remaining - in FY 2021, \$291 million was transferred to the UED&D Fund). The Administration proposes to transfer additional balances to the UED&D Fund. The proposed transfers reflect the ongoing need to decontaminate, decommission, and remediate the uranium processing facilities.

Highlights of the FY 2022 Budget Request

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.

As the cleanup and decommissioning at the gaseous diffusion plants progresses, the risk and hazard to human health and the environment is reduced. In addition, as cleanup is completed, the financial resources needed to maintain site infrastructure will be reduced.

D&D Fund Deposit

Funding (\$K)

FY 2020 Enacted	FY 2021 Enacted	FY 2022 Request	FY 2022 Request vs FY 2021 Enacted
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Defense Environmental Cleanup

Contribution to the Uranium Enrichment D&D Fund

HQ-DD-0100 / Federal Contribution to the Uranium Enrichment D&D Fund

0	0	415,670	+415,670
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D&D Fund Deposit
Explanation of Major Changes (\$K)

FY 2022 Request vs FY 2021 Enacted

Defense Environmental Cleanup

Contribution to the Uranium Enrichment D&D Fund

HQ-DD-0100 / Federal Contribution to the Uranium Enrichment D&D Fund

- Increase reflects the Federal government contribution to Uranium Enrichment Decontamination and Decommissioning Fund. +415,670

Total, D&D Fund Deposit	+415,670
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Federal Contribution to the Uranium Enrichment D&D Fund (PBS: HQ-DD-0100)

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 purpose of this activity is to provide the annual Federal contribution to the Uranium Enrichment Decontamination and Decommissioning Fund to cover the costs of cleanup at the three gaseous diffusion plants.

Federal Contribution to the Uranium Enrichment D&D Fund (PBS: HQ-DD-0100)

Activities and Explanation of Changes

FY 2021 Enacted	FY 2022 Request	Explanation of Changes FY 2022 Request vs FY 2021 Enacted
\$0	\$415,670,000	+\$415,670,000
<ul style="list-style-type: none">No activity.	<ul style="list-style-type: none">Provide the FY 2022 Federal Government contribution to the Uranium Enrichment Decontamination and Decommissioning Fund.	<ul style="list-style-type: none">Increase reflects the Federal government contribution to Uranium Enrichment Decontamination and Decommissioning Fund.

GENERAL PROVISIONS-DEPARTMENT OF ENERGY
[(INCLUDING TRANSFER OF FUNDS)]

SEC. 301. (a) No appropriation, funds, or authority made available by this title for the Department of Energy shall be used to initiate or resume any program, project, or activity or to prepare or initiate Requests For Proposals or similar arrangements (including Requests for Quotations, Requests for Information, and Funding Opportunity Announcements) for a program, project, or activity if the program, project, or activity has not been funded by Congress.

(b) (1) Unless the Secretary of Energy notifies the Committees on Appropriations of both Houses of Congress at least 3 full business days in advance, none of the funds made available in this title may be used to-

(A) make a grant allocation or discretionary grant award totaling \$1,000,000 or more;

(B) make a discretionary contract award or Other Transaction Agreement totaling \$1,000,000 or more, including a contract covered by the Federal Acquisition Regulation;

(C) issue a letter of intent to make an allocation, award, or Agreement in excess of the limits in subparagraph (A) or (B); or

(D) announce publicly the intention to make an allocation, award, or Agreement in excess of the limits in subparagraph (A) or (B).

(2) The Secretary of Energy shall submit to the Committees on Appropriations of both Houses of Congress within 15 days of the conclusion of each quarter a report detailing each grant allocation or discretionary grant award totaling less than \$1,000,000 provided during the previous quarter.

(3) The notification required by paragraph (1) and the report required by paragraph (2) shall include the recipient of the award, the amount of the award, the fiscal year for which the funds for the award were appropriated, the account and program, project, or activity from which the funds are being drawn, the title of the award, and a brief description of the activity for which the award is made.

(c) The Department of Energy may not, with respect to any program, project, or activity that uses budget authority made available in this title under the heading "Department of Energy-Energy Programs", enter into a multiyear contract, award a multiyear grant, or enter into a multiyear cooperative agreement unless-

(1) the contract, grant, or cooperative agreement is funded for the full period of performance as anticipated at the time of award; or

(2) the contract, grant, or cooperative agreement includes a clause conditioning the Federal Government's obligation on the availability of future year budget authority and the Secretary notifies the Committees on Appropriations of both Houses of Congress at least 3 days in advance.

(d) Except as provided in subsections (e), (f), and (g), the amounts made available by this title shall be expended as authorized by law for the programs, projects, and activities specified in the "Final Bill" column in the "Department of Energy" table included under the heading "Title III-Department of Energy" in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act).

(e) The amounts made available by this title may be reprogrammed for any program, project, or activity, and the Department shall notify[, and obtain the prior approval of,] the Committees on Appropriations of both Houses of Congress at least 30 days prior to the use of any proposed reprogramming that would cause any program, project, or activity funding level to increase or decrease by more than \$5,000,000 or 10 percent, whichever is less, during the time period covered by this Act.

(f) None of the funds provided in this title shall be available for obligation or expenditure through a reprogramming of funds that-

(1) creates, initiates, or eliminates a program, project, or activity;

(2) increases funds or personnel for any program, project, or activity for which funds are denied or restricted by this Act; or

(3) reduces funds that are directed to be used for a specific program, project, or activity by this Act.

(g)(1) The Secretary of Energy may waive any requirement or restriction in this section that applies to the use of funds made available for the Department of Energy if compliance with such requirement or restriction would pose a substantial risk to human health, the environment, welfare, or national security.

(2) The Secretary of Energy shall notify the Committees on Appropriations of both Houses of Congress of any waiver under paragraph (1) as soon as practicable, but not later than 3 days after the date of the activity to which a requirement or restriction would otherwise have applied. Such notice shall include an explanation of the substantial risk under paragraph (1) that permitted such waiver.

(h) 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. 302. 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. 3094) during fiscal year [2021] 2022 until the enactment of the Intelligence Authorization Act for fiscal year [2021] 2022.

SEC. 303. None of the funds made available in this title shall be used for the construction of facilities classified as high-hazard nuclear facilities under 10 CFR Part 830 unless independent oversight is conducted by the Office of Enterprise Assessments to ensure the project is in compliance with nuclear safety requirements.

SEC. 304. None of the funds made available in this title may be used to approve critical decision-2 or critical decision-3 under Department of Energy Order 413.3B, or any successive departmental guidance, for construction projects where the total project cost exceeds \$100,000,000, until a separate independent cost estimate has been developed for the project for that critical decision.

SEC. 305. Notwithstanding section 161 of the Energy Policy and Conservation Act (42 U.S.C. 6241), upon a determination by the President in this fiscal year that a regional supply shortage of refined petroleum product of significant scope and duration exists, that a severe increase in the price of refined petroleum product will likely result from such shortage, and that a draw down and sale of refined petroleum product would assist directly and significantly in reducing the adverse impact of such shortage, the Secretary of Energy may draw down and sell refined petroleum product from the Strategic Petroleum Reserve. Proceeds from a sale under this section shall be deposited into the SPR Petroleum Account established in section 167 of the Energy Policy and Conservation Act (42 U.S.C. 6247), and such amounts shall be available for obligation, without fiscal year limitation, consistent with that section.

[SEC. 306. (a) Of the offsetting collections, including unobligated balances of such collections, in the "Department of Energy-Power Marketing Administration-Colorado River Basins Power Marketing Fund, Western Area Power Administration", \$21,400,000 shall be transferred to the "Department of the Interior-Bureau of Reclamation-Upper Colorado River Basin Fund" for the Bureau of Reclamation to carry out environmental stewardship and endangered species recovery efforts.

(b) No funds shall be transferred directly from "Department of Energy-Power Marketing Administration-Colorado River Basins Power Marketing Fund, Western Area Power Administration" to the general fund of the Treasury in the current fiscal year.]

TITLE V-GENERAL PROVISIONS (INCLUDING TRANSFER OF FUNDS)

SEC. 501. None of the funds appropriated by this Act may be used in any way, directly or indirectly, to influence congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 U.S.C. 1913.

[SEC. 502. (a) None of the funds made available in title III of this Act may be transferred to any department, agency, or instrumentality of the United States Government, except pursuant to a transfer made by or transfer authority provided in this Act or any other appropriations Act for any fiscal year, transfer authority referenced in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act), or any authority whereby a department, agency, or instrumentality of the United States Government may provide goods or services to another department, agency, or instrumentality.

(b) None of the funds made available for any department, agency, or instrumentality of the United States Government may be transferred to accounts funded in title III of this Act, except pursuant to a transfer made by or transfer authority provided in this Act or any other appropriations Act for any fiscal year, transfer authority referenced in the explanatory statement described in section 4 (in the matter preceding division A of this consolidated Act), or any authority whereby a department, agency, or instrumentality of the United States Government may provide goods or services to another department, agency, or instrumentality.

(c) The head of any relevant department or agency funded in this Act utilizing any transfer authority shall submit to the Committees on Appropriations of both Houses of Congress a semiannual report detailing the transfer authorities, except for any authority whereby a department, agency, or instrumentality of the United States Government may provide goods or services to another department, agency, or instrumentality, used in the previous 6 months and in the year-to-date. This report shall include the amounts transferred and the purposes for which they were transferred, and shall not replace or modify existing notification requirements for each authority.]

SEC. [503]502. None of the funds made available by this Act may be used in contravention of Executive Order No. 12898 of February 11, 1994 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations).

SEC. [504]503. (a) None of the funds made available in this Act may be used to maintain or establish a computer network unless such network blocks the viewing, downloading, and exchanging of pornography.

(b) Nothing in subsection (a) shall limit the use of funds necessary for any Federal, State, Tribal, or local law enforcement agency or any other entity carrying out criminal investigations, prosecution, or adjudication activities.

[SEC. 505. (a) Requirements relating to non-Federal cost-share grants and co-operative agreements for the Delta Regional Authority under section 382D of the Agricultural Act of 1961 and Consolidated Farm and Rural Development Act (7 U.S.C. 2009aa-3) are waived for grants awarded in fiscal year 2020 and in subsequent years in response to economic distress directly related to the impacts of the Coronavirus Disease (COVID-19).

(b) Requirements relating to non-Federal cost-share grants and cooperative agreements for the Northern Border Regional Commission under section 15501(d) of title 40, United States Code, are waived for grants awarded in fiscal year 2020 and in subsequent years in response to economic distress directly related to the impacts of the Coronavirus Disease (COVID-19).

(c) Requirements relating to non-Federal cost-share grants and cooperative agreements for the Denali Commission are waived for grants awarded in fiscal year 2020 and in subsequent years in response to economic distress directly related to the impacts of the Coronavirus Disease (COVID-19).]

SEC. [506]504. Of the unavailable collections currently in the United States Enrichment Corporation Fund, [\$291,000,000] \$415,670,000 shall be transferred to and merged with the Uranium Enrichment Decontamination and Decommissioning Fund and shall be available only to the extent provided in advance in appropriations Acts.