

Department of Energy

FY 2021 Congressional Budget Request



Environmental Management

Department of Energy

FY 2021 Congressional Budget Request



Environmental Management



FY 2021 Congressional Budget Request

Environmental Management

Table of Contents

	Page
Appropriation Account Summary	1
Appropriation Language	3
Overview	5
Carlsbad	35
Idaho	73
Oak Ridge	89
Paducah	129
Portsmouth	141
Richland	167
River Protection	189
Savannah River	217
Lawrence Livermore National Laboratory	291
Los Alamos National Laboratory	299
Nevada	311
Sandia National Laboratories	321
Separations Process Research Unit	327
West Valley Demonstration Project	333
Energy Technology Engineering Center	343
Moab	349
Other Sites	355
Mission Support	365
Program Direction	383
Crosscuts	393
Funding by Appropriation by Site	399
General Provisions	405

DEPARTMENT OF ENERGY

Appropriation Summary

FY 2021

(Dollars in Thousands)

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs. FY 2020 Enacted	
				\$	%
Department of Energy Budget by Appropriation					
Energy Efficiency and Renewable Energy	2,379,000	2,777,277	719,563	-2,057,714	-74.09%
Electricity	156,000	190,000	195,045	5,045	2.66%
Cybersecurity, Energy Security and Emergency Response	120,000	156,000	184,621	28,621	18.35%
Nuclear Energy*	1,180,000	1,340,000	1,042,131	-297,869	-22.23%
Uranium Reserve	0	0	150,000	150,000	0.00%
Interim Storage and Nuclear Waste Fund Oversight	0	0	27,500	27,500	0.00%
Fossil Energy Research and Development	740,000	750,000	730,601	-19,399	-2.59%
Strategic Petroleum Reserve	235,000	195,000	187,081	-7,919	-4.06%
Naval Petroleum and Oil Shale Reserve	10,000	14,000	13,006	-994	-7.10%
Strategic Petroleum Reserve Petroleum Account	10,000	10,000	0	-10,000	-100.00%
Northeast Home Heating Oil Reserve	10,000	10,000	0	-10,000	-100.00%
Total, Fossil Energy Petroleum Reserve Accounts	265,000	229,000	200,087	-28,913	-12.63%
Total, Fossil Energy Programs	1,005,000	979,000	930,688	-48,312	-4.93%
Uranium Enrichment Decontamination and Decommissioning (D&D) Fund	841,129	881,000	806,244	-74,756	-8.49%
Energy Information Administration	125,000	126,800	128,710	1,910	1.51%
Non-Defense Environmental Cleanup	310,000	319,200	275,820	-43,380	-13.59%
Science	6,585,000	7,000,000	5,837,806	-1,162,194	-16.60%
Artificial Intelligence Technology Office	0	0	4,912	4,912	0.00%
Advanced Research Projects Agency - Energy	366,000	425,000	-310,744	-735,744	-173.12%
Departmental Administration	165,858	161,000	136,094	-24,906	-15.47%
Indian Energy Policy and Programs	18,000	22,000	8,005	-13,995	-63.61%
Inspector General	51,330	54,215	57,739	3,524	6.50%
International Affairs	0	0	32,959	32,959	0.00%
Title 17 Innovative Technology Loan Guarantee Program	12,311	29,000	-160,659	-189,659	-654.00%
Advanced Technology Vehicles Manufacturing Loan Program	5,000	5,000	0	-5,000	-100.00%
Tribal Energy Loan Guarantee Program	1,000	2,000	-8,500	-10,500	-525.00%
Total, Credit Programs	18,311	36,000	-169,159	-205,159	-569.89%
Total, Energy Programs	13,320,628	14,467,492	10,057,934	-4,409,558	-30.48%
Federal Salaries and Expenses	410,000	434,699	454,000	19,301	4.44%
Weapons Activities	11,100,000	12,457,097	15,602,000	3,144,903	25.25%
Defense Nuclear Nonproliferation	1,930,000	2,164,400	2,031,000	-133,400	-6.16%
Naval Reactors*	1,788,618	1,648,396	1,684,000	35,604	2.16%
Total, National Nuclear Security Administration	15,228,618	16,704,592	19,771,000	3,066,408	18.36%
Defense Environmental Cleanup	6,024,000	6,255,000	4,983,608	-1,271,392	-20.33%
Nuclear Energy	146,090	153,408	137,800	-15,608	-10.17%
Other Defense Programs	860,292	906,000	1,054,727	148,727	16.42%
Total, Environmental and Other Defense Activities	7,030,382	7,314,408	6,176,135	-1,138,273	-15.56%
Total, Atomic Energy Defense Activities	22,259,000	24,019,000	25,947,135	1,928,135	8.03%
Southwestern Power Administration	10,400	10,400	10,400	0	0.00%
Western Area Power Administration	89,372	89,196	89,372	176	0.20%
Falcon and Amistad Operating and Maintenance Fund	228	228	228	0	0.00%
Colorado River Basins Power Marketing Fund	0	-42,800	-21,400	21,400	-50.00%
Total, Power Marketing Administrations	100,000	57,024	78,600	21,576	37.84%
Total, Energy and Water Development and Related Agencies	35,656,628	38,527,516	36,083,669	-2,443,847	-6.34%
Excess Fees and Recoveries, FERC	-16,000	-16,000	-9,000	7,000	-43.78%
Title XVII Loan Guarantee Program Section 1703 Negative Credit Subsidy Receipt	-107,000	-15,000	-49,000	-34,000	226.67%
Sale of Northeast Home Heating Oil Reserve	0	0	-75,000	-75,000	0.00%
Sale of Oil from Strategic Petroleum Reserve**	0	0	-589,000	-589,000	0.00%
Total, Funding by Appropriation	35,533,628	38,512,516	35,361,669	-3,150,847	-8.18%
DOE Budget Function	35,533,628	38,512,516	35,361,669	-3,150,847	-8.18%
NNSA Defense (050) Total	15,228,618	16,704,592	19,771,000	3,066,408	18.36%
Non-NNSA Defense (050) Total	7,030,382	7,314,408	6,176,135	-1,138,273	-15.56%
<i>Defense (050)</i>	<i>22,259,000</i>	<i>24,019,000</i>	<i>25,947,135</i>	<i>1,928,135</i>	<i>8.03%</i>
Science (250)	6,585,000	7,000,000	5,837,806	-1,162,194	-16.60%
Energy (270)	6,689,628	7,493,516	3,576,728	-3,916,788	-52.27%
<i>Non-Defense (Non-050)</i>	<i>13,274,628</i>	<i>14,493,516</i>	<i>9,414,534</i>	<i>-5,078,982</i>	<i>-35.04%</i>

* Funding does not reflect statutory transfer of funds from Naval Reactors to Nuclear Energy for maintenance and operation of the Advanced Test Reactor (\$85.5M in FY19; \$88.5M in FY20).

**Includes a \$50M sale from the Northeast Gasoline Supply Reserve.

**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 one passenger minivan for replacement only, [\$6,255,000,000] \$5,092,608,000, to remain available until expended: Provided, That of such amount, [\$281,119,000] \$275,285,000 shall be available until September 30, [2021] 2022, for program direction: Provided further, That of the unobligated balances from prior year appropriations available under this heading for LLNL Excess Facilities D&D, \$109,000,000 is hereby permanently cancelled: Provided further, That no amounts may be cancelled from amounts that were designated by the Congress as an emergency requirement pursuant to the concurrent resolution on the budget or the Balanced Budget and Emergency Deficit Control Act of 1985. (Energy and Water Development and Related Agencies Appropriations Act, 2020.)

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] \$275,820,000, to remain available until expended: Provided, That[\$200,000 of the funds provided are for community support], in addition, amounts deposited under this heading in fiscal year 2021 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. (Energy and Water Development and Related Agencies Appropriations Act, 2020.)

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, [\$881,000,000]\$806,244,000, to be derived from the Uranium Enrichment Decontamination and Decommissioning Fund, to remain available until expended, of which [\$5,250,000]\$21,284,000 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, 2020.)

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 2019 Enacted	FY 2020 Enacted	FY 2021 Request
Defense Environmental Cleanup	6,036,177	6,266,800	5,092,608
Non-Defense Environmental Cleanup	310,000	319,200	275,820
Uranium Enrichment Decontamination and Decommissioning Fund	841,129	881,000	806,244
Subtotal, Environmental Management	7,187,306	7,467,000	6,174,672
Use of Prior Year (Defense Environmental Cleanup)	-7,577	0	0
Rescission of Prior Year Balances	-4,600	0	-109,000
15-D-401 Containerized Sludge Removal (RL)	0	-11,800	0
Total, Environmental Management	7,175,129	7,455,200	6,065,672

Overview

The Office of Environmental Management (EM) has been tasked with addressing the significant environmental liability that resulted from decades of nuclear weapons production activities and government-sponsored nuclear energy research that played a critical role in domestic security and prosperity. The Department will leverage past experience; 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.

The EM program was established in 1989 and is responsible for the cleanup of millions of gallons of liquid radioactive waste; thousands of tons of spent (used) nuclear fuel and nuclear material; large volumes of transuranic and mixed/low-level waste; huge quantities of contaminated soil and water, and thousands of excess facilities. This environmental cleanup program is among the largest in the world, and involves some of the most dangerous materials known to humankind. EM has completed cleanup activities at 91 sites in 30 states and in the Commonwealth of Puerto Rico, and is now responsible for the remaining cleanup at 16 sites in 11 states. EM's progress on completion of sites is tracked in the EM Corporate Performance metric for geographic sites completed.

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.

EM Progress

EM continued to make significant progress in cleaning up the complex in FY 2019. At Hanford, the Richland Operations Office completed transfers of radioactive sludge away from the Columbia River to T Plant. This effort will ultimately lead to cocooning of the final two Hanford reactors. Plutonium Uranium Extraction Plant (PUREX) Tunnel 2 was stabilized, providing additional safeguards to workers, the public and the environment. Additionally, safe and deliberate progress continued on the demolition of the Plutonium Finishing Plant with work to remove the vault and the lower-risk portion of the Main Processing Facility completed.

At Hanford's Office of River Protection, efforts to initiate tank waste treatment for permanent disposal took a significant step forward with key portions of the Waste Treatment and Immobilization Plant required for the Direct Feed Low Activity Waste approach, like the Low-Activity Waste Annex and Control Room, were completed and opened to commissioning teams. In addition, waste retrieval activities began at the A/AX Tank Farms. This work supports the Department's goal of continuing to achieve risk reduction at the Hanford site, and will help to build a waste feed inventory for the Waste Treatment and Immobilization Plant Low-Activity Waste Facility.

The Savannah River Site is on the cusp of substantially accelerating the tank waste mission as a successful 11-year demonstration of two interim salt waste processing facilities drew to a close, helping to further preparations for the startup of the Salt Waste Processing Facility. Over its lifetime the pioneering work of the Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit enabled EM to process 7.4 million gallons of radioactive salt waste, resulting 15 million gallons of grout safe for permanent disposal – facilitating the closure of six high-level waste tanks. The success of the Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit processes validated the technology that will be used by Salt Waste Processing Facility and enabled the Site to continue to empty waste tanks, and treat and safely dispose of radioactive waste in support of DOE's plans for reducing and mitigate one of the greatest environmental risks in the state of South Carolina.

Marking its 20th anniversary in 2019, the Waste Isolation Pilot Project received its 12,500th shipment of transuranic waste for disposal and drivers exceeded 15 million safe miles without serious accident or injury. While serving as the lynchpin of the national transuranic waste mission, infrastructure upgrades like a critical new mine ventilation system, a salt reduction building, a filter building, a new utility shaft, a lighting protection system and fire protection loop were advanced. These investments will ensure that Waste Isolation Pilot Plant is best positioned to meet EM mission needs in the years to come.

Cleanup of the East Tennessee Technology Park at Oak Ridge gained headway with completion of demolition of the K-1037 Building as well as K-1414 Building, and Buildings 131 and 631. Built in 1945, the structure grew through the years with additions that brought its square footage to approximately 380,000 square feet. As one of the earliest structures at the site, the K-1037 Building was originally a warehouse, but it was later used to produce barrier material used in the gaseous diffusion process until 1982. This represents another step toward transforming the former government-owned uranium enrichment complex into a hub for local economic growth and development.

At Idaho, DOE safely completed the 15-year process of treating all the stored debris transuranic waste at the Advanced Mixed Waste Treatment Facility in preparation for offsite disposal. The Integrated Waste Treatment Unit successfully completed its longest simulated waste run, demonstrating that the Integrated Waste Treatment Unit technology can safely and effectively treat the remaining 900,000 gallons of liquid radioactive waste stored at the Idaho Site. Exhumation of targeted buried waste was completed in Accelerated Retrieval Project VIII, and waste exhumation began in Accelerated Retrieval Project IX, the final area under an agreement with the State of Idaho to remove waste from 5.69 acres in the Cold War-era landfill. The final design for an evapo-transpiration cover (that will be placed over the entire buried waste area once closed) was completed and approved by regulators.

At Los Alamos National Laboratory, EM moved forward with efforts to address a chromium groundwater contamination plume. EM successfully implemented the interim measure for the plume, consisting of a pump-and-treat system, to control the spread of chromium contamination at Los Alamos and hold it within the site boundaries as a final solution is developed and implemented.

At the Portsmouth Gaseous Diffusion Plant, EM achieved a critical milestone by reaching the highest operating uptime at the site's depleted uranium hexafluoride conversion plant since it began operations. This achievement came after the effort to convert the nation's inventory of depleted uranium hexafluoride to more stable oxide form for subsequent reuse or disposal hit its production target for 2019 six months ahead of schedule. At the Paducah Gaseous Diffusion Plant, EM continued to move forward with facility deactivation activities with the preparation and shipment of the first of 22 cold traps stored at the Paducah Site. These cold traps, which can weigh as much as 16,000 pounds, were used at the C-410 Feed Plant during uranium enrichment.

EM also continued to make progress and realize accomplishments at a variety of small sites across the DOE complex. Most notably, physical cleanup activities were completed at the Separations Process Research Unit site in New York by finishing demolition of all buildings.

At the Nevada National Security Site, the soil mission was safely completed. Hundreds of scientists, technicians, laboratory employees, and other team members supported the work to remove surface and shallow subsurface soils contaminated by historic nuclear testing from 1951 until 1992. The last of the Nevada National Security Site soils sites approved for closure this year were a group of six sites where chemical and radiological contamination resulted primarily from weapons-related testing.

The safe and compliant disposition of waste from the demolition of the West Valley Demonstration Project vitrification plant was completed representing another important step in the progress towards site cleanup. Crews shipped nearly 460 containers of waste by train and truck to off-site disposal facilities.

EM marked the removal of 10 million tons of uranium mill tailings (out of 16 million tons) from the Moab Uranium Mill Tailings Remedial Action Project site in Utah, protecting the Colorado River.

Marking a significant milestone toward the final cleanup of the Energy Technology Engineering Center site in California, DOE issued a Record of Decision to enable demolition of remaining structures.

Reform Initiatives

In 2019, DOE took the significant step of issuing its interpretation of the term "high-level radioactive waste," which will allow some lower activity reprocessing waste to be disposed of in a risk-based manner based on its characteristics, rather than its origin. This could open the door to disposing of reprocessing wastes in a more timely fashion. EM has taken an initial step to examine the use of this interpretation for a single waste stream at the Savannah River Site. This process is part of DOE's scientifically based approach to managing radioactive waste that is fully protective of human health and the environment.

EM will seek to incentivize our contractors through use of innovative contracting approaches that emphasize successful achievement of outcomes. EM is adopting an "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 meantime, EM is refocusing our existing contracts to include incentives for performance to the greatest extent possible. 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

In the summer of 2018, EM shifted to the End State Contracting Model with the objective of reinvigorating the completion mindset and reforming the way EM does business in the management of environmental cleanup. The End State Contracting Model utilizes a single award Indefinite Delivery Indefinite Quantity contract structure, which provides EM the needed flexibility to task its contractors using a risk-based approach to better define discrete scopes of work for site closure or end states for more realistic, reliable pricing and appropriate incentive structures to yield significant reductions in EM's environmental financial liability.

The End State Contracting Model employs a two-step process using a competitive qualifications-based Request for Proposal for selection of the offeror representing the best value and subsequent single source, Task Order(s) negotiations through effective partnering. The selection process utilizes a streamlined evaluation of representative sample scopes of work typically consisting of a year or less in duration vs detailed proposal evaluation of up to 10 years of scope. Additionally, EM is moving back towards Cost Plus Incentive Fee contracts with greater fee earning potential than that of recently awarded Cost Plus Award Fee contracts. While the fee potential is higher, the contractor assumes more risk under the Cost Plus Incentive Fee contract.

The End State Indefinite Delivery Indefinite Quantity approach also provides EM with an off-ramp earlier in the Period of Performance without contract termination liability if contractor performance is subpar. Currently, EM has seven (7) active end state acquisitions: Hanford Central Plateau Cleanup Contract, Hanford Tank Closure Contract, Oak Ridge Reservation Cleanup Contract, Nevada Environmental Program Services Contract, Idaho Cleanup Project Contract, Savannah River Integrated Mission Completion Contract, and Portsmouth Decontamination and Decommissioning.

The first two End State Contracting Request for Proposals for the Central Plateau Cleanup Contract and Tank Closure Contract at Hanford were released in February 2019. EM has awarded the Central Plateau Cleanup Contract, and expects to award the Tank Closure Contract later this year. The Request for Proposal for Nevada Environmental Program Services Contract was issued in late July with contract award scheduled for calendar year 2020. EM is also evaluating the use of end-state contracting at other sites, with releases scheduled throughout the next twelve to eighteen months.

Highlights and Major Changes in the FY 2021 Budget Request

The FY 2021 investment of \$6,065,672,000 in discretionary budget authority 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 to ensure that resources are balanced between meeting milestones and achieving cleanup progress.

In FY 2021, much progress will be made on the treatment of high-level radioactive waste in tanks across the complex---one of EM's largest environmental challenges. At the Savannah River Site, the FY 2021 Budget Request supports the Liquid Waste Program, to 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 decontaminated salt waste in Saltstone Disposal Units. The mission of the Saltstone Disposal Unit #7 project is to construct a cylindrical reinforced concrete tank designed to contain approximately 30,000,000 gallons of Saltstone grout, which is the waste from the disposition of the decontaminated salt solution resulting from salt waste processing. 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 Salt Waste Processing Facility is poised to start in FY 2020, therefore in FY 2021, it will be in 24-7 operations. The FY 2021 Request also includes \$25 million for design and construction of the Advanced Manufacturing Collaborative Facility.

The Department is also working aggressively to complete and launch the treatment facilities to safely immobilize and dispose of tank waste at Hanford. The Office of River Protection's FY 2021 Budget Request reflects the Department's commitment to delivering tank waste treatment operations under the Direct-Feed Low Activity Waste (DFLAW) program in

a timeframe to meet our commitments under the Tri-Party Agreement and the Amended Consent Decree. The FY 2021 budget request places a clear priority on getting the waste treatment mission started as soon as practical, while maintaining safe and compliant operations in the tank farms to protect workers, the public, and the environment.

Richland's FY 2021 Budget Request is designed to maintain safe operations; support Direct Feed Low-Activity Waste startup and commissioning performed by the Office of River Protection; provide focused groundwater pump and treat operations; and perform critical site infrastructure projects with focus on DFLAW. This budget request also provides for Hanford site landlord services to include, but not limited to, roads and transportation services; electrical and water services; facility maintenance; network and software engineering; physical and cyber security, and records management.

At the Idaho Site, the FY 2021 Budget Request supports Integrated Waste Treatment Unit operations and additional treated sodium bearing waste storage capacity. A 50-day simulant run was successfully conducted in FY 2019 that proved the plant could produce the intended product. Final plant modifications are underway in preparation for radiological operations, and EM is working to begin radioactive waste operations by the end of CY 2020. The request will support completing buried waste exhumation activities at Idaho. Additionally, this request supports continued progress in characterizing, packing and shipping transuranic and mixed low-level waste, and making progress toward the Idaho Settlement Agreement milestone to have all spent nuclear fuel out of wet storage by 2023. Resource Conservation & Recovery Act closure activities will continue at the Advanced Mixed Waste Treatment Facility.

At Oak Ridge the FY 2021 Budget Request continues slab and soil remediation at the East Tennessee Technology Park, shipments of transuranic waste to the Waste Isolation Pilot Plant, construction of the Outfall 200 Mercury Treatment Facility at the Y-12 National Security Complex, testing and maturation of critical technologies to support design of the Transuranic Sludge Treatment Process, mercury-related technology development, including characterization, remediation, monitoring, and modeling, initiates downblending of the remaining uranium-233 material at Oak Ridge National Laboratory, as well as continues design for the 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 2021 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, transuranic waste transportation capabilities, and continued progress on repairing or replacing infrastructure, modernizing underground equipment to zero-emission battery-electric vehicles or very low emission Tier IV Final diesel powered equipment, and three line-item construction projects (Safety Significant Confinement Ventilation System; Utility Shaft Project; and the Hoisting Capability Project).

At the Los Alamos National Laboratory, the FY 2021 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. Consistent with the priorities established with the New Mexico Environment Department in the 2016 Consent Order, cleanup activities will continue to focus on remediation of contaminated sites, and surface/groundwater management. Activities will continue on the Chromium Plume Control Interim Measures to control migration of a hexavalent chromium plume beneath Mortandad and Sandia canyons.

Additionally characterization activities will continue to investigate and develop corrective measures for final remediation of the hexavalent chromium plume. Installation of New Mexico Environment Department approved groundwater remedies for the Royal Demolition Explosives plume in Cañon de Valle will continue. Implementation of the individual storm water permits will continue as well as investigation and cleanup of several aggregate areas and demolition of slabs at Technical Area 21.

At Portsmouth, the FY 2021 Budget Request continues progress on deactivation and decommissioning activities. This budget request also supports the safe operation of the Depleted Uranium Hexafluoride Conversion facility. The FY 2021 Budget Request includes funding the On-Site Waste Disposal Facility, Line-Item Capital Project #1 (15-U-408) to receive the debris from the X-326 Process Building, at \$46,639,000 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, at \$16,500,000. 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 2021 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, the major activities planned for FY 2021 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 2021 Budget Request supports safely excavating, transporting, and placing mill tailings to the disposal cell at Crescent Junction, Utah; replacing and maintaining equipment as needed for a safe work environment; excavating a portion of the disposal cell; and extracting contaminated groundwater and injecting freshwater to protect the Colorado River.

At Lawrence Livermore National Laboratory EM will utilize FY 2020 enacted appropriation to continue demolition and characterization work supporting planning efforts for decommissioning and demolition on NNSA-owned high-risk contaminated excess facilities documented in the October 2018 report to Congress, Plan for Deactivation and Decommissioning of Nonoperational Defense Nuclear Facilities. Demolition activities of Building 175 will be completed and the reactor in Building 280 will start. The majority of activities scheduled for FY 2021 for the 300 site are in support of the development of remedial solutions for contamination at Building 812, Building 850, and Building 865.

EM's FY 2021 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 2021, 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 2021 Program Direction Working Capital Fund estimate is \$11,867,000.

EM's remaining FY 2021 Working Capital Fund request is \$19,280,000. EM will fund activities within the Working Capital Fund such as A-123/Internal Controls, Corporate Business Systems (STARS, iBudget, iPortal/IDW, Digital Media, Oak Ridge Financial Services Center, and STRIPES), Financial Statement Audits, Interagency Transfers, Mail and Transportation, Overseas Presence, Pension Studies, Project Management Career Development Program, Printing and Graphics, and Procurement Management. 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 2021 Working Capital Fund Estimate

	Program Direction	EM Cleanup	Total
A123	0	338	338
Building Occupancy	8,299	0	8,299
Copy Services	0	198	198
Corporate Business Systems	200	8,318	8,518
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	4,952	4,952
Supply	236	0	236
Telecom	2,427	0	2,427
Total	11,867	19,280	31,147

Environmental Management Funding by Congressional Control (\$K)

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Closure Sites				
Closure Sites Administration	4,889	4,987	4,987	0
Hanford Site				
Central Plateau Remediation	660,358	654,800	498,335	-156,465
Richland Community and Regulatory Support	10,121	10,121	2,500	-7,621
River Corridor and Other Cleanup Operations	193,692	236,102	54,949	-181,153
Construction				
18-D-404: Modification of Waste Encapsulation and Storage Facility, Richland, WA (PBS RL-0013C)	1,000	11,000	0	-11,000
Total, Hanford Site	865,171	912,023	555,784	-356,239
Idaho National Laboratory				
ID Excess Facilities D&D	10,000	0	0	0
Idaho Cleanup and Waste Disposition	420,000	430,000	257,554	-172,446
Idaho Community and Regulatory Support	3,200	3,500	2,400	-1,100
Total, Idaho National Laboratory	433,200	433,500	259,954	-173,546
NNSA Sites				
Lawrence Livermore National Laboratory	1,704	1,727	1,764	+37
LLNL Excess Facilities D&D	25,000	65,000	0	-65,000
Los Alamos National Laboratory	220,000	220,000	120,000	-100,000
Nevada	60,136	60,737	60,737	0
Sandia National Laboratories	2,600	2,652	4,860	+2,208
Separations Processing Research Unit	15,000	15,300	15,000	-300
Total, NNSA Sites	324,440	365,416	202,361	-163,055
Oak Ridge				
OR Cleanup and Disposition	74,000	101,100	58,000	-43,100
OR Nuclear Facility D&D	189,000	213,000	109,077	-103,923
OR Reservation Community and Regulatory Support	5,700	5,900	4,930	-970
OR Technology Development and Deployment	3,000	5,000	3,000	-2,000
U233 Disposition Program	52,300	55,000	45,000	-10,000
Construction				
14-D-403: Outfall 200 Mercury Treatment Facility, OR (OR-0041)	76,000	70,000	20,500	-49,500

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
17-D-401: On-Site Disposal Facility	10,000	0	22,380	+22,380
Total, Construction	86,000	70,000	42,880	-27,120
Total, Oak Ridge	410,000	450,000	262,887	-187,113
Office of River Protection				
ORP Low-Level Waste Offsite Disposal	0	10,000	0	-10,000
Tank Farm Activities	771,947	775,000	597,757	-177,243
Waste Treatment and Immobilization Plant Construction	15,000	15,000	50,000	+35,000
01-D-16D: High Level Waste Facility, RL	60,000	25,000	0	-25,000
01-D-16E: Pretreatment Facility, RL	15,000	15,000	0	-15,000
15-D-409: Low Activity Waste Pretreatment System, Hanford (ORP-0014)	56,053	0	0	0
18-D-16: Waste Treatment and Immobilization Plant LBL/Direct Feed LAW	655,000	776,000	609,924	-166,076
Total, Construction	786,053	816,000	609,924	-206,076
Total, Office of River Protection	1,573,000	1,616,000	1,257,681	-358,319
Savannah River Site				
Radioactive Liquid Tank Waste Stabilization and Disposition	696,869	820,106	970,332	+150,226
Savannah River Risk Management Operations	489,460	506,366	455,122	-51,244
SR Community and Regulatory Support Construction	11,249	11,249	4,989	-6,260
05-D-405: Salt Waste Processing Facility, SR	130,000	21,200	0	-21,200
17-D-402: Saltstone Disposal Unit #7, SR (SR-0014C)	41,243	40,034	10,716	-29,318
18-D-402: Emergency Operations Center	1,259	6,792	0	-6,792
18-D-402: Saltstone Disposal Unit #8/9, SR (SR-0014C)	7,577	20,000	65,500	+45,500
19-D-701: SR Security System Replacement	10,000	4,525	0	-4,525
20-D-401: Saltstone Disposal Unit 10 11 12	0	500	0	-500
20-D-402: Advanced Manufacturing Collaborative Facility (AMC)	0	25,000	25,000	0
Total, Construction	190,079	118,051	101,216	-16,835
Total, Savannah River Site	1,387,657	1,455,772	1,531,659	+75,887
Program Support				
Mission Support	12,979	12,979	12,979	0
Program Direction	298,500	281,119	275,285	-5,834
Safeguards and Security	304,434	313,097	320,771	+7,674
Technology Development and Deployment				
Mission Support	25,000	25,000	25,000	0

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Waste Isolation Pilot Plant				
Waste Isolation Pilot Plant Construction	311,695	294,353	323,260	+28,907
15-D-411: Safety Significant Confinement Ventilation System, WIPP	84,212	58,054	0	-58,054
15-D-412: Utility Shaft	1,000	44,500	50,000	+5,500
21-D-401: Hoisting Capability Project	0	0	10,000	+10,000
Total, Construction	85,212	102,554	60,000	-42,554
Total, Waste Isolation Pilot Plant	396,907	396,907	383,260	-13,647
Total, Defense Environmental Cleanup	6,036,177	6,266,800	5,092,608	-1,174,192
Non-Defense Environmental Cleanup				
Community, Regulatory and Program Support	0	200	0	-200
Management and Storage of Elemental Mercury	0	1,200	0	-1,200
Fast Flux Test Reactor Facility D&D	2,240	2,500	2,500	0
Gaseous Diffusion Plants				
Paducah Gaseous Diffusion Plant	50,345	56,456	57,580	+1,124
Portsmouth Gaseous Diffusion Plant	50,959	56,629	57,974	+1,345
Total, Gaseous Diffusion Plants	101,304	113,085	115,554	+2,469
Small Sites				
Brookhaven National Laboratory	20,456	0	0	0
Energy Technology Engineering Center	11,000	18,200	11,000	-7,200
Idaho National Laboratory	10,000	12,800	11,000	-1,800
Lawrence Berkeley National Laboratory	35,000	31,000	0	-31,000
Moab	45,000	45,000	47,653	+2,653
Oak Ridge	10,000	10,000	0	-10,000
Other Sites	0	10,000	0	-10,000
Total, Small Sites	131,456	127,000	69,653	-57,347
West Valley Demonstration Project	75,000	75,215	88,113	+12,898
Total, Non-Defense Environmental Cleanup	310,000	319,200	275,820	-43,380
Uranium Enrichment Decontamination and Decommissioning Fund				
U/Th Reimbursements				
Mission Support	11,000	5,250	21,284	+16,034
Oak Ridge	195,000	195,693	144,701	-50,992
Paducah	206,000	240,000	206,518	-33,482
Portsmouth				

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Portsmouth Gaseous Diffusion Plant Construction	366,931	367,193	351,854	-15,339
15-U-408: On-Site Waste Disposal Facility, Portsmouth (PO-0040)	41,168	41,102	46,639	+5,537
20-U-401: On Site Waste Disposal Facility (Cell Line 2&3)	0	10,000	16,500	+6,500
Total, Construction	41,168	51,102	63,139	+12,037
Total, Portsmouth	408,099	418,295	414,993	-3,302
Pension and Community and Regulatory Support				
Oak Ridge	17,258	17,655	15,000	-2,655
Paducah Gaseous Diffusion Plant	2,102	2,094	2,099	+5
Portsmouth Gaseous Diffusion Plant	1,670	2,013	1,649	-364
Total, Pension and Community and Regulatory Support	21,030	21,762	18,748	-3,014
Total, Uranium Enrichment Decontamination and Decommissioning Fund	841,129	881,000	806,244	-74,756
Total, Environmental Management	7,187,306	7,467,000	6,174,672	-1,292,328
Use of Prior Year (Defense Environmental Cleanup)	-7,577	0	0	0
Rescission of Prior Year Balances	-4,600	0	-109,000	-109,000
15-D-401 Containerized Sludge Removal (RL)	0	-11,800	0	+11,800
Total, Environmental Management	7,175,129	7,455,200	6,065,672	-1,389,528
Full Time Equivalents	1,350	1,350	1,275	-75

SBIR/STTR:

- FY 2019 Transfer to the Office of Science: SBIR: \$896; STTR: \$127
- FY 2020 Enacted: SBIR \$960; STTR \$135
- FY 2021 Request: SBIR \$896; STTR \$126

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

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Carlsbad	403,487	403,599	390,066	-13,533
Idaho	443,200	446,300	270,954	-175,346
Oak Ridge	646,281	682,348	431,848	-250,500
Paducah	274,024	314,339	282,403	-31,936
Portsmouth	475,806	493,427	491,306	-2,121
Richland	954,097	1,001,301	654,584	-346,717
River Protection	1,573,000	1,616,000	1,257,681	-358,319
Savannah River	1,551,014	1,629,924	1,702,870	+72,946
Lawrence Livermore National Laboratory	26,704	66,727	1,764	-64,963
Los Alamos National Laboratory	220,000	220,000	120,000	-100,000
Nevada	60,136	60,737	60,737	0
Sandia Site Office	2,600	2,652	4,860	+2,208
Separations Process Research Unit	15,000	15,300	15,000	-300
West Valley Demonstration Project	78,133	79,611	92,411	+12,800
Brookhaven National Laboratory	20,456	0	0	0
Energy Technology Engineering Center	11,000	18,200	11,000	-7,200
Moab	45,000	45,000	47,653	+2,653
Other Sites				
Closure Sites Administration	4,889	4,987	4,987	0
Lawrence Berkeley National Laboratory	35,000	31,000	0	-31,000
Other Sites	0	10,000	0	-10,000
Subtotal, Other Sites	39,889	45,987	4,987	-41,000
Program Direction	298,500	281,119	275,285	-5,834
Mission Support	48,979	44,429	59,263	+14,834
Subtotal, Environmental Management	7,187,306	7,467,000	6,174,672	-1,292,328
Use of Prior Year (Defense Environmental Cleanup)	-7,577	0	0	0
Rescission of Prior Year Balances	-4,600	0	-109,000	-109,000
15-D-401 Containerized Sludge Removal (RL)	0	-11,800	0	+11,800
Total, Environmental Management	7,175,129	7,455,200	6,065,672	-1,389,528

**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 2019 and FY 2020.

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

Capital Operating Expenses Summary (including (Major Items of Equipment (MIE))

Capital Equipment > \$500K (including MIE)	0	0	0	0	0	0	0
Accelerator Improvement Projects (AIP) (<\$5M)	0	0	0	0	0	0	0
Minor Construction	374,869	36,319	95,749	48,192	150,876	92,441	-58,435
Total, Capital Operating Expenses	374,869	36,319	95,749	48,192	150,876	92,441	-58,435

Capital Equipment > \$500K (including MIE)	0	0	0	0	0	0	0
--	---	---	---	---	---	---	---

Accelerator Improvement Projects (Total Estimated Cost <\$5M)	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---

Minor Construction Projects

Carlsbad

Procure and Install 24kV Switch Station for Salt Hoist	258	8	250	160	0	0	0
Continuous Miner	4,000	0	4,000	2,737	0	0	0
Public Address System	15,127	0	0	291	15,127	0	-15,127
Fire Water Loop Phase 1 (Loop, Pump and Tanks)	12,307	3,000	9,307	780	0	0	0
Replace air compressors and compressed air treatment systems in Bldg 485	1,390	0	1,390	1,643	0	0	0
Fire Water Loop Phase 2 (Alarms)	8,000	0	8,000	169	0	0	0
Electrical Substation Replacement	13,119	0	6,000	161	0	7,119	+7,119
Safety Significant Fire Suppression System (Waste Handling Building 411 Fire System)	4,000	0	4,000	705	0	0	0
Fire Water Loop Phase 3 (Spurs to facilities)	4,373	0	0	836	2,373	2,000	-373
Salt Shaft Loading Pocket Salt Removal and Steel Replacement	2,036	0	2,036	60	0	0	0

	Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Waste and Shaft Hoist Controllers Replacement	5,000	0	0	0	0	5,000	+5,000
CMS Software, Servers, Controller, and Firewall	7,881	0	0	0	0	7,881	+7,881
Total, Carlsbad	77,491	3,008	34,983	7,542	17,500	22,000	+4,500
<u>Oak Ridge</u>							
Mercury Research Center	1,840	1,249	591	1,122	0	0	0
Technology Demonstration Facility	750	0	0	0	750	0	-750
2026 Building Modifications U233 Processing	10,281	2,250	8,031	2,196	0	0	0
History Center	6,091	6,091	0	5,188	0	0	0
Viewing Tower/Equipment Building	19,464	1,464	10,000	142	8,000	0	-8,000
Wayside Exhibits & Access to Historic Preservation Facilities	4,559	2,559	0	1,423	2,000	0	-2,000
SWSA 6 Laydown & Storage Area	4,700	0	2,000	387	2,700	0	-2,700
ORNL Fire Alarm Upgrades	9,400	0	2,000	19	7,400	0	-7,400
Zeolite Installation Building 3544	14,224	0	11,024	4,526	3,200	0	-3,200
Pretreatment System Building 3517	3,776	0	576	569	3,200	0	-3,200
Bailey DCS System Upgrade	4,600	0	0	0	4,600	0	-4,600
MSRE Upgrades	5,000	0	0	0	5,000	0	-5,000
Graphite Reactor Roof & Exhaust	4,500	0	0	0	4,500	0	-4,500
ORNL Equipment Staging	3,900	0	0	0	3,900	0	-3,900
Total, Oak Ridge	93,085	13,613	34,222	15,572	45,250	0	-45,250
<u>Paducah</u>							
Security Management Facility	4,373	0	0	0	4,373	0	-4,373
Emergency Operations Center	6,000	0	0	0	6,000	0	-6,000
Total, Paducah	10,373	0	0	0	10,373	0	-10,373
<u>Portsmouth</u>							
Electrical Supply and Distribution Gaseous Diffusion Plant	6,716	0	1,972	1,458	1,437	3,821	+2,384

	Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
S&S Training Center	1,036	0	0	0	0	1,036	+1,036
Total, Portsmouth	7,752	0	1,972	1,458	1,437	4,857	+3,420
<u>Richland</u>							
Cesium and Strontium Capsule Project Cask Storage Area	17,500	3,000	500	3,330	8,000	6,000	-2,000
Construct Integrated Disposal Facility (IDF) (DFLAW priority)	10,000	0	0	3,695	10,000	0	-10,000
L-707, Advanced Electrical Metering ^a	2,476	0	60	0	2,416	0	-2,416
L-781, 181D Vertical Turbine Pumps, Header, Instrumentation, Commission ^a	1,168	0	678	0	490	0	-490
L-826, 181B Vertical Turbine Pumps, Header, Instrumentation, Commission ^a	1,170	0	642	0	528	0	-528
L-838, Water Feeds to 622R, 6608 Facility and 200 W Sewer Lagoons	530	0	0	0	530	0	-530
L-849, Replace 200E 1.1M Gallon PW Tank ^a	6,269	237	565	296	5,467	0	-5,467
L-850, Replace 200W 1.1M Gallon PW Tank (DFLAW Priority) ^a	7,528	129	714	668	4,814	1,871	-2,943
L-854, 200E Sewer Consolidations (DFLAW Priority) ^a	4,968	2,948	2,020	1,996	0	0	0
L-888, 400 Area Fire Station ^a	9,618	166	897	1,028	8,555	0	-8,555
L-894, Raw Water Cross Connection Isolation 200E/W ^a	6,129	3,737	2,392	2,072	0	0	0
L-895, Fire Protection Infrastructure for Plateau Raw Water ^a	7,885	851	6,515	4,139	519	0	-519
L-897, 200 Area Water Treatment Facility (DFLAW priority) ^a	14,760	700	1,995	1,600	8,774	3,291	-5,483
L-906, HFD Station 92 Extension ^a	756	0	476	199	280	0	-280
L-907, Fleet Complex Site Development	1,411	0	0	0	1,411	0	-1,411
L-908, Auto/Truck Shop and Storage	0	0	0	0	0	0	0
L-909, Heavy Equipment Shop and Storage	0	0	0	0	0	0	0
Total, Richland	92,168	11,768	17,454	19,023	51,784	11,162	-40,622

^a These capital investments represent expenditures that may be performed between FY 2020 and FY 2021 based on emerging risks.

River Protection

Construct 222-SL, 222-SA Facility Replacement ^a	1,953	0	1,953	0	0	0	0
--	-------	---	-------	---	---	---	---

	Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Construct New Maintenance Shop ^c	5,200	0	1,200	118	4,000	0	-4,000
ETF Acetonitrile Treatment Upgrade ^b	13,500	0	0	0	0	13,500	+13,500
ETF Load in Expansion ^b	6,646	0	0	0	0	6,646	+6,646
Ancillary Equipment Addition ^b	10,276	0	0	0	0	10,276	+10,276
222-S Office Space Addition ^b	8,602	0	0	0	8,602	0	-8,602
AP Farm Tanker Truck Loading and Off Loading Station ^b	7,528	0	0	0	7,528	0	-7,528
Modular Grout System ^b	12,000	0	0	0	0	12,000	+12,000
ETF Motor Control Center Upgrades ^b	6,000	0	0	0	0	6,000	+6,000
Total, River Protection	71,705	0	3,153	118	20,132	48,422	+28,290

^a After further review of the project need it was determined this scope will not be performed.

^b These capital investments represent expenditures that may be accelerated to FY 2020 based on emerging or identified risks.

^c FY 2019 represents the amount that was obligated and FY 2020 enacted is the remaining amount needed to complete the project.

Savannah River

SRNL IGPPs ^a	11,895	7,930	3,965	4,479	0	0	0
Diesel Generator Replacement	375	0	0	0	375	0	-375
Lab C 159/163 Renovation 773A	1,000	0	0	0	1,000	0	-1,000
Lab B 126/130 Renovation 773A	700	0	0	0	700	0	-700
HVAC unit 735-A	375	0	0	0	375	0	-375
Relocate Glass Apparatus Fabrication Laboratory to C-Wing, 735-A	1,100	0	0	0	1,100	0	-1,100
Upgrade SRNL Limited Area Public Address System	100	0	0	0	100	0	-100
Renovate Laboratory C-155 Hood and Gloveboxes, 773-A	750	0	0	0	750	0	-750
Y-760, Relocate Glass Apparatus Fab. Lab.	300	0	0	0	0	300	+300
Y-794, Replacement HVAC Sys. 735-11A	925	0	0	0	0	925	+925
Y-710, Renovate Lab C-159/163	1,075	0	0	0	0	1,075	+1,075
Construct Advanced Characterization Bldg. (TEM)	1,000	0	0	0	0	1,000	+1,000
TIMS Installation	1,500	0	0	0	0	1,500	+1,500

	Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
SRNL Delta V Control System Upgrade	1,200	0	0	0	0	1,200	+1,200
Total, Savannah River	22,295	7,930	3,965	4,479	4,400	6,000	+1,600
^a Projects and allocation of the FY 2020 and FY 2021 IGPP request are preliminary. Final FY 2020 and FY 2021 projects will reflect emerging or identified risks.							
Total, Minor Construction	374,869	36,319	95,749	48,192	150,876	92,441	-58,435
Total, Capital Summary including Capital Equipment	374,869	36,319	95,749	48,192	150,876	92,441	-58,435

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

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
--------------	--------------------	------------------------	------------------------	------------------------	------------------------	---

Waste Treatment and Immobilization Plant, Hanford WA

18-D-16, Waste Treatment and Immobilization Plant LBL/Direct Feed LAW

Total Estimate Cost (TEC)	TBD	5,669,515	655,000	685,966	776,000	609,924	-166,076
Other Project Costs (OPC)	0	0	0	0	0	0	0
<i>01-D-16A-D WTP Subprojects A-D</i>							
Total Estimate Cost (TEC)	TBD	2,588,318	60,000	45,146	25,000	0	-25,000
Other Project Costs (OPC)	0	0	0	0	0	0	0
<i>01-D-16E Pretreatment Facility</i>							
Total Estimate Cost (TEC)	TBD	3,727,050	15,000	20,643	15,000	0	-15,000
Other Project Costs (OPC)	0	0	0	0	0	0	0
Total Estimate Cost (TEC)	TBD	11,984,883	730,000	751,755	816,000	609,924	-206,076
Other Project Costs (OPC)	0	0	0	0	0	0	0
Total Project Cost (TPC) 01-D-416	TBD	11,984,883	730,000	751,755	816,000	609,924	-206,076

14-D-403, Outfall 200 Mercury Treatment Facility, OR (OR-0041)

Total Estimate Cost (TEC)	N/A*	45,608	76,000	17,421	N/A*	N/A*	N/A*
Other Project Costs (OPC)	N/A*	11,892	0	0	N/A*	N/A*	N/A*
Total Project Cost (TPC) 14-D-403	224,000	57,500	76,000	17,421	70,000	20,500	-49,500

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

15-U-408, On Site Waste Disposal Facility (PO-0040)

Total Estimate Cost (TEC)	268,058	102,582	39,068	47,352	38,502	43,839	+5,337
Other Project Costs (OPC)	16,616	6,422	2,100	2,792	2,600	2,800	+200
Total Project Cost (TPC) 15-U-408	237,913	109,004	41,168	50,144	41,102	46,639	+5,537

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

15-D-411, Safety Significant Confinement Ventilation System (WIPP) (CB-0080)

Total Estimate Cost (TEC)	261,316	123,750	84,212	65,757	53,354	0	-53,354
Other Project Costs (OPC)	26,469	10,500	3,500	0	4,700	7,769	+3,069
Total Project Cost (TPC) 15-D-411	287,785	134,250	87,712	65,757	58,054	7,769	-50,285

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

Total Estimate Cost (TEC)	156,600	61,100	1,000	15,892	44,500	50,000	+5,500
Other Project Costs (OPC)	7,865	5,400	638	0	0	0	0
Total Project Cost (TPC) 15-D-412	164,465	66,500	1,638	15,892	44,500	50,000	+5,500

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

Total Estimate Cost (TEC)	N/A*	16,000	9,852	10,153	N/A*	N/A*	N/A*
Other Project Costs (OPC)	N/A*	22,534	148	156	N/A*	N/A*	N/A*
Total Project Cost (TPC) 17-D-401	TBD	38,534	10,000	10,309	0	22,380	+22,380

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

17-D-402, Saltstone Disposal Unit #7, SR (SR-0014C)

Total Estimate Cost (TEC)	142,513	35,500	41,243	47,574	40,034	10,716	-29,318
Other Project Costs (OPC)	16,487	6,819	2,782	1,326	3,465	3,976	511
Total Project Cost (TPC) 17-D-402	159,000	42,319	44,025	48,900	43,499	14,692	-28,807

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

Total Estimate Cost (TEC)	247,771	178	7,577	5,108	20,000	65,500	45,500
Other Project Costs (OPC)	32,229	729	3,250	1,091	5,000	6,000	1,000
Total Project Cost (TPC) 18-D-401	280,000	907	10,827	6,199	25,000	71,500	+46,500

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

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

Total Estimate Cost (TEC)	TBD	0	0	0	9,400	14,700	+5,300
Other Project Costs (OPC)	TBD	0	0	0	600	1,800	+1,200
Total Project Cost (TPC) 20-U-401	TBD	0	0	0	10,000	16,500	+6,500

20-D-402, Advanced Manufacturing Collaborative Facility

Total Estimate Cost (TEC)	TBD	0	0	0	25,000	25,000	0
Other Project Costs (OPC)	TBD	2,127	1,000	0	0	0	0
Total Project Cost (TPC) 20-D-402	TBD	2,127	1,000	0	25,000	25,000	0

21-D-401, Hoisting Capability Project (WIPP) (CB-0080)

Total Estimate Cost (TEC)	TBD	0	0	0	0	10,000	+10,000
Other Project Costs (OPC)	TBD	0	0	0	0	0	0
Total Project Cost (TPC) 21-D-401	TBD	0	0	0	0	10,000	+10,000

Total All Construction Projects

Total Estimate Cost (TEC)^c	1,040,475	12,369,601	988,952	961,012	1,046,790	829,679	-217,111
Other Project Costs (OPC)^c	97,151	66,423	13,418	5,365	16,365	22,345	+5,980
Total Project Cost (TPC) All Construction Projects^d	1,353,163	12,436,024	1,002,370	966,377	1,133,155	894,904	-238,251

^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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Operating				
Carlsbad				
CB-0020	6,580	6,692	6,806	+114
CB-0090	25,500	26,500	27,162	+662
CB-0081	19,500	20,400	22,890	+2,490
CB-0080	220,000	229,953	251,208	+21,255
CB-0083	46,695	17,500	22,000	+4,500
Subtotal, Carlsbad	318,275	301,045	330,066	+29,021
Idaho				
ID-0100	3,200	3,500	2,400	-1,100
ID-0013	215,387	179,025	74,854	-104,171
ID-0014B	162,739	185,886	123,200	-62,686
ID-0030B	24,900	38,685	32,700	-5,985
ID-0012B-D	16,974	26,404	26,800	+396
ID-0040-EF	10,000	0	0	0
Subtotal, Idaho	433,200	433,500	259,954	-173,546
Lawrence Livermore National Laboratory				
VL-LLNL-0031	1,175	1,312	1,339	+27
VL-FOO-0013B-D	529	415	425	+10
CBC-LLNL-0040	25,000	65,000	0	-65,000
Subtotal, Lawrence Livermore National Laboratory	26,704	66,727	1,764	-64,963
Los Alamos National Laboratory				
VL-FAO-0101	3,394	3,394	3,394	0
VL-LANL-0030	132,050	132,050	75,027	-57,023
VL-LANL-0013	84,556	84,556	41,579	-42,977
Subtotal, Los Alamos National Laboratory	220,000	220,000	120,000	-100,000
Mission Support				
HQ-MS-0100	6,979	6,979	6,979	0
HQ-TD-0100	25,000	25,000	25,000	0
EM-HBCU-0100	6,000	6,000	6,000	0
Subtotal, Mission Support	37,979	37,979	37,979	0
Nevada				

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
VL-NV-0100	4,740	4,741	5,065	+324
VL-NV-0030	32,998	35,134	34,859	-275
VL-NV-0080	22,398	20,862	20,813	-49
Subtotal, Nevada	60,136	60,737	60,737	0
Oak Ridge				
OR-0100	5,700	5,900	4,930	-970
OR-TD-0100	3,000	5,000	3,000	-2,000
OR-0013B	74,000	101,100	58,000	-43,100
OR-0041	35,000	60,000	32,574	-27,426
OR-0042	154,000	153,000	76,503	-76,497
OR-0020	14,023	9,000	9,260	+260
OR-0011D	52,300	55,000	45,000	-10,000
Subtotal, Oak Ridge	338,023	389,000	229,267	-159,733
Other Sites				
CBC-0100-FN	1,100	1,100	1,100	0
CBC-0100-RF	2,000	1,900	1,800	-100
CBC-0100-EM	1,789	1,987	2,087	+100
Subtotal, Other Sites	4,889	4,987	4,987	0
Paducah				
PA-0020	15,577	15,789	16,206	+417
Portsmouth				
PO-0020	15,078	16,490	16,690	+200
Program Direction				
HQ-PD-0100	287,952	270,571	263,418	-7,153
HQ-PDWCF-0100	10,548	10,548	11,867	+1,319
Subtotal, Program Direction	298,500	281,119	275,285	-5,834
Richland				
RL-0100	10,121	10,121	2,500	-7,621
RL-0013C	159,900	176,855	138,900	-37,955
RL-0030	132,158	138,995	56,100	-82,895
RL-0011	46,200	0	0	0
RL-0041	119,500	133,675	30,000	-103,675
RL-0040	74,192	102,427	24,949	-77,478
RL-0012	13,900	0	0	0
RL-0020	86,686	86,778	96,300	+9,522
RL-0201	308,200	338,950	303,335	-35,615

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Subtotal, Richland	950,857	987,801	652,084	-335,717
River Protection				
ORP-0014	771,947	775,000	597,757	-177,243
ORP-0070	15,000	15,000	50,000	+35,000
ORP-0014A	0	10,000	0	-10,000
Subtotal, River Protection	786,947	800,000	647,757	-152,243
Sandia Site Office				
VL-SN-0030	2,600	2,652	4,860	+2,208
Savannah River				
SR-0100	11,249	11,249	4,989	-6,260
SR-0013	41,425	43,825	50,345	+6,520
SR-0011C	332,947	360,558	317,355	-43,203
SR-0014C	696,869	820,106	970,332	+150,226
SR-0030	73,612	65,508	53,829	-11,679
SR-0020	163,357	174,152	171,211	-2,941
SR-0041	28,390	26,324	23,264	-3,060
SR-0042	13,086	10,151	10,329	+178
Subtotal, Savannah River	1,360,935	1,511,873	1,601,654	+89,781
Separations Process Research Unit				
VL-SPRU-0040	15,000	15,300	15,000	-300
West Valley Demonstration Project				
OH-WV-0020	3,133	4,196	4,298	+102
Subtotal, Operating	4,887,833	5,149,195	4,278,588	-870,607
Line Item Construction				
Carlsbad				
CB-0080	85,212	102,554	60,000	-42,554
Oak Ridge				
OR-0041	86,000	70,000	42,880	-27,120
Richland				
RL-0013C	1,000	11,000	0	-11,000
River Protection				
ORP-0014	56,053	0	0	0
ORP-0060	730,000	816,000	609,924	-206,076
Subtotal, River Protection	786,053	816,000	609,924	-206,076
Savannah River				
SR-0014C	178,820	81,734	76,216	-5,518

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
SR-0042	11,259	36,317	25,000	-11,317
Subtotal, Savannah River	190,079	118,051	101,216	-16,835
Subtotal, Line Item Construction	1,148,344	1,117,605	814,020	-303,585
Subtotal, Environmental Management Non-Defense Environmental Cleanup Operating	6,036,177	6,266,800	5,092,608	-1,174,192
Brookhaven National Laboratory				
BRNL-0041	20,456	0	0	0
Energy Technology Engineering Center				
CBC-ETEC-0040	11,000	18,200	11,000	-7,200
Idaho				
ID-0012B-N	10,000	12,800	11,000	-1,800
Mission Support				
HQ-MSF-0100	0	1,200	0	-1,200
Moab				
CBC-MOAB-0031	45,000	45,000	47,653	+2,653
Oak Ridge				
OR-0104	10,000	10,000	0	-10,000
Other Sites				
CBC-LBNL-0040	35,000	31,000	0	-31,000
CBC-0040-EF	0	10,000	0	-10,000
Subtotal, Other Sites	35,000	41,000	0	-41,000
Paducah				
PA-0011	1,369	863	778	-85
PA-0011X	48,976	55,593	56,802	+1,209
Subtotal, Paducah	50,345	56,456	57,580	+1,124
Portsmouth				
PO-0011X	50,959	56,629	57,974	+1,345
Richland				
RL-0042	2,240	2,500	2,500	0
West Valley Demonstration Project				
OH-WV-0040	57,020	72,105	79,003	+6,898
OH-WV-0013	17,980	3,110	9,110	+6,000
OH-WV-0100	0	200	0	-200
Subtotal, West Valley Demonstration Project	75,000	75,415	88,113	+12,698
Subtotal, Operating	310,000	319,200	275,820	-43,380

FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
--------------------	--------------------	--------------------	--

Uranium Enrichment Decontamination and Decommissioning Fund

Operating

Mission Support

HQ-UR-0100

11,000 5,250 21,284 +16,034

Oak Ridge

OR-0102

17,258 17,655 15,000 -2,655

OR-0040

195,000 195,693 144,701 -50,992

Subtotal, Oak Ridge

212,258 213,348 159,701 -53,647

Paducah

PA-0103

2,102 2,094 2,099 +5

PA-0040

206,000 240,000 206,518 -33,482

Subtotal, Paducah

208,102 242,094 208,617 -33,477

Portsmouth

PO-0104

1,020 2,013 1,149 -864

PO-0040

366,931 367,193 351,854 -15,339

PO-0103

650 0 500 +500

Subtotal, Portsmouth

368,601 369,206 353,503 -15,703

Subtotal, Operating

799,961 829,898 743,105 -86,793

Line Item Construction

Portsmouth

PO-0040

41,168 51,102 63,139 +12,037

Subtotal, Environmental Management

841,129 881,000 806,244 -74,756

Subtotal, Environmental Cleanup

7,187,306 7,467,000 6,174,672 -1,292,328

Use of Prior Year (Defense Environmental Cleanup)

-7,577 0 0 0

Rescission of Prior Year Balances

-4,600 0 -109,000 -109,000

15-D-401 Containerized Sludge Removal (RL)

0 -11,800 0 +11,800

Total, Environmental Cleanup

7,175,129 7,455,200 6,065,672 -1,389,528

Summary

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Operating	4,887,833	5,149,195	4,278,588	-870,607
Line Item Construction	1,148,344	1,117,605	814,020	-303,585
Subtotal, Defense Environmental Cleanup	6,036,177	6,266,800	5,092,608	-1,174,192
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	310,000	319,200	275,820	-43,380
Line Item Construction	0	0	0	0
Subtotal, Non-Defense Environmental Cleanup	310,000	319,200	275,820	-43,380
Uranium Enrichment Decontamination and Decommissioning Fund				
Operating	799,961	829,898	743,105	-86,793
Line Item Construction	41,168	51,102	63,139	+12,037
Subtotal, Uranium Enrichment Decontamination and Decommissioning Fund	841,129	881,000	806,244	-74,756
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	7,187,306	7,467,000	6,174,672	-1,292,328
Offsets	-12,177	-11,800	-109,000	-97,200
Total, Environmental Cleanup	7,175,129	7,455,200	6,065,672	-1,389,528
Total Operating	5,997,794	6,298,293	5,297,513	-1,000,780
Total Line Item Construction	1,189,512	1,168,707	877,159	-291,548
Subtotal, Environmental Management	7,187,306	7,467,000	6,174,672	-1,292,328
Offsets	-12,177	-11,800	-109,000	-97,200
Total, Environmental Management	7,175,129	7,455,200	6,065,672	-1,389,528

Environmental Management Federal Staffing

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Carlsbad	60	60	55	-5
Idaho	40	40	39	-1
Oak Ridge	75	75	73	-2
Portsmouth/Paducah Project Office	57	57	55	-2
Richland	230	230	216	-14
River Protection	175	175	155	-20
Savannah River	250	250	239	-11
Small Sites	26	26	25	-1
Nevada Site Office	15	15	15	0
Los Alamos Site Office	29	29	30	+1
Subtotal, Field, Full-Time Equivalents	957	957	902	-55
Headquarters Operations	263	263	244	-19
Consolidated Business Center	130	130	129	-1
Total, Field, Full-Time Equivalents	1,350	1,350	1,275	-75

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.

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 (WIPP), 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.

Direct maintenance and repair for operations at the Carlsbad Field Office is estimated to be \$11,500,000 in FY 2021.

Current Status

The Waste Isolation Pilot Plant resumed operations by emplacing waste in the underground on January 4, 2017. While DOE completed the recovery effort with the resumption of waste emplacement, continuing management attention will be necessary to maintain disposal operations under the enhanced safety basis and safety management program requirements. The rate of Waste Isolation Pilot Plant operations is controlled by the capability of the current ventilation system to support waste emplacement and simultaneous mining activities. The Waste Isolation Pilot Plant continues operation of the Interim Ventilation System and Supplemental Ventilation System. The Waste Isolation Pilot Plant's two line-item capital projects, the Safety Significant Confinement Ventilation System (15-D-411), and Utility Shaft (15-D-412) in conjunction with the Hoisting Capability Project (21-D-401) will provide the increased airflow and infrastructure capabilities necessary to operate the WIPP facility. The new permanent ventilation system is necessary to operate at an emplacement capability of approximately 17 shipments/week and to ensure mining of new repository space is complete in time to ensure continuity of waste emplacement. Ongoing actions in FY 2021 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; 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; complete construction and begin startup and commissioning activities on the new Safety Significant Confinement Ventilation System, continue construction progress on the new Utility Shaft (formerly Exhaust Shaft); preliminary activities to support 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 2021 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 or very low emission Tier IV Final diesel powered equipment, the new Safety Significant Confinement Ventilation System (15-D-411), Utility Shaft (15-D-412) and Hoisting Capability Project (21-D-401).

The Waste Isolation Pilot Plant activities planned in FY 2021 within PBS 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, continuing mining, and continuation of waste emplacement operations using existing disposal panels. Key enhancements/improvements to be maintained in FY 2021 include: safety management programs, continued radiological contamination mitigation in the repository, emergency management capabilities, and contractor assurance system effectiveness. In FY 2021, the Waste Isolation Pilot Plant will also be working towards approval through the regulatory processes for mining of additional disposal panels and drifts to allow for the Waste Isolation Pilot Plant Land Withdrawal Act disposal limits, increasing the number of regulatory approved shielded container designs available for disposal of remote handled waste, and initiating preliminary activities to support additional hoisting capability for salt

removal, material, and personnel evacuation. In FY 2021 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 PBS 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 2021. 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 PBS 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 2021, the transportation capability supports up to ten 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 2021 request includes \$50,000,000 in line-item funding for construction for the new Utility Shaft (formerly Exhaust Shaft). This funding level will allow for the early commitment of funds by placing major contracts necessary to complete the project. 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, waste emplacement, 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. In addition, the FY 2021 request includes \$10,000,000 in line-item funding for additional hoisting capability for pre-design work and \$7,769,000 in Other Project Costs (OPC) for the completion of the Safety Significant Confinement Ventilation Project.

FY 2020 - 2021 Key Milestones/Outlook

- (FY 2020-FY 2021) Continue progress in repair/replacement of critical infrastructure needed to increase the Waste Isolation Pilot Plant emplacement capacity
- (FY 2020-FY 2021) Continue regulatory processes for design and disposal approval
- (FY 2020-FY 2021) Continue design work for additional hoisting capability for salt removal, materials, and personnel to and from the Waste Isolation Pilot Plant underground
- (FY 2021) Complete construction of new filter building and salt reduction building and commence commissioning and startup testing on the Safety Significant Confinement Ventilation System (15-D-411)
- (FY 2021) Complete mining of Panel 8
- (FY 2021) Receipt of additional zero-emission battery-electric underground mining equipment
- (FY 2021) Receipt of shielded container assemblies and additional highway shipping containers for heavy loads

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 expected to be renewed in FY 2020.

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.

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 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 options into two periods: The first was a two-year period from October 1, 2017 to September 30, 2019 and the second is a three-year period from October 1, 2019 to September 30, 2022.

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 Waste Isolation Pilot Plant planning and implementation activities are included within this Management and Operating contract.

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.

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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Waste Isolation Pilot Plant				
Waste Isolation Pilot Plant				
CB-0080 / Operate Waste Disposal Facility-WIPP				
Operating	220,000	229,953	251,208	+21,255
Construction				
15-D-411: Safety Significant Confinement Ventilation System, WIPP	84,212	58,054	0	-58,054
15-D-412: Utility Shaft	1,000	44,500	50,000	+5,500
21-D-401: Hoisting Capability Project	0	0	10,000	+10,000
	<u>305,212</u>	<u>332,507</u>	<u>311,208</u>	<u>-21,299</u>
CB-0081 / Central Characterization Project	19,500	20,400	22,890	+2,490
CB-0083 / Critical Infrastructure Repair/Replacement	46,695	17,500	22,000	+4,500
CB-0090 / Transportation-WIPP	25,500	26,500	27,162	+662
Subtotal, Waste Isolation Pilot Plant	396,907	396,907	383,260	-13,647
Safeguards and Security				
CB-0020 / Safeguards and Security	6,580	6,692	6,806	+114
Total, Defense Environmental Cleanup	403,487	403,599	390,066	-13,533

Carlsbad
Explanation of Major Changes (\$K)

FY 2021 Request vs FY 2020 Enacted

Defense Environmental Cleanup

Waste Isolation Pilot Plant

CB-0080 / Operate Waste Disposal Facility-WIPP

- Decrease is attributed to 1) a decrease in funding for 15-D-411 due to proposed completion in FY 2020 and turnover in FY 2021, therefore last year of funding (-\$58,054,000); 2) maintaining operational resources to sustain improved Safety Management Programs and to increase waste emplacement rates (+ \$21,255,000); 3) an increase for 15-D-412 (shaft sinking), as well as a new contract in place at end of FY 2019 and start of construction activities November 2020 (+\$5,500,000); and 4) increase due to design work for additional hoisting capability for 21-D-401 (+\$10,000,000). -21,299

CB-0081 / Central Characterization Project

- Increase reflects anticipated increase in support sites' transuranic waste characterization programs and transportation certification activities. Increase will support shipments from additional sites and preparation to increase shipments with the opening of Panel 8 in the mine in FY 2022. +2,490

CB-0083 / Critical Infrastructure Repair/Replacement

- Increase reflects continued infrastructure recapitalization projects as well as mine modernization activities. +4,500

CB-0090 / Transportation-WIPP

- Transportation activities from multiple locations required for sustained operations at a rate of up to ten shipments per week. Also additional shielded container assembly and new highway shipping containers. +662

Safeguards and Security

CB-0020 / Safeguards and Security

- No significant change. +114

Total, Carlsbad	-13,533
------------------------	----------------

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

Overview

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

This PBS 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 2021 funding includes the following activities: surface and underground operations, including waste emplacement in existing approved disposal panels mine stability (ground control); maintenance and repair of facilities and equipment; 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 two line-item capital projects the Safety Significant Confinement Ventilation System (15-D-411), Utility Shaft (15-D-412) in conjunction with the Hoisting Capability Project (21-D-401) will provide the increased airflow and infrastructure capabilities necessary to operate the WIPP facility.

In FY 2021, the Waste Isolation Pilot Plant will also be executing the regulatory processes for mining of 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. Design work will also be ongoing to support additional hoisting capability for salt removal, material, and personnel evacuation through the Hoisting Capability Project (21-D-401).

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$332,507,000	\$311,208,000	-\$21,299,000
<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 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 right-of-ways. Provide funding for 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"> 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 low or zero 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 right-of-ways. Provide funding for 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 is attributed to 1) a decrease in funding for 15-D-411 due to proposed completion in FY 2020 and turnover in FY 2021, therefore last year of funding (-\$58,054,000); 2) maintaining operational resources to sustain improved Safety Management Programs and to increase waste emplacement rates (+ \$21,255,000); 3) an increase for 15-D-412 (shaft sinking), as well as a new contract in place at end of FY 2019 and start of construction activities November 2020 (+\$5,500,000); and 4) increase due to design work for additional hoisting capability for 21-D-401 (+\$10,000,000).

- Continue support of Above Ground Storage Capability Permit Modification Request to the Hazardous Waste Storage Facility Permit for the ability to start final design and construction activities.
 - Continue progress toward construction 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.
 - Mine additional panels needed to continue the mission.
- Continue progress toward construction 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.
 - Initiate design work for additional hoisting capability.
 - Complete Panel 8 mining.
 - Continue regulatory activities to support mining additional panels needed to continue the mission.
-

Central Characterization Project (PBS: CB-0081)

Overview

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

This project consists of Central Characterization Project activities, which are managed by DOE’s National TRU Program. The project consists of two primary areas of overall program scope. First, the National TRU 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 TRU 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 TRU 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, flammable gas analysis are planned within each respective site’s budget.

Central Characterization Project (PBS: CB-0081)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$20,400,000	\$22,890,000	+\$2,490,000
<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. 	<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. 	<ul style="list-style-type: none"> • Increase reflects anticipated increase in support sites’ transuranic waste characterization programs and transportation certification activities. Increase will support shipments from additional sites and preparation to increase shipments with the opening of Panel 8 in the mine in FY 2022.

- 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. Provide only transportation certification at Idaho National Laboratory (where Idaho National Laboratory funds waste certification).

- 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. Provide only transportation certification at Idaho National Laboratory (where Idaho National Laboratory funds waste certification).
-

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

Overview

This PBS 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 WIPP's degraded and beyond design life infrastructure, which includes General Plant Projects (GPPs) and Major Items of Equipment (MIE) that are needed for safety and regulatory compliance, waste emplacement capability, ensure mining of new repository space is complete in time to ensure continuity of waste emplacement, and to sustain mining and waste emplacement operations.

FY 2021 funding is requested for the projects in the table below.

Project Name	Current Status	Mission Impact	Resolution/Description	FY21 Requested Amount
Fire Water Loop Phase 3 (Spurs to facilities)	System is degraded but operable with compensatory measures	Waste Handling interruptions Significant operations impacts Implementation of this project is impacted by manpower limitations	Procure subcontractor services to design, fabricate, install, and test the spurs to the facilities installed in this phase. Phases 1 & 2 finish is a prereq to completion of spurs.	2,000
Electrical Substations Replacement (Sub #6)	Beyond design life Rusted and corroded housing with high potential for system failure	Upon failure: Stop waste shipments and emplacement No Panel 8 mining Egress from mine with no further entries	Procure subcontractor services to design, procure, and install replacement substations. Priority order 1,3,6,2,4	2,373
Electrical Substations Replacement (Sub #2)	Beyond design life Rusted and corroded housing with high potential for system failure	Upon failure: Stop waste shipments and emplacement No Panel 8 mining Egress from mine with no further entries	Procure subcontractor services to design, procure, and install replacement substations. Priority order 1,3,6,2,4	2,373
Electrical Substations Replacement (Sub #4)	Beyond design life Rusted and corroded housing with high potential for system failure	Upon failure: Stop waste shipments and emplacement No Panel 8 mining Egress from mine with no further entries	Procure subcontractor services to design, procure, and install replacement substations. Priority order 1,3,6,2,4	2,373
Waste and Salt Hoist Controllers Replacement	Existing controller over 30 years old.	Unscheduled repairs will be highly impactive to waste emplacement.	Procure design, installation, and testing services to upgrade the Salt Hoist and Waste Hoist controllers (mission critical work). Both hoists provide critical access to the underground for TRU/TRU mixed waste, personnel, equipment, and materials.	5,000
CMS Software, Servers, Controller, and Firewall	Current system is operable but experiences frequent outages.	System alarm functions and monitoring must be performed manually.	Procure subcontractor services to design and install CMS Virtual Host Servers, Software, Domain Controller, Storage Servers and Firewalls	7,881
				22,000

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

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$17,500,000	\$22,000,000	+\$4,500,000
<ul style="list-style-type: none"> Repair and replace 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 PBS 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 NRC-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 2021 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$26,500,000	\$27,162,000	+\$662,000
<ul style="list-style-type: none"> • Provide transportation capabilities for up to ten shipments per week through the carrier contract. • Support shipping corridor readiness, including training and associated stakeholder and regulatory grants, including Nuclear Regulatory Commission fees. • Maintain package certification and associated required maintenance for packages used: TRUPACT II's, Half PACTS, TRUPACT III's, and RH-72B's. 	<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. • Obtain additional shielded container assembly and new highway shipping containers. • Maintain 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"> • Transportation activities from multiple locations required for sustained operations at a rate of up to ten shipments per week. Also additional shielded container assembly and new highway shipping containers.

- Continue transportation readiness and capability for inter-site shipments.
-

Safeguards and Security (PBS: CB-0020)

Overview

This PBS 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$6,692,000	\$6,806,000	+\$114,000
<ul style="list-style-type: none"> • Provide 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"> • Provide 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 significant change.

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

	Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
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)	77,491	3,008	34,983	7,542	17,500	22,000	+4,500
Total, Capital Operating Expenses	77,491	3,008	34,983	7,542	17,500	22,000	+4,500
Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <\$20M)							
<u>Carlsbad</u>							
Procure and Install 24kV Switch Station for Salt Hoist Continuous Miner	258	8	250	160	0	0	0
Public Address System	15,127	0	0	291	15,127	0	-15,127
Fire Water Loop Phase 1 (Loop, Pump and Tanks)	12,307	3,000	9,307	780	0	0	0
Replace air compressors and compressed air treatment systems in Bldg 485	1,390	0	1,390	1,643	0	0	0
Fire Water Loop Phase 2 (Alarms)	8,000	0	8,000	169	0	0	0
Electrical Substation Replacement	13,119	0	6,000	161	0	7,119	+7,119
Safety Significant Fire Suppression System (Waste Handling Building 411 Fire System)	4,000	0	4,000	705	0	0	0
Fire Water Loop Phase 3 (Spurs to facilities)	4,373	0	0	836	2,373	2,000	-373
Salt Shaft Loading Pocket Salt Removal and Steel Replacement	2,036	0	2,036	60	0	0	0
Waste and Shaft Hoist Controllers Replacement	5,000	0	0	0	0	5,000	+5,000
CMS Software, Servers, Controller, and Firewall	7,881	0	0	0	0	7,881	+7,881
Total, Carlsbad	77,491	3,008	34,983	7,542	17,500	22,000	+4,500
Total, Capital Summary	77,491	3,008	34,983	7,542	17,500	22,000	+4,500

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

	Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
15-D-411, Safety Significant Confinement Ventilation System (WIPP) (CB-0080)							
Total Estimate Cost (TEC)	261,316	123,750	84,212	65,757	53,354	0	-53,354
Other Project Costs (OPC)	26,469	10,500	3,500	0	4,700	7,769	+3,069
Total Project Cost (TPC) 15-D-411	287,785	134,250	87,712	65,757	58,054	7,769	-50,285
15-D-412, Utility Shaft, formerly Exhaust Shaft (WIPP) (CB-0080)							
Total Estimate Cost (TEC)	156,600	61,100	1,000	15,892	44,500	50,000	+5,500
Other Project Costs (OPC)	7,865	5,400	638	0	0	0	0
Total Project Cost (TPC) 15-D-412	164,465	66,500	1,638	15,892	44,500	50,000	+5,500
21-D-401, Hoisting Capability Project (WIPP) (CB-0080)							
Total Estimate Cost (TEC)	0	0	0	0	0	10,000	+10,000
Other Project Costs (OPC)	TBD	0	0	0	0	0	0
Total Project Cost (TPC) 21-D-401	TBD	0	0	0	0	10,000	+10,000

**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 2021 Request for the Safety Significant Confinement Ventilation System is \$7,769,000: \$0 for construction and \$7,769,000 for other project costs. Other Project Costs will be required for startup and commissioning activities once construction activities complete in FY2021.

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 2020 Construction Project Data Sheet and does not include a new start for the budget year. The update includes the latest project cost and schedule estimates from an External Independent Review validated baseline and achieving Critical Decision-2/3 on May 10, 2018.

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.

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 2016	10/22/2014	3QFY 2015	3QFY 2015	1QFY 2016	4QFY 2016	TBD	N/A	TBD
FY 2017	10/22/2014	3QFY 2015	1QFY 2016	2QFY 2018	2QFY 2018	TBD	N/A	TBD
FY 2018	10/22/2014	12/10/2015	12/23/2015	2QFY 2018	2QFY 2018	TBD	N/A	TBD
FY 2019	10/22/2014	12/10/2015	12/23/2015	5/10/2018	2QFY 2018	TBD	N/A	TBD
FY 2020	10/22/2014	12/10/2015	12/23/2015	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	5/10/2018	5/10/2018	5/10/2018	11/30/2022	11/30/2022

CD-0—Approve Mission Need for a construction project with a conceptual scope and cost range

Conceptual Design Complete -Actual date the conceptual design was completed

CD-1- Approve Design Scope and Project Cost and Schedule Ranges

CD-2 - Approve Project 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 Closeout

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

	Performance Baseline Validate	CD-3A	
FY 2016	1QFY 2016	4QFY 2016	
FY 2017	2QFY 2018	4QFY 2016	
FY 2018	2QFY 2018	4QFY 2017	
FY 2019	2QFY 2018	4QFY 2017	
FY 2020	5/10/2018	10/6/2017	
FY 2021	5/10/2018	10/6/2017	

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

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 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 NNSA'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 (KPPs)

The Threshold KPPs, 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	18,530
FY 2019	84,212	84,212	96,783
FY 2020	53,354	53,354	102,916

FY 2021	0	0	26,227
Total, Construction	244,456	244,456	244,456
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	18,530
FY 2019	84,212	84,212	96,783
FY 2020	53,354	53,354	102,916
FY 2021	0	0	26,227
Total, TEC	261,316	261,316	261,316
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	11,748
Total, OPC (except D&D)	22,064	22,064	22,064
OPC D&D			
FY 2021	4,405	4,405	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	16,153
Total OPC	26,469	26,469	26,469
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	19,897
FY 2019	87,712	87,712	98,370

FY 2020	58,054	58,054	106,486
FY 2021	7,769	7,769	42,380
Total, TPC	287,785	287,785	287,785

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

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	18,100	16,860
Contingency	0	0	0
Total, Design	16,860	18,100	16,860
Construction			
Site Work	2,585	2,585	2,585
Long-lead Equipment	22,909	22,909	22,909
Construction	180,240	164,592	180,240
Contingency	38,722	44,460	38,722
Total, Construction	244,456	234,546	244,456
Total, TEC	261,316	252,646	261,316
Contingency, TEC	38,722	44,460	38,722
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	628	628	628
Conceptual Design	800	800	800
Reviews	2,600	2,600	2,600
Contingency	2,466	2,631	2,466
Other OPC	15,590	9,275	15,590
Total, OPC except D&D	22,064	15,934	22,064
OPC, D&D			
D&D	4,405	3,978	4,405
Contingency	0	400	0
Total, OPC D&D	4,405	4,378	4,405
Total, OPC	26,469	20,312	26,469
Contingency	2,446	3,031	2,446
Total, TPC	287,785	272,958	287,785
Total, Contingency	41,168	47,491	41,168

Schedule of Appropriation Requests

(Dollars in Thousands)

Request		Prior Years	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Outyears	Total
FY 2016	TEC	35,218						TBD	TBD
	OPC	5,000						TBD	TBD
	TPC	40,218						TBD	TBD
FY 2017	TEC	35,218	2,352					TBD	TBD
	OPC	5,000	0					TBD	TBD
	TPC	40,218	2,352					TBD	TBD
FY 2018	TEC	35,218	2,532	46,000				TBD	TBD
	OPC	5,000	2,000	3,500				TBD	TBD
	TPC	40,218	4,532	49,500				TBD	TBD
FY 2019	TEC	35,218	2,532	46,000	84,212			TBD	TBD
	OPC	5,000	2,000	3,500	5,000			TBD	TBD
	TPC	40,218	4,532	49,500	89,212			TBD	TBD
FY 2020	TEC	35,218	2,532	86,000	84,212	53,354		0	261,316
	OPC	5,000	2,000	3,500	3,500	4,700		7,769	26,469
	TPC	40,218	4,532	89,500	87,712	58,054		7,769	287,785
FY 2021	TEC	35,218	2,532	86,000	84,212	53,354	0	0	261,316
	OPC	5,000	2,000	3,500	3,500	4,700	7,769	0	26,469
	TPC	40,218	4,532	89,500	87,712	58,054	7,769	0	287,785

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	FY 2023
Expected Useful Life (number of years)	29
Expected Future Start of D&D of this capital asset (fiscal quarter)	FY 2053

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
<u>Maintenance & Repair</u>	<u>287</u>	<u>287</u>	<u>8,323</u>	<u>8,323</u>
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 will undergo decontamination and decommissioning as part of this project.

The new area being constructed in this project is replacing existing facilities, and the costs of D&D of the facilities that are being replaced are included in the costs of 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 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 2021 Request for the Utility Shaft (formerly Exhaust Shaft) is \$50,000,000: \$50,000,000 for construction and \$0 other project costs. FY2021 funds will be spent on the shaft sinking contract, installation of the new exhaust stack and purchased air handling and mining equipment (electric bolter and electric miner) associated with the Utility Shaft Project.

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 2020 Construction Project Data Sheet and does not include a new start for the budget year.

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 and the North Access Road Bypass along with procurement of a Hybrid bolter and Electric Miner. This work is currently underway as planned. The CD-2/3 was signed June 11, 2019. Bids for the shaft sinking have been evaluated. Construction work for the shaft is expected to begin in FY 2020. The construction of the shaft is contingent upon a Class 3 permit modification request, which was submitted in August 2019 and is expected to be approved in the 2nd quarter of FY 2021.

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 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	6/11/2019	3QFY2019	3QFY2019	N/A	TBD
FY 2021	10/22/2014	12/10/2015	12/23/2015	6/11/2019	6/11/2019	6/11/2019	N/A	12/31/2023

CD-0—Approve Mission Need for a construction project with a conceptual scope and cost range

Conceptual Design Complete -Actual date the conceptual design was completed

CD-1- Approve Design Scope and Project Cost and Schedule Ranges

CD-2 - Approve Project 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 Closeout

	Performance	
	Baseline	CD-3A
	Validate	
FY 2016	1QFY 2016	
FY 2017	1QFY 2018	
FY 2018	2QFY 2018	
FY 2019	2QFY 2018	
FY 2020	3QFY 2019	1QFY 2019
FY 2021	3QFY 2019	1QFY 2019

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

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

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 NNSA'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 (KPPs)

The Threshold KPPs, 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
FY 2018	19,600	19,600	0
FY 2019	1,000	1,000	27,681
FY 2020	44,500	44,500	45,489
FY 2021	50,000	50,000	55,421
Outyears	32,520	32,520	53,495
Total, Construction	182,086	182,086	182,086
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	27,681
FY 2020	44,500	44,500	45,489

FY 2021	50,000	50,000	55,421
Outyears	32,520	32,520	53,495
Total, TEC	189,120	189,120	189,120
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	2,598
Outyears	1,827	1,827	0
Total, OPC	7,865	7,865	7,865
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	30,048
FY 2020	44,500	44,500	46,760
FY 2021	50,000	50,000	58,019
Outyears	34,347	34,347	53,495
Total, TPC	196,985	196,985	196,985

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

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	TBD	7,034
Contingency	0	TBD	0
Total, Design	7,034	TBD	7,034
Construction			
Site Work	30,935	TBD	30,935
Long-lead Equipment	5,974	TBD	5,974
Construction	113,302	TBD	113,302
Contingency	31,875	TBD	31,875
Total, Construction	182,086	TBD	182,086
Total, TEC	189,120	TBD	189,120
Contingency, TEC	31,875	TBD	31,875

Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	0	TBD	0
Conceptual Design	0	TBD	0
Independent Reviews & Estimates	1,488	TBD	1,488
Contingency	2,868	TBD	2,868
Other OPC	3,509	TBD	3,509
Total, OPC except D&D	7,865	TBD	7,865
<hr/>			
Total, OPC	7,865	TBD	7,865
Contingency, OPC	2,868	TBD	2,868
<hr/>			
Total, TPC	196,985	TBD	196,985
Total, Contingency	34,743	TBD	34,743

Schedule of Appropriation Requests

(Dollars in Thousands)

Request		Prior Years	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Outyears	Total
FY 2016	TEC	11,500							TBD
	OPC	2,000							TBD
	TPC	13,500							TBD
FY 2017	TEC	11,500	2,533						TBD
	OPC	2,000	0						TBD
	TPC	13,500	2,533						TBD
FY 2018	TEC	11,500	30,000	19,600					TBD
	OPC	2,000	1,500	1,900					TBD
	TPC	13,500	31,500	21,500					TBD
FY 2019	TEC	11,500	30,000	19,600	1,000				TBD
	OPC	2,000	1,500	1,900	638				TBD
	TPC	13,500	31,500	21,500	1,638				TBD
FY 2020	TEC	11,500	30,000	19,600	1,000	44,500			TBD
	OPC	2,000	1,500	1,900	638	0			TBD
	TPC	13,500	31,500	21,500	1,638	44,500			TBD
FY 2021	TEC	11,500	30,000	19,600	1,000	44,500	50,000	34,347	189,120
	OPC	2,000	1,500	1,900	638	0	0	0	7,865
	TPC	13,500	31,500	21,500	1,638	44,500	50,000	34,347	196,985

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	3QFY22
Expected Useful Life (number of years)	32
Expected Future Start of decontamination and decommissioning of this capital asset (fiscal quarter)	FY 2054

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
<u>Maintenance & Repair</u>	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.

21-D-401, Hoisting Capability Project (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 2021 Request for the Hoisting Capability is \$10,000,000: \$0 for construction and \$10,000,000 other project costs. Funding in FY 2021 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*, which was approved on February 7, 2020, with a Rough-Order of Magnitude (ROM) cost range between \$88,000,000 and \$200,000,000 with a CD-4, *Project Completion*, in fiscal year (FY) 2025.

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 safe, efficient, and reliable hoisting for mined salt, equipment, personnel, and provide backup capability for waste hoist operations (excluding waste transport) to allow the facility to continue to operate more efficiently and safely to meet the transuranic (TRU) waste disposal mission.

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 2021	02/7/2020	TBD	TBD	TBD	TBD	TBD	N/A	TBD

CD-0—Approve Mission Need for a construction project with a conceptual scope and cost range

Conceptual Design Complete -Actual date the conceptual design was completed

CD-1- Approve Design Scope and Project Cost and Schedule Ranges

CD-2 - Approve Project 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 Closeout

Project Cost History

(Dollars in Thousands)

	TEC,	TEC,		OPC	OPC,		
FY 2021	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

Design and construct a new hoisting capability to provide for multiple capabilities including: salt hoists, equipment, personnel, and provide backup capability for waste hoist operations (excluding waste transport).

Justification

Conceptual planning for additional disposal panels is underway. These additional panels along with accompanying main connecting transport and infrastructure tunnels (drifts) are required to be mined at WIPP to achieve the completion of the TRU waste disposal mission according to the WIPP Land Withdrawal Act volumetric limits.

Within the next few years, the current salt hoist will need a significant overhaul which could take almost a year to complete. This would impact mine operations as salt mining will be curtailed until the overhaul is complete. Also, the increased mining required for the additional panels and drifts is expected to challenge the existing WIPP hoisting systems, particularly the Salt Handling Shaft (SHS) which was constructed in 1983. In addition, the proposed direction and location of the new drifts and panels is a significant distance to the west of the current repository that creates a need for an additional emergency egress from the underground repository. Specifically, the distance of the new drifts and panels from the existing hoisting systems can challenge the Mine Safety and Health Administration (MSHA) requirements to be at an emergency egress point for evacuation within another 30 minutes (total one hour from time of event to all personnel evacuated).

The hoisting capability project would increase the existing salt hoisting capability and material/personnel hoist capability for “just-in-time” mining at WIPP where excavation, outfitting, and regulatory certification are completed a few months before actual TRU waste disposal commences.

Failure to address hoisting capabilities would slow mining operations and ultimately waste emplacements. Addressing hoisting capabilities is also essential for mine safety and egress for personnel.

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 (KPPs)

The Threshold KPPs, 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. The Objective KPPs represent the desired project performance and will be defined at CD-2.

Performance Measure	Threshold	Objective
TBD	TBD	TBD

3. Project Cost and Schedule

Financial Schedule

(Dollars in Thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2021	0	0	0
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2021	0	0	0
Outyears	TBD	TBD	TBD

Total, Construction	TBD	TBD	TBD
Total Estimated Cost (TEC)			
FY 2021	10,000	10,000	0
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
FY 2021	0	0	0
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Costs			
FY 2021	10,000	10,000	TBD
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	TBD
Contingency	TBD	N/A	TBD
Total, Design	TBD	N/A	TBD
Construction			

Site Work	TBD	N/A	TBD
Long-lead Equipment	TBD	N/A	TBD
Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Construction	TBD	N/A	TBD
<hr/>			
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
Independent Reviews & Estimates	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Other OPC	TBD	N/A	TBD
Total, OPC except D&D	TBD	N/A	TBD
<hr/>			
Total, OPC	TBD	N/A	TBD
Contingency, OPC	TBD	N/A	TBD
Total, TPC	TBD	N/A	TBD
Total, Contingency	TBD	N/A	TBD

Schedule of Appropriation Requests

(Dollars in Thousands)

Request		FY 2021	Outyears	Total
FY 2021	TEC	10,000	TBD	TBD
	OPC	0	TBD	TBD
	TPC	10,000	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	TBD	TBD	TBD
Utilities	TBD	TBD	TBD	TBD
<u>Maintenance & Repair</u>	TBD	TBD	TBD	TBD
Total	TBD	TBD	TBD	TBD

5. D&D Information

This project will design and construct a new hoisting capability for 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.

Idaho

Overview

The Idaho Site supports the Department's cleanup activities resulting principally from Cold War activities and peripherally from research and development activities associated with the peaceful civilian use of nuclear power. 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 waste from Idaho.

The Idaho Site has achieved significant risk reduction in treating challenging radioactive waste, decontaminating and decommissioning excess facilities, remediating contaminated soils, and transferring spent nuclear fuel from wet to dry storage and consolidation of that storage to a single locality within the Idaho Nuclear Technology and Engineering Center. Near-term remaining work includes 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 Waste Isolation Pilot Plant (WIPP); calcine waste disposition; decontamination and decommissioning of remaining excess facilities; completing Comprehensive Environmental Response, Compensation and Liability Act Record of Decision cleanup requirements, including Test Area North groundwater remediation; closure of the tank farm; installing final caps; and making legacy spent nuclear fuel road ready for final dispositioning.

Direct maintenance and repair at the Idaho Site is estimated to be \$25,608,000.

Highlights of the FY 2021 Budget Request

The funding request 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 Advanced Mixed Waste Treatment Facility will continue Resource Conservation & Recovery Act closure activities.

The funding request also continues progress toward treating the stored sodium bearing waste. A 50-day simulant run was successfully conducted in FY 2019. Final plant modifications are underway in preparation for radiological operations in FY 2021.

This request supports completion of buried waste exhumations. Nine out of nine retrieval areas are planned to be completed.

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, by transferring the remaining two fuel types out of Chemical Processing Plant building-666.

FY 2020 - 2021 Key Milestones/Outlook

The following are the Idaho Cleanup Projects' regulatory milestones:

- (September 2020) Submit the 90 percent design for the Subsurface Disposal Area cap (Completed Dec 2018)
- (September 2020) Certify 25 percent of remaining Contact-Handled Transuranic Waste exclusive of sludge
- (September 2021) Certify 25 percent of remaining Contact-Handled Transuranic Waste exclusive of sludge
- (September 2021) Develop and submit certification schedule for Remote-Handled Transuranic Waste

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 (between DOE and the State of Idaho Department of Environmental Quality) establishes actions and milestones to resolve Resource Conservation and Recovery Act compliance issues including 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.

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

Program planning and contract management at the Idaho Cleanup Project is conducted through the issuance and execution of contracts to large and small businesses. Idaho 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. The five year, cost plus incentive fee hybrid contract valued at \$1,600,000,000 is managed by Fluor Idaho, LLC, for the Idaho National Laboratory Site and expires on May 31, 2021. There are no option periods to extend the contract. The procurement process is underway to award a new contract in time to support a contract effective date of June 1, 2021. The primary objective of the Idaho Cleanup Project contract with DOE-ID is to safely accomplish as much of the remaining DOE Office of EM's cleanup mission at the Idaho National Laboratory Site as possible to meet regulatory and legal requirements.

In addition, a small business contractor, Spectra Tech, Inc., manages the four year (plus one option year) Firm Fixed Price contract valued at \$40,000,000. The option has been exercised and the contract expires on March 31, 2021. The procurement process is underway to determine the acquisition strategy. The primary objective of the Nuclear Regulatory Commission Licensed Facilities contract is to provide management and oversight of the Nuclear Regulatory Commission licensed Independent Spent Fuel Storage Installations in support of the Idaho Cleanup Project. This includes managing the licenses for two existing facilities (the Three Mile Island-2 and Fort St. Vrain ISFSIs); the unbuilt facility (the Idaho Spent Fuel Facility), and operating, maintaining, and providing security services at Fort St. Vrain, Colorado.

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 offsite disposal facilities and shipping assets (containers, tractors, trailers and drivers, and shipping schedules), including shipping rates to the Waste Isolation Pilot Plant for legacy transuranic waste. The shipment of transuranic waste destined for WIPP (currently more than 20,000 containers) will be completed consistent with the WIPP Shipping Schedule.
- 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 Sodium Bearing Waste.

Idaho

Funding (\$K)

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Idaho National Laboratory				
ID Excess Facilities D&D				
ID-0040-EF / Idaho Excess Facilities D&D	10,000	0	0	0
Idaho Cleanup and Waste Disposition				
ID-0012B-D / SNF Stabilization and Disposition-2012 (Defense)	16,974	26,404	26,800	+396
ID-0013 / Solid Waste Stabilization and Disposition	215,387	179,025	74,854	-104,171
ID-0014B / Radioactive Liquid Tank Waste Stabilization and Disposition-2012	162,739	185,886	123,200	-62,686
ID-0030B / Soil and Water Remediation-2012	24,900	38,685	32,700	-5,985
Subtotal, Idaho Cleanup and Waste Disposition	420,000	430,000	257,554	-172,446
Idaho Community and Regulatory Support				
ID-0100 / Idaho Community and Regulatory Support	3,200	3,500	2,400	-1,100
Total, Idaho National Laboratory	433,200	433,500	259,954	-173,546
Non-Defense Environmental Cleanup				
Small Sites				
Idaho National Laboratory				
ID-0012B-N / SNF Stabilization and Disposition-2012 (Non-Defense)	10,000	12,800	11,000	-1,800
Total, Idaho	443,200	446,300	270,954	-175,346

Idaho
Explanation of Major Changes (\$K)

FY 2021 Request vs FY 2020 Enacted

Defense Environmental Cleanup

Idaho National Laboratory

Idaho Cleanup and Waste Disposition

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

- No significant change. +396

ID-0013 / Solid Waste Stabilization and Disposition

- Decrease represents completion of treatment and characterization of all contact-handled transuranic non-sludge waste at Advanced Mixed Waste Treatment Facility (AMWTF). The decrease also reflects funding received in the FY 2020 enacted appropriations that will be utilized to continue Resource Conservation and Recovery Act (RCRA) closure activities, handling of mixed low-level waste (MLLW) and operations of Radioactive Waste Management Complex (RWMC). -104,171

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

- The decrease reflects funding received in the FY 2020 enacted appropriations that will be utilized to continue Integrated Waste Treatment Unit (IWTU) activities into FY 2021 as the facilities enter stable operations following ongoing facility modifications and testing. -62,686

ID-0030B / Soil and Water Remediation-2012

- The decrease reflects funding received in the FY 2020 enacted appropriations and continues progress on buried waste exhumation as well as planned decommissioning and decontamination progress of the Subsurface Disposal Area (SDA) waste exhumation facilities. -5,985

Idaho Community and Regulatory Support

ID-0100 / Idaho Community and Regulatory Support

- The decrease is associated with the Idaho Department of Environmental Quality air permit which is no longer required, and another reduction for costs associated with the Citizens Advisory Board and United States Geological Survey efforts. -1,100

Non-Defense Environmental Cleanup

Small Sites

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

- Decrease reflects final transition to stable storage operations. -1,800

Total, Idaho	-175,346
---------------------	-----------------

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$26,404,000	\$26,800,000	+\$396,000
<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 storage for transfer to the Materials and Fuels Complex. Retrieve Advanced Test Reactor fuel from wet storage for placement into dry storage. Support spent nuclear fuel packaging demonstration activity to assure safe extended storage of spent nuclear fuel and conduct planning and preliminary design for future disposition. 	<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. Support spent nuclear fuel packaging demonstration activity to assure safe extended storage of spent nuclear fuel and conduct planning and preliminary design for future disposition. 	<ul style="list-style-type: none"> No significant change.

- 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.
 - Perform transfer of spent fuel at Chemical Processing Plant 749 from 1st generation vaults to second generation vaults due to hydrogen generation to support stable, long-term 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 due to hydrogen generation to support stable, long-term storage.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$179,025,000	\$74,854,000	-\$104,171,000
<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. 	<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. 	<ul style="list-style-type: none"> Decrease represents completion of treatment and characterization of all contact-handled transuranic non-sludge waste at Advanced Mixed Waste Treatment Facility (AMWTF). The decrease also reflects funding received in the FY 2020 enacted appropriations that will be utilized to continue Resource Conservation and Recovery Act (RCRA) closure activities, handling of mixed low-level waste (MLLW) and operations of Radioactive Waste Management Complex (RWMC).

- Treat and dispose mixed low-level radioactive waste and low-level radioactive waste offsite.
- Provide for storage of processed and certified transuranic waste pending shipment to the Waste Isolation Pilot Plant.
- Transition the Advanced Mixed Waste Treatment Plant to cold standby ready for Resource Conservation & Recovery Act closure.

- Treat and dispose mixed low-level radioactive waste and low-level radioactive waste offsite.
 - 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.
-

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$185,886,000	\$123,200,000	-\$62,686,000
<ul style="list-style-type: none"> Develop and further the regulatory path forward for disposal of the sodium bearing waste treatment product. Maintain Integrated Waste Treatment Unit (IWTU) during outage and prepare for operations to begin in CY 2020. 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. Continue developing and testing methods and equipment necessary to retrieve and transfer calcine waste to a permanent repository. 	<ul style="list-style-type: none"> Develop and further the regulatory path forward for disposal of the sodium bearing waste treatment product. Continue Integrated Waste Treatment Unit (IWTU) 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 additional treated sodium bearing waste storage capacity. 	<ul style="list-style-type: none"> The decrease reflects funding received in the FY 2020 enacted appropriations that will be utilized to continue Integrated Waste Treatment Unit (IWTU) activities into FY 2021 as the facilities enter stable operations following ongoing facility modifications and testing.

- Continue engineering and design work required to install the calcine waste retrieval equipment.
-

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$38,685,000	\$32,700,000	-\$5,985,000
<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. • Maintain the remedies at Waste Area Group 2 (Test Reactor Area); Waste Area Group 4 (Central Facilities Area); Waste Area Group 5 (Power Burst Facility/Auxiliary Reactor Area); and Waste Area Group 6 (Experimental Breeder Reactor/BORAX). • Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for the Waste Area Group 3 (Operable Unit 3-14) (Idaho Nuclear Technology 	<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 Waste Area Group 2 (Test Reactor Area); Waste Area Group 4 (Central Facilities Area); Waste Area Group 5 (Power Burst Facility/Auxiliary Reactor Area); and Waste Area Group 6 (Experimental Breeder Reactor/BORAX). • Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for the Waste Area Group 3 	<ul style="list-style-type: none"> • The decrease reflects funding received in the FY 2020 enacted appropriations and continues progress on buried waste exhumation as well as planned decommissioning and decontamination progress of the Subsurface Disposal Area (SDA) waste exhumation facilities.

and Engineering Center) tank farm soils and groundwater.

- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for Waste Area Group 1 (Operable Unit 1-07B) TAN Groundwater.
- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for Waste Area Group 10 (Operable Unit 10-08) site wide ground water, miscellaneous sites, and future sites.
- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for Waste Area Group 10 (Operable unit 10-04) 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.

(Operable Unit 3-14) (Idaho Nuclear Technology and Engineering Center) tank farm soils and groundwater.

- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for Waste Area Group 1 (Operable Unit 1-07B) TAN Groundwater.
- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for Waste Area Group 10 (Operable Unit 10-08) site wide ground water, miscellaneous sites, and future sites.
- Implement the Comprehensive Environmental Response, Compensation, and Liability Act Record of Decision for Waste Area Group 10 (Operable Unit 10-04) 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.
- Initiate decontamination and decommissioning processes for Buried Waste Exhumation Facilities.

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 (ID-DEQ) execution of requirement in the Federal Facility Agreement/Consent Order (FFACO) 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$3,500,000	\$2,400,000	-\$1,100,000
<ul style="list-style-type: none"> • Support from United States Geological Survey • 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"> • The decrease is associated with the Idaho Department of Environmental Quality air permit which is no longer required, and another reduction for costs associated with the Citizens Advisory Board and United States Geological Survey efforts.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$12,800,000	\$11,000,000	-\$1,800,000
<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 new upgraded systems to meet Nuclear Regulatory Commission license conditions. • Construct a new personnel support facility 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 new upgraded systems to meet Nuclear Regulatory Commission license conditions. 	<ul style="list-style-type: none"> • Decrease reflects final transition to stable storage operations.

Oak Ridge

Overview

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.

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. One-half million people live within a thirty mile radius of the Oak Ridge Reservation. These three site locations are surrounded by surface waters and/or groundwater. 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 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 is a former gaseous diffusion plant that was shut down in 1987. It is currently being cleaned up and transitioned into a private sector industrial park.
- The Oak Ridge National Laboratory covers 3,300 acres and conducts multi-program energy and basic research. It is the Department of Energy's largest multi-program national laboratory. 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 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 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.

Direct maintenance and repairs at Oak Ridge is estimated to be \$64,586,000 in FY 2021.

The Oak Ridge Office of Environmental Management plans to purchase the following vehicle in FY 2021: one minivan.

Highlights of the FY 2021 Budget Request

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

- Maintain Oak Ridge Office of Environmental Management facilities in a safe, compliant and secure manner.
- Operate Oak Ridge Office of Environmental Management waste management facilities, such as the on-site disposal facility and sanitary landfills at the Y-12 National Security Complex, and wastewater and gaseous waste treatment operations at Oak Ridge National Laboratory.
- Initiate down blending of the remaining Uranium-233 material at Oak Ridge National Laboratory.
- Continue slab and soil remediation at the East Tennessee Technology Park.
- Continue support for shipments of transuranic waste to the Waste Isolation Pilot Plant.
- Continue construction of the Outfall 200 Mercury Treatment Facility at the Y-12 National Security Complex.
- Continue design for On-Site Waste Disposal Facility, to support Y-12 National Security Complex and Oak Ridge National Laboratory cleanup.

- Continue testing and maturation of critical technologies to support design of the Transuranic Sludge Treatment Process.
- Continue mercury-related technology development, including characterization, remediation, monitoring, and modeling

The FY 2021 request includes funding for two line-item construction project: Outfall 200 Mercury Treatment Facility (\$20,500,000) and On-Site Waste Disposal Facility (\$22,380,000).

- The purpose of the Outfall 200 Mercury Treatment Facility project is to construct a robust water treatment facility that will remove mercury from Upper East Fork Poplar Creek, before it leaves the Y-12 National Security Complex site and enters the City of Oak Ridge. It also provides infrastructure to prepare for large-scale demolition of the former mercury use buildings located at the Y-12 National Security Complex site. The \$20,500,000 requested for the Outfall 200 Mercury Treatment Facility project includes funding for construction and other project costs.
- The purpose of the On-Site Waste Disposal Facility project is to provide waste disposal capacity for demolition debris and remediation waste from Y-12 National Security Complex and Oak Ridge National Laboratory cleanup projects once the existing disposal facility has reached capacity. Its construction enables the Office of Environmental Management to avoid costly transportation operations and allows the program to address high-risk contaminated facilities. The \$22,380,000 requested for the On-Site Waste Disposal Facility project includes funding for design and other project costs.

FY 2020 and FY 2021 Key Milestones/Outlook

- (September 2020) Complete major facilities demolition at the East Tennessee Technology Park.
- (July 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.

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

Program planning and execution at Oak Ridge is conducted through contracts to large and small businesses. Oak Ridge develops near- and long-term program/project plans and contract strategies to execute these plans to complete cleanup on schedule. 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.
 - o Period of Performance - April 29, 2011 to July 31, 2020
 - o Contract Value - \$3.2B
 - 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.
 - o Performance – Contractor has been a high performing contractor as evidenced by the consistent award fee scores of Very Good to Excellent and the contractor’s cumulative schedule performance index of 0.99 and cost performance index of 1.05. The Oak Ridge Office of Environmental Management has seen significant savings on cleanup projects performed by this contract including underrunning the K-25 demolition project contract baseline by \$4.4M; K-31 demolition project by \$6.5M; and K-27 demolition project \$9.6M. These were large gaseous diffusion buildings that posed safety and technical challenges.
- 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 - A five-year period of performance ending October 2020.
 - o Contract Value - \$232M.
 - o Type – The contract was awarded as a hybrid contract which consists of Fixed Priced CLIN 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 Items based upon the remaining work and availability of historical information.
 - o Performance – Contractor has consistently achieved excellent 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 - \$522M
 - o Type - The contract, originally awarded as a cost-reimbursement type, was converted to a firm-fixed price beginning with the Direct Disposition Campaign. 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 - \$92M
 - o Type – Firm-fixed price

- o Performance – The contractor was provided a Notice to Proceed in December 2018. The contractor is developing pre-construction submittals and will begin construction activities once the submittals are approved.
- 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 re compete them.

Strategic Management

The Oak Ridge cleanup strategy includes near-term goals to: (1) complete closure and reindustrialize the East Tennessee Technology Park; (2) continue the processing campaign for the remaining Uranium-233 inventory; (3) continue support to the Carlsbad Field Office for shipping transuranic debris waste to the Waste Isolation Pilot Plant; (4) continue construction of the Outfall 200 Mercury Treatment Facility at the Y-12 National Security Complex; (5) complete the design of a new on-site disposal facility called the On Site Disposal Facility; (6) construct and operate the Transuranic Sludge Test Facility; and (6) continue the groundwater monitoring program for the reservation.

A key component to cleanup success in Oak Ridge is 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 to promote cooperation. 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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Oak Ridge				
OR Cleanup and Disposition				
OR-0013B / Solid Waste Stabilization and Disposition-2012	74,000	101,100	58,000	-43,100
OR Nuclear Facility D&D				
OR-0041 / Nuclear Facility D&D-Y-12				
Operating	35,000	60,000	32,574	-27,426
Construction				
14-D-403: Outfall 200 Mercury Treatment Facility, OR (OR-0041)	76,000	70,000	20,500	-49,500
17-D-401: On-Site Disposal Facility	10,000	0	22,380	+22,380
	121,000	130,000	75,454	-54,546
OR-0042 / Nuclear Facility D&D-Oak Ridge National Laboratory	154,000	153,000	76,503	-76,497
Subtotal, OR Nuclear Facility D&D	275,000	283,000	151,957	-131,043
OR Reservation Community and Regulatory Support				
OR-0100 / Oak Ridge Reservation Community & Regulatory Support (Defense)	5,700	5,900	4,930	-970
OR Technology Development and Deployment				
OR-TD-0100 / Technology Development Activities - Oak Ridge	3,000	5,000	3,000	-2,000
U233 Disposition Program				
OR-0011D / U233 Disposition Program	52,300	55,000	45,000	-10,000
Total, Oak Ridge	410,000	450,000	262,887	-187,113
Safeguards and Security				
OR-0020 / Safeguards and Security	14,023	9,000	9,260	+260
Total, Defense Environmental Cleanup	424,023	459,000	272,147	-186,853

Non-Defense Environmental Cleanup

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Small Sites				
Oak Ridge				
OR-0104 / Community and Regulatory (Non-Defense)	10,000	10,000	0	-10,000
Uranium Enrichment Decontamination and Decommissioning Fund				
Oak Ridge				
Oak Ridge				
OR-0040 / Nuclear Facility D&D-East Tennessee Technology Park (D&D Fund)	195,000	195,693	144,701	-50,992
Pension and Community and Regulatory Support				
Oak Ridge				
OR-0102 / East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration	17,258	17,655	15,000	-2,655
Total, Uranium Enrichment Decontamination and Decommissioning Fund	212,258	213,348	159,701	-53,647
Total, Total, Oak Ridge	646,281	682,348	431,848	-250,500

Oak Ridge
Explanation of Major Changes (\$K)

FY 2021 Request vs FY 2020 Enacted

Defense Environmental Cleanup

Oak Ridge

OR Cleanup and Disposition

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

- Decrease reflects funding received in the FY 2020 enacted appropriation for processing legacy transuranic debris waste and transition activities for the Oak Ridge Office of Environmental Management cleanup follow-on contract; and an increase to support continued testing of critical technology elements required to support final design of the sludge processing facility. -43,100

OR Nuclear Facility D&D

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

- Decrease reflects funding received in the FY 2020 enacted appropriation for cleanup activities and reduced funding required for the Outfall 200 Mercury Treatment Facility construction project; and an increase for the On-Site Waste Disposal Facility construction project. -54,546

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

- Decrease reflects funding received in the FY 2020 enacted appropriation for cleanup and critical deferred maintenance activities. -76,497

OR Reservation Community and Regulatory Support

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

- No significant change. -970

OR Technology Development and Deployment

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

- Decrease reflects funding received in the FY 2020 enacted appropriation that will be utilized to study various technologies to remediate Mercury from soils. -2,000

U233 Disposition Program

OR-0011D / U233 Disposition Program

- Decrease reflects funding received in the FY 2020 enacted appropriation for preparing Building 2026 to process the remaining Uranium-233 material at Oak Ridge National Laboratory. -10,000

Safeguards and Security

OR-0020 / Safeguards and Security

FY 2021 Request vs FY 2020 Enacted

• No change.	+260
Non-Defense Environmental Cleanup	
Small Sites	
OR-0104 / Community and Regulatory (Non-Defense)	
• Decrease reflects funding received in the FY 2020 enacted appropriation to meet remaining Memorandum of Agreement commitments for preserving the historical significance of Building K-25.	-10,000
Uranium Enrichment Decontamination and Decommissioning Fund	
OR-0040 / Nuclear Facility D&D-East Tennessee Technology Park (D&D Fund)	
• Decrease reflects completion of demolition of facilities.	-50,992
Pension and Community and Regulatory Support	
OR-0102 / East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration	
• Decrease reflects reduced pension requirements.	-2,655
<hr/>	
Total, Oak Ridge	-250,500

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 processed Oak Ridge Reservation transuranic and low-level waste. Contact-handled transuranic debris processing was initiated in FY 2006 and processing of remote-handled transuranic debris began in FY 2008 at the Transuranic Waste Processing Center. All transuranic debris waste processing is scheduled for completion in 2020 and will be safely stored at Oak Ridge until off-site shipments to the Waste Isolation Pilot Plant are complete.

This PBS also includes the Sludge Processing Facility Buildout Project. This project will provide the facilities to retrieve, process and dispose of legacy transuranic sludge currently being stored in tanks at the Oak Ridge National Laboratory. Work to mature the technology of the selected alternative will be used to continue progress on this project.

This PBS also includes funding for Oak Ridge transuranic waste characterization and certification activities conducted by the National TRU Program Central Characterization Project.

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

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$101,100,000	\$58,000,000	-\$43,100,000
<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. Continue transfers of transuranic waste from storage facilities to the Transuranic Waste Processing Facility. Conduct activities at the Transuranic Waste Processing Facility to process legacy contact-handled and remote-handled debris to meet regulatory milestones; and to prepare and ship waste to the Waste Isolation Pilot Plant in accordance with Carlsbad Field Office requirements. 	<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. Continue transfers of transuranic waste between storage facilities at the Transuranic Waste Processing Facility. Conduct activities at the Transuranic Waste Processing Center to prepare and ship waste to the Waste Isolation Pilot Plant in accordance with Carlsbad Field Office requirements. Manage transuranic waste storage pending shipment to the Waste Isolation Pilot Plant. 	<ul style="list-style-type: none"> Decrease reflects funding received in the FY 2020 enacted appropriation for processing legacy transuranic debris waste and transition activities for the Oak Ridge Office of Environmental Management cleanup follow-on contract; and an increase to support continued testing of critical technology elements required to support final design of the sludge processing facility.

- Obtain certification by the Central Characterization Project that the processed transuranic waste meets Waste Isolation Pilot Plant disposal criteria. Manage transuranic waste storage pending shipment to the Waste Isolation Pilot Plant.
 - Manage mixed low-level radioactive waste in compliance with regulations.
 - Initiate testing of sludge processing facility critical technologies to support the transuranic sludge processing facility design.
 - Fund transition activities for the OREM cleanup follow-on contract.
- Manage mixed low-level radioactive waste in compliance with regulations.
 - Continue testing of sludge processing facility critical technologies to support the transuranic sludge processing facility design.
-

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

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS funds the cleanup at the Y-12 National Security Complex, which is a contributor of mercury to the Upper East Fork Poplar Creek that flows through the City of Oak Ridge. The near-term focus of work at the Y-12 National Security Complex includes: surveillance and maintenance of current excess facilities awaiting future decontamination and decommissioning; deactivation and demolition of Y-12 high-risk excess facilities; and 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.

Funds also support the cost-effective cleanup of the Oak Ridge Reservation through the operation of the Environmental Management Waste Management Facility (maximum capacity of 2,200,000 cubic yards) and the Oak Ridge Reservation Landfills for disposition of waste from all on-site DOE program offices.

This PBS includes two Line Item Construction projects; the Outfall 200 Mercury Treatment Facility and the On Site Waste Disposal Facility. 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 is a proposed landfill to provide on-site waste disposal capacity for demolition debris and remediation waste from Oak Ridge Reservation clean-up projects once the existing disposal facility has reached capacity.

The scope of this PBS also includes direct maintenance and repair that are applicable to these areas.

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

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$130,000,000	\$75,454,000	-\$54,546,000
<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. 	<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. 	<ul style="list-style-type: none"> Decrease reflects funding received in the FY 2020 enacted appropriation for cleanup activities and reduced funding required for the Outfall 200 Mercury Treatment Facility construction project; and an increase for the On-Site Waste Disposal Facility construction project.

- Initiate deactivation activities on multiple high-risk excess facilities at Y-12.
 - Continue implementing Oak Ridge Reservation groundwater strategy.
 - Continue construction of the Outfall Mercury Treatment Facility.
 - Continue implementing Oak Ridge Reservation groundwater strategy.
 - Continue construction of the Outfall Mercury Treatment Facility.
 - Continue final design activities for the On Site Waste Disposal Facility.
-

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 cleanup of the Oak Ridge National Laboratory. The near-term focus of work at the Oak Ridge National Laboratory includes operation of liquid, gaseous, and process waste systems in support of the Office of Environmental Management and Office of Science missions; as well as surveillance and maintenance and hazard abatement of more than 200 excess contaminated facilities that range from reactors to hot cells. The scope also includes activities to monitor three contaminated groundwater plumes, contaminated surface water, and numerous areas of soil and sediment contamination awaiting future environmental remediation actions. In addition, the scope includes deactivation and demolition of Oak Ridge National Laboratory high-risk excess facilities. The activities performed under this PBS will ensure worker safety and mitigate the potential for contaminant release and continue environmental monitoring of surface and groundwater systems to support future remediation decisions identified in the Comprehensive Environmental Response Compensation and Liability Act Records of Decision. The scope of this PBS also includes direct maintenance and repair that are applicable to these areas.

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

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$153,000,000	\$76,503,000	-\$76,497,000
<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. • 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. 	<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. • 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. 	<ul style="list-style-type: none"> • Decrease reflects funding received in the FY 2020 enacted appropriation for cleanup and critical deferred maintenance activities.

- Initiate deactivation activities on multiple high-risk excess facilities at Oak Ridge National Laboratory and make improvements to the X-10 Graphite Reactor National Historic Landmark.
 - Conduct infrastructure upgrades to the Liquid and Gaseous Waste Operations facilities to ensure mission critical activities continue at Oak Ridge Environmental Management, the Office of Science and at the Oak Ridge National Laboratory.
 - Perform enhanced surveillance and maintenance activities at the Molten Salt Reactor Experiment Facility to address issues with safety systems.
- Conduct infrastructure upgrades to the Liquid and Gaseous Waste Operations facilities to ensure mission critical activities continue at Oak Ridge Environmental Management, the Office of Science and at the Oak Ridge National Laboratory.
 - 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 a Tennessee non-regulatory Environmental Surveillance Oversight grant, the Tennessee regulatory Federal Facility Agreement grant 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$5,900,000	\$4,930,000	-\$970,000
<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.

The Technology Development and Deployment program focuses 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. The goal is to 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 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 funding received in the FY 2020 enacted appropriation that will be utilized to study various technologies to remediate Mercury from soils.

- Initiate activities to establish a Technology Demonstration Facility which will be utilized to study various technologies to remediate Mercury from soils.
-

U233 Disposition Program (PBS: OR-0011D)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

Oak Ridge maintains the DOE inventory of Uranium-233 which is currently stored in Building 3019 at the Oak Ridge National Laboratory. Uranium-233 is a special nuclear material which 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. Disposing of the 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.

With the completion of the Uranium-233 Consolidated Edison Uranium Solidification Project Direct Disposition Campaign, the focus has shifted to the down blending, solidification, and disposal operations in Building 2026 for the remainder of the material.

U233 Disposition Program (PBS: OR-0011D)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$55,000,000	\$45,000,000	-\$10,000,000
<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. Complete preparation of Building 2026 and continue operational readiness activities to enable processing of the remaining Uranium-233 material at Oak Ridge National Laboratory. 	<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. Complete operational readiness activities to enable hot cell processing of the remaining Uranium-233 material at Oak Ridge National Laboratory and initiate Uranium-233 down blending operations in the Building 2026 hot cells. 	<ul style="list-style-type: none"> Decrease reflects funding received in the FY 2020 enacted appropriation for preparing Building 2026 to process the remaining Uranium-233 material at Oak Ridge National Laboratory.

Safeguards and Security (PBS: OR-0020)

Overview

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

The Oak Ridge Environmental Management Safeguards and Security Program provides security services to support the site’s cleanup program. These funds also implement Homeland Security Presidential Directive-12 identification credentials for all employees to sustain a reliable, cleared workforce.

The Cyber Security Program protects government information and technology systems in compliance with DOE requirements to support the cleanup of the Oak Ridge site. Activities include 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$9,000,000	\$9,260,000	+\$260,000
<ul style="list-style-type: none"> Provide safeguard and security services for the following major 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, 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, 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, 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"> No change.

Community and Regulatory (Non-Defense) (PBS: OR-0104)

Overview

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

This PBS funds activities which support the multi-party 2012 Memorandum of Agreement to comply with Section 106 of the National Historic Preservation Act; preserving the historical significance of the former K-25 site. The K-25 Building was once the largest facility in the world, over 44 acres under roof, and was a significant part of the Manhattan Project.

Community and Regulatory (Non-Defense) (PBS: OR-0104)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$10,000,000	\$0	-\$10,000,000
<ul style="list-style-type: none"> Complete facility construction, install exhibits, and open the K-25 History Center to the public at the East Tennessee Technology Park. Complete the remaining Memorandum of Agreement commitments. 	<ul style="list-style-type: none"> No activities in FY 2020. 	<ul style="list-style-type: none"> Decrease reflects funding received in the FY 2020 enacted appropriation to meet remaining Memorandum of Agreement commitments for preserving the historical significance of Building K-25.

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

Overview

This PBS funds decontamination and decommissioning of facilities and remedial actions for contaminated sites at the East Tennessee Technology Park. Approximately 2,200 acres of the 5,000 acres at the site contain potential contamination including known groundwater contaminant plumes from former burial grounds and contaminated soils. The decommissioning and demolition of the large gaseous diffusion plant was completed in FY 2017. There remains many contaminated ancillary and support buildings that require demolition before the site can be closed and transitioned to a private sector park. The scope of this PBS includes: decontamination and decommissioning of remaining facilities (including planning, deactivation of utilities, asbestos and other hazardous material abatement, equipment dismantlement and disposal, structure demolition, and waste disposition); remedial actions (including planning, removal actions, and development of Comprehensive, Environmental, Response, Compensation and Liability Act documentation); and site infrastructure services (including fire protection; utility services; environmental, safety, and health programs; real property management); and capital improvements and repairs. The scope of this PBS also includes direct maintenance and repair that are applicable to these areas.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$195,693,000	\$144,701,000	-\$50,992,000
<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. Complete demolition of remaining contaminated facilities owned by the Department of Energy. Conduct characterization and slab and soil remediation of the main plant area, Zone 2. 	<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"> Decrease reflects completion of demolition of facilities.

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

Overview

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$17,655,000	\$15,000,000	-\$2,655,000
<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 reduced pension requirements.

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

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Request
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

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)	93,085	13,613	34,222	15,572	45,250	0
Total, Capital Operating Expenses	93,085	13,613	34,222	15,572	45,250	0

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

Oak Ridge

Mercury Research Center	1,840	1,249	591	1,122	0	0	0
Technology Demonstration Facility	750	0	0	0	750	0	-750
2026 Building Modifications U233 Processing	10,281	2,250	8,031	2,196	0	0	0
History Center	6,091	6,091	0	5,188	0	0	0
Viewing Tower/Equipment Building	19,464	1,464	10,000	142	8,000	0	-8,000
Wayside Exhibits & Access to Historic Preservation Facilities	4,559	2,559	0	1,423	2,000	0	-2,000
SWSA 6 Laydown & Storage Area	4,700	0	2,000	387	2,700	0	-2,700
ORNL Fire Alarm Upgrades	9,400	0	2,000	19	7,400	0	-7,400
Zeolite Installation Building 3544	14,224	0	11,024	4,526	3,200	0	-3,200
Pretreatment System Building 3517	3,776	0	576	569	3,200	0	-3,200
Bailey DCS System Upgrade	4,600	0	0	0	4,600	0	-4,600
MSRE Upgrades	5,000	0	0	0	5,000	0	-5,000
Graphite Reactor Roof & Exhaust	4,500	0	0	0	4,500	0	-4,500
ORNL Equipment Staging	3,900	0	0	0	3,900	0	-3,900
Total, Plant Projects (GPP and IGPP) (Total Estimated (TEC) <\$20M)	93,085	13,613	34,222	15,572	45,250	0	-45,250
Total, Capital Summary	93,085	13,613	34,222	15,572	45,250	0	-45,250

Oak Ridge

Construction Projects Summary (\$K)

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Request
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

14-D-403, Outfall 200 Mercury Treatment Facility, OR (OR-0041)

Total Estimate Cost (TEC)	N/A*	45,608	76,000	17,421	N/A*	N/A*	N/A*
Other Project Costs (OPC)	N/A*	11,892	0	0	N/A*	N/A*	N/A*
Total Project Cost (TPC) 14-D-403	224,000	57,500	76,000	17,421	70,000	20,500	-49,500

* 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*	16,000	9,852	10,153	N/A*	N/A*	N/A*
Other Project Costs (OPC)	N/A*	22,534	148	156	N/A*	N/A*	N/A*
Total Project Cost (TPC) 17-D-401	TBD	38,534	10,000	10,309	0	22,380	+22,380

* 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 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 for Phase 1.

A Federal Project Director has been assigned to the project and has approved this data sheet. The Federal Project Director is currently certified at Level II.

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.

Future critical decisions for this line item will be phased into three separate subprojects.

Significant Changes

This FY 2021 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

Fiscal Year or Date

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
Phase 2	5/26/2016	4Q FY2017	4Q FY2018	TBD	N/A	TBD	N/A	TBD
Phase 3	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
Phase 2	5/26/2016	4Q FY2017	4Q FY2018	TBD	N/A	TBD	N/A	TBD
Phase 3	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
Phase 2	5/26/2016	1/12/2018	8/24/2018	4Q FY2020	TBD	TBD	N/A	TBD
Phase 3	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
Phase 2	5/26/2016	1/12/2018	8/24/2018	1Q FY2022	TBD	TBD	N/A	TBD

Phase 3	5/26/2016	1/12/2018	8/24/2018	1Q FY2022	TBD	TBD	N/A	TBD
---------	-----------	-----------	-----------	-----------	-----	-----	-----	-----

Note: The schedule dates are only estimates and are consistent with the high end of the schedule range

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range

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

CD-1 – Approve Design Scope and Project Cost and Schedule Ranges

CD-2 – Approve Project 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 Closeout

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
Phase 2	0	TBD	TBD	TBD	TBD	TBD	TBD
Phase 3	0	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
Phase 2	0	TBD	TBD	TBD	TBD	TBD	TBD
Phase 3	0	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
Phase 2	0	TBD	TBD	TBD	TBD	TBD	TBD
Phase 3	0	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
Phase 2	0	TBD	TBD	TBD	TBD	TBD	TBD
Phase 3	0	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 cell 1, 2, and 3 (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 cell 4 (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.

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
KPPs to be developed		

3. Project Cost and Schedule

Financial Schedule

		(Dollars in Thousands)		
		Appropriations	Obligations	Costs
Total Estimated Cost (TEC)				
Design				
FY 2017	Phase 1	6,000	0	0
FY 2018	Phase 1	10,000	16,000	812
FY 2019	Phase 1	9,852	302	10,153
FY 2020	Phase 1	0	9,550	8,000
FY 2021	Phase 1	22,314	22,314	7,431
Outyears ^a	Phase 1	TBD	TBD	TBD
Total, Design		TBD	TBD	TBD

(Dollars in Thousands)

		Appropriations	Obligations	Costs
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
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	9,852	302	10,153
FY 2020	Phase 1	0	9,550	8,000
FY 2021	Phase 1	22,314	22,314	7,431
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	148	148*	156
FY 2020	Phase 1	0	0	202
FY 2021	Phase 1	66	66	92
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	148	148*	156
FY 2020	Phase 1	0	0	202
FY 2021	Phase 1	66	66	92
Outyears ^a	Phase 1	TBD	TBD	TBD
Total, OPC		TBD	TBD	TBD

(Dollars in Thousands)

Appropriations	Obligations	Costs
----------------	-------------	-------

*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	8,202
FY 2021	Phase 1	22,380	22,380	7,523
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

Phase 1

26,396 26,396 N/A

Total Design

26,396 26,396 N/A

Construction

Phase 1

TBD TBD N/A

Phase 2

TBD TBD N/A

Phase 3

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

Phase 2

TBD TBD N/A

Phase 3

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	Out years	Total
FY 2018	TEC	6,000	1,000				TBD	TBD
	OPC	17,236	4,000				TBD	TBD
	TPC	23,236	5,000				TBD	TBD
FY 2019	TEC	6,000	10,000	4,690			TBD	TBD
	OPC	17,236	5,297	310			TBD	TBD
	TPC	23,236	15,297	5,000			TBD	TBD
FY 2020	TEC	6,000	10,000					
	OPC	17,236	5,297					
	TPC	23,236	15,297	10,000	15,269	0	TBD	TBD
FY 2021	TEC	6,000	10,000					
	OPC	17,236	5,297					
	TPC	23,236	15,297	10,000	0	22,380	TBD	TBD

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

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 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.

**14-D-403, Outfall 200 Mercury Treatment Facility
Y-12 National Security Complex, Oak Ridge Tennessee
Project is for Design and Construction**

1. Summary, Significant Changes and Schedule and Cost History

Summary

The FY 2021 Request for the Outfall 200 Mercury Treatment Facility is \$20,500,000.

The most recent DOE O 413.3B approved Critical Decision is Critical Decision-2/3, *Approve Performance Baseline/Approve Start of Construction*, which was approved by the Project Management Executive on October 1, 2018. Appropriation of funding is requested for a Total Project Cost of \$224,000,000 based on the approved project performance baseline.

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.

A Federal Project Director has been assigned to the project and has approved this data sheet.

This project will design and construct a Mercury Treatment Facility for Outfall 200 flow having a total footprint of approximately 74,000 square feet. The total footprint is comprised of two primary areas, the headworks area and the treatment facility area, joined by a transfer pipeline corridor. The headworks area will consist of collection and transfer components, grit separation equipment, and storm water storage tank. The treatment facility will consist of outdoor tanks, piping, and transfer and treatment equipment along with an approximately 22,000 square foot metal building to house weather-sensitive equipment and controls. In addition, construction will include utilities, foundations, parking, and fencing. The facility will accomplish mercury removal through a combination of unit operations, including grit removal, chemical precipitation, clarification and media filtration.

The funds being requested in FY 2021 will be used to continue construction.

Critical Milestone History

Request	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 2015	2Q FY2014 ^a	N/A	2Q FY 2015	N/A	4Q FY2017	1Q FY2017	TBD	N/A	TBD
FY 2016	3/17/2014 ^a	1Q FY2015	2Q FY 2015	N/A	TBD	TBD	TBD	N/A	TBD
FY 2017	3/17/2014 ^a	10/13/2014	5/6/2015	N/A	TBD	TBD	TBD	N/A	TBD
FY 2018	3/17/2014 ^a	10/13/2014	5/6/2015	N/A	TBD	TBD	TBD	N/A	TBD
FY 2019	3/17/2014 ^a	10/13/2014	5/6/2015	8/2/2017	TBD	4Q FY2017 ^b	TBD	N/A	TBD
FY 2020	9/22/2014 ^a	10/13/2014	5/6/2015	8/2/2017	10/1/2018	8/10/2017 ^b	10/1/2018	N/A	9/30/2025
FY 2021	9/22/2014 ^a	10/13/2014	5/6/2015	8/2/2017	10/1/2018	8/10/2017 ^b	10/1/2018	N/A	9/30/2025

^a Critical Decision -0 approval was originally issued on 7/20/2007 for the aggregate cleanup of the Y-12 National Security Site. Conceptual Design activities for this project were not initiated until FY 2012. An updated, project-specific Mission Need Statement and Critical Decision-0 was approved by the Assistant Secretary of Environmental Management on March 17, 2014. Disaggregation of the project from the aggregate cleanup of the Y-12 National Security Site was approved by the Deputy Secretary of Energy on September 22, 2014 and this date is recorded as the official Critical Decision-0 approval date in the Project Assessment and Reporting System (PARS II).

^b A design contractor will provide Title III design support during the construction phase.

Note: The schedule dates are consistent with the validated performance baseline.

- CD-0** – Approve Mission Need for a construction project with a conceptual scope and cost range
- Conceptual Design Complete** – Actual date the conceptual design was completed (if applicable)
- CD-1** – Approve Design Scope and Project Cost and Schedule Ranges
- CD-3A** – Approve Early Site Preparation
- CD-2** – Approve Project Performance Baseline
- Final Design Complete** – Actual date the project design was Issued for Construction.
- CD-3** – Approve Start of Construction
- D&D Complete** – Completion of D&D work (see Section 9)
- CD-4** – Approve Start of Operations or Project Closeout
- 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 2015	34,500	TBD	TBD	TBD	N/A	TBD	TBD
FY 2016	34,500	TBD	TBD	TBD	N/A	TBD	TBD
FY 2017	34,500	TBD	TBD	TBD	N/A	TBD	TBD
FY 2018	30,175	TBD	TBD	TBD	N/A	TBD	TBD
FY 2019	29,062	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	30,476	168,732	199,208	24,792	N/A	24,792	224,000
FY 2021	32,057	157,925	189,982	34,018	N/A	34,018	224,000

2. Project Scope and Justification

Scope

The scope of this project is to design and construct a Mercury Treatment Facility for Outfall 200 flow having a footprint of approximately 74,000 square feet comprised of two primary areas, the headworks area and the treatment facility area, joined by a transfer pipeline corridor. The headworks area will consist of collection and transfer components, grit separation equipment, and storm water storage tank. The treatment facility will consist of outdoor tanks, piping, and transfer and treatment equipment along with an approximately 22,000 square foot metal building to house weather-sensitive equipment and controls and office areas. In addition, construction will include utilities, foundations, parking, and fencing. The Outfall 200 Mercury Treatment Facility will be constructed at the Y-12 National Security Complex in Oak Ridge, Tennessee, as a Comprehensive Environmental Response, Compensation, and Liability Act of 1980 interim remedial action. The facility will provide treatment of storm sewer water discharges through Outfall 200, for the removal of mercury. The facility will accomplish mercury removal through a combination of unit operations, including grit removal, chemical precipitation, clarification and media filtration.

The Comprehensive Environmental Response, Compensation, and Liability Act and DOE O 413.3B Critical Decision process is ongoing.

Justification

Historical missions at the Y-12 National Security Complex resulted in the release of mercury to the environment. Residual mercury in the 60-year-old, deteriorating storm drain infrastructure, infiltrating groundwater and sediment-bound mercury are remobilized and transported through the storm drain network to Outfall 200 into the Upper East Fork Poplar Creek. Currently, this is the largest environmental risk on the U.S. Department of Energy Oak Ridge Reservation. The primary pathway of concern is surface water because the Upper East Fork Poplar Creek flows directly from the Y-12 complex into the city of Oak Ridge. Over the past two decades, DOE has implemented a series of projects that have reduced the concentration of mercury measured at the site boundary at Station 17, the Y-12 National Pollutant Discharge Elimination System permit compliance point. Despite the success of these actions, an unknown volume of mercury remains in the soils

beneath and adjacent to the buildings, storm sewers, and process pipelines, which continues to be released to the storm sewer system. Design and construction of a water treatment system for Outfall 200 flow is expected to mitigate the current downstream migration of mercury, as well as potential future changes in mercury flux characteristics.

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

Performance Measure	Threshold	Objective
Provide an intake collection capacity of up to 40,000 gallons per minute (gpm), including capability to transfer up to 3,000 gpm for treatment	X	N/A
Provide a storm water storage capacity of up to 2 million gallons	X	N/A
Construct a water treatment facility with processing capacity to treat up to 3,000 gpm utilizing flow equalization, chemical precipitation, clarification, and media filtration.	X	N/A

3. Project Cost and Schedule

Financial Schedule

(dollars in thousands)		
Budget Authority (Appropriations)	Obligations	Costs

Total Estimated Cost (TEC)

Design			
FY 2014	N/A	N/A	0
FY 2015	N/A	N/A	1,184
FY 2016	N/A	N/A	6,279
FY 2017	N/A	N/A	5,830
FY 2018	N/A	N/A	2,097
FY 2019	N/A	N/A	745
FY 2020	N/A	N/A	4,537
FY 2021	N/A	N/A	4,305
FY 2022	N/A	N/A	4,168
FY 2023	N/A	N/A	2,486
FY 2024	N/A	N/A	426
FY 2025	N/A	N/A	0
Total, Design ^d	N/A	N/A	32,057 ^d
Construction			
FY 2017	N/A	N/A	984
FY 2018	N/A	N/A	12,918
FY 2019	N/A	N/A	16,676
FY 2020	N/A	N/A	32,542

	(dollars in thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
FY 2021	N/A	N/A	41,333
FY 2022	N/A	N/A	36,148
FY 2023	N/A	N/A	14,391
FY 2024	N/A	N/A	2,933
FY 2025	N/A	N/A	0
Total, Construction	N/A	N/A	157,925
TEC			
FY 2014	4,608	0	0
FY 2015	9,400	14,008	1,184
FY 2016	9,400	9,400	6,279
FY 2017	5,100	3,600	6,814
FY 2018	17,100	6,228	15,015
FY 2019	N/A	N/A	17,421
FY 2020	N/A	N/A	37,079
FY 2021	N/A	N/A	45,638
FY 2022	N/A	N/A	40,316
FY 2023	N/A	N/A	16,877
FY 2024	N/A	N/A	3,359
FY 2025	N/A	N/A	0
Total TEC	N/A	N/A	189,982

* Congress appropriated funds for TPC beginning in FY 2017.

Other Project Cost (OPC)

OPC except D&D			
FY 2012 ^a	5,153	5,153	2,325
FY 2013 ^b	253	253	2,684
FY 2014 ^c	4,375	4,375	2,895
FY 2015	1,413	1,413	2,565
FY 2016	698	698	775
FY 2017	N/A	N/A	359
FY 2018	N/A	N/A	0
FY 2019	N/A	N/A	0
FY 2020	N/A	N/A	3,124
FY 2021	N/A	N/A	1,200
FY 2022	N/A	N/A	5,776
FY 2023	N/A	N/A	6,520
FY 2024	N/A	N/A	4,070
FY 2025	N/A	N/A	1,725
Total, OPC except D&D	N/A	N/A	34,018

OPC			
FY 2012 ^a	5,153	5,153	2,325
FY 2013 ^b	253	253	2,684
FY 2014 ^c	4,375	4,375	2,895
FY 2015	1,413	1,413	2,565
FY 2016	698	698	775
FY 2017	N/A	N/A	359
FY 2018	N/A	N/A	0
FY 2019	N/A	N/A	0

	(dollars in thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
FY 2020	N/A	N/A	3,124
FY 2021	N/A	N/A	1,200
FY 2022	N/A	N/A	5,776
FY 2023	N/A	N/A	6,520
FY 2024	N/A	N/A	4,070
FY 2025	N/A	N/A	1,725
Total, OPC	N/A	N/A	34,018

* Congress appropriated funds for TPC beginning in FY 2017.

Total Project Cost (TPC)

FY 2012 ^a	5,153	5,153	2,325
FY 2013 ^b	253	253	2,684
FY 2014 ^c	8,983	4,375	2,895
FY 2015	10,813	15,421	3,749
FY 2016	10,098	10,098	7,054
FY 2017	5,100	3,600	7,173
FY 2018	17,100	6,228	15,015
FY 2019	76,000	88,334	17,421
FY 2020	70,000	70,038	40,203
FY 2021	20,500	20,500	46,838
FY 2022	N/A	N/A	46,092
FY 2023	N/A	N/A	23,397
FY 2024	N/A	N/A	7,429
FY 2025	N/A	N/A	1,725
Outyears	N/A	N/A	0
Total, TPC	224,000	224,000	224,000

* Congress appropriated funds for TPC beginning in FY 2017.

^a FY 2012 cost of \$2,325 is funded by Recovery Act appropriations.

^b FY 2013 cost of \$2,684 is funded by Recovery Act appropriations.

^c FY 2014 cost of \$145 is funded by Recovery Act appropriations.

^d A design contractor will provide Title III design support during the construction phase.

Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	13,944	13,944	13,944
Title III	15,380	13,156	13,156
Contingency	2,733	3,376	3,377
Total Design	32,057	30,476	30,476
Construction			
Construction	111,912	114,977	114,977
Early Site Preparation	17,882	19,000	19,000

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Contingency	28,131	34,755	34,755
Total Construction	157,925	168,732	168,732
Total, TEC	189,982	199,208	199,208
Contingency, TEC	30,864	38,132	38,132
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Design	7,300	7,300	7,300
Start-Up	10,168	6,850	6,850
Contingency	3,500	4,262	4,262
Other OPC	13,050	6,380	6,380
Total, OPC except D&D	34,018	24,792	24,792
Total, OPC	34,018	24,792	24,792
Contingency, OPC	3,500	4,262	4,262
Total, TPC	224,000	224,000	224,000
Total, Contingency	34,314	42,394	42,394

Schedule of Appropriation Requests

Request		Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Outyears	Total
		Years								
FY 2015 Request	TEC	14,008	TBD	TBD	TBD					TBD
	OPC	11,914	TBD	TBD	TBD					TBD
	TPC	25,202	TBD	TBD	TBD					TBD
	TEC	14,008	6,800	TBD	TBD					TBD

Request		Prior Years	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Outyears	Total
FY 2016 Request	OPC	11,194	500	TBD	TBD					TBD
	TPC	25,202	7,300	TBD	TBD					TBD
FY 2017 Request	TEC	14,008	9,400	4,000	TBD					TBD
	OPC	11,194	700	1,100	TBD					TBD
	TPC	25,202	10,100	5,100	TBD					TBD
FY 2018 Request	TEC	14,008	9,400	N/A	N/A					TBD
	OPC	11,194	700	N/A	N/A					TBD
	TPC	25,202	10,100	5,100	17,100					TBD
FY 2019 Request	TEC	14,008	9,400	N/A	N/A	N/A	TBD		TBD	TBD
	OPC	11,194	700	N/A	N/A	N/A	TBD		TBD	TBD
	TPC	25,202	10,100	5,100	17,100	11,274	TBD		TBD	TBD
FY 2020 Request	TEC	14,008	9,400	N/A	N/A	N/A	N/A		N/A	N/A
	OPC	11,194	700	N/A	N/A	N/A	N/A		N/A	N/A
	TPC	25,202	10,100	5,100	17,100	76,000	49,000		41,498	224,000
FY 2021 Request	TEC	14,008	9,400	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	OPC	11,194	698	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	TPC	25,202	10,098	5,100	17,100	76,000	70,000	20,500	N/A	224,000

* Congress appropriated funds for TPC beginning in FY 2017.

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	Oct 2025
Expected Useful Life (number of years)	16
Expected Future Start of D&D of this Capital Asset (fiscal quarter)	Oct 2041

Related Funding Requirements

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	7,880 ^a	TBD	126,080 ^b	TBD
Utilities	0	0	0	0
Maintenance	0	0	0	0
Total, Operations & Maintenance	7,880 ^a	TBD	126,080 ^b	TBD

^a Annual Costs have been escalated to FY 2026 dollars to reflect estimated cost as of the start of operations.

^b Life Cycle Costs have not been escalated over the estimated 16-year period of operations.

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	22,000
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"	22,000
Total area eliminated	22,000

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.

6. Acquisition Approach

Awarded contract to URS/CH2M Oak Ridge, LLC (UCOR) on April 29, 2011. This contract includes the design of the Outfall 200 Mercury Treatment Facility, support for Critical Decision-3A/early site preparation construction activities, early site preparation utilities relocation and secant pile wall construction, support for DOE Order 413.3B Critical Decision approval through Critical Decision-2/3, and construction management technical support services. The contract is a cost plus award fee with performance based incentives.

Awarded 8a contract to Aerostar SES, LLC for limited early site preparation activities. The contract is a firm-fixed price contract.

This Project Data Sheet assumes the design contractor will provide the Title III support during the construction phase and, therefore, Title III Costs are Project Engineering and Design.

An Acquisition Strategy was developed for the project to support Critical Decision-1 approval and updated to support Critical Decision-2/3 approval. An Acquisition Plan was developed for the project construction phase. A firm fixed price contract was competitively procured for the balance of construction; award was made December 4, 2018 to Aptim North Wind Construction JV LLC.

Paducah

Overview

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 \$32,849,000.

Highlights of the FY 2021 Budget Request

This FY 2021 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.

FY 2020 and FY 2021 Key Milestones/Outlook

- (February 2020) Initiate C-400 Complex Operable Unit Remedial Investigation activities.
- (May 2020) Complete Construction of New Substation (per Agreement with Tennessee Valley Authority).
- (June 2020) Complete Disposition of 22 Cold Traps stored in C-746-Q Building to reduce the site risk.
- (November 2020) Complete Fieldwork associated with Remedial Action at C-720 Maintenance Building (Solid Waste Management Unit 211A).
- (December 2020) Complete Remedial Investigation Fieldwork activities for the C-400 Complex Operable Unit.
- (March 2021) Submit D1 Remedial Action Completion Report for C-720 Maintenance Building (Solid Waste Management Unit 211A).
- (September 2021) Complete Dismantlement of Three Electrical Switchyards.
- (September 2021) Complete Installation of the Protective Force Facility within the Modular Security Complex.

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 9/29/2016 - 1/30/2022.
- Four Rivers Nuclear Partnerships, a cost-plus-award-fee contract with cost reimbursable and indefinite-delivery indefinite quantity contract for deactivation and remediation services, covering the period 6/20/2017 - 6/19/2022. This contract has the potential for a thirty-six month option period and a twenty-four month option period.
- Swift and Staley, Inc., a small business, hybrid firm-fixed-price contract for site support services, covering the period 10/02/2015 - 9/30/2020.

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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Safeguards and Security				
PA-0020 / Safeguards and Security	15,577	15,789	16,206	+417
Non-Defense Environmental Cleanup				
Gaseous Diffusion Plants				
Paducah Gaseous Diffusion Plant				
PA-0011 / NM Stabilization and Disposition-Paducah Uranium Facilities Management	1,369	863	778	-85
PA-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	48,976	55,593	56,802	+1,209
Subtotal, Paducah Gaseous Diffusion Plant	50,345	56,456	57,580	+1,124
Uranium Enrichment Decontamination and Decommissioning Fund				
Paducah				
Paducah Gaseous Diffusion Plant				
PA-0040 / Nuclear Facility D&D-Paducah	206,000	240,000	206,518	-33,482
Pension and Community and Regulatory Support				
Paducah Gaseous Diffusion Plant				
PA-0103 / Paducah Community and Regulatory Support	2,102	2,094	2,099	+5
Total, Uranium Enrichment Decontamination and Decommissioning Fund	208,102	242,094	208,617	-33,477
Total, Total, Paducah	274,024	314,339	282,403	-31,936

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

FY 2021 Request vs FY 2020 Enacted

Defense Environmental Cleanup	
Safeguards and Security	
PA-0020 / Safeguards and Security	
<ul style="list-style-type: none"> • Increase supports installation of the new Protective Force facility within the modular security complex. 	+417
 Non-Defense Environmental Cleanup	
Gaseous Diffusion Plants	
Paducah Gaseous Diffusion Plant	
PA-0011 / NM Stabilization and Disposition-Paducah Uranium Facilities Management	
<ul style="list-style-type: none"> • No significant change. 	-85
PA-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	
<ul style="list-style-type: none"> • Increase continues support for required safety and reliability modifications. 	+1,209
 Uranium Enrichment Decontamination and Decommissioning Fund	
Paducah	
PA-0040 / Nuclear Facility D&D-Paducah	
<ul style="list-style-type: none"> • Decrease primarily due to significant progress on one-time discrete subcontracted projects, including construction of an Emergency Operations Center; dismantlement of the C-531, C-535, and C-537 switchyards; and railroad repairs and replacement of end-of-life equipment. 	-33,482
 Pension and Community and Regulatory Support	
PA-0103 / Paducah Community and Regulatory Support	
<ul style="list-style-type: none"> • No significant change. 	+5
<hr/>	
Total, Paducah	-31,936

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$15,789,000	\$16,206,000	+\$417,000
<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 cyber security. Construct Security Management facility 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. 	<ul style="list-style-type: none"> Increase supports installation of the new Protective Force facility within the modular security complex.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$863,000	\$778,000	-\$85,000
<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"> 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 significant change.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$55,593,000	\$56,802,000	+\$1,209,000
<ul style="list-style-type: none"> Continue operations of the DUF6 conversion facility Package converted depleted uranium oxide and store on site. Initiate safety and reliability modifications, including installation of hydrogen fluoride storage system isolation valves; installation of maintenance platforms for oxide powder handling system; replacement of polyvinyl chloride piping and components; installation of bulk hydrogen backup system; upgrade process control system; and replace sintered metal conversion unit filters. Conduct cylinder surveillance and maintenance to keep material in a safe, stable condition. 	<ul style="list-style-type: none"> Continue operations of the DUF6 conversion facility. Package converted depleted uranium oxide and store on site. Conduct oxide shipment pilot plant study involving shipment of up to 18 cylinders in two different rail conveyances. Continue safety and reliability modifications. Initiate additional safety and reliability modifications, including upgrade of oxide powder handling system heating and ventilation system; installation of engineered ventilation for changing cylinder valves; and replacement of hydrogen fluoride condensers. 	<ul style="list-style-type: none"> Increase continues support for required safety and reliability modifications.

- Complete annual plant maintenance outages
 - Conduct cylinder surveillance and maintenance to keep material in a safe, stable condition.
 - Complete annual plant maintenance outages.
-

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$240,000,000	\$206,518,000	-\$33,482,000
<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. Continue fieldwork for C-400 Complex (the primary source of offsite groundwater contamination) Remedial Investigation Feasibility Study and submittal of regulatory documents. 	<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. Complete Remedial Investigation Feasibility Study fieldwork activities for the C-400 Complex Operable Unit (the primary source of offsite groundwater contamination). 	<ul style="list-style-type: none"> Decrease primarily due to significant progress on one-time discrete subcontracted projects, including construction of an Emergency Operations Center; dismantlement of the C-531, C-535, and C-537 switchyards; and railroad repairs and replacement of end-of-life equipment.

- Continue utilities and space optimizations to reduce power and water needs, including dismantlement of three switchyards.
 - Initiate fieldwork associated with remedial action at C-720 Maintenance Building (solid waste management unit 211A). This unit is a smaller source of TCE contamination that will be utilizing bioremediation as the final remedy.
 - Initiate infrastructure projects to replace end-of-life equipment and improve modes of transportation.
 - Complete Disposition of 22 Cold Traps stored in C-746-Q Building to reduce the site risk.
 - Initiate characterization, hazardous material removal, and converter disposition activities in C-333 Building (primary uranium enrichment facility being deactivated).
 - Initiate construction of Emergency Operations Center.
 - Initiate R-114 Refrigerant (Freon) disposition activities.
- Continue utilities and space optimizations to reduce power and water utilization.
 - Complete dismantlement of three electrical switchyards.
 - Complete construction of Emergency Operations Center.
 - Complete fieldwork associated with remedial action at C-720 Maintenance Building (solid waste management unit 211A). This unit is a smaller source of TCE contamination that will be utilizing bioremediation as the final remedy.
 - Submit D1 Remedial Action Completion Report for C-720 Maintenance Building (solid waste management unit 211A).
 - Continue characterization, hazardous material removal, and converter disposition activities in the C-333 Process Building (primary uranium enrichment facility being deactivated).
-

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$2,094,000	\$2,099,000	+\$5,000
<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. 	<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. 	<ul style="list-style-type: none"> No significant change.

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

	Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
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)							
Total, Capital Operating Expenses	10,373	0	0	0	10,373	0	-10,373
Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <\$20M)							
<u>Paducah</u>							
Security Management Facility	4,373	0	0	0	4,373	0	-4,373
Emergency Operations Center	6,000	0	0	0	6,000	0	-6,000
Total, Paducah	10,373	0	0	0	10,373	0	-10,373
Total, Capital Summary	10,373	0	0	0	10,373	0	-10,373

Portsmouth

Overview

The Portsmouth Site 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 \$ 47,995,000.

The Portsmouth Operations Office plans to purchase the following vehicles: one 47' bucket truck and one digger derrick.

Highlights of the FY 2021 Budget Request

This FY 2021 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.

The FY 2021 Budget Request includes funding the On-Site Waste Disposal Facility, Line-Item Capital Project #1 (15-U-408) to receive the debris from the X-326 Process Building at \$46,639,000 (\$0 for design, \$43,839,000 for construction, and \$2,800,000 for other project cost) 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, at \$16,500,000 (\$1,200,000 for design, \$13,500,000 for construction, and \$1,800,000 for other project cost). 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.

FY 2020 and FY 2021 Key Milestones/Outlook

- (November 2019) Complete Construction of On-Site Waste Disposal Facility Cell One Liner (15-U-408).
- (February 2020) Initiate Design and Construction of next On-Site Waste Disposal Facility Capital Project (20-U-401).
- (April 2020) Initiate Excavation of Cell 4 and 5 for On-Site Waste Disposal Facility Capital Project (15-U-408).
- (July 2020) Complete Initial North Leachate Transmission Systems for On-Site Waste Disposal Facility (15-U-408).
- (July 2020) Complete Field Construction of Water Managements System of First Process Building (X-326).
- (August 2020) Initiate Demolition of First Process Building (X-326).
- (October 2020) Initiate Excavation X-740 Overburden Soil for use in On-Site Waste Disposal Facility.
- (November 2020) Complete First Placement of Process Building Debris into On-Site Waste Disposal Facility Cell Liner 1.
- (December 2020) Complete Sediment Pond 1 for On-Site Waste Disposal Facility (20-U-401).
- (September 2021) Complete Deactivation of Second Process Building (X-333).
- (September 2021) Complete Construction of Cell Liner 4 of On-Site Waste Disposal Facility (15-U-408).

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 2020.

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 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, legacy soil, and groundwater remediation, covering March 29, 2016 – March 28, 2021.
- 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 – February 24, 2021.

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; 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 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 from thin-wall to thick-wall cylinders to place the material in Department of Transportation compliant configuration prior to shutdown of the X-342/X-344 Facilities.
- DOE will continue to develop excavation work plans in accordance with the agreement reached with the Ohio Environmental Protection Agency.

Portsmouth Project Office

Funding (\$K)

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Safeguards and Security				
PO-0020 / Safeguards and Security	15,078	16,490	16,690	+200
Non-Defense Environmental Cleanup				
Gaseous Diffusion Plants				
Portsmouth Gaseous Diffusion Plant				
PO-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	50,959	56,629	57,974	+1,345
Uranium Enrichment Decontamination and Decommissioning Fund				
Portsmouth				
Portsmouth Gaseous Diffusion Plant				
PO-0040 / Nuclear Facility D&D-Portsmouth				
Operating	366,931	367,193	351,854	-15,339
Construction				
15-U-408: On-Site Waste Disposal Facility, Portsmouth (PO-0040)	41,168	41,102	46,639	+5,537
20-U-401: On Site Waste Disposal Facility (Cell Line 2&3)	0	10,000	16,500	+6,500
	<u>408,099</u>	<u>418,295</u>	<u>414,993</u>	<u>-3,302</u>
Pension and Community and Regulatory Support				
Portsmouth Gaseous Diffusion Plant				
PO-0103 / Portsmouth Contract/Post-Closure Liabilities/Administration	650	0	500	+500
PO-0104 / Portsmouth Community and Regulatory Support	1,020	2,013	1,149	-864
Subtotal, Portsmouth Gaseous Diffusion Plant	<u>1,670</u>	<u>2,013</u>	<u>1,649</u>	<u>-364</u>
Total, Uranium Enrichment Decontamination and Decommissioning Fund	<u>409,769</u>	<u>420,308</u>	<u>416,642</u>	<u>-3,666</u>
Total, Total, Portsmouth	<u>475,806</u>	<u>493,427</u>	<u>491,306</u>	<u>-2,121</u>

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

FY 2021 Request vs FY 2020 Enacted

Defense Environmental Cleanup	
Safeguards and Security	
PO-0020 / Safeguards and Security	
<ul style="list-style-type: none"> Increase continues support for cyber security activities. 	+200
Non-Defense Environmental Cleanup	
Gaseous Diffusion Plants	
Portsmouth Gaseous Diffusion Plant	
PO-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	
<ul style="list-style-type: none"> Increase continues support for required safety and reliability modifications. 	+1,345
Uranium Enrichment Decontamination and Decommissioning Fund	
Pension and Community and Regulatory Support	
PO-0103 / Portsmouth Contract/Post-Closure Liabilities/Administration	
<ul style="list-style-type: none"> Increase supports pending litigation expenses, severance, and the administration of post-retirement life and medical support. 	+500
PO-0104 / Portsmouth Community and Regulatory Support	
<ul style="list-style-type: none"> Decrease reflects planned activities. 	-864
Portsmouth	
PO-0040 / Nuclear Facility D&D-Portsmouth	
<ul style="list-style-type: none"> No significant change. 	-3,302
<hr/>	
Total, Portsmouth	-2,121

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$16,490,000	\$16,690,000	+\$200,000
<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 cybersecurity. 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"> Increase continues support for cyber security activities.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$56,629,000	\$57,974,000	+\$1,345,000
<ul style="list-style-type: none"> Continue operations of the DUF6 conversion facility. Package converted depleted uranium oxide and store on site. Initiate safety and reliability modifications, including installation of hydrogen fluoride storage system isolation valves; installation of maintenance platforms for oxide powder handling system; replacement of polyvinyl chloride piping and components; installation of bulk hydrogen backup system; upgrade process control system; and replace sintered metal conversion unit filters. Conduct annual plant maintenance outages. Conduct cylinder surveillance and maintenance to keep existing material in a safe and stable condition. 	<ul style="list-style-type: none"> Continue operations of the DUF6 conversion facility. Package converted depleted uranium oxide and store on site. Continue safety and reliability modifications. Initiate additional safety and reliability modifications, including upgrade of oxide powder handling system heating and ventilation system; installation of engineered ventilation for changing cylinder valves; and replacement of hydrogen fluoride condensers. Conduct annual plant maintenance outages. Conduct cylinder surveillance and maintenance to keep existing material in a safe and stable condition. 	<ul style="list-style-type: none"> Increase continues support for required safety and reliability modifications.

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 2021 Budget Request of \$414,993,000 supports removal of high-risk radioactively contaminated equipment and hazardous materials from the uranium processing buildings, including \$46,639,000 (\$0 for design, \$43,839,000 for construction, and \$2,800,000 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 \$16,500,000 (\$1,200,000 for design, \$13,500,000 for construction, and \$1,800,000 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$418,295,000	\$414,993,000	-\$3,302,000
<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. Continue pre-demolition activities of first process building (X-326). Continue deactivation of second process building (X-333). 	<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). 	<ul style="list-style-type: none"> No significant change.

- Initiate demolition of first process building (X-326).
 - Initiate field construction of the Water Management System in preparation of the First Process Building Demolition (X-326).
 - Complete Cell 1 Liner of the On-Site Waste Disposal Facility Capital Project #1 (15-U-408).
 - Initiate construction of Cells 4 and 5 of the On-Site Waste Disposal Facility Capital Project #1 (15-U-408).
 - Initiate design and construction of the On-Site Waste Disposal Facility Capital Project #2 (20-U-401).
 - Continue electrical substation projects per agreement with American Electric Power.
 - Complete deactivation of the second Process Building (X-333), waste disposition, and infrastructure projects.
 - Complete construction of the Water Management System for process building demolition.
 - Complete first placement of the process building debris into Cell Liner 1 of the On-Site Waste Disposal Facility Capital Project #1 (15-U-408).
 - Continue excavation activities for generation of On-Site Waste Disposal Facility engineered fill.
 - Complete construction of Cell Liner 4 of the On-Site Waste Disposal Facility Capital Project #1 (15-U-408).
 - Continue construction of Cell Liner 5 of the On-Site Waste Disposal Facility Capital Project #1 (15-U-408).
 - Initiate mass rough grading/cut and fill up to two million cubic yards for Cells 2, 3, and 6 footprint of the On-Site Water Disposal Facility Capital Project #2 (20-U-401).
 - Continue electrical substation projects per agreement with American Electric Power.
-

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$0	\$500,000	+\$500,000
Planned activities using carryover funding: <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"> 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"> Increase supports pending litigation expenses, severance, and the administration of post-retirement life and medical support.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$2,013,000	\$1,149,000	-\$864,000
<ul style="list-style-type: none"> Support oversight activities of the Ohio Environmental Protection Agency. Support the designated Site Specific Advisory Board. 	<ul style="list-style-type: none"> Support oversight activities of the Ohio Environmental Protection Agency. Support the designated Site Specific Advisory Board. 	<ul style="list-style-type: none"> Decrease reflects planned activities.

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

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

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)	7,752	0	1,972	1,458	1,437	4,857	+3,420
Total, Capital Operating Expenses	7,752	0	1,972	1,458	1,437	4,857	+3,420

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

Portsmouth

Electrical Supply and Distribution Gaseous Diffusion Plant	6,716	0	1,972	1,458	1,437	3,821	+2,384
S&S Training Center	1,036	0	0	0	0	1,036	+1,036
Total, Portsmouth	7,752	0	1,972	1,458	1,437	4,857	+3,420
Total, Capital Summary	7,752	0	1,972	1,458	1,437	4,857	+3,420

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

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

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

Total Estimate Cost (TEC)	268,058	102,582	39,068	47,352	38,502	43,839	+5,337
Other Project Costs (OPC)	16,616	6,422	2,100	2,792	2,600	2,800	+200
Total Project Cost (TPC) 15-U-408	284,674	109,004	41,168	50,144	41,102	46,639	+5,537

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

Total Estimate Cost (TEC)	TBD	0	0	0	9,400	14,700	+5,300
Other Project Costs (OPC)	TBD	0	0	0	600	1,800	+1,200
Total Project Cost (TPC) 20-U-401	TBD	0	0	0	10,000	16,500	+6,500

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 2021 Request for the On-Site Waste Disposal Facility – Initial Infrastructure & Cell 1, 4, & 5 Liner Construction is \$46,639,000. This funding will support the completion of the first placement of the process building debris into Cell Liner 1 of the On-Site Waste Disposal Facility Capital Project #1. These funds will also make it possible to complete construction of Cell Liner 4 as well as continue construction of Cell Liner 5.

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.

DOE Order 413.3B approved Critical Decision (CD) for the On-Site Waste Disposal Facility – Initial Infrastructure & Cell 1, 4, & 5 Liner Construction project resulted in an 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 that supports future On-Site Waste Disposal Facility cells. This 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 demolition. The CD-1 Total Project Cost range for the On-Site Waste Disposal Facility 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 Certified Level III Federal Project Director is assigned to the project and has approved this construction project data sheet.

Significant Changes

This Construction Project Data Sheet is an update to the FY 2020 Congressional Request data sheet and does not include a new start for the budget year.

On February 12, 2019, the Ohio Environmental Protection Agency (EPA) concurred with the On-Site Waste Disposal Facility Final (100%) Design package. The Interim Leachate Treatment System (ILTS) Phase 1/Modular Leachate Treatment System (MLTS) and ILTS Phase 2 Pre-Final (90%) Design package was submitted by DOE to Ohio EPA for concurrence review. On May 15, 2019, Ohio EPA provided conditional concurrence on civil construction work to allow DOE to proceed with early ILT/MLTS construction activities.

As of August 12, 2019, the following site preparatory activities have been completed: X-114A Facility demolition; land clearing; Sedimentation Pond 2, 3, 4, and Basin A functionally complete; Phase 1 Raw Water Line, Filling Station No. 1 and Booster Station installation; On-Site Waste Disposal Facility 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 of ~2,600,000 cubic yards of earthwork movement); concrete work for Valve Houses; East Laydown area; Cell 1 clay layer installed, including excavation of 720 sandstone within Cell 1 footprint and areas to the north.

Additionally, the following work is projected to be completed by the end of FY 2020: Phase 2 potable water and sanitary sewer; Phase 2 Raw Water Line; grading of On-Site Waste Disposal Facility Access and Construction Roads; surface water control channels; power and communications in preparation of future operations; installation of North Leachate Transmission System, including valve houses 1, 4, & 5 (Initiated May 2019); Cell 1 Liner, supporting leachate systems and MLTS/ILTS to be operational by the end of FY 2020; installation of the secondary geosynthetic clay liner (GCL)/geomembrane liner (GML); and MLTS/ILTS civil work and conveyance line.

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

^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 for a construction project with a conceptual scope and cost range

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

CD-1 – Approve Design Scope and Project Cost and Schedule Ranges

CD-2 – Approve Project 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 9)

CD-4 – Approve Start of Operations or Project Closeout

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

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	TBD	TBD	TBD	TBD	TBD	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	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

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

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 modular, temporary leachate treatment system. Major components of the On-Site Waste Disposal Facility infrastructure included in this capital 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 will require major earthwork activities including clearing/grubbing and large-scale grading involving cut and fill of soil and rock. The decommissioning/demolition of the X-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	N/A	N/A	364
FY 2016	N/A	N/A	3,899
FY 2017	N/A	N/A	4,572
FY 2018	N/A	N/A	4,021
FY 2019	N/A	N/A	3,732
FY 2020	N/A	N/A	92
FY 2021	N/A	N/A	0
Outyears	N/A	N/A	0
Total, Design	N/A	N/A	16,680
Construction			
FY 2015	N/A	N/A	277
FY 2016	N/A	N/A	14,766
FY 2017	N/A	N/A	29,815
FY 2018	N/A	N/A	30,003
FY 2019	N/A	N/A	43,620
FY 2020	N/A	N/A	38,350
FY 2021	N/A	N/A	40,062
Outyears	N/A	N/A	54,485
Total, Construction	N/A	N/A	251,378
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	38,502	38,502	38,442

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
FY 2021	43,839	43,839	40,062
Outyears	44,067	44,067	54,485
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	2,600	2,600	2,595
FY 2021	2,800	2,800	2,797
Outyears	2,694	2,694	3,002
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	41,037
FY 2021	46,639	46,639	42,859
Outyears	46,761	46,761	57,486
Total, TPC	284,674	284,674	284,674

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
Total Estimated Cost (TEC)			
Design			
Design	16,542	14,879	N/A
Contingency	138	138	N/A
Total, Design	16,680	15,017	N/A
Construction			
Building & Site Work	236,706	233,723	N/A
D&D	563	563	N/A
Contingency	14,108	18,755	N/A
Total, Construction	251,377	253,041	N/A
Total, TEC	268,057	268,058	N/A
Contingency, TEC	14,245	18,893	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	0	0	N/A
Cold startup	2,339	2,339	N/A
Other OPC Costs	13,948	13,948	N/A
Contingency	329	329	N/A
Total, OPC except D&D	16,616	16,616	N/A
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	N/A
Contingency, OPC	329	329	N/A
Total, TPC	284,674	284,674	N/A
Total, Contingency	14,575	19,222	N/A

Schedule of Appropriation Requests

(Dollars in Thousands)

Request Year		Prior Years	FY 2019	FY 2020	FY 2021	Outyears	Total
FY 2015	TEC	235,253	52,073	0	TBD	0	287,326
	OPC	20,264	2,410	0	TBD	0	22,674
	TPC	255,517	54,483	0	TBD	TBD	310,000
FY 2016	TEC	26,249	TBD	TBD	TBD	TBD	TBD
	OPC	0	TBD	TBD	TBD	TBD	TBD
	TPC	26,249	TBD	TBD	TBD	TBD	TBD
FY 2017	TEC	66,717	TBD	TBD	TBD	TBD	TBD
	OPC	700	TBD	TBD	TBD	TBD	TBD
	TPC	67,417	TBD	TBD	TBD	TBD	TBD
FY 2018	TEC	102,701	TBD	TBD	TBD	TBD	TBD
	OPC	6,303	TBD	TBD	TBD	TBD	TBD
	TPC	109,004	TBD	TBD	TBD	TBD	TBD
FY 2019	TEC	101,429	39,668	TBD	TBD	TBD	TBD
	OPC	7,575	1,500	TBD	TBD	TBD	TBD
	TPC	109,004	41,168	TBD	TBD	TBD	TBD
FY 2020	TEC	102,582	38,590	38,502	N/A	88,384	268,058
	OPC	6,422	2,578	2,600	N/A	5,016	16,616
	TPC	109,004	41,168	41,102	N/A	93,400	284,674
FY 2021	TEC	102,582	39,068	38,502	43,839	44,067	268,058
	OPC	6,422	2,100	2,600	2,800	2,694	16,616
	TPC	109,004	41,168	41,102	46,639	46,761	284,674

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1Q 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 ^a

Notes:

^a No future D&D required for this project.

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
Maintenance	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 2021 Request for the On-Site Waste Disposal Facility – Remaining Infrastructure & Cell 2, 3, & 6 Liner Construction is \$16,500,000. In FY 2021, these funds will allow for the initiation of mass rough grading/cut and fill up to two million cubic yards for Cells 2, 3, and 6 footprint of the On-Site Water Disposal Facility Capital Project #2.

FY 2021 funding is expected to continue design, procurement, and construction activities.

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.

The preliminary cost range for the On-Site Waste Disposal Facility project is \$230,000,000 to \$310,500,000.

A Certified Level III Federal Project Director is assigned to the project and has approved this Construction Project Data Sheet.

Significant Changes

This Construction Project Data Sheet is an update to the FY 2020 Congressional Request data sheet and does not include a new start for the budget year.

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	Constructi on 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

* The original CD-0 for the On-Site Waste Disposal Facility CAP-2 Project (i.e., Cell 4 and Cell 5 Liner Construction) 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-4 date will be established at CD-2/3 approval.

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range

Conceptual Design Complete – Actual date the conceptual design was completed (if applicable)
 CD-1 – Approve Design Scope and Project Cost and Schedule Ranges
 CD-2 – Approve Project 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 9)
 CD-4 – Approve 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

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, valve houses and 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. Due to the majority of scope being outside of the current Prime Contract segment, the project’s Performance Baseline is yet to be developed. The project is developing a combined CD-1/2/3 package with approval anticipated during Second Quarter FY 2020.

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	N/A	N/A	3,300
FY 2021	N/A	N/A	1,200
Outyears	N/A	N/A	TBD
Total, Design	N/A	N/A	TBD
Construction			
FY 2020	N/A	N/A	6,100
FY 2021	N/A	N/A	13,500
Outyears	N/A	N/A	TBD
Total, Construction	N/A	N/A	TBD
TEC			
FY 2020	9,400	9,400	9,400
FY 2021	14,700	14,700	14,700
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
[Other Project Cost (OPC)]			
OPC except D&D			
FY 2020	N/A	N/A	600
FY 2021	N/A	N/A	1,800
Outyears	N/A	N/A	TBD
Total, OPC except D&D	N/A	N/A	TBD
OPC, D&D			
Total, D&D	N/A	N/A	N/A
OPC			
FY 2020	600	600	600
FY 2021	1,800	1,800	1,800
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2020	10,000	10,000	10,000
FY 2021	16,500	16,500	16,500
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	TBD	N/A
Contingency	TBD	TBD	N/A
Total, Design	TBD	TBD	N/A

Construction

Building & Site Work	TBD	TBD	N/A
D&D	TBD	TBD	N/A
Contingency	TBD	TBD	N/A
Total, Construction	TBD	TBD	N/A

Total, TEC	TBD	TBD	N/A
Contingency, TEC	TBD	TBD	N/A

Other Project Cost (OPC)

OPC except D&D

Conceptual Planning	TBD	TBD	N/A
Cold startup	TBD	TBD	N/A
Other OPC Costs	TBD	TBD	N/A
Contingency	TBD	TBD	N/A
Total, OPC except D&D	TBD	TBD	N/A

D&D *(if any)*

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

Total, OPC	TBD	TBD	N/A
Contingency, OPC	TBD	TBD	N/A

Total, TPC	TBD	TBD	N/A
Total, Contingency	TBD	TBD	N/A

Schedule of Appropriation Requests

(Dollars in Thousands)

Request Year		FY 2020	FY 2021	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	14,700	TBD	TBD
	OPC	600	1,800	TBD	TBD
	TPC	10,000	16,500	TBD	TBD

4. Related Operations and Maintenance Funding Requirements

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

**No D&D is planned related to this project.*

(dollars in thousands, \$K)

	Annual Costs*		Life Cycle Costs*	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	TBD	TBD	TBD	TBD
Utilities	TBD	TBD	TBD	TBD
Maintenance	TBD	TBD	TBD	TBD
Total, Operations & Maintenance	TBD	TBD	TBD	TBD

**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 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 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 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 additional 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 \$228,312,000.

The Richland Operations Office plans to purchase the following vehicles in FY 2021: 1 Ladder Truck; 3 Fire Engine Pumper Trucks; 6 Type III Wildland Tanker Trucks; 4 Type V Wildland Grass Trucks; 1 Bucket Truck; 2 Septic Trucks; 2 Potable Water Trucks; 2 Crew Cab 4x4 Utility Trucks; 8 Full Size Cargo Vans; 7 small cargo vans; 2 water trucks; 2 Large Service Cargo Vans; 1 Refuse Truck; 1 vapor tracking van; 1 lube truck, and 1 step-van. The total estimated cost of this equipment is \$10,500,000.

Highlights of the FY 2021 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 Richland Operations Office also provides the Hanford site 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 2020 & FY 2021 Key Milestones/Outlook

The following listing represents key milestones included in the Tri-Party Agreement for performance in fiscal years 2020 and 2021.

- (December 2019) M-016-178; Initiate deactivation of 105-KW Fuel Storage Basin.
- (April 2020) M-026-01AD; Submit Hanford Land Disposal Restrictions Report.
- (August 2020) M-015-97; Submit 100-OL-1 Feasibility Study Report Draft A to Ecology.
- (September 2020) M-085-72; Submit removal action Work Plan for 224B to Environmental Protection Agency.
- (September 2020) M-091-44T; Submit Change Package to Establish Schedule for Achieving Offsite Shipment of All TRUM Waste.

- (September 2020) M-091-49A; Submit a Change Request to Establish a Schedule for Achieving the Retrieval of Retrievably Stored Waste.
- (December 2020) M-024-71; Complete construction of all groundwater wells listed for CY 2020.
- (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-016-86; Complete Remedial Actions for 618-11 Burial Ground in accordance with DOE/RL-2014-1.
- (September 2021) M-085-90; Submit Remedial Investigation/Feasibility Study Work Plan for 200-CR-1 to Environmental Protection Agency.

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 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:

- CH2M Hill Plateau Remediation Company, a cost-plus-award-fee term contract for the cleanup of the Hanford Central Plateau. This contract has a base period of performance from October 1, 2008, through September 30, 2013, with contract option to extend through September 30, 2018. The 5-year option period of October 1, 2013 through September 30, 2018, has been exercised. The contract was extended from October 1, 2018, to September 30, 2019, pending award and transition of a successor contract. The CHPRC contract was extended a second time, from October 1, 2019 to September 30, 2020, to support the award and transition to the successor contractor. The extension includes contract provisions that will allow termination of the contract with 60 days advance notice, if needed to align the end of this contract with the end of the successor contract transition period. The follow-on contract was awarded on December 12, 2019.
- Mission Support Alliance, LLC, a cost-plus-award-fee contract for infrastructure support services in support of Hanford Site cleanup. This contract has a base period of performance from May 26, 2009, through May 25, 2014, with one 3-year option and one 2-year option. The Mission Support Alliance contract options have been exercised for the period of May 26, 2014, through May 25, 2019. The contract was extended from May 26, 2019 to November 25, 2019, utilizing the Federal Acquisition Regulation clause 52.217-8, Option to Extend Services. The MSA contract was extended a second time, from November 26, 2019 to May 25, 2020, to support the award and transition to the successor contractor. The extension was implemented under a sole source justification and includes provisions that will allow termination of the contract with 60 days advance notice, if needed to align the end of this contact with the end of the successor contract transition period. The follow-on contract was awarded on December 5, 2019.
- HPM Corporation, 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. This contract was awarded on December 31, 2018. Contract transition completed on 3/31 2019 (HPM Corporation was also the predecessor contractor) 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 most of 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 includes, but is not limited to: (1) cleanup commitments; (2) agency cleanup responsibilities; and (3) enforceable milestones to achieve regulatory compliance and remediation.

The following present the highest risks to timely achievement of the program's strategic goals:

The Department of Energy Office of Inspector General (OIG) issued Special Report on Compilation of Challenges and Previously Reported Key Findings at the Hanford Site for Fiscal Years 2012-2018 (DOE OIG 19-04) in November 2018. The OIG reported, in summary, that the Hanford Site has been plagued with mismanagement, poor internal controls, and fraudulent activities, resulting in monetary impacts totaling hundreds of millions of dollars by the various contractors involved at the site. As many of the weaknesses continue, without more aggressive oversight of contractors and subcontractors, millions of dollars will continue to be at risk for inappropriate charges and potential fraudulent activities.

Although the OIG recognizes that the Department has implemented improvements in response to prior OIG findings, weaknesses continue with the management of contractors and subcontractors at a level that, in OIG's opinion, results in an unacceptable level of risk of inappropriate charges to the Government.

To address risks identified by the OIG, the EM program is implementing an "Ethical Compliance Culture" initiative to sustain a culture of ethical compliance that safeguards taxpayer investment in the Hanford cleanup mission.

Richland

Funding (\$K)

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Hanford Site				
Central Plateau Remediation				
RL-0011 / NM Stabilization and Disposition-PFP	46,200	0	0	0
RL-0012 / SNF Stabilization and Disposition	13,900	0	0	0
RL-0013C / Solid Waste Stabilization and Disposition- 2035				
Operating	159,900	176,855	138,900	-37,955
Construction				
18-D-404: Modification of Waste Encapsulation and Storage Facility, Richland, WA (PBS RL-0013C)	1,000	11,000	0	-11,000
	160,900	187,855	138,900	-48,955
RL-0030 / Soil and Water Remediation-Groundwater/Vadose Zone - 2035	132,158	138,995	56,100	-82,895
RL-0201 / Hanford Site Wide Services	308,200	338,950	303,335	-35,615
Subtotal, Central Plateau Remediation	661,358	665,800	498,335	-167,465
Richland Community and Regulatory Support				
RL-0100 / Richland Community and Regulatory Support	10,121	10,121	2,500	-7,621
River Corridor and Other Cleanup Operations				
RL-0040 / Nuclear Facility D&D-Remainder of Hanford - 2035	74,192	102,427	24,949	-77,478
RL-0041 / Nuclear Facility D&D-River Corridor Closure Project	119,500	133,675	30,000	-103,675
Subtotal, River Corridor and Other Cleanup Operations	193,692	236,102	54,949	-181,153
Total, Hanford Site	865,171	912,023	555,784	-356,239
Safeguards and Security				
RL-0020 / Safeguards and Security	86,686	86,778	96,300	+9,522
Total, Defense Environmental Cleanup	951,857	998,801	652,084	-346,717
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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
2,240	2,500	2,500	0
954,097	1,001,301	654,584	-346,717

Richland
Explanation of Major Changes (\$K)

FY 2021 Request vs FY 2020 Enacted

Defense Environmental Cleanup

Hanford Site

Central Plateau Remediation

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

- Decrease reflects replanning and re-evaluation of former seismic integrity study performed. -48,955

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

- The decrease reflects focused operation of groundwater remediation systems along the Columbia River. -82,895

RL-0201 / Hanford Site Wide Services

- The decrease is associated with the completion of various infrastructure and risk mitigation activities. -35,615

Richland Community and Regulatory Support

RL-0100 / Richland Community and Regulatory Support

- The decrease reflects elimination of payment in lieu of tax payments. -7,621

River Corridor and Other Cleanup Operations

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

- The decrease reflects completed contract transition in FY 2020 and risk reduction activities associated with facilities and waste sites. -77,478

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

- The decrease reflects the planned completion of interim structural stabilization activities for the 324 Building. -103,675

Safeguards and Security

RL-0020 / Safeguards and Security

- The increase supports Design Basis Threat, Cybersecurity, and Industrial Controls activities to address evolving threats and requirements; and adds \$3,000,000 for studies required to support the creation of a Hanford 10-year Security Infrastructure Refresh Plan. The increase also reflects \$2,200,000 to fund DOE's Cyber Program. +9,522

Non-Defense Environmental Cleanup

Fast Flux Test Reactor Facility D&D

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

- No change. 0

**FY 2021 Request vs
FY 2020 Enacted**

Total, Richland	-346,717
------------------------	-----------------

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 (ERDF) 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$187,855,000	\$138,900,000	-\$48,955,000
<ul style="list-style-type: none"> Support operations necessary to provide for safe and compliant interim storage of spent nuclear fuel, which include operating and maintaining the Canister Storage Building and the 200 Area Interim Storage Area facilities, operating systems, equipment and monitoring systems. Support safe storage of 1,936 cesium and strontium capsules in the Waste Encapsulation and Storage Facility. Maintain T Plant Complex in a safe, compliant, and cost-effective manner for acceptance/storage of low-level radioactive waste, mixed low-level radioactive waste, and transuranic waste (including single-shell 	<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. Interim Disposal Facility DSA/Permitting/Upgrades to support DFLAW. Continue design of modifications to the Waste Encapsulation and Storage Facility necessary to begin moving the cesium-strontium capsules to dry storage. 	<ul style="list-style-type: none"> Decrease reflects replanning and re-evaluation of former seismic integrity study performed.

transuranic tanks). Provide the operations necessary to support K-Basin sludge storage.

- Provide core project, waste and transportation management, including safe and compliant storage of the spent nuclear fuel.
 - Maintain operations of the Central Waste Complex, the Low Level Burial Grounds, the Waste Receiving and Processing Facility, and the Mixed Waste Disposal Trenches for compliant acceptance and storage of low-level radioactive waste, mixed low-level radioactive waste and transuranic wastes at Hanford.
 - Support operations of the Environmental Restoration Disposal Facility.
 - Continue progress on construction activities for Line-Item Project 18-D-404 Modification of Waste Encapsulation and Storage Facility.
-

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$138,995,000	\$56,100,000	-\$82,895,000
<ul style="list-style-type: none"> Continue integration of site-wide groundwater and vadose zone cleanup activities, groundwater contamination monitoring, as well as operations, maintenance, and necessary modifications of all 6 existing remediation systems resulting in treating approximately 2 billion gallons of groundwater. Continue to meet Tri-Party Agreement M-24 Well Drilling Commitments. Provides progress towards the completion of the Comprehensive Environmental Response, Compensation and Liability Act process decision documentation needed to obtain the Record of Decisions for the Operable Units on the River 	<ul style="list-style-type: none"> Continue technical integration of site-wide groundwater and vadose zone cleanup activities, groundwater contamination monitoring, as well as pump and treat operations. 	<ul style="list-style-type: none"> The decrease reflects focused operation of groundwater remediation systems along the Columbia River.

Corridor. Funding supports the M-015 milestone series.

- Supports remedial action implementation activities on the River Corridor to stop contamination from reaching the Columbia River. Tri-Party Agreement M-016-00.
-

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$338,950,000	\$303,335,000	-\$35,615,000
<ul style="list-style-type: none"> • 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. • Supports site infrastructure requirements in support of Direct Feed Low Activity Waste commissioning and start-up. • 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 	<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"> • The decrease is associated with the completion of various infrastructure and risk mitigation activities.

- National Historic Preservation Act compliance; and rent.
 - 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.
 - Supports other Hanford infrastructure operations and services required to transition the site to 24/7 nuclear operations.
-

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$10,121,000	\$2,500,000	-\$7,621,000
<ul style="list-style-type: none"> Support Washington and Oregon States' emergency preparedness, environmental oversight, Hanford Advisory Board and Payment In Lieu of Taxes payments. 	<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); remediation of all 200 Area waste sites containing large inventories of mobile contaminants that may migrate into groundwater plumes (includes removal of contaminants or construction of surface barrier caps over waste sites); deactivation and disposition of contaminated equipment; final disposition of Cold War legacy wastes; 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$102,427,000	\$24,949,000	-\$77,478,000
<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 transition costs associated with new Hanford contracts. Supports Facilities Risk Mitigation activities, (e.g. below grade stabilization activities, canyon hazards removal activities, etc.). 	<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.). 	<ul style="list-style-type: none"> The decrease reflects completed contract transition in FY 2020 and risk reduction activities associated with facilities and waste sites.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$133,675,000	\$30,000,000	-\$103,675,000
<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. Funding also support surveillance and maintenance activities. • Continue to support operations necessary to provide for safe and compliant monitoring of the 324 Building. • Support safe surveillance and monitoring activities for 100 K Area Remediation. 	<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. Funding also support surveillance and maintenance activities. Continue to support operations necessary to provide for safe and compliant monitoring of the 324 Building. 	<ul style="list-style-type: none"> • The decrease reflects the planned completion of interim structural stabilization activities for the 324 Building.

- Continue progress towards remediation of the highly contaminated 300-296 waste site under the 324 Building.
-

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$86,778,000	\$96,300,000	+\$9,522,000
<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 Preparedness and Response, Physical Security, Information Protection, Protective Force, Personnel Security, Cybersecurity and Nuclear Material Control and Accountability. Enable 10 CFR 1046, programmatic adherence to new 10 CFR 712 requirements for Human Reliability Program policy changes. Provide for upgrade/replacement of deteriorated/obsolete physical security, 	<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. Provide for studies required to support the creation of a Hanford 10-year Security Infrastructure Refresh Plan. 	<ul style="list-style-type: none"> The increase supports Design Basis Threat, Cybersecurity, and Industrial Controls activities to address evolving threats and requirements; and adds \$3,000,000 for studies required to support the creation of a Hanford 10-year Security Infrastructure Refresh Plan. The increase also reflects \$2,200,000 to fund DOE’s Cyber Program.

qualification, and training systems and facilities.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$2,500,000	\$2,500,000	+\$0
<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 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 2019 and FY 2021.

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

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)	92,168	11,768	17,454	19,023	51,784	11,162	-40,622
Total, Capital Operating Expenses	92,168	11,768	17,454	19,023	51,784	11,162	-40,622

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

Richland

Cesium and Strontium Capsule Project Cask Storage Area	17,500	3,000	500	3,330	8,000	6,000	-2,000
Construct Integrated Disposal Facility (IDF) (DFLAW priority)	10,000	0	0	3,695	10,000	0	-10,000
L-707, Advanced Electrical Metering ^a	2,476	0	60	0	2,416	0	-2,416
L-781, 181D Vertical Turbine Pumps, Header, Instrumentation, Commission ^a	1,168	0	678	0	490	0	-490
L-826, 181B Vertical Turbine Pumps, Header, Instrumentation, Commission ^a	1,170	0	642	0	528	0	-528
L-838, Water Feeds to 622R, 6608 Facility and 200 W Sewer Lagoons	530	0	0	0	530	0	-530
L-849, Replace 200E 1.1M Gallon PW Tank ^a	6,269	237	565	296	5,467	0	-5,467
L-850, Replace 200W 1.1M Gallon PW Tank (DFLAW Priority) ^a	7,528	129	714	668	4,814	1,871	-2,943
L-854, 200E Sewer Consolidations (DFLAW Priority) ^a	4,968	2,948	2,020	1,996	0	0	0
L-888, 400 Area Fire Station ^a	9,618	166	897	1,028	8,555	0	-8,555
L-894, Raw Water Cross Connection Isolation 200E/W ^a	6,129	3,737	2,392	2,072	0	0	0
L-895, Fire Protection Infrastructure for Plateau Raw Water ^a	7,885	851	6,515	4,139	519	0	-519
L-897, 200 Area Water Treatment Facility (DFLAW priority) ^a	14,760	700	1,995	1,600	8,774	3,291	-5,483
L-906, HFD Station 92 Extension ^a	756	0	476	199	280	0	-280

	Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
L-907, Fleet Complex Site Development	1,411	0	0	0	1,411	0	-1,411
L-908, Auto/Truck Shop and Storage	0	0	0	0	0	0	0
L-909, Heavy Equipment Shop and Storage	0	0	0	0	0	0	0
Total, Richland	92,168	11,768	17,454	19,023	51,784	11,162	-40,622
Total, Capital Summary	92,168	11,768	17,454	19,023	51,784	11,162	-40,622

^a These capital investments represent expenditures that may be performed between FY 2020 and FY 2021 based on emerging risks.

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 waste from the past production of nuclear materials stored in the underground tank farms at the Hanford Site, treat waste to standards that are protective of human health and the environment, prepare 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 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. 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 program. However, more than 40 years of plutonium production also yielded a challenging nuclear waste legacy—approximately 56,000,000 gallons of radioactive and chemical waste stored in 177 underground tanks (grouped into tank farms), 16 of which have completed waste retrieval and are transitioning to closure, located on Hanford's Central Plateau, 7 miles from the Columbia River. 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 56,000,000 gallons of waste make the mission uniquely complex.

The Department is working to construct and operate the Waste Treatment and Immobilization plant and required infrastructure to safely immobilize and dispose of Hanford's tank waste. The Waste Treatment and Immobilization Plant at Hanford will include: Analytical Laboratory, Balance of Facilities, Low-Activity Waste Facility, Effluent Management Facility, High-Level Waste Facility, and Pretreatment Facility. The original plan required waste to be processed through the Pretreatment Facility, where it would be separated into a low-activity waste stream to be vitrified in the Low-Activity Waste Facility and a high-level waste stream to be vitrified in the High-Level Waste Facility. Due to technical issues with the High-Level Waste and Pretreatment Facility, the Department established a Direct Feed Low-Activity Waste strategy that focuses on completion of the Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory no later than December 2023. This strategy allows the Department to address the most mobile tank waste (liquid) in the near term by feeding low-activity waste directly from tank farms to the Low-Activity Waste Facility, instead of routing waste through the Pretreatment Facility. The initial pretreatment strategy will utilize a skid-mounted Tank-Side Cesium Removal system, filtration and shielded ion exchange system to provide initial feed to the Waste Treatment and Immobilization Plant Low-Activity Waste Facility no later than December 2023 per the 2016 Amended Consent Decree.

The direct maintenance and repair activities at the Office of River Protection are estimated to be \$73,899,000.

Highlights of the FY 2021 Budget Request

The Office of River Protection FY 2021 budget request represents planned efforts for continued 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.

The FY 2021 request also includes funding for line-item project "01-D-416, the Waste Treatment and Immobilization Plant (\$609,924,000)." 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.

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 Office of River Protection 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. Specific activities include management and maintenance of 177 underground waste tanks, tank waste retrieval, 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). An additional acquisition process is underway to solicit and award a contract for the safe operation of the 222-S Laboratory and 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.
- 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. The Department has exercised both option periods and has extended the contract 24 months from October 1, 2018, through September 30, 2020, to allow the acquisition team additional time to complete the source evaluation process for the follow-on Hanford Tank Closure Contract. It is a cost-plus-award-fee term contract.
- Wastren Advantage, Inc., to provide analytical testing and services required within the 222-S Laboratory, which is responsible for the analysis of highly radioactive waste samples in support of all the Hanford projects. The estimated period of performance for the contract is September 25, 2015, through September 24, 2020, consisting of one 2-year base period and three 1-year option periods. It is a fixed-price award fee contract.

Strategic Management

To maximize near-term risk reduction and leverage Waste Treatment and Immobilization Plant facilities as they are completed, the Department is implementing a strategy to complete the Waste Treatment and Immobilization Plant in phases. The Department is currently advancing the completion of the design, procurement, and construction 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. Construction of these facilities is mostly complete, with startup and commissioning activities continuing.

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.

In April/May 2019, the Department chartered an Analysis of Alternatives (AoA) which is the first step with respect to the preliminary recovery plan for the High-Level Waste Facility and the Pretreatment Facility. The Analysis of Alternatives will be complete in FY 2020 and will provide inputs that will be utilized by the Department to derive preferred alternative for further analyses to support decision on the approach that best meet the overall mission.

The highest challenge to timely achievement of the program's strategic goals is to address the risks identified by the Office of Inspector General, in the Inspector General report titled, Special Report on Compilations of Challenges and Previously Reported Key Findings at the Hanford Site for FY 2012-2018 (DOE OIG 19-04). The EM program has implemented an "Ethical Compliance Culture" initiative to sustain a culture of ethical compliance that safeguards taxpayer investment in the Hanford cleanup mission.

River Protection

Funding (\$K)

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Office of River Protection				
ORP Low-Level Waste Offsite Disposal				
ORP-0014A / Low-Level Waste Offsite Disposal	0	10,000	0	-10,000
Tank Farm Activities				
ORP-0014 / Radioactive Liquid Tank Waste Stabilization and Disposition				
Operating	771,947	775,000	597,757	-177,243
Construction				
15-D-409: Low Activity Waste Pretreatment System, Hanford (ORP-0014)	56,053	0	0	0
	<u>828,000</u>	<u>775,000</u>	<u>597,757</u>	<u>-177,243</u>
Waste Treatment and Immobilization Plant				
ORP-0060 / Major Construction-Waste Treatment Plant				
Construction				
01-D-16D: High Level Waste Facility, RL	60,000	25,000	0	-25,000
01-D-16E: Pretreatment Facility, RL	15,000	15,000	0	-15,000
18-D-16: Waste Treatment and Immobilization Plant LBL/Direct Feed LAW	655,000	776,000	609,924	-166,076
ORP-0070 / Waste Treatment Plant Commissioning	15,000	15,000	50,000	+35,000
Subtotal, Waste Treatment and Immobilization Plant	<u>745,000</u>	<u>831,000</u>	<u>659,924</u>	<u>-171,076</u>
Total, Office of River Protection	<u>1,573,000</u>	<u>1,616,000</u>	<u>1,257,681</u>	<u>-358,319</u>

River Protection
Explanation of Major Changes (\$K)

FY 2021 Request vs FY 2020 Enacted
--

Defense Environmental Cleanup	
Office of River Protection	
ORP Low-Level Waste Offsite Disposal	
ORP-0014A / Low-Level Waste Offsite Disposal	
<ul style="list-style-type: none"> • The decrease reflects a pause in evaluation of supplemental Low-Activity Waste treatment and disposal methods. 	-10,000
Tank Farm Activities	
ORP-0014 / Radioactive Liquid Tank Waste Stabilization and Disposition	
<ul style="list-style-type: none"> • The decrease focuses the Department’s priority on accomplishing Direct Feed Low Activity Waste activities. 	-177,243
Waste Treatment and Immobilization Plant	
ORP-0060 / Major Construction-Waste Treatment Plant	
<ul style="list-style-type: none"> • The decrease reflects funding received in the FY 2020 enacted appropriations that will be utilized to advance the Direct Feed Low Activity Waste strategy. 	-206,076
ORP-0070 / Waste Treatment Plant Commissioning	
<ul style="list-style-type: none"> • The increase supports long-lead procurements and assembly of spare Low Activity Waste Melters for planned startup and operations of Waste Treatment Plant Low Activity Waste Facility, Analytical Laboratory and Balance of Facilities. 	+35,000
<hr/>	
Total, River Protection	-358,319

Low-Level Waste Offsite Disposal (PBS: ORP-0014A)

Overview

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

The Low-Level Waste Offsite Disposal project (previously known as Test Bed Initiative) began in 2017 with completion of a Laboratory Scale test. The pretreatment of three gallons of Hanford liquid tank waste, and immobilization in grout of the three gallons took place at the Perma-Fix Northwest Facility in Richland, Washington. The resulting immobilized mixed low-level waste was transported to the Waste Control Specialists Federal Waste Facility near Andrews, Texas, for permanent disposal.

The Engineering Scale phase 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 Waste Control Specialist Federal Waste Facility for disposal.

The Production Scale phase will target 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:

- Initiate ways to reduce cleanup costs, accelerate schedules, and maximize public-private partnerships.
- 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 the GAO-17-306 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.

Low-Level Waste Offsite Disposal (PBS: ORP-0014A)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$10,000,000	\$0	-\$10,000,000
<ul style="list-style-type: none"> • Evaluation of National Environmental Policy Act documentation and Waste Incidental to Reprocessing Determination documentation for potential updates following completion of Low- 	<ul style="list-style-type: none"> • None. 	<ul style="list-style-type: none"> • The decrease reflects a pause in evaluation of supplemental Low-Activity Waste treatment and disposal methods.

Level Waste Offsite Disposal Tank Farms liquid waste retrieval and pretreatment equipment design and fabrication.

- Regulatory permitting development and updates to the Tank Farms Documented Safety Analysis.
 - Preparation for transportation of pretreated liquid waste to an off-site commercial permitted facility for immobilization, and disposal of the mixed low-level waste at the Waste Control Specialist Federal Waste Facility.
-

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 56,000,000 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 1,000,000 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 and retrievals of the tank farms, the 242-A Evaporator, the Effluent Treatment Facility, and the 222-S Laboratory to manage the waste and support safe nuclear and environmentally compliant operations at Hanford and enable Waste Treatment and Immobilization Plant operations. The first phase of the Low-Activity Waste Pretreatment System project 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.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$775,000,000	\$597,757,000	-\$177,243,000
<p>242-A Evaporator operations and upgrades to support direct-feed low-activity waste</p> <ul style="list-style-type: none"> Design and install replacement slurry waste transfer lines <p>Effluent Treatment Facility operation</p> <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 	<p>Effluent Treatment Facility operation</p> <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 <p>Effluent Treatment Facility upgrades to support direct-feed low-activity waste</p> <ul style="list-style-type: none"> Install and startup new processing unit to allow treatment of Acetonitrile 	<ul style="list-style-type: none"> The decrease focuses the Department’s priority on accomplishing Direct Feed Low Activity Waste activities.

Effluent Treatment Facility and Liquid Effluent Retention Facility upgrades to support direct-feed low-activity waste

- Design treatment facility load in area expansion to support increased facility operation throughput requirements during Direct Feed Low Activity Waste operations
- Design and initiate installation of the Liquid Effluent Retention Facility Basin 41

222-S Laboratory operations and upgrades to support tank farms and direct-feed low-activity waste samples

- Tank Waste Characterization Sampling
- Direct-Feed Low-Activity Waste Sample Method Development
- Design and construct additional office space to support Direct Feed Low Activity Waste personnel

Tank Farm Integrity Program to prolong the lifespan of aging tanks

- Visual inspection of 15 single-shell tanks
- Annulus visual inspections of 9 double-shell tanks
- Ultrasonic testing of 3 double-shell tanks
- Tank chemistry control

Maintenance of facilities

- Tank farm vapor mitigation strategies
- Preventative and corrective maintenance
- Critical spare parts management
- Construct new maintenance shop

Waste Treatment and Immobilization Plant and Direct-Feed Low-Activity Waste Support

- Interim Disposal Facility Performance Assessment
- Project and technical integration
- Immobilized Low-Activity Waste Transportation System

- 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 as 222-S

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

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

- Process feed development
- Electrical utilities
- Waste Management

Direct-Feed Low-Activity Waste Feed Delivery and Tank-Side Cesium Removal

- Tank-side cesium removal testing, delivery, and installation
- Procure Tank-Side Cesium Removal Ion Exchange Columns
- Design and Construct Spent Ion Exchange Column Storage Pad
- Complete Tank Farm to Waste Treatment and Immobilization Plant Transfer Line Construction
- AP Tank Farm Upgrades to Feed Tank-Side Cesium Removal and Store Processed Low-Activity Waste

AP Farm Upgrades

- Design, fabricate/procure a tanker truck loading and offloading station in AP farm to allow low level waste to be transferred from double shell tank AP-106 to a tanker truck to support alternative waste treatment and disposal options

AX Farm Retrieval

- Complete retrieval of two of the four tanks in AX Farm

- 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

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 has not decided on the 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$816,000,000	\$609,924,000	-\$206,076,000

Low-Activity Waste Facility –

Engineering Design Activities:

- Complete work to go and punch list for 47 system handovers including: Ventilation System, Communications Electrical System, Low Activity Waste Secondary Offgas/Vessel Vent process System, Mechanical Handling Control System, and Stack Discharge Monitoring System

Construction Activities:

- Complete installation of shield windows, Elevation +3
- Complete installation of shield windows, Elevation +21
- Complete installation of Nitrogen Purge System for Shield Windows (all elevations)
- Complete installation of Process Cell Pipe Shielding, Elevation +28
- Complete installation of Low Activity Waste Facility Container Finishing Handling System Mechanical Handling Equipment

Startup Activities:

- Complete testing and handover to Facility Management for all systems, including: Concentrate Receipt Process Systems 1 & 2, Low Activity Waste Facility Container Finishing Handling System, Melter Feed Process System 1 & 2, Melter Process System Unit 1 & 2, Primary Offgas Process System 1 & 2, Low Activity Waste Facility Container Pour Handling Process, Plant Cooling Water System, Programmable Protection System, and Uninterruptible Power Electrical System

Commissioning Activities:

- Finalize procedures, complete refurbishments, and accept handover from Startup on 58 systems, including: Breathing Service Air System, Low-Activity Waste Facility Container Finishing Handling System, Melter #1 & #2, Melter Feed Process Systems 1 & 2, Low Activity Waste

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

- The decrease reflects funding received in the FY 2020 enacted appropriations that will be utilized to advance the Direct Feed Low Activity Waste strategy.

Facility Secondary Offgas/Vessel Vent Process System, and Radioactive Liquid Waste Disposal System

Balance of Facilities / Direct Feed Low-Activity Waste / Effluent Management Facility –

Construction Activities:

- Complete cut and fill for rough grade and utility earthwork
- Complete concrete work including bollards and MH extensions
- Complete installation and adjust electrical equipment and utilities

Startup activities

- Complete walkdown and submit handover to Facility Management for the Lighting Electrical, Demineralized Water, and Communications Electrical Systems

Commissioning Activities

- Continue facility operations
- Continue operation support
- Finalize Facility Management readiness to accept handover for 34 systems

Analytical Laboratory –

Engineering Activities:

- Complete work to go and punch list items for handover for the C2 Ventilation, C3 Ventilation, C5 Ventilation, Communications Electrical, Process Control, and Plant Vacuum Air Systems

Startup Activities

- Complete component and system testing
- Submit handover to Facility Management on 10 systems, including the Communications Electrical and Stack Discharge Monitoring Systems

Commissioning

- Continue Training Management & Program Support
- Continue Operations Training
- Continue Maintenance Training

- 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 through the use of prior year funding balances

- Continue Preservation Maintenance
- Continue Preventative Maintenance and Corrective Maintenance
- Finalize Facility management readiness to accept handover from Startup for 12 systems, including the C3 Ventilation, C5 Ventilation, Communications Electrical, and Stack Discharge Monitoring systems

High-Level Waste Facility (HLW) –

Design Activities:

- Continue production design and perform 60 percent design reviews for a few of the major facility systems

Procurement Activities:

- Support procurement suspension activities

Construction Activities:

- Continue preservation maintenance activities

Pretreatment Facility –

Procurement Activities:

- Support procurement suspension activities

Construction Activities:

- 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$15,000,000	\$50,000,000	+\$35,000,000
<ul style="list-style-type: none"> Continue commissioning activities that are not included in the line-item 01-D-416, Waste Treatment and Immobilization Plant, such as the procurement of long lead consumables, spare parts, and facility transition planning, etc. 	<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"> The increase supports long-lead procurements and assembly of spare Low Activity Waste Melters for planned startup and operations of Waste Treatment Plant Low Activity Waste Facility, Analytical Laboratory and Balance of Facilities.

**Office of River Protection
Capital Summary (\$K)**

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

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)	71,705	0	3,153	118	20,132	48,422
Total, Capital Operating Expenses	71,705	0	3,153	118	20,132	48,422

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

River Protection

Construct 222-SL, 222-SA Facility Replacement ^a	1,953	0	1,953	0	0	0
Construct New Maintenance Shop ^c	5,200	0	1,200	118	4,000	-4,000
ETF Acetonitrile Treatment Upgrade ^b	13,500	0	0	0	0	13,500
ETF Load in Expansion ^b	6,646	0	0	0	0	6,646
Ancillary Equipment Addition ^b	10,276	0	0	0	0	10,276
222-S Office Space Addition ^b	8,602	0	0	0	8,602	-8,602
AP Farm Tanker Truck Loading and Off Loading Station ^b	7,528	0	0	0	7,528	-7,528
Modular Grout System ^b	12,000	0	0	0	0	12,000
ETF Motor Control Center Upgrades ^b	6,000	0	0	0	0	6,000
Total, River Protection	71,705	0	3,153	118	20,132	48,422

Total, Capital Summary

71,705	0	3,153	118	20,132	48,422	+28,290
---------------	----------	--------------	------------	---------------	---------------	----------------

^a After further review of the project need it was determined this scope will not be performed.

^b These capital investments represent expenditures that may be accelerated to FY 2020 based on emerging or identified risks.

^c FY 2019 represents the amount that was obligated and FY 2020 enacted is the remaining amount needed to complete the project.

**Office of River Protection
Construction Projects Summary (\$K)**

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Request
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

Waste Treatment and Immobilization Plant, Hanford WA

*18-D-16, Waste Treatment and Immobilization Plant LBL/Direct Feed
LAW*

Total Estimate Cost (TEC)	TBD	5,669,515	655,000	685,966	776,000	609,924	-166,076
Other Project Costs (OPC)	TBD	0	0	0	0	0	0
<i>01-D-16A-D WTP Subprojects A-D</i>							
Total Estimate Cost (TEC)	TBD	2,588,318	60,000	45,146	25,000	0	-25,000
Other Project Costs (OPC)	TBD	0	0	0	0	0	0
<i>01-D-16E Pretreatment Facility</i>							
Total Estimate Cost (TEC)	TBD	3,727,050	15,000	20,643	15,000	0	-15,000
Other Project Costs (OPC)	TBD	0	0	0	0	0	0
Total Estimate Cost (TEC)	TBD	11,984,883	730,000	751,755	816,000	609,924	-206,076
Other Project Costs (OPC)	TBD	0	0	0	0	0	0
Total Project Cost (TPC) 01-D-416	TBD	11,984,883	730,000	751,755	816,000	609,924	-206,076

**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 2021 budget request for the Waste Treatment and Immobilization Plant is \$609,924,000.

In 2013, the Department established the strategic framework for addressing the risks and challenges to completing the Office of River Protection mission as soon as practicable, which included an alternate approach to immobilizing the tank waste as soon as practicable. This approach directly feeds low-activity waste without waiting for completion of the High-Level Waste and Pretreatment facilities.

On December 15, 2016, the Deputy Secretary approved the direct-feed low-activity waste approach, contract modification, and Project Execution Plan with hot operations (Critical Decision 4a) to commence not 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 2020 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 2021. 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

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

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 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 be completed in FY 2020 to determine how best to provide tank waste feed to the High-Level Waste Facility and the Low-Level Waste 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 18 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 courts March 11, 2016 Amended Consent Decree requirement to begin operations by December 2023 through a direct-feed low-activity waste processing approach. The waste feed for low-activity waste processing will be provided for these facilities initially by a tank-side cesium removal capability. Thereafter, feed will be supplied by a Low-Activity Waste Pretreatment System capability being procured by line-item project 15-D-409.

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

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	9,594,331	3,956,977	3,956,977	3,861,545	2,407,856	2,407,856	2,344,991	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	816,000	690,000	776,000	776,000	640,000	25,000	25,000	30,000	15,000	15,000	20,000
FY 2021	609,924	724,924	820,000	609,924	674,924	770,000	0	0	0	0	0	0
Outyears	TBD	0	0	TBD	0	0	0	0	0	0	0	0
Grand Total	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Costs updated to reflect actual expenditures for fiscal year 2019 and projected costs for fiscal year 2020.

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 ^a	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 ^b	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 ^c	TBD	1,409,428	876,000	TBD	718,454	N/A	TBD	275,217	N/A	TBD	415,757	N/A
Technical Support/Transition ^d	TBD	185,000	50,000	TBD	56,292	N/A	TBD	42,332	N/A	TBD	86,376	N/A
Contingency/Fee ^e	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.

7. Schedule of Appropriation Requests

(Dollars in Thousands)

Request Year	Type	Prior Years	FY 2019	FY 2020	FY 2021	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	11,984,613	730,000	-	-	TBD	TBD
FY 2020	TEC/TPC	11,984,613	730,000	816,000	-	TBD	TBD
FY 2021	TEC/TPC	11,984,613	730,000	816,000	609,924	TBD	TBD

^a This data sheet reflects direct-feed low-activity waste processing to be accomplished in the following facilities: the Low-Activity Waste Facility, Analytical Laboratory, Effluent Management Facility, and Balance of Facilities.

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.

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 are planned for the future:

5. Critical Decision 4a: Approve Start of Initial Operations (hot commissioning) for Direct Feed Low Activity Waste – TBD
6. 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 provide an optimal energy future. 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.

Highlights of the FY 2021 Budget Request

The Nuclear Material Stabilization and Disposition Program will maintain a high state of readiness at the H-Canyon facility in FY 2021. In FY 2021, 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.

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. Completion of new DOE directed scope to re-establish characterization capabilities for transuranic waste in E-Area by 3rd quarter FY 2021, including modifications to transuranic waste Pad 4 and installation of Government Furnished Services and Items equipment.

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 decontaminated salt waste in Saltstone Disposal Units. The FY 2021 request includes funding for two line-item construction projects: Saltstone Disposal Unit #7 (\$14,692,000) and Saltstone Disposal Units #8 and #9 (\$71,500,000).

The mission of the Saltstone Disposal Unit #7 project is to construct a cylindrical reinforced concrete tank designed to contain approximately 30,000,000 gallons of Saltstone grout which is the waste from the disposition of the decontaminated salt solution resulting from salt waste processing. The \$14,692,000 requested for the Saltstone Disposal Unit #7 includes \$10,716,000 for design and construction activities and Operations \$3,976,000 for other project costs. 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 \$71,500,000 requested for the Saltstone Disposal Units #8 and #9 project includes \$65,500,000 of Line Item Funds for design and construction activities and \$6,000,000 of Operations funding for other project costs. The Operations portion of Saltstone Disposal Units 7-9 (\$3,976,000 and \$6,000,000) is included in the Liquid Waste Operations budget.

The 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, 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 (SCDHEC) and the Environmental Protection Agency oversight and implementation of the Federal Facility Agreement, and SCDHEC for implementation of the DOE and SCDHEC Agreement in Principle for the Environmental Surveillance and Oversight Program for independent and periodic monitoring performed by SCDHEC 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. The FY 2021 request includes 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 NNSA Tritium Research and Development and other national security missions. The \$25,000,000 (\$25,000,000 appropriated in FY20) requested for the Advanced Manufacturing Collaborative project (Total Estimated Cost of \$50,000,000) 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.

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 systems.

Also included are line-item construction projects, the Emergency Operations Center Replacement. The Emergency Operations Center Replacement project will replace existing Emergency Operations Center facilities that are in poor condition and past their design life. Additionally, the Security Replacement Project will replace the existing E3S security system with the DOE standard Argus System.

FY 2020 and 2021 Key Milestones/Outlook

- (October 2019) Submit Lower Three Runs Proposed Plan.
- (November 2019) Complete Bulk Waste Removal Efforts for Tank 10.
- (November 2019) Submit Federal Facilities Agreement APPENDIX E for FY 2020.
- (January 2020) 2013 Resource Conservation and Recovery Act Permit Renewal Application for the M-Area and Metallurgical Laboratory Hazardous Waste Management Facility (Vol. III, Rev.0).
- (January 2020) Initiate Treatability Study Field Start for D-Area Groundwater Operable Unit.
- (February 2020) Issue Sixth Five-Year Remedy Review Report for SRS Operable Units with Native Soil Covers and/or Land Use Controls.
- (February 2020) Submit D-Area Operable Unit Second Enforceable Agreement Record of Decision Remedial Alternative Selection in Support of D-Area Operable Unit (4 units).
- (March 2020) Submit Lower Three Runs Integrator Operable Unit Rev. 0 Record of Decision Remedial Alternative Selection.
- (April 2020) Initiate Removal Action Start D-Area Coal Storage Area (484-17D) in Support of D-Area Groundwater Operable Unit.
- (June 2020) Issue F-Tank Farm Deactivation Plan.
- (June 2020) Start the Remedial Action for D-Area Groundwater Operable Unit.
- (July 2020) F-Area Hazardous Waste Management Facility -Reduce discharge from the plume of all constituents in the surface water at seep line.
- (July 2020) F-Area Hazardous Waste Management Facility – Evaluate the performance of Phase II and submit Corrective Action Plan
- (July 2020) H-Area Hazardous Waste Management Facility - Reduce the discharge of constituents in the surface water at seep line.
- (July 2020) H-Area Hazardous Waste Management Facility – Evaluate Phase II and submit Corrective Action Plan.
- (September 2020) Initiate Field Start ECODS N-1, Lumber Pile (631-2G), Sandblast Area CMN-001, Building 690-N Operable Unit.
- (September 2020) Initiate water addition to Tank 9 to begin Salt Dissolution in support of Tank Closure Cesium Removal.
- (September 2020) Start Remedial Action G-Area Oil Seepage Basin (761-13G).
- (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 Federal Facilities Agreement Appendix E for Fiscal Year 2021.
- (November 2020) Submit D-Area Operable Unit Second Early Action Land Use Control Implementation Plan (4 units).
- (January 2021) 2013 Resource Conservation Recovery Act Permit Renewal Application for the F-Area Hazardous Waste Management Facility (Volume IV, Rev.0).

- (January 2021) 2013 Resource Conservation Recovery Act Permit Renewal Application for the H-Area Hazardous Waste Management Facility (Volume V, Rev.0).
- (February 2021) Issue Record of Decision Lower Three Runs Integrator Operable Unit Remedial Alternative Selection.
- (May 2021) Submit Lower Three Runs Integrator Operable Unit Land Use Controls Implementation Plan.
- (July 2021) Submit D-Area Groundwater Operable Unit (D-Area Upgradient Sources) Corrective Measures Study/Feasibility Study
- (September 2021) Initiate D-Area Ash Basin Remedial Action Start in Support of D-Area Operable Unit (4 milestones)

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 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, 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)
- 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 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 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. SRNS also manages and operates NNSA 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 FAR 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 (GAO) and DOE extended the contract through May 31, 2018 to allow for the continuation of Liquid Waste services while DOE supported the GAO process and fostered competition for award of the follow-on competitive Liquid Waste services procurement. In February 2018, GAO 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 GAO 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 SRS 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.

- Centerra Group, LLC: Contract covers the guard services at the Savannah River Site for the period of performance from October 08, 2009, to October 07, 2014, with option period 1 from October 08, 2014, to October 07, 2017, and option period 2 from October 08, 2017, to October 07, 2019. The Department has exercised both options. 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 CD-4 date of November 2013. Subsequent contract changes and realized project risks moved the CD-4 date, as approved by the DOE Deputy Secretary, to January 2021. Construction was declared complete on May 26, 2016; completion of commissioning and start of radioactive operations is targeted for Fiscal Year 2020. 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.

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 land and 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:

- Commissioning and startup for the Salt Waste Processing Facility.
- Maintaining and operating deteriorating facilities.

Savannah River

Funding (\$K)

FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 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	696,869	820,106	970,332	+150,226
Construction				
05-D-405: Salt Waste Processing Facility, SR	130,000	21,200	0	-21,200
17-D-402: Saltstone Disposal Unit #7, SR (SR-0014C)	41,243	40,034	10,716	-29,318
18-D-402: Saltstone Disposal Unit #8/9, SR (SR-0014C)	7,577	20,000	65,500	+45,500
20-D-401: Saltstone Disposal Unit 10 11 12	0	500	0	-500
	<u>875,689</u>	<u>901,840</u>	<u>1,046,548</u>	<u>+144,708</u>

Savannah River Risk Management Operations

SR-0011C / NM Stabilization and Disposition	332,947	360,558	317,355	-43,203
SR-0013 / Solid Waste Stabilization and Disposition	41,425	43,825	50,345	+6,520
SR-0030 / Soil and Water Remediation & Facility Deactivation and Decommissioning	73,612	65,508	53,829	-11,679
SR-0041 / Surveillance, Maintenance, and Deactivation	28,390	26,324	23,264	-3,060
SR-0042 / Infrastructure and Land Management				
Operating	13,086	10,151	10,329	+178
Construction				
18-D-402: Emergency Operations Center	1,259	6,792	0	-6,792
19-D-701: SR Security System Replacement	10,000	4,525	0	-4,525
20-D-402: Advanced Manufacturing Collaborative Facility (AMC)	0	25,000	25,000	0
	<u>24,345</u>	<u>46,468</u>	<u>35,329</u>	<u>-11,139</u>
Subtotal, Savannah River Risk Management Operations	500,719	542,683	480,122	-62,561

SR Community and Regulatory Support

SR-0100 / Savannah River Community and Regulatory Support	11,249	11,249	4,989	-6,260
---	--------	--------	-------	--------

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Total, Savannah River Site	1,387,657	1,455,772	1,531,659	+75,887
Safeguards and Security				
SR-0020 / Safeguards and Security	163,357	174,152	171,211	-2,941
Total, Defense Environmental Cleanup	1,551,014	1,629,924	1,702,870	+72,946

**Savannah River
Explanation of Major Changes (\$K)**

FY 2021 Request vs FY 2020 Enacted

Defense Environmental Cleanup

Savannah River Site

Radioactive Liquid Tank Waste Stabilization and Disposition

SR-0014C / Radioactive Liquid Tank Waste Stabilization and Disposition-2035

- The increase is attributable to: 1) Liquid Waste Operations- Increase in Operations Staffing to support a rotating training shift and support attrition in Tank Farms and Defense Waste Processing Facility and hiring of critical personnel to support greater salt processing operations and preparation of tanks for waste removal and sludge feed preparation to support Defense Waste Processing Facility operations(+\$48,724); 2) Salt Waste Processing Operations - An increase due to Salt Waste Processing Facility operations after completing the Salt Waste Processing Facility line item project, and an increase in preparation of tanks for waste removal and feed preparation in support of Salt Waste Processing Facility operations at planned rates (+\$63,514); 3) Salt Waste Processing Facility – Line Item Project completed (-\$21,200); 4) Saltstone Disposal - An increase in Saltstone Disposal Unit projects due to construction in Saltstone Disposal Units 8&9 (+\$15,682); 5) Regulatory Commitments - An increase in the area of Regulatory Commitments due to focus on preparation of old-style tanks for waste removal and closure activities of ancillary facilities in F-Tank Farm supporting feed preparation for Salt Waste Processing Facility and Defense Waste Processing Facility (+\$12,285); and 6) Legacy pension and Post-Retirement Benefits – higher contributions to Legacy Pension and Post-retirement Benefits (+\$25,703).

+144,708

Savannah River Risk Management Operations

SR-0011C / NM Stabilization and Disposition

- The decrease reflects funding received in the FY 2020 enacted appropriations, and activities to shut down the HB Line and convert it to a standby condition.

-43,203

SR-0013 / Solid Waste Stabilization and Disposition

- The increase is attributable to completion of new DOE-directed scope to re-establish characterization capabilities for transuranic waste in E-Area by 3rd quarter FY 2021, including modifications to transuranic waste Pad 4 and installation of equipment. Increase in Facility Management which includes: 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, trending increased utility costs associated with increased E-Area activities, and replacement of equipment to continue waste receipts and storage.

+6,520

SR-0030 / Soil and Water Remediation & Facility Deactivation and Decommissioning

- The decrease is attributed to a reduction in the required scope negotiated with the Regulators in FY 2021 and the reduced contribution to Site Indirects.

-11,679

FY 2021 Request vs FY 2020 Enacted

SR-0041 / Surveillance, Maintenance, and Deactivation	
<ul style="list-style-type: none"> The decrease is due to completion of 235-F Risk Reduction activities needed to recommend closure of Defense Nuclear Facilities Safety Board Recommendation 2012-1. 	-3,060
SR-0042 / Infrastructure and Land Management	
<ul style="list-style-type: none"> The Emergency Operations Center and SR Security Replacement Center will be using carryover for FY 2021. 	-11,139
SR Community and Regulatory Support	
SR-0100 / Savannah River Community and Regulatory Support	
<ul style="list-style-type: none"> The decrease eliminates payments in-Lieu-of-Taxes. 	-6,260
Safeguards and Security	
SR-0020 / Safeguards and Security	
<ul style="list-style-type: none"> The decrease is due to NNSA's expected contribution for Cyber Security, which offsets the amount required by EM. 	-2,941
<hr/>	
Total, Savannah River	+72,946

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. In addition, this project covers surveillance and maintenance for the Consolidated Incinerator Facility. Completion of new DOE directed scope to re-establish characterization capabilities for TRU waste in E-Area by 3QTR FY21, including modifications to TRU Pad 4 and installation of Government Furnished Service or Item equipment.

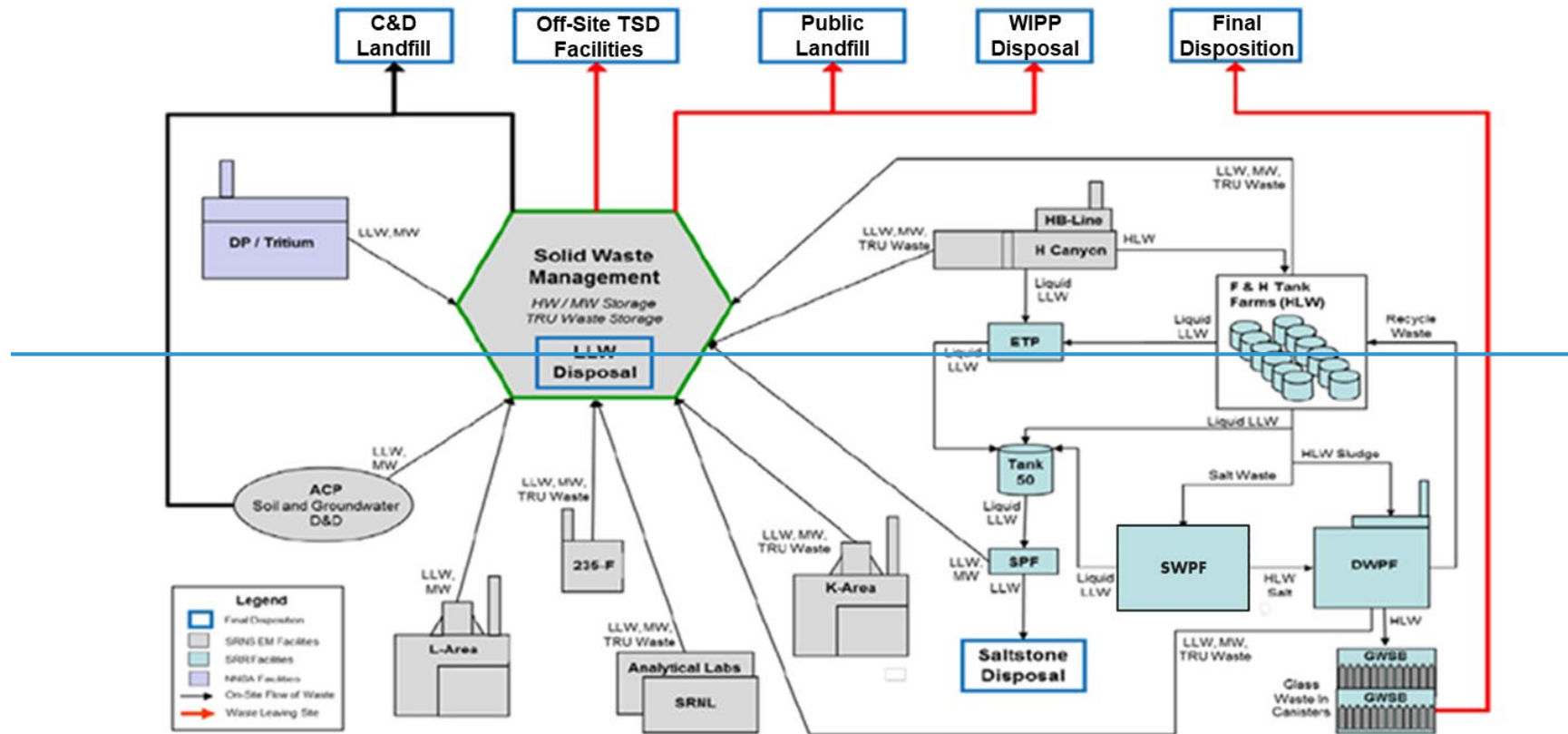
This PBS also includes direct maintenance and repair that are applicable to these areas.

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 January 2020, 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 January 2020, 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 January 2020, 694 cubic meters of transuranic waste 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 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 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).

Waste Flows



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

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$43,825,000	\$50,345,000	+\$6,520,000
<p><u>Solid Waste Management Program (\$37,232)</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. 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. Update the Performance Assessment of E Area to demonstrate appropriate long-term protection of the public and environment following closure of the facilities. <p><u>Legacy Pension and Post-Retirement Benefits (\$6,593)</u></p> <p>Contribute to the site Legacy Pension and Post-Retirement Benefits payment.</p>	<p><u>Solid Waste Management Program (\$41,854)</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 protection of the public and environment following closure of the facilities. 	<ul style="list-style-type: none"> The increase is attributable to completion of new DOE-directed scope to re-establish characterization capabilities for transuranic waste in E-Area by 3rd quarter FY 2021, including modifications to transuranic waste Pad 4 and installation of equipment. Increase in Facility Management which includes: 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, trending increased utility costs associated with increased E-Area activities, and replacement of equipment to continue waste receipts and storage.

Legacy Pension and Post-Retirement Benefits

(\$8,491)

- Contribute to the site Legacy Pension and Post-Retirement Benefits payment.
-

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 six (6) active soil and groundwater remedial systems, and the monitoring of 33 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 58 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.

Federal Facility Agreement

The FY 2021 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.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$65,508,000	\$53,829,000	-\$11,679,000
<p><u>Soil and Water Remediation (\$50,007)</u></p> <ul style="list-style-type: none"> • Achieve compliance with over 69 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 40 regulatory-required soil and groundwater remedial systems (5 active & 35 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 units (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. <p><u>Next Phase of Regulatory Projects from Federal Facility Agreement (\$7,233)</u></p> <ul style="list-style-type: none"> • Continue C Area groundwater remediation. • Complete G-Area Oil Seepage Basin Remedial Action 	<p><u>Soil and Water Remediation (\$45,245)</u></p> <ul style="list-style-type: none"> • 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 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. 	<ul style="list-style-type: none"> • The decrease is attributed to a reduction in the required scope negotiated with the Regulators in FY 2021 and the reduced contribution to Site Indirects.

- Initiate planning for D-Area OU D&D
 - Remediate D-Area Groundwater and Coal Storage Area.
 - Achieve D-Area Groundwater Treatability Action Start
 - Complete P-area Groundwater Removal Action
- Legacy Pension and Post-Retirement Benefits
(\$8,268)
- Contribute to the site Legacy Pension and Post-Retirement Benefits payment.
-
- Implement activities defined in the Lower Three Runs Record of Decision
- Legacy Pension and Post-Retirement Benefits
(\$8,584)
- Contribute to the site Legacy Pension and Post-Retirement Benefits payment.

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), disposition of source term holdup within 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 maintenance 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

The mission of the Receiving Basin for Off-Site Fuels Facility was to store aluminum-based spent nuclear fuel from research reactors worldwide in support of the Department of Energy's "take back" policy regarding United States origin enriched uranium. Built in the early 1960s, the Receiving Basin for Off-Site Fuels Facility is a 139-foot wide by 148-foot long steel frame structure that houses water-filled basins for cask unloading and spent nuclear fuel repackaging and storage. The building includes the basin areas, a control room, and an attached facility for water filtration and deionization. The basin area consists of two storage basins, three working basins (for cropping, bundling, inspection, and interim storage), a cask loading/unloading basin, and a cask decontamination pit. The basins vary in area and depth with an unloading basin depth from 29 to 45 feet.

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.

The Defense Nuclear Facility Safety Board issued Recommendation 2012-1 to take action to remove and/or immobilize the residual contamination within Building 235-F because of the potential dose consequences to collocated workers and the environment in the event of a seismically induced full facility fire. Building 235-F at the Savannah River Site houses several partially deactivated processing lines including the Plutonium Fuel Form facility, Actinide Billet Line, Plutonium Experimental Facility, and the old metallography lab glovebox. To ensure protection of on-site and off-site personnel from radiation exposure in the event of a seismically induced fire, the implementation plan includes the following: controlling transient combustibles, restoration of services to the cells and gloveboxes, removing fixed combustibles, improving fire detection, minimizing ignition sources, and removing the Plutonium 238 material from the Plutonium Fuel Form cells and gloveboxes that creates the risk.

Surveillance, Maintenance, and Deactivation (PBS: SR-0041)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$26,324,000	\$23,264,000	-\$3,060,000
<p><u>Facility Surveillance and Maintenance (\$17,073)</u></p> <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. <p><u>Building 235-F Risk Reduction (\$4,569)</u></p> <ul style="list-style-type: none"> Complete removal of material-at-risk from 235-F. Complete remaining activities per Defense Nuclear Safety Board Implementation Plan to reduce risk to personnel and the environment by reducing residual Plutonium 238. Initiate project close-out activities for Defense Nuclear Safety Board Implementation Plan. Initiate end state planning for Building 235-F. <p><u>Legacy Pension and Post-Retirement Benefits (\$4,682)</u></p> <ul style="list-style-type: none"> Contribute to Legacy Pension and Post-Retirement Benefits payment. 	<p><u>Facility Surveillance and Maintenance (\$19,202)</u></p> <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. <p><u>Deactivation of Receiving Basin for Offsite Fuel (\$137)</u></p> <ul style="list-style-type: none"> Initiate programmatic planning for decommissioning of Receiving Basin for Offsite Fuel that has been de-inventoried and being maintained in a post deactivated status. <p><u>Legacy Pension and Post-Retirement Benefits (\$3,925)</u></p> <ul style="list-style-type: none"> Contribute to Legacy Pension and Post-Retirement Benefits payment. 	<ul style="list-style-type: none"> The decrease is due to completion of 235-F Risk Reduction activities needed to recommend closure of Defense Nuclear Facilities Safety Board Recommendation 2012-1.

Infrastructure and Land Management (PBS: SR-0042)

Overview

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. 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 Project relocates the primary and alternate Savannah River Site Operations Center (SRSOC - site 911 and communications center), and the Emergency Operations Center (EOC - command and support center), from their current locations. The primary SRSOC and EOC 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 SR Security System Replacement Line Item Project 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.

The Advanced Manufacturing Collaborative (AMC) 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. This includes:

- 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 the Site timber assets.

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.

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 M&O 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$46,468,000	\$35,329,000	-\$11,139,000
<u>General Site Infrastructure</u> <ul style="list-style-type: none"> • Complete A-Area Firewater Supply Project with carryover funds. <u>Emergency Operations Center Replacement Project (\$6,792)</u>	<u>Land Management (\$9,657)</u> <ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • The Emergency Operations Center and SR Security Replacement Center will be using carryover for FY 2021.

- Award a firm fixed price contract for, and complete, the Final Design for the construction of the Primary and Alternate Emergency Operations facilities.

SR Security System Replacement (\$4,525)

- Funds will support ongoing K Area design efforts and baseline development.

Advanced Manufacturing Collaborative Project (\$25,000)

- Support design activities required for Critical Decision documentation and construction activities.

Land Management (\$9,146)

- 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.

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.
- 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)

- Continue activities required for Critical Decision documentation and construction activities.

Historical Preservation (\$528)

- 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.

Historical Preservation (\$689)

- 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.

Legacy Pension and Post-Retirement Benefits (\$316)

Contribute to the site Legacy Pension and Post-Retirement Benefits payment

- 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.
- Legacy Pension and Post-Retirement Benefits (\$144)
- Contribute to the site Legacy Pension and Post-Retirement Benefits payment.

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.

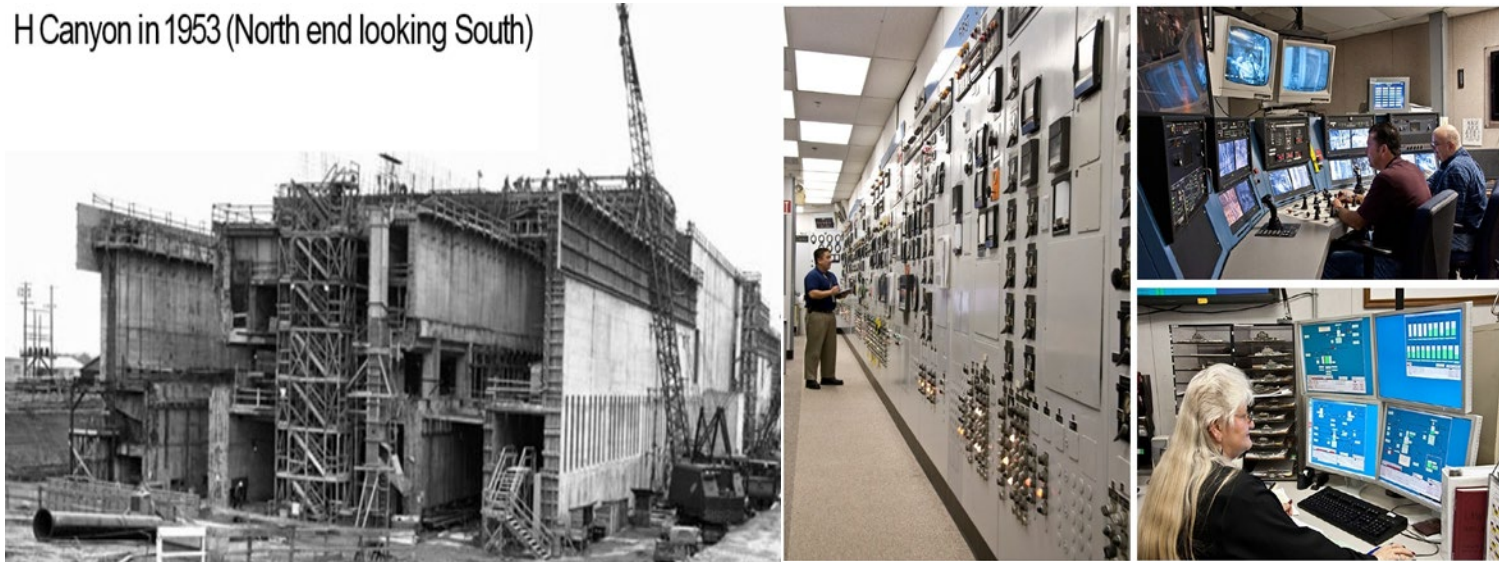
H-Area

H-Area supports the DOE Enriched Uranium and Plutonium Disposition programs 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, 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 or proper disposition thereby reducing proliferation risks.

H Canyon in 1953 (North end looking South)



The primary mission of the H Canyon facility is shifting to disposition of the SRS inventory of spent nuclear fuel in L Basin. This shift will result in decreased cycle times to dissolve spent nuclear fuel and will accelerate the closure of L Basin by ~ 15 years. The primary need for this shift is the closure of the contract with the Tennessee Valley Authority and the uneconomical cost for recovering blended down uranium through H-Canyon operations. This strategy eliminates the need to resolve technical challenges with future disposition pathways (i.e. dry storage of SRS aluminum based spent nuclear fuel). This shift is pending a NEPA evaluation, which is currently underway.

The operational mission end-state will be accomplished when all L Area spent nuclear fuel and projected receipts are dispositioned through H Canyon and operating nuclear facilities have been turned over to PBS 41 for final disposition.

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 NNSA for

expedited Pu removal from the State of South Carolina, so all activities are carefully coordinated between EM and NNSA. Final disposition will be determined by EM and NNSA 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 reactor areas 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 U.S. 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) supporting the National Nuclear Security Administration nonproliferation program, Office of Nuclear Energy's domestic research program, along with the Office of Science's research programs. As of December 2019, L-Basin is approximately 89 percent full for Material Test Reactor type fuel storage, and 88 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 spent nuclear fuel facilities have been deactivated and turned over 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$360,558,000	\$317,355,000	-\$43,203,000
<p><u>Surveillance and Maintenance– H-Area (\$192,679)</u></p> <ul style="list-style-type: none"> Operate H Canyon in a safe and secure manner. Perform infrastructure life extension activities. 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 (\$73,139)</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 (\$38,979)</u></p> <ul style="list-style-type: none"> Provide safe storage for EM-owned spent nuclear fuel in L-Area Basin. Perform critical maintenance on facility perimeter intrusion system. Perform surveillance and maintenance of legacy heavy water to ensure safe storage. Continue to support planned receipts of research reactor spent nuclear fuel. <p><u>Additional Pu Downblending (\$1,166)</u></p>	<p><u>Surveillance and Maintenance– H-Area (\$150,172)</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 (\$69,997)</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 (\$40,816)</u></p> <ul style="list-style-type: none"> Provide safe storage for EM-owned spent nuclear fuel in L-Area Basin. 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. 	<ul style="list-style-type: none"> The decrease reflects funding received in the FY 2020 enacted appropriations, and activities to shut down the HB Line and convert it to a standby condition.

- EM operational support for characterization pad planned as part of DOE response to expedite removal of Plutonium from State of South Carolina.
- Purchase of additional critically control overpacks planned as EM operational support to the National Nuclear Security Administration's response to expedited removal of Plutonium from State of South Carolina.

Legacy Pension and Post-Retirement Benefits

(\$54,595)

- Contribute to the site Legacy Pension and Post-Retirement Benefits payment.

Legacy Pension and Post-Retirement Benefits

(\$56,370)

- Contribute to the site Legacy Pension and Post-Retirement Benefits payment.

Radioactive Liquid Tank Waste Stabilization and Disposition (PBS: SR-0014C)

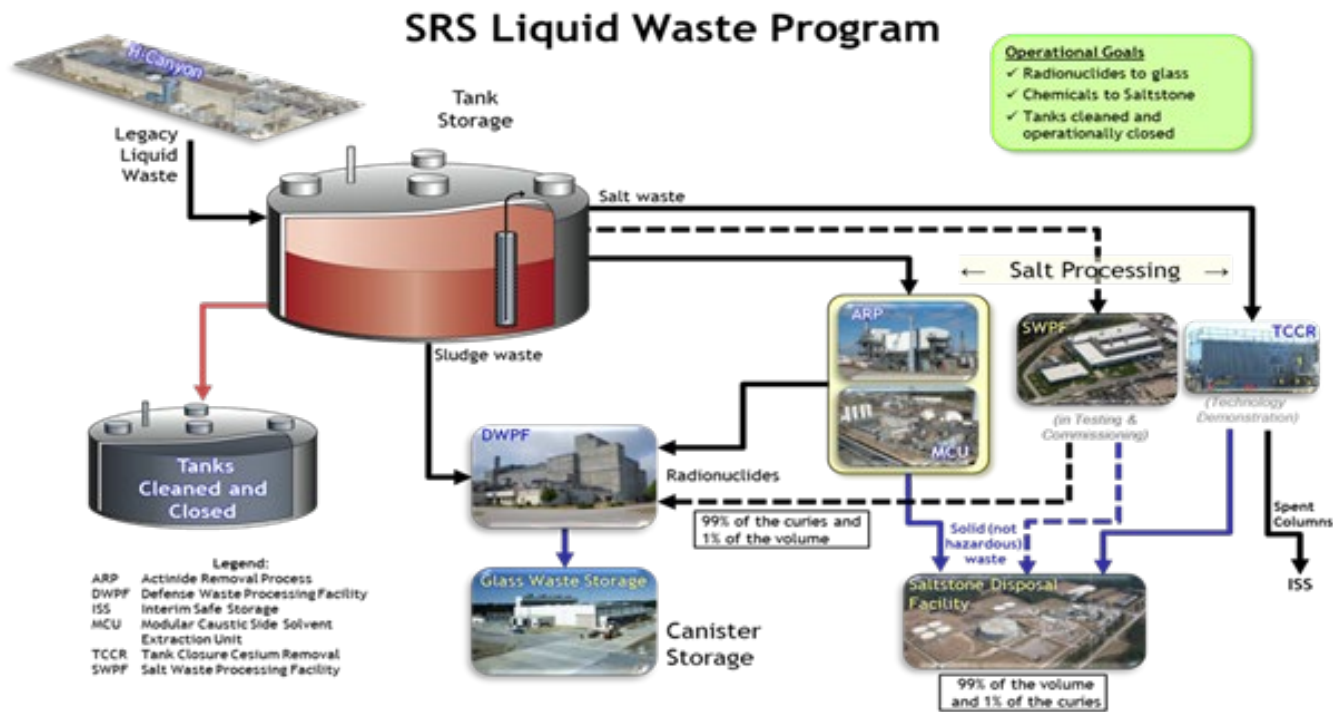
Overview

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 35,410,000 gallons of legacy liquid radioactive waste containing approximately 247,400 curies currently stored in 43 underground storage tanks (as of December 31, 2019).

The Liquid Waste Program has reduced risk so far by:

- Producing 4,210 canisters with 61,821,000 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;
- Disposing over 17,800,000 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 160,000,000 gallons of radioactive waste. As of December 2019, approximately 35,410,000 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 35,410,000 gallons. The Savannah River Site evaporators are a major factor in the treatment of liquid waste. There are currently two 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 in a federal repository. As of December 2019, the Defense Waste Processing Facility has produced 4,210 canisters immobilizing 61,821,000 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.

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 35,410,000 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 32,500,000 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 is forecast to begin in March 2020. Operation of 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 2020, the Liquid Tank Waste Stabilization and Disposition program completed all tie-ins and the process modifications between liquid waste operating facilities and the Salt Waste Processing Facility required for startup operations. LW facilities modifications required to support increase in Salt Waste Processing Facility operating rates after the first year of operations continue in FY2020. This is required to ensure proper integration to support the Salt Waste Processing Facility startup in FY2020 and to support greatly increased salt processing rates.

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 construction of Saltstone Disposal Unit #7 was initiated in FY18 and will become operational in FY21. Construction activities of Saltstone Disposal Units 8 and 9 were initiated in FY20 with construction activities in FY21. Saltstone Disposal Units 10-12 required geotechnical analysis and preparation of the CD-2/3 package was completed in FY20. 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 SRS 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 BWRE 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$901,840,000	\$1,046,548,000	+\$144,708,000
<p><u>Liquid Waste Operations (\$610,173)</u></p> <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. Modify spaces of additional 300 canisters for double stacking effort in Glass Waste Storage Building #1. Perform Tank Farm operations activities, including waste transfers and removals. Complete procurement of the 3H Evaporator spare pot. Complete Preparation of Tank 26 and initiate sludge removal and washing to support Sludge Batch 10 ready in FY 2021. Operate Defense Waste Processing Facility to produce 80-100 canisters (dependent on salt processing) of vitrified high-level waste. Complete assembly of Melter #4, to be kept as the spare for Melter #3 currently in operation, initiate procurement of a Melter Storage Box and construction of a Failed Equipment Storage Vault (FESFV). 	<p><u>Liquid Waste Operations (\$658,897)</u></p> <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. Modify spaces of additional 300 canisters for double stacking effort in Glass Waste Storage Building #1. Perform Tank Farm operations activities, including waste transfers and removals. Operate Defense Waste Processing Facility to produce 200-220 canisters (dependent on salt processing) of vitrified high-level waste. 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. Initiate design preparation of Tanks 33 and 34. Continue preparation of Tanks 35 and 39 for Sludge Batches to feed the Defense Waste Processing Facility. Complete Sludge Batch 9 and begin processing Sludge Batch 10 to feed Defense Waste 	<ul style="list-style-type: none"> The increase is attributable to: 1) Liquid Waste Operations- Increase in Operations Staffing to support a rotating training shift and support attrition in Tank Farms and Defense Waste Processing Facility and hiring of critical personnel to support greater salt processing operations and preparation of tanks for waste removal and sludge feed preparation to support Defense Waste Processing Facility operations(+\$48,724); 2) Salt Waste Processing Operations - An increase due to Salt Waste Processing Facility operations after completing the Salt Waste Processing Facility line item project, and an increase in preparation of tanks for waste removal and feed preparation in support of Salt Waste Processing Facility operations at planned rates (+\$63,514); 3) Salt Waste Processing Facility – Line Item Project completed (- \$21,200); 4) Saltstone Disposal - An increase in Saltstone Disposal Unit projects due to construction in Saltstone Disposal Units 8&9 (+\$15,682); 5) Regulatory Commitments - An increase in the area of Regulatory Commitments due to focus on preparation of old-style tanks for waste removal and closure activities of ancillary facilities in F-Tank Farm supporting feed

- Maintain liquid tank waste system operational to receive and process 300,000 gallons of H Canyon waste.
- Continue preparation of Tank 35 and initiate preparation of Tank 39 for Sludge Batches to feed the Defense Waste Processing Facility.

Salt Waste Processing Operations (\$83,022)

- Initiate hot commissioning and initiate radioactive waste operations, supporting 6 month operation of Salt Waste Processing Facility including Hot Commissioning.
- Support execution of all required Liquid Waste System preparation and integration activities for the Salt Waste Processing Facility start-up in FY2020
- Complete Liquid Waste/Salt Waste Processing Facility integration final tie-ins and Defense Waste Processing Facility modifications and continue Saltstone Facility modifications and Saltstone implementation of 3rd operating shift to support startup and increased operation rates in the Salt Waste Processing Facility.
- Continue Tank 3 salt dissolution needed for salt batches to feed the Salt Waste Processing Facility.
- Continue preparation of Tanks 27, 31, and 44 for salt dissolution needed for salt batches to feed the Salt Waste Processing Facility.
- Initiate preparation of Tanks 28 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, processing tanks ventilation and critical spare parts to support Salt Waste Processing Facility planned operations.

Processing Facility. Initiate compilation of sludge for Sludge Batch 11.

- Resume technology development for the selection of Tank 48 waste treatment.

Salt Waste Processing Operations (\$146,536)

- Operate Salt Waste Processing Facility up to a 6 million gallon processing rate and initiate transition to the use of next generation solvent (NGS) that will enable operations above 6 million gallon per year processing rate.
- Complete Defense Waste Processing Facility modifications and Saltstone Facility modifications to support increased operation rates in the Salt Waste Processing Facility.
- Continue Tank 3 salt dissolution needed for salt batches to feed the Salt Waste Processing Facility.
- Complete preparation of Tanks 44 and continue preparation of Tank 31 for salt dissolution needed for salt batches to feed the Salt Waste Processing Facility.
- Complete Tank 42 modifications as a blend tank to support Salt Waste Processing Facility at 9Mgal/yr.
- Continue preparation of Tanks 28, 31 and 47 and complete preparation of Tanks 27 and 44 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 (\$76,216)

preparation for Salt Waste Processing Facility and Defense Waste Processing Facility (+\$12,285); and 6) Legacy pension and Post-Retirement Benefits – higher contributions to Legacy Pension and Post-retirement Benefits (+\$25,703).

- SDU Line Item OPC funded scope
Salt Waste Processing Facility (\$21,200)
 - Complete CD-4 Construction closeout
- Saltstone Disposal (\$60,534)
 - Continue Saltstone Disposal Unit 7 cell construction and balance of plant.
 - Initiate Saltstone Disposal Units 8/9 cell construction and balance of plant.
 - Preparations of Saltstone Disposal Units 10-12 Project for CD 2/3 approval.
 - Support Saltstone Production Facility operations to support Salt Waste Processing Facility production rates.

Regulatory Commitments (\$20,690)

- Complete preparation of Tank 9. Operate Tank Closure Cesium Removal Unit #1 to complete demonstration of this technology with Tank 10H waste.
- Modify Tank Closure Cesium Removal Unit #1 to process Tank 9H waste.
 - Prepare F-Tank Farm Deactivation Plan to meet *Minor Modification for the 2019 Suspension Agreement of Federal Facility Agreement High-Level Waste Tank Milestones.*
 - Water addition to Tank 9H to begin salt dissolution to meet *Minor Modification for the 2019 Suspension Agreement of Federal Facility Agreement High-Level Waste Tank Milestones.*

Legacy pension and Post-Retirement Benefits (\$106,221)

- Contribute to the site Legacy Pension and Post-Retirement Benefits payment.

- 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 (\$32,975)

- 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 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.

Legacy pension and Post-Retirement Benefits (\$131,924)

- Contribute to the site Legacy Pension and Post-Retirement Benefits payment.
-

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$11,249,000	\$4,989,000	-\$6,260,000
<ul style="list-style-type: none"> Provides payments in-Lieu-of-Taxes to Aiken, Allendale, and Barnwell counties (\$6,475) Provide support to South Carolina Department of Natural Resources for technical expertise in the conduct of geological surveys and natural resource management (\$137). Provide support to South Carolina Department of Health and Environmental Control for oversight of environmental monitoring, Federal Facility Agreement, Agreement in Principle, and Site Treatment Plan (\$3,271). Provide support to Georgia and South Carolina Emergency Management Support (\$438). 	<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 (\$137). Provide support to South Carolina Department of Health and Environmental Control for oversight of environmental monitoring, Federal Facility Agreement, Agreement in Principle, and Site Treatment Plan (\$3,486). Provide support to Georgia and South Carolina Emergency Management Support (\$438). Support Interagency Agreement for the Environmental Protection Agency, Region 4 	<ul style="list-style-type: none"> The decrease eliminates payments in-Lieu-of-Taxes.

- Support Interagency Agreement for the Environmental Protection Agency, Region 4 oversight of the Federal Facility Agreement (\$286).
 - Provide support to the Site Specific Advisory Board (Savannah River Citizen’s Advisory Board) (\$372).
 - Support DOE lease agreements, including those with the U.S. Army Corps of Engineers (\$17).
 - Support Workforce Opportunities in Regional Careers grant (\$253).
-
- oversight of the Federal Facility Agreement (\$286).
 - Provide support to the Site Specific Advisory Board (Savannah River Citizen’s Advisory Board) (\$372).
 - Support DOE lease agreements, including those with the U.S. Army Corps of Engineers (\$17).
 - Support Workforce Opportunities in Regional Careers grant (\$253).

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 classified matter or Governmental property from loss or theft.
- Protect against other hostile acts that may cause impacts on national security, or on 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. and
- 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$174,152,000	\$171,211,000	-\$2,941,000
<p><u>Safeguards and Security Program (\$152,009)</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 DOE-SR 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 (\$17,209)</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. 	<p><u>Safeguards and Security Program (\$148,448)</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 DOE-SR 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 (\$14,239)</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 	<ul style="list-style-type: none"> • The decrease is due to NNSA's expected contribution for Cyber Security, which offsets the amount required by EM.

- Support Headquarters Cyber initiatives (amount derived based on Site to total PBS appropriation)
Legacy Pension and Post-Retirement Benefits
(\$5,634)
- Contribute to the site Legacy Pension and Post-Retirement Benefits payment.

- and information systems according to current threat vectors and risk posture.
- Support Headquarters cyber initiatives (amount derived based on Site to total PBS appropriation)
Legacy Pension and Post-Retirement Benefits
(\$8,524)
 - Contribute to the site Legacy Pension and Post-Retirement Benefits payment.
-

Savannah River National Laboratory Crosscut
(dollars in thousands)

Savannah River National Laboratory	FY 2020 Request¹	FY 2021 Request¹	FY 2020 vs FY 2021
Environmental Management			
Defense Environmental Cleanup			
Direct Funding -			
Savannah River	110,760	117,760	7,000
EM Headquarters	16,000	19,000	3,000
Office of River Protection	13,000	15,000	2,000
Paducah / Portsmouth	1,100	1,100	0
Carlsbad	1,000	1,000	0
Oak Ridge	1,000	1,000	0
Richland	2,100	2,500	400
Los Alamos National Laboratory	300	500	200
Idaho	1,200	1,200	0
Total	146,460	159,060	12,600

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, and outside entities such as the Federal Bureau of Investigation. The FY 2021 numbers noted above are estimates based on executed FY 2019 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.

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.

Activities Supported by Savannah River National Laboratory Funding

Activities and Explanation of Changes

FY 2020 Request	FY 2021 Request	Explanation of Changes FY 2020 vs FY 2021
\$110,760	\$117,760	+\$7,000
<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. • 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. 	<p align="center"><u>Savannah River</u></p> <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. • 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. 	<ul style="list-style-type: none"> • Flowsheet development and assessment of excess materials to be dispositioned through the canyon to the liquid waste system • Evaluation of existing streams against reinterpretation of the HLW definition and R&D testing to implement disposition programs. • Evaluation of at tank characterization techniques to allow accelerated salt processing

- | | |
|---|---|
| <ul style="list-style-type: none"> • 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. | <ul style="list-style-type: none"> • 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

\$16,000	\$19,000	+\$3,000
<ul style="list-style-type: none"> • Nuclear Materials Packaging development and certifications. • 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 	<ul style="list-style-type: none"> • Nuclear Materials Packaging development and certifications. • 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 	<ul style="list-style-type: none"> • Increase reflects supports for integration of the Technology Development and Deployment program across Science, EM, and LM; assistance in the development of the EM Strategic Plan; 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.

- 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 & 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).
- 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 & 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 and verify protectiveness levels of alternative waste forms for management of nuclear materials (EM-managed Plutonium).
- Provide critical resources in the development of the EM Strategic Plan.
- Develop response and framework in coordination with recommendations of the NAS S&T study.
- Provide engineering assessment resources to process/approach issues and events across the complex through SRNL 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-HQ and field offices for implementation of end-state contracts.

Office of River Protection

\$13,000

- Waste form development & 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.
- 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.

\$15,000

- Waste form development & 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.
- 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.

+\$2,000

- Increase reflects evaluations and studies in support of direct feed High Level Waste processing and alternative processing evaluations.

- Development of sludge retrieval and tank farm sampling technologies to reduce water load and minimize worker exposure.
- 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.

Paducah / Portsmouth

\$1,100

- Deploy models and technologies for remediation and closure.
- Deactivation & 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 work force training. It also includes stakeholder engagement.
- Support resolution of subsurface contamination issues.
- Participate in developing material recovery (Nickel) worksheets during the deactivation & decommissioning of cascades.

\$1,100

- Deploy models and technologies for remediation and closure.
- Deactivation & 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 work force training. It also includes stakeholder engagement.
- Support resolution of subsurface contamination issues.
- Provide packaging and transportation technical support.

\$0

- Transition in scope from technical review and assessment to modeling and technology development and deployment focusing on groundwater remediation, solid waste disposal options, nuclear material holdup measurements, development and application of virtual reality tools and continued packaging and transportation technical support.

Carlsbad

\$1,000

- 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.

\$1,000

- 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 TRU Program.

\$0

- No change

Oak Ridge

\$1,000	\$1,000	\$0
<ul style="list-style-type: none"> • Deploy waste remediation technologies. • Provide engineering consultation and support for EM waste treatment missions. 	<ul style="list-style-type: none"> • Deploy waste remediation technologies. • Provide engineering consultation and support for EM waste treatment missions. • Support to evaluation of D&D and closure options for excess facilities. 	<ul style="list-style-type: none"> • No change

<u>Richland</u>		
\$2,100	\$2,500	+\$400
<ul style="list-style-type: none"> • Member of the DOE Low-Level Waste Disposal Facility Federal Review Group for the Environmental Restoration Disposal Facility Performance Assessment. • Materials consultation. • Deactivation & decommissioning technology development and deployment. • Develop enhanced characterization approaches for facility maintenance and planning for deactivation & 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. 	<ul style="list-style-type: none"> • Member of the DOE Low-Level Waste Disposal Facility Federal Review Group for the Environmental Restoration Disposal Facility Performance Assessment. • Materials consultation. • Deactivation & decommissioning technology development and deployment. • Develop enhanced characterization approaches for facility maintenance and planning for deactivation & 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 RL and their contractors 	<ul style="list-style-type: none"> • Increase reflects additional support for in-situ groundwater management, and closure; support for development and evaluation of models for remediation decisions, as well as deployment of deactivation & decommissioning technologies; development of site closure strategies: and support for engagement and discussions with stakeholders.

<u>Los Alamos National Laboratory</u>		
\$300	\$500	+\$200
<ul style="list-style-type: none"> • Nuclear materials packaging studies. • Technical assistance for groundwater remediation. • Technical consultation to new Los Alamos National Laboratory EM Office 	<ul style="list-style-type: none"> • Nuclear materials packaging studies, including disposition of drums at WCS. • Technical assistance for groundwater remediation. • Technical consultation to new Los Alamos National Laboratory EM Office. 	<ul style="list-style-type: none"> • Increase reflects support for transuranic drum disposition, and assistance with groundwater issues.

- Implement enhanced approaches to in-situ groundwater management.

<u>Idaho National Laboratory</u>		
\$1,200	\$1,200	\$0
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • No change

**Savannah River
Capital Summary (\$K)**

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Request
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

Capital Operating Expenses Summary (including (Major Items of Equipment (MIE))

Capital Asset Projects > \$20M	0	0	0	0	0	0	+0
Plant Projects (GPP and IGPP) (<\$20M)	22,295	7,930	3,965	4,479	4,400	6,000	+1,600
Total, Capital Operating Expenses	22,295	7,930	3,965	4,479	4,400	6,000	+1,600

Plant Projects (GPP and IGPP) (Total Project Cost (TPC) <\$20M)

Savannah River

SRNL IGPPs ^a	11,895	7,930	3,965	4,479	0	0	0
Diesel Generator Replacement	375	0	0	0	375	0	-375
Lab C 159/163 Renovation 773A	1,000	0	0	0	1,000	0	-1,000
Lab B 126/130 Renovation 773A	700	0	0	0	700	0	-700
HVAC unit 735-A	375	0	0	0	375	0	-375
Relocate Glass Apparatus Fabrication Laboratory to C-Wing, 735-A	1,100	0	0	0	1,100	0	-1,100
Upgrade SRNL Limited Area Public Address System	100	0	0	0	100	0	-100
Renovate Laboratory C-155 Hood and Gloveboxes, 773-A	750	0	0	0	750	0	-750
Y-760, Relocate Glass Apparatus Fab. Lab.	300	0	0	0	0	300	+300
Y-794, Replacement HVAC Sys. 735-11A	925	0	0	0	0	925	+925
Y-710, Renovate Lab C-159/163	1,075	0	0	0	0	1,075	+1,075
Construct Advanced Characterization Bldg. (TEM)	1,000	0	0	0	0	1,000	+1,000
TIMS Installation	1,500	0	0	0	0	1,500	+1,500
SRNL Delta V Control System Upgrade	1,200	0	0	0	0	1,200	+1,200
Total, Savannah River	22,295	7,930	3,965	4,479	4,400	6,000	+1,600

^a Projects and allocation of the FY 2020 and FY 2021 IGPP request are preliminary. Final FY 2020 and FY 2021 projects will reflect emerging or identified risks.

Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Request
-------	-------------	-----------------	-----------------	-----------------	-----------------	------------------------------------

Total, Capital Summary

22,295	7,930	3,965	4,479	4,400	6,000	+1,600
--------	-------	-------	-------	-------	-------	--------

**Savannah River
Construction Summary (\$K)**

	Total	Prior Years	FY 2019 Enacted	FY 2019 Actuals	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Request
17-D-402, Saltstone Disposal Unit #7, SR (SR-0014C)							
Total Estimate Cost (TEC)	142,513	35,500	41,243	47,574	40,034	10,716	-29,318
Other Project Costs (OPC)	16,487	6,819	2,782	1,326	3,465	3,976	511
Total Project Cost (TPC) 17-D-402	159,000	42,319	44,025	48,900	43,499	14,692	-28,807
18-D-401, Saltstone Disposal Unit #8 and #9, SR (SR-0014C)							
Total Estimate Cost (TEC)	247,771	178	7,577	5,108	20,000	65,500	45,500
Other Project Costs (OPC)	32,229	729	3,250	1,091	5,000	6,000	1,000
Total Project Cost (TPC) 18-D-401	280,000	907	10,827	6,199	25,000	71,500	+46,500
20-D-402, Advanced Manufacturing Collaborative Facility							
Total Estimate Cost (TEC)	TBD	0	0	0	25,000	25,000	0
Other Project Costs (OPC)	TBD	2,127	1,000	0	0	0	0
Total Project Cost (TPC) 20-D-402	TBD	2,127	1,000	0	25,000	25,000	0

**17-D-402, Saltstone Disposal Unit -7
Savannah River Site, Aiken, SC
Project is for Design and Construction**

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

Summary

The Fiscal Year (FY) 2021 Request for the Saltstone Disposal Unit (SDU) 7 project is \$14,692,000 (includes \$10,716,000 for Construction and \$3,976,000 for Other Project Costs).

In accordance with Department of Energy (DOE) Order (O) 413.3B, *Program and Project Management for the Acquisition of Capital Projects*, the Federal Project Director (FPD) has been appointed. A combined Critical Decision (CD) 2/3, *Approve Performance Baseline/Approve Start of Construction*, was approved on March 23, 2018. The Total Project Cost (TPC) for SDU 7 is \$159 million and CD-4, *Approve Project Completion* is March 31, 2022. CD-3A, *Approve Site Preparation, Early Construction and Long Lead Procurement* was approved on October 17, 2017. This has allowed site preparation activities to start on time and is providing greater flexibility to the project in the sequencing of construction activities. Lessons learned from the successful completion of SDU 6 are being incorporated into SDU 7.

Significant Changes

This Project Data Sheet is an update of the FY 2020 Project Data Sheet and does not include a new start for the budget year.

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	02/19/16	N/A	TBD	TBD	TBD	N/A	TBD	N/A	TBD
FY 2017	02/19/16	N/A	05/04/17	10/17/17	TBD	N/A	TBD	N/A	TBD
FY 2018	02/19/16	N/A	05/04/17	10/17/17	3/23/18	N/A	3/23/18	N/A	3/31/22
FY 2019	02/19/16	N/A	05/04/17	10/17/17	3/23/18	N/A	3/23/18	N/A	3/31/22
FY 2020	02/19/16	N/A	05/04/17	10/17/17	3/23/18	N/A	3/23/18	N/A	3/31/22
FY 2021	02/19/16	N/A	05/04/17	10/17/17	3/23/18	N/A	3/23/18	N/A	3/31/22

CD-0 – Approve Mission Need

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

CD-1 – Approve Design Scope and Project Cost and Schedule Ranges

CD-3A - Site Preparation, Early Construction and Long Lead Procurement

CD-2 – Approve Project 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 9)

CD-4 – Approve Start of Operations or Project Closeout

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 2016	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2017	TBD	TBD	TBD	TBD	N/A	TBD	TBD

(\$ 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	8,171	134,342	142,513	16,487	N/A	16,487	159,000
FY 2020	7,582	134,931	142,513	16,487	N/A	16,487	159,000
FY 2021	7,582	134,931	142,513	16,487	N/A	16,487	159,000

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 Unit 7 is 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 Unit 7 project will construct one 375 feet in diameter, 43 feet high, 32,000,000 gallon cylindrical large tank disposal cell 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)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2017	4,500	4,500	4,500
FY 2018	3,082	3,082	3,082
Total, Design	7,582	7,582	7,582
Construction			
FY 2017	1,000	1,000	1,000
FY 2018	26,918	26,918	26,918
FY 2019	41,243	41,243	41,243
FY 2020	40,034	40,034	40,034
FY 2021	10,716	10,716	10,716
Outyears	15,020	15,020	15,020
Total, Construction	134,931	134,931	134,931
TEC			
FY 2017	5,500	5,500	5,500
FY 2018	30,000	30,000	30,000
FY 2019	41,243	41,243	41,243
FY 2020	40,034	40,034	40,034
FY 2021	10,716	10,716	10,716
Outyears	15,020	15,020	15,020
Total, TEC	142,513	142,513	142,513
OPC			
FY 2016	0	0	0
FY 2017	2,819	2,819	2,819
FY 2018	4,000	4,000	4,000
FY 2019	2,782	2,782	2,782
FY 2020	2,431	3,465	3,465

(dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
FY 2021	3,976	1,267	1,267
Outyears	479	479	479
Total, OPC	16,487	16,487	16,487
Total Project Cost (TPC)			
FY 2016	0	0	0
FY 2017	8,319	8,319	8,319
FY 2018	34,000	34,000	34,000
FY 2019	44,025	44,025	44,025
FY 2020	42,465	42,465	42,465
FY 2021	14,692	14,692	14,692
Outyears	15,499	15,499	15,499
Total, TPC	159,000	159,000	159,000

Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	5,755	5,755	5,755
Contingency	1,827	1,827	1,827
Total, Design	7,582	7,582	7,582
Construction			
Site Preparation	10,172	10,172	10,172
Equipment	N/A	N/A	N/A
Other Construction	103,216	103,216	103,216
Contingency	21,543	21,543	20,988
Total, Construction	134,931	134,931	134,376
Total, TEC	142,513	141,958	141,958
Contingency, TEC	23,370	22,815	22,815
Other Project Cost (OPC)			
OPC except D&D	8,258	8,258	8,258
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	3,129	3,684	3,684
Other OPC	5,100	5,100	5,100
Total, OPC except D&D	16,487	17,042	17,042
Total, OPC	16,487	13,358	13,358
Total, Contingency	3,129	3,684	3,684
Total, TPC	159,000	159,000	159,000

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total, Contingency	26,500	26,500	26,500

Schedule of Appropriation Requests

Request		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Outyears	Total
FY 2017	TEC	0	6,850				TBD		TBD
	OPC	1,201	2,664				TBD		TBD
	TPC	1,201	9,514				TBD		TBD
FY 2018	TEC	0	5,500	45,097			TBD		TBD
	OPC	1,201	1,618	2,740			TBD		TBD
	TPC	1,201	7,118	47,837			TBD		TBD
FY 2019	TEC	0	5,500	30,000	41,243		TBD		TBD
	OPC	1,201	1,618	4,000	2,782		TBD		TBD
	TPC	1,201	7,118	34,000	44,025		TBD		TBD
FY 2020	TEC	0	5,500	30,000	41,243	40,034			116,777
	OPC	1,201	1,618	4,000	2,782	2,431			12,032
	TPC	1,201	7,118	34,000	44,025	42,465			128,809
FY2021	TEC	0	5,500	30,000	41,243	40,034	10,716	15,020	142,513
	OPC	1,201	1,618	4,000	2,782	2,431	3,976	479	16,487
	TPC	1,201	7,118	34,000	44,025	42,465	14,692	15,499	159,000

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2QFY2022
Expected Useful Life (number of years)	3-5
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

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

The overall Acquisition approach was included in the Request for Proposals for the upcoming Liquid Waste Contract rebid. The liquid waste Prime Contractor will be tasked 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 SDU 6 project, incorporating best practices and lessons learned.

**18-D-401, Saltstone Disposal Units 8/9
Savannah River Site, Aiken, SC (SR-0014C)
Project is for Design and Construction**

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

Summary

The FY 2021 Request for the Saltstone Disposal Units 8/9 project is \$71,500,000 (Includes \$65,500,000 in Design and Construction costs and \$6,000,000 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) will be 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 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 2018	3/17/2017		4QFY2017	TBD		TBD	N/A	TBD
FY 2019	3/17/2017		12/11/2017	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

CD-0 – Approve Mission Need

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

CD-1 – Approve Design Scope and Project Cost and Schedule Ranges

CD-2 – Approve Project 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 9)

CD-4 – Approve Start of Operations or Project Closeout

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

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 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 2018	178	178	178
FY 2019	1,328	1,328	1,328
FY 2020	2,708	2,708	2,708
FY 2021	2,460	2,460	2,460
Outyears	526	526	526
Total, Design	7,200	7,200	7,200
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
Outyears	153,990	153,990	153,990
Total, Construction	240,571	240,571	240,571
TEC			
FY 2018	178	178	178
FY 2019	7,577	7,577	7,577
FY 2020	20,000	20,000	20,000
FY 2021	65,500	65,500	65,500
Outyears	154,516	154,516	154,516

(dollars in thousands)

	Appropriations	Obligations	Costs
Total, TEC	247,771	247,771	247,771
OPC			
FY 2018	729	729	729
FY 2019	3,250	3,250	3,250
FY 2020	2,999	2,999	2,999
FY 2021	6,000	6,000	6,000
Outyears	19,251	19,251	19,251
Total, OPC	32,229	32,229	32,229
Total Project Cost (TPC)	280,000	280,000	280,000
FY 2018	907	907	907
FY 2019	10,827	10,827	10,827
FY 2020	22,708	22,708	22,708
FY 2021	71,500	71,500	71,500
Outyears	174,058	174,058	174,058
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	400	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	236,271	236,271	236,271
Total, Contingency	43,729	43,729	43,729

Schedule of Appropriation Requests

Request	Prior Years	FY 2018	FY 2019	FY 2020	FY 2021	Outyears	Total	
FY 2018	TEC	0	178				178	
	OPC	0	729				729	
	TPC	0	907				907	
FY 2019	TEC	0	178	7,577			7,755	
	OPC	0	729	3,250			3,979	
	TPC	0	907	10,827			11,734	
FY 2020	TEC	0	178	7,577	19,709		27,464	
	OPC	0	729	3,250	2,999		6,978	
	TPC	0	907	10,827	22,708		34,442	
FY 2021	TEC	0	178	7,577	20,000	65,500	154,516	247,771
	OPC	0	729	3,250	2,999	6,000	19,251	32,229
	TPC	0	907	10,827	22,708	71,500	174,058	280,000

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4QFY2025
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	TBD	TBD	TBD	TBD
Maintenance	TBD	TBD	TBD	TBD
Total, Operations & Maintenance	TBD	TBD	TBD	TBD

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 and 7 projects, incorporating best practices and lessons learned.

**20-D-402, Design and Construct the Advanced Manufacturing Collaborative Facility
Savannah River Site, Aiken, South Carolina**

1. Significant Changes and Summary

Summary

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

Critical Decision-0 was approved by EM-1 on March 6, 2015, citing the critical need for EM to employ innovative approaches in technology to reduce mission risk, project failures, cost overruns, and program delays; all of which contribute to an increasing rather than decreasing EM liability. Construction of this facility will provide accessible laboratory space and offices that will be used to drive collaboration among the National Laboratories, Industry, and Academia. It will exploit the unique attributes of those entities to stimulate innovative thinking and to adapt innovative technologies to accomplish DOE missions. The National Laboratories will bring research and technology development focused on DOE missions. Commercial entities will bring cutting-edge technologies (process intensification, smart manufacturing etc.) and best practices. Academia will bring broad, interdisciplinary perspective and expertise to a collaborative setting. In addition, the facility will provide a unique environment to train the next generation workforce in the advanced technologies and methods expected to become a significant part of EM’s cleanup and closure technology toolbox.

TEC funds are expected to complete final design in FY 2021 and initiate construction activities in FY 2022. A firm-fixed price procurement is planned.

A Federal Project Director with certification level 4 has been assigned to this project and approves this CPDS.

2. 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 2015	03/06/2015	11/30/2015	11/30/2015	TBD	TBD	TBD	N/A	N/A
FY 2016	03/06/2015	11/30/2015	11/30/2015	TBD	TBD	TBD	N/A	N/A
FY 2017	03/06/2015	11/30/2015	11/30/2015	TBD	TBD	TBD	N/A	N/A
FY 2018	03/06/2015	11/30/2015	11/30/2015	TBD	TBD	TBD	N/A	N/A
FY 2019	03/06/2015	2Q FY2019*	11/30/2015	TBD	TBD	TBD	N/A	N/A
FY 2020	03/06/2015	2Q FY2019*	2Q FY2020*	4Q FY2020	TBD	TBD	N/A	N/A
FY 2021	03/06/2015	2Q FY2019	2Q FY2020	4Q FY2020	4Q FY2021	TBD	N/A	TBD

* Conceptual design and CD-1 to be revisited and reapproved based on the shift in Acquisition Strategy to construction by DOE.

CD-0 – Approve Mission Need for a construction project with a conceptual scope and cost range

- Conceptual Design Complete** – Actual date the conceptual design was completed
- CD-1** – Approve Design Scope and Project Cost and Schedule Ranges
- CD-2** – Approve Project 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 9)
- CD-4** – Approve Start of Operations or Project Closeout

3. Project Cost History

Dollars in Thousands

	TEC, Design & Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2020	50,000	50,000	9,127	0	9,127	59,127
FY 2021	50,000	50,000	9,127	0	9,127	59,127

No construction will be performed until the project performance baseline has been validated and CD-3 has been approved.

4. Project Scope and Justification

Scope

Design and construction of accessible, commercially viable and flexible laboratory space.

Justification

Construction of the Advanced Manufacturing Collaborative facility will allow the Department to focus on developing and adapting safer and more cost-effective technology, facilities, and expertise for nuclear chemical and materials manufacturing to tackle the remaining challenges in the cleanup of radioactive and chemical waste resulting from Cold War activities and nuclear research. The DOE Laboratory Operations Board review of Savannah River National Laboratory infrastructure concluded that two-thirds of the Savannah River National Laboratory facilities are substandard or inadequate for modern technology development. The Advanced Manufacturing Collaborative facility strengthens current efforts to consolidate and modernize Laboratory facilities to address these inadequacies.

The Advanced Manufacturing Collaborative facility will provide accessible, modern, commercially viable and flexible laboratory space for SRNL to collaborate with industry and academia to translate a range of proven and potential advanced manufacturing technologies from the commercial chemical and manufacturing sectors into DOE processes, plans and missions to significantly improve risk management, enhance worker and public safety, reduce costs and shave years off the legacy waste cleanup schedule.

The facility’s location on the campus of the University of South Carolina-Aiken will also create an environment that can develop the best and brightest next generation workforce to help counter the attrition of nuclear chemical and materials processing experience by providing a venue for cutting-edge training with a focus on chemical and materials technology. The laboratory is targeted for about 60,000 square feet that will include high-bay, wet laboratories, mechanical laboratories, offices, and collaborative spaces.

Without this new laboratory space, the inadequate facilities will continue to affect negatively mission performance and the ability to insert new technology into EM’s cleanup toolbox. Location of the facility on non-federal property enhances the ability to collaborate with the private sector and academia. The Laboratory’s current incapacity to develop and implement technologies that will drive earlier and more cost-effective completion of EM’s cleanup and closure work will negatively affect cleanup and closure across the complex. The commercial chemical processing industry has demonstrated lifecycle cost savings up to 80%, reduced process cycle times up to 40%, and 10x increases in product yield applying the technologies Advanced Manufacturing Collaborative facility could adapt for use by EM.

The project will be conducted in accordance with the project management requirements in DOE O 413.3B, Program and Project Management for the Acquisition of Capital Assets unless an exception is granted.

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY2020	N/A	N/A	795
FY 2021	N/A	N/A	2,000
Total, Design	N/A	N/A	2,795
Construction			
Outyears	N/A	N/A	50,000
Total, Construction	N/A	N/A	50,000
TEC			
FY 2020	25,000	795	795
FY 2021	25,000	2,000	2,000
Outyears	0	47,205	47,205
Total, TEC	50,000	50,000	50,000

OPC except D&D

(dollars in thousands)

	Appropriations	Obligations	Costs
FY2015			323
FY2016			647
FY2017			1,157
FY2018			0
FY2019			0
FY2020			0
FY2021			0
Outyears			7,000
Total, OPC except D&D	9,127	9,127	9,127
D&D			
Total, D&D	N/A	N/A	N/A
OPC			
Total, OPC	9,127	9,127	9,127
Total Project Cost (TPC)			
FY 2020	59,127	59,127	59,127
Total, TPC	59,127	59,127	59,127

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	2,795	N/A	N/A
Contingency	0	N/A	N/A
Total, Design	2,795	N/A	N/A
Construction			
Building Sitework	2,922	N/A	N/A
Substructure	1,800	N/A	N/A
Shells	11,754	N/A	N/A
Interiors	6,858	N/A	N/A
Services	13,473	N/A	N/A
Equipment and furnishings	2,518	N/A	N/A
General Conditions and Fees	7,880	N/A	N/A
Total, Construction	47,205	N/A	N/A
Total, TEC	50,000	N/A	N/A
Contingency, TEC	0	0	0

Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	970	0	0
Conceptual Design	1,157	0	0
Move in costs	7,000	0	0
Total, OPC except D&D	9,127	0	0
D&D			
D&D	0	0	0
Contingency	0	0	0
Total, D&D	0	0	0
Total, OPC			
Contingency, OPC	0	0	0
Total, TPC			
Total, Contingency	0	0	0

7. Schedule of Appropriation Requests
(\$K)

Request	Prior Years	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY2021	Outyears	Total
FY 2020	TEC	0	0	0	0	0	50,000	0	0	50,000
	OPC	0	323	647	1,157	0	0	0	7,000	9,127
	TPC	0	323	647	1,157	0	0	50,000	0	59,127
FY 2021	TEC	0	0	0	0	0	25,000	25,000	0	50,000
	OPC	0	323	647	1,157	0	0	0	7,000	9,127
	TPC	0	323	647	1,157	0	0	25,000	25,000	59,127

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1QFY 2024
Expected Useful Life (number of years)	30 (20 as DOE owned)
Expected Release/Rent to USC-A	1QFY 2044

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs (20 yrs)	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations and Maintenance	1,700	0	34,000	0
Utilities	546	0	10,920	0
<u>Real and Personal Prop Taxes</u>	<u>246</u>	<u>0</u>	<u>4,920</u>	<u>0</u>
Total	2,492	0	49,840	0

9. D&D Information

	Square Feet
N/A under the expected lease arrangement	N/A

10. Acquisition Approach

The design and construction of the AMC is planned as a negotiated firm-fixed-price (FFP) contract. Non-Federal land is expected to be provided on University of South Carolina-Aiken campus under a zero-dollar ground lease arrangement. It is anticipated after 20 years, the ground lease will either be renewed or arrangements will be made with USC-A for continued use by the University through rental of the facility or grant. As a result, D&D is not anticipated.

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 and Building 812/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 remaining perchlorate contamination in Building 850/Operable Unit 5 groundwater and characterization and/or remedy selection and implementation for soil and groundwater for Building 865/Operable Unit 8 and Building 812/Operable Unit 9 are currently scheduled for completion by the end of FY 2028. 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.

In early 2015, both the DOE Inspector General (IG) and the Government Accountability Office (GAO) issued reports raising concerns with DOE's management of high-risk excess facilities, particularly those awaiting transition to EM. These reports describe what the IG characterized as increasing levels of risk assumed by DOE due to delays in the cleanup and disposition of contaminated excess facilities. The IG also found that these delays were exacerbated by DOE prioritization practices. As noted in these reports, DOE's progress in disposing of excess facilities, while substantial, has not included all of the relatively higher risk excess facilities. According to the reports, additional attention, improved strategic direction, and better prioritization would help maximize the use of resources to address these issues. These reports recommended that

DOE conduct an updated analysis and provide a report with critical information on contaminated excess facilities to DOE leadership to support decisions regarding the path forward for addressing these facilities.

In its December 2016 Report to Congress, "Plan for Deactivation and Decommissioning of Nonoperational Defense Nuclear Facilities," DOE documented a qualitative assessment of risks posed by excess facilities and defined the scope of the challenge. In response to this risk assessment effort, DOE developed a plan to inspect and evaluate the higher risk process-contaminated excess facilities to determine if conditions had changed since the prior inspection in FY 2008, to update disposition estimates, and to recommend next steps in preparing facilities for disposition. These inspections began in FY 2016. DOE completed the facility inspections at Lawrence Livermore National Laboratory in Livermore in FY 2016.

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 ten 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 2021 Budget Request

Using FY 2020 enacted appropriations, demolition and characterization work supporting planning efforts for decommissioning and demolition work will continue on NNSA-owned high-risk contaminated excess facilities documented in the October 2018 report to Congress, Plan for Deactivation and Decommissioning of Nonoperational Defense Nuclear Facilities. Demolition activities of Building 175 will be completed and the reactor in Building 280 will start.

The majority of activities scheduled for FY 2021 for the 300 site are in support of the development of remedial solutions for contamination at Building 812, Building 850, and Building 865.

FY 2020 - FY 2021 Key Milestones/Outlook

- (February 2020) Commence characterization of Building 175 (MARS-E Beam Facility).
- (December 2020) Commence reactor dismantlement from Building 280 (Pool-Type Reactor).
- (March 2021) Commence characterization of Building 251 (Heavy Element Facility).
- (August 2021) Complete demolition of Building 175.

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, Limited Liability Company, 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 NNSA-owned high-risk contaminated excess facilities, EM is using multiple contracting avenues to facilitate decommissioning and demolition. To accomplish the Building 280 reactor removal, EM is partnering with the U.S. Army Corps of Engineers to use a contract vehicle that facilitated a quicker start on decommissioning. EM

plans to use work authorizations under the National Nuclear Security Administration's Management and Operating contract to decommission and demolish Building 175. EM will use a Nationwide Deactivation, Decommissioning and Removal Indefinite Delivery-Indefinite Quantity contract that is currently in acquisition through the EM Consolidated Business Center.

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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 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)	529	415	425	+10
VL-LLNL-0031 / Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300	1,175	1,312	1,339	+27
Subtotal, Lawrence Livermore National Laboratory	1,704	1,727	1,764	+37
LLNL Excess Facilities D&D				
CBC-LLNL-0040 / LLNL Excess Facilities D&D	25,000	65,000	0	-65,000
Total, NNSA Sites	26,704	66,727	1,764	-64,963

**Lawrence Livermore National Laboratory
Explanation of Major Changes (\$K)**

FY 2021 Request vs FY 2020 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)

<ul style="list-style-type: none"> • No significant change. 	+10
--	-----

VL-LLNL-0031 / Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300

<ul style="list-style-type: none"> • No significant change. 	+27
--	-----

LLNL Excess Facilities D&D

CBC-LLNL-0040 / LLNL Excess Facilities D&D

<ul style="list-style-type: none"> • The decrease reflects funding received in the FY 2020 enacted appropriations and continues progress on demolition and characterization of high-risk excess facilities. 	-65,000
--	---------

Total, Lawrence Livermore National Laboratory	-64,963
--	----------------

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 2020.

Solid Waste Stabilization and Disposition Support - Lawrence Livermore National Laboratory (Defense) (PBS: VL-FOO-0013B-D)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$415,000	\$425,000	+\$10,000
<ul style="list-style-type: none"> • Provide grants to the State of California Regional Water Quality Control Board and the California Department of Toxic Substances Control to support Comprehensive Environmental Response, Compensation, and Liability Act oversight. This funding is mandated by the Federal Facility Agreement signed by DOE, Environmental Protection Agency, and the State of California. The grants were last renewed in 2017 and are subject to renewal in 2020. 	<ul style="list-style-type: none"> • Provide grants to the State of California Regional Water Quality Control Board and the California Department of Toxic Substances Control to support Comprehensive Environmental Response, Compensation, and Liability Act oversight. This funding is mandated by the Federal Facility Agreement signed by DOE, Environmental Protection Agency, and the State of California. 	<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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$1,312,000	\$1,339,000	+\$27,000
<ul style="list-style-type: none"> • Finalize the Remedial Investigation/Feasibility Study for metals and radionuclides in soil at Building 865. 	<ul style="list-style-type: none"> • Draft the Remedial Investigation/Feasibility Study for Building 812. 	<ul style="list-style-type: none"> • No significant change.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$65,000,000	\$0	-\$65,000,000
<ul style="list-style-type: none"> • Commence characterization of Building 175. 	Continue demolition and characterization: <ul style="list-style-type: none"> • Complete demolition of Building 175. • Commence demolition of Building 280. • Commence characterization of Building 251. 	<ul style="list-style-type: none"> • The decrease reflects funding received in the FY 2020 enacted appropriations and continues progress on demolition and characterization of high-risk excess facilities.

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 two regulatory drivers are the renegotiated Order on Consent (Consent Order) that was signed on June 24, 2016, by DOE and the New Mexico Environment Department, and DOE's radiological requirements.

In FY 2012, the Department initiated discussions with the State of New Mexico to reprioritize the near-term scheduled activities within the 2005 Consent Order to a risk-based approach. This reprioritization was documented in early 2012 in the Framework Agreement, a document of shared commitment between DOE and the State of New Mexico. Unlike the Consent Order, it is not an enforceable agreement. Inherent in reaching this agreement was the acknowledgement by DOE that the completion date (December 2015) of the March 2005 Consent Order would not be met. The Framework Agreement contained a milestone to complete disposition of 3,706 cubic meters of above-ground transuranic waste by June 30, 2014. This milestone was not met due to factors associated with the February 2014 events that led to the suspension of the Waste Isolation Pilot Plant operations and the subsequent identification that the breached container contributing to the radiological release originated from the Los Alamos National Laboratory. This container was from a legacy transuranic waste stream containing nitrate salts and an incompatible absorbent. Prior to the February 2014 events, significant progress had been made to reduce the risks associated with the above-ground transuranic waste inventory, with only 10 percent of the targeted 3,706 cubic meters remaining on site. The radiological release and the Los Alamos National Laboratory factors that contributed to the breached container was evaluated in detail by a DOE Accident Investigation Board, an independent national laboratory Technical Assessment Team, and various other internal and external organizations.

Upon discovery that the breached container at the Waste Isolation Pilot Plant originated from Los Alamos, the processing of legacy transuranic waste at Los Alamos National Laboratory was suspended. The New Mexico Environment Department issued an Administrative Order requiring the safe isolation of nitrate salt bearing wastes remaining on site; the activities required to comply with this Order were among the FY 2016 and FY 2017 activities at the site. This Order requires ongoing and continuous monitoring of the waste to ensure its continued safe storage. In December 2014, the New Mexico Environment Department also issued an Administrative Compliance Order assessing fines and penalties associated with self-disclosed Resource Conservation and Recovery Act non-compliances. In addition to assessing fines and penalties, the New Mexico Environment Department required plans for the treatment of nitrate salt bearing waste. Additionally, the Phase II Waste Isolation Pilot Plant Accident Investigation Board Report was issued, supported by the Technical Assessment Team, on April 16, 2015. The Phase II report required the development and implementation of Corrective Action Plans for Los Alamos National Laboratory's transuranic waste disposition program. When fully implemented these actions should preclude the possibility of a release similar to the one that occurred on February 14, 2014, at the Waste Isolation Pilot Plant. Treatability studies and a resumption plan were established as part of FY 2016 operations and treatment of the nitrate salt bearing waste stream began in FY 2017 and was completed in FY 2018.

The Environmental Management program at the Los Alamos site was previously executed by the National Nuclear Security Administration Management and Operating Contractor Los Alamos National Security, LLC, prior to the establishment of the Environmental Management Los Alamos Field Office, and then temporarily under a short-term bridge contract to the Office of Environmental Management (via the Department of Energy's Environmental Management Consolidated Business Center) after the formation of the Environmental Management Los Alamos Field Office. In December 2017, the Department awarded the Los Alamos Legacy Cleanup Contract to Newport News Nuclear BWXT Los Alamos, LLC, a joint venture led by

Stoller Newport News Nuclear, part of Huntington Ingalls Industries Technical Solutions division, with partner BWX Technologies, Inc. The new Contractor successfully completed transition on the Los Alamos Legacy Cleanup Contract on April 30, 2018, with a “Safe in 90 Day” campaign of slow deliberate focused steps to a fully operational posture within the Los Alamos Environmental Management scope beginning on August 1, 2018. Newport News Nuclear BWXT-Los Alamos, Inc. continues to make progress on executing the legacy cleanup scope through FY 2019 with a focus on beginning “Safe, Efficient, and Transparent” into FY 2019 and beyond through their five year base contract period.

Highlights of the FY 2021 Budget Request

In FY 2021, 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.

Consistent with the priorities established with the New Mexico Environment Department in the 2016 Consent Order, cleanup activities will continue to focus on surface water and groundwater management. Activities will continue on the Chromium Plume Control Interim Measures to control migration of a hexavalent chromium plume beneath Mortandad and Sandia canyons. Additionally, Plume-Center Characterization activities will continue to investigate and develop corrective measures for remediation of the hexavalent chromium plume, and design will be initiated for the proposed remedies. Installation of New Mexico Environment Department approved groundwater remedies for the Royal Demolition Explosives plume in Cañon de Valle will continue. Implementation of the individual storm water permits will continue and investigation and cleanup of several aggregate areas will be completed. Demolition of slabs at Technical Area 21 will continue.

The FY 2021 request will 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 Area A and T.

FY 2020 and FY 2021 Key Milestones/Outlook

- (January 2020) Begin retrieval and processing of below grade transuranic waste at Area G
- (March 2020) Complete first major Consent Order Campaign documented with the Completion Report for Historical Properties Campaign
- (August 2020) Complete Corrective Measures Evaluation for the RDX Contaminant Plume in the Deep Groundwater
- (September 2020) Complete Letter Report documenting field work completion and sampling conducted (DP West and DP East)
- (September 2020) Completion of three aggregate area investigations and cleanup for the second major Consent Order Campaign for Southern External Boundary
- (January 2020) Initiate MDA T Moisture Monitoring Pilot Activities
- (August 2020) Continue Royal Demolition Explosives Corrective Measures Evaluation for submittal
- (January 2021) Continue retrieval and processing of below grade transuranic waste at Area G (January 2021) Continue Corrugated Metal Pipe retrieval effort
- (January 2021) Continue ship transuranic waste at Area G to WIPP on a weekly basis (April 2021) Complete Corrective Measures Implementation Plan for the Royal Demolition Explosives Contaminant Plume in the Deep Groundwater
- (April 2021) Complete Radiological Risk Assessment for Material Disposal Area AB
- (April 2021) Initiate processing of cemented-monoliths (transuranic) in Building 375
- (May-September 2021) Complete three investigation reports for 3 Aggregate Areas under the Southern Boundary Campaign
- (September 2021) Complete Supplemental Investigation Reports Campaign
- (June 2020) Complete Known Cleanup Site Campaign
- (March 2021) Complete Corrective Measures Evaluation for Material Disposal Area H submittal to NMED
- (September 2021) Continue Technical Area 21 Delta Prime West Slabs Remediation

- (September 2021) Complete demolition of Building 257 at Technical Area 21
- (September 2021) Continue to segregate, package, and ship mixed/low level waste for offsite disposal

Regulatory Framework

The primary regulatory driver for Environmental Management at Los Alamos National Laboratory has been the Consent Order. The Consent Order provides the primary requirements for the environmental cleanup efforts at Los Alamos National Laboratory and established an enforceable scope and schedule and milestones for corrective actions. As mentioned previously, the Department under the Atomic Energy Act of 1957, regulates the radiological contaminant under its regulations. Both of these 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; the Individual Permit issued by the U. S. Environmental Protection Agency in February 2009 for storm water management at Los Alamos National Laboratory; 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 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 essentially 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 completed to the Waste Isolation Pilot Plant, removing all but one container of above ground transuranic waste from WCS. Regarding the path forward for the remaining containers stored below grade at Waste Control Specialists, the Department will provide no later than March 31, 2020, a written plan and schedule setting forth a specific date for removal of the remaining transuranic waste. The Savannah River National Laboratory is supporting this effort. The remaining waste remains in a safe condition.

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 established a 97 day transition period which was completed 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 and 93 days.

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 renegotiated Consent Order between DOE and the regulator.
- Assessments and corrective actions at contaminated sites to reduce unacceptable human health and ecological risks and reduce the inventory of legacy transuranic 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 of time 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. Additionally, regulators are assumed to approve the necessary permits without the need for public hearings.

Los Alamos National Laboratory

Funding (\$K)

FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
----------------------------	----------------------------	----------------------------	---

Defense Environmental Cleanup

NNSA Sites

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	84,556	41,579	-42,977
VL-LANL-0030 / Soil and Water Remediation-LANL	132,050	132,050	75,027	-57,023
Subtotal, Los Alamos National Laboratory	220,000	220,000	120,000	-100,000

**Los Alamos National Laboratory
Explanation of Major Changes (\$K)**

FY 2021 Request vs FY 2020 Enacted

Defense Environmental Cleanup

Los Alamos

EMLA Cleanup Activities

VL-LANL-0013 / Solid Waste Stabilization and Disposition-LANL Legacy

- Accelerates initiation, startup and operations of contact handled transuranic waste retrieval, treatment and disposition activities with prior year balances. -42,977

VL-LANL-0030 / Soil and Water Remediation-LANL

- The decrease is consistent with FY 2021 Consent Order activities for ongoing campaigns and represents portions of Aggregate Area work completing in Q3 of FY 2021. -57,023

EMLA Community and Regulatory Support

VL-FAO-0101 / Miscellaneous Programs and Agreements in Principle

- No change. 0

Total, Los Alamos National Laboratory	-100,000
--	-----------------

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 PBS 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$84,556,000	\$41,579,000	-\$42,977,000
<ul style="list-style-type: none"> Continue Solid Waste Stabilization and Disposition services and actions to maintain safe storage of stored transuranic inventory (above and below grade), such as safe configuration and within prescribed Material-at-Risk limits and compliance with the Resource Conservation and Recovery Act permit. Continue management and disposition of mixed low-level radioactive waste/low-level radioactive waste and transuranic waste. Conduct safe operations of transuranic waste processing lines at TA-54 Area G. Submit the radiological risk assessment on 33 remote-handled transuranic waste shafts. 	<ul style="list-style-type: none"> Continue Solid Waste Stabilization and Disposition services and actions to maintain safe storage of stored transuranic inventory (above and below grade), such as safe configuration and within prescribed Material-at-Risk limits and compliance with the Resource Conservation and Recovery Act permit. Continue management and disposition of mixed low-level radioactive waste/low-level radioactive waste and transuranic waste. Continue safe operations of transuranic waste processing lines at TA-54 Area G. 	<ul style="list-style-type: none"> Accelerates initiation, startup and operations of contact handled transuranic waste retrieval, treatment and disposition activities with prior year balances.

- 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 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 shipments to the Waste Isolation Pilot Plant.
- 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 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 shipments to the Waste Isolation Pilot Plant.
 - Continue processing of corrugated metal pipes with the diamond wire saw.
 - Initiate planning for retrieval and processing of Pit 9 wastes types including drums and large components.
-

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 PBS 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 or PRSs), 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 PRSs 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.

Beginning in FY 2018, activities previously included in the PBS 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

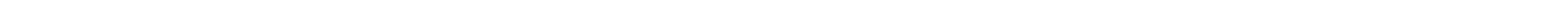
FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$132,050,000	\$75,027,000	-\$57,023,000
<ul style="list-style-type: none"> Continue groundwater monitoring and reporting requirements consistent with the renegotiated Consent Order on Compliance signed on June 24, 2016, and the Resource Conservation and Recovery Act Operating Permit; install several monitoring wells under the renegotiated Consent Order; continued operation and evaluation of sediment transport measures implemented to protect the regional drinking water supplies (Santa Fe), sediment monitoring, mitigation and reporting requirements 	<ul style="list-style-type: none"> Continue groundwater monitoring and reporting requirements consistent with the renegotiated Consent Order on Compliance signed on June 24, 2016, and the Resource Conservation and Recovery Act Operating Permit; install several monitoring wells under the renegotiated Consent Order; continued operation and evaluation of sediment transport measures implemented to protect the regional drinking water supplies (Santa Fe), sediment monitoring, 	<ul style="list-style-type: none"> The decrease is consistent with FY 2021 Consent Order activities for ongoing campaigns and represents portions of Aggregate Area work completing in Q3 of FY 2021.

consistent with the Individual Permit.

- Complete investigation work plan for pits and trenches at Material Disposition Area-A.
- 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 planning activities at Individual Permit sites including Los Alamos, Pueblo, Ancho, Chaquehui, Sandia, and Mortandad Canyons.
- Continue chromium plume control Interim Measure; installation of injection and extraction wells (full-scale IM operation spring/summer 2019) and continue chromium plume center characterization activities through modeling and hydrology studies, installation of monitoring wells, moving towards an approved Corrective Measures Evaluation in 2020/2021.
- Continue investigation and closure activities at TA-21.
- Continue activities associated with groundwater investigation for high explosives plume in Cañon de Valle and submit recommendation for RDX plume.
- Continue deactivation and decommissioning activities for process-contaminated facilities at Technical Area-21 which enables access to contamination sites beneath the building footprint.
- Closeout accelerated cleanup campaign.
- Closeout Supplemental Investigation Report campaign with Completion Report submitted in 2021.
- Prepare chromium plume Corrective Measures Evaluation Report.

mitigation and reporting requirements consistent with the Individual Permit.

- 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 activities at Individual Permit sites including Los Alamos, Pueblo, Ancho, Chaquehui, Sandia, and Mortandad canyons.
- Continue chromium plume control Interim Measure.
- Continue chromium plume center characterization activities through modeling and hydrology studies, installation of monitoring wells, submit Corrective Measures Evaluation report to NMED for approval.
- Continue investigation and closure activities at TA-21.
- Submit Corrective Measures Evaluation Report for deep groundwater high explosives plume beneath Cañon de Valle.
- Continue Supplemental Investigation Reports Campaign.
- Continue demolition of Technical Area 21 Building 257.
- Continue Delta Prime West Slabs remediation at Technical Area 21.
- Continue field work for three Aggregate Areas under the Southern External Boundary Campaign and one under the Pajarito Watershed Campaign.



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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$3,394,000	\$3,394,000	+\$0
<ul style="list-style-type: none"> Continue the Regional Coalition activities. Continue the Natural Resource Damage Assessment and Trustee Council activities. Continue the Los Alamos Pueblo Program to continue environmental monitoring programs for air, soil, and water and establish an independent monitoring program. 	<ul style="list-style-type: none"> Continue the Regional Coalition of Los Alamos National Laboratory Communities activities. Continue the Natural Resource Damage Assessment and Trustee Council activities. Continue the Los Alamos Pueblo Program to continue environmental monitoring programs for air, soil, and water and establish an independent monitoring program. Continue Los Alamos National Laboratory Community Participation Program. Continue regulatory support activities with state regulator. 	<ul style="list-style-type: none"> No change.

Nevada

Overview

The 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, Tonopah Test Range, and 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 (hazardous and radioactive waste), 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 2021 Budget Request

The EM Nevada Program FY 2021 budget supports continued progress towards risk-informed closure of eighty two (82) remaining subsurface contaminated groundwater and thirteen (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.

FY 2020 and FY 2021 Key Milestones/Outlook

PBS VL-NV-0030:

- (June 2020) Submit Annual Tonopah Test Range and Nevada Test and Training Range Post-Closure Regulatory Inspection Report to the State of Nevada.
- (June 2020) Submit Annual Post-Closure Inspection Report for the Nevada National Security Site sites to the State of Nevada.
- (June 2020) Submit Annual Post-Closure Sampling Report for Groundwater sites to the State of Nevada.
- (May 2020) Submit Annual Post-Closure Inspection Report for Resource Conservation and Recovery Act permitted sites to the State of Nevada.
- (July 2020) Submit Corrective Action Unit 97 CR, Rev 0 to the State of Nevada.
- (August 2020) Submit Corrective Action Units 101/102 CY 2019 Underground Test Area Annual Sampling Report to the State of Nevada.
- (September 2020) Provide Corrective Action Units 101/102 Phase II Data Completion Presentation #6 to the State of Nevada.
- (May 2021) Provide Corrective Action Unit 97 Yucca Flat/Climax Mine Monitoring Network Well Installation/Development Presentation #1 to the State of Nevada.
- (May 2021) Submit Annual Resource Conservation and Recovery Act Post-Closure Report to the State of Nevada
- (June 2021) Submit Annual Tonopah Test Range and Nevada Test and Training Range Post-Closure Regulatory Inspection Report to the State of Nevada.
- (June 2021) Submit Annual Nevada National Security Site Non-Resource Conservation and Recovery Act Post-Closure Regulatory Inspection Report to the State of Nevada.
- (June 2021) Submit Annual Groundwater Annual Monitoring Report to the State of Nevada.
- (August 2021) Submit Corrective Action Unit 101 Central Pahute Mesa Annual Groundwater Sampling Report to the State of Nevada.

- (August 2021) Submit Corrective Action Unit 102 Western Pahute Mesa Annual Groundwater Sampling Report to the State of Nevada.

PBS VL-NV-0080:

- (September 2020) Continue disposal of low-level radioactive waste and mixed low-level radioactive waste; continue audits and certification programs; and maintain facilities and documents.
- (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.

PBS VL-NV-0100:

- (September 2020) Continue funding to the State of Nevada.
- (September 2021) Continue funding to the State of Nevada.

Regulatory Framework

EM Nevada Program work at the Nevada National Security Site, the Tonopah Test Range, 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
- 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 Program Mission at the Nevada National Security Site is conducted through the issuance and execution of contracts to large and small businesses. The EM Nevada Program at the Nevada National Security Site 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 2022 with award term options through November 30, 2027. Work Authorizations are placed to cover EM work under the Management and Operating contract. This contract includes the EM-funded operation of the waste disposal facilities and infrastructure support for the environmental cleanup scope. The Management and Operating contract transition period ran from August 1, 2017 through November 30, 2017.

The current prime EM contract at the Nevada National Security Site supports environmental characterization and remediation activities and waste acceptance activities across the DOE complex. The current contract with Navarro Research and Engineering, Inc. is managed by EM and was awarded on February 1, 2015, with a transition period of one month (February 2015) and a base period of performance of 7 months (March 1 - September 30, 2015) and 4 option periods (October 1, 2015 – January 31, 2020). All option periods have been exercised. An up-to-six month extension has been approved as the selection process for the new contract is currently ongoing. The Final Request for Proposal was released to industry on July 22, 2019.

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 and Nevada Test and Training Range, by maintaining the capability to dispose of approximately 1.2 million cubic feet of low-level radioactive waste, mixed low-level radioactive waste and classified waste annually.

Nevada

Funding (\$K)

FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
--------------------	--------------------	--------------------	--

Defense Environmental Cleanup

NNSA Sites

Nevada

VL-NV-0030 / Soil and Water Remediation-Nevada	32,998	35,134	34,859	-275
VL-NV-0080 / Operate Waste Disposal Facility-Nevada	22,398	20,862	20,813	-49
VL-NV-0100 / Nevada Community and Regulatory Support	4,740	4,741	5,065	+324
Subtotal, Nevada	60,136	60,737	60,737	0

Nevada
Explanation of Major Changes (\$K)

FY 2021 Request vs FY 2020 Enacted
--

Defense Environmental Cleanup

NNSA Sites

Nevada

VL-NV-0030 / Soil and Water Remediation-Nevada

- Decrease is due to reprioritization of Corrective Action Units 101/102 Pahute Mesa. -275

VL-NV-0080 / Operate Waste Disposal Facility-Nevada

- No significant change. -49

VL-NV-0100 / Nevada Community and Regulatory Support

- Increase is primarily due to the low-level radioactive waste fee agreement with the State of Nevada. Per the agreement, the funding increases \$300,000 annually through FY 2021. +324

Total, Nevada	0
----------------------	----------

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.

Currently, activities at over 1,200 contaminated soil, industrial-type and groundwater sites have been completed and activities at approximately 900 other sites are in progress.

Soil and Water Remediation-Nevada (PBS: VL-NV-0030)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$35,134,000	\$34,859,000	-\$275,000
Groundwater Remediation: <ul style="list-style-type: none"> • Complete Closure activities for Corrective Action Unit 97 Yucca Flat/Climax Mine. • Begin monitoring well installation and development for Corrective Action Unit 97 Yucca Flat/Climax Mine and 99 Rainier Mesa/Shoshone Mountain. • Complete annual data collection and sampling of groundwater Corrective Action Units not closed. • Continue hydrologic and geologic data analysis activities including groundwater 	Groundwater Remediation: <ul style="list-style-type: none"> • Initiate Well Installation of five (5) Model Evaluation Wells in Corrective Action Units 101/102 Pahute Mesa. • State of Nevada approval of Corrective Action Unit 97 Yucca Flat/Climax Mine Closure. • Complete monitoring well installation and development for Corrective Action Unit 97 Yucca Flat/Climax Mine. • Complete annual data collection and sampling of groundwater Corrective Action Units not closed. 	<ul style="list-style-type: none"> • Decrease is due to reprioritization of Corrective Action Units 101/102 Pahute Mesa.

flow and transport modeling for Corrective Action Units 101/102 Pahute Mesa.

Soil Remediation:

- Continue air monitoring and studies for soil remediation.

Industrial Sites:

- Continue pre-closure Engine Maintenance Assembly & Disassembly facility surveillance and maintenance.

Post-Closure Long-term Monitoring:

- Continue post-closure monitoring of soils and industrial-type sites.
- Continue annual post-closure sampling and monitoring for closed groundwater sites.

- Continue hydrologic and geologic data analysis activities including groundwater flow and transport modeling for Corrective Action Units 101/102 Pahute Mesa.

Industrial Sites:

- Continue pre-closure Engine Maintenance Assembly & Disassembly facility surveillance and maintenance.
- Initiate Corrective Action Unit 114 Engine Maintenance Assembly & Disassembly facility Steamlined Approach for Environmental Restoration Plan Rev #1.
- State of Nevada approval of Corrective Action Unit 572 Test Cell C Ancillary Buildings and Structures Steamlined Approach for Environmental Restoration Plan.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$20,862,000	\$20,813,000	-\$49,000
<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, Radioactive Waste Management. Continue audits and waste certification reviews in support of generator programs to ensure compliance with the Nevada National Security Site Waste Acceptance Criteria. Support cleanup activities across the DOE complex by providing disposal capacity and services for up to 1,200,000 cubic feet of low- 	<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, Radioactive Waste Management. Continue audits and waste certification reviews in support of generator programs to ensure compliance with the Nevada National Security Site Waste Acceptance Criteria. Support cleanup activities across the DOE complex by providing disposal capacity and services for up to 1,200,000 cubic feet of low- 	<ul style="list-style-type: none"> No significant change.

level radioactive and mixed low-level radioactive waste.

- Continue operation of the Resource Conservation and Recovery Act mixed low-level radioactive waste disposal cell.
- Complete facility expansion activities to allow for continued disposal operations beyond FY 2021.
- Complete disposition of two Experimental Spheres through offsite treatment to support final disposal at the Waste Isolation Pilot Plant.

level radioactive, mixed low-level radioactive waste, and classified waste.

- Continue operation of the Resource Conservation and Recovery Act compliant mixed low-level radioactive waste disposal cell.
 - Construct new low-level waste disposal cell in expanded area.
 - Complete closure of Corrective Action Unit 577 Area 5 Chromium Contaminated Waste Disposal Cells.
-

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 FFACO 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$4,741,000	\$5,065,000	+\$324,000
<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. • Provide funds for the low-level radioactive waste fee agreement. • Provide for Site Specific Advisory Board requirements. 	<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. • Provide funds for the low-level radioactive waste fee agreement. • Provide for Site Specific Advisory Board requirements. 	<ul style="list-style-type: none"> • Increase is primarily due to the low-level radioactive waste fee agreement with the State of Nevada. Per the agreement, the funding increases \$300,000 annually through FY 2021.

Sandia National Laboratories

Overview

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 2021 Budget Request

In FY 2021, 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. If the public hearing associated with the selection of the final remedy for the Tijeras Arroyo Groundwater Area of Concern occurs in FY 2020, the Corrective Measures Implementation Plan will be submitted to New Mexico Environment Department for review in FY 2021. At the Technical Area-V Groundwater Area of Concern, FY 2021 funding supports the Interim Measure/Treatability Study using In-Situ Bioremediation, primarily finishing injection wells 2 and 3 and preparing for full scale injection at injection well 2.

FY 2020 and FY 2021 Key Milestones/Outlook

- (FY 2020) Performance Monitoring, Analysis & Validation at the Technical Area-V Groundwater Area of Concern.
- (FY 2020) Submit the Well Install Report to New Mexico Environment Department for the Burn Site Groundwater Area of Concern.
- (FY 2020) Support a public hearing associated with the selection of the final remedy for the Tijeras Arroyo Groundwater Area of Concern.
- (FY 2020) 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 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) Submit the Corrective Measures Implementation Plan to New Mexico Environment Department for review for the Tijeras Arroyo 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. As of July 2018, 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 6 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 receptors. 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 the 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 are planned to be 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 National Environmental Policy Act '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 2019 and move forward with the Corrective Action Complete regulatory closeout process, including a public hearing in FY 2020; 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.

Sandia Site Office

Funding (\$K)

FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
--------------------	--------------------	--------------------	--

Defense Environmental Cleanup

NNSA Sites

Sandia National Laboratories

VL-SN-0030 / Soil and Water Remediation-Sandia

2,600

2,652

4,860

+2,208

Sandia Site Office
Explanation of Major Changes (\$K)

FY 2021 Request vs FY 2020 Enacted

Defense Environmental Cleanup

NNSA Sites

Sandia National Laboratories

VL-SN-0030 / Soil and Water Remediation-Sandia

- Increase is associated with the transition from field work at Technical Area-V Groundwater Area of Concern and Burn Site Groundwater Area of Concern to the installation of wells at Burn Site Groundwater Area of Concern; Technical Area-V Groundwater Area of Concern; beginning Phase 2 full scale injection in well 2 at the Technical Area-V Groundwater Area of Concern; and submitting the Corrective Measures Implementation Plan to the New Mexico Environmental Department for review for the Tijeras Arroyo Groundwater Area of Concern.

+2,208

Total, Sandia Site Office

+2,208

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 2020-2021 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$2,652,000	\$4,860,000	+\$2,208,000
<ul style="list-style-type: none"> Install additional groundwater wells and start eight quarters of characterization. Continue field work implementation of the Interim Measure/Treatability Study at Technical Area-V Groundwater Area. 	<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"> Increase is associated with the transition from field work at Technical Area-V Groundwater Area of Concern and Burn Site Groundwater Area of Concern to the installation of wells at Burn Site Groundwater Area of Concern; Technical Area-V Groundwater Area of Concern; beginning Phase 2 full scale injection in well 2 at the Technical Area-V Groundwater Area of Concern; and submitting the Corrective Measures Implementation Plan to the New Mexico Environmental Department for review for the Tijeras Arroyo Groundwater Area of Concern.

Separations Process Research Unit

Overview

The Separations Process Research Unit site supports cleanup of radioactive and chemical waste resulting from the 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 are expected to be finalized in the second quarter of FY 2020.

The remaining scope of work at the Separations Process Research Unit site consists of the completion of the AECOM closeout activities consisting of final project reports, 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, to be awarded FY 2019 and expected completion FY 2021.
2. Mohawk River sediment sampling by the Army Corps of Engineers, and radioactivity assessment.
3. Procurement actions to transport, treat, and dispose of Separations Process Research Unit transuranic waste.

Highlights of the FY 2021 Budget Request

The FY 2021 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, completing out the Mohawk River assessment, and continuation of the effort to transport, treat, and dispose of Separations Process Research Unit transuranic waste.

FY 2020 - FY 2021 Key Milestones/Outlook

- (FY-2020) Award contract(s), and/or an inter-entity work agreement for the re-packaging, transportation, treatment, certification, storage, and disposition of Separations Process Research Unit transuranic waste.
- (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.
- (FY 2021) Complete the Mohawk River assessment.

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 still with the New York State Department of Environmental Conservation. The Separations Process Research Unit transuranic Waste Storage area project is operating in compliance under a consent order.

Contractual Framework

The cleanup of F-yard will be awarded with a Fixed Price contract. The Mohawk River sampling and assessment is expected to be time and materials awards. Transuranic waste treatment, processing, certification, and shipping contract type is yet to be determined.

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 is temporarily stored at the Separations Process Research Unit site in outdoor conex boxes. This waste is expected to be disposed at the DOE Waste Isolation Pilot Plant facility.
- Separations Process Research Unit transuranic waste will be packaged in shielded containers that will allow Separations Process Research Unit remote-handled waste to be managed as contact-handled waste prior to shipping to Waste Isolation Pilot Plant. Commercial industry input is also being sought for alternatives to processing the transuranic waste that may reduce the amount of transuranic waste.

Separations Process Research Unit

Funding (\$K)

FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
--------------------	--------------------	--------------------	--

Defense Environmental Cleanup

NNSA Sites

Separations Processing Research Unit

VL-SPRU-0040 / Nuclear Facility D&D-Separations Process Research Unit	15,000	15,300	15,000	-300
---	--------	--------	--------	------

**Separations Process Research Unit
Explanation of Major Changes (\$K)**

FY 2021 Request vs FY 2020 Enacted

Defense Environmental Cleanup

NNSA Sites

Separations Processing Research Unit

VL-SPRU-0040 / Nuclear Facility D&D-Separations Process Research Unit

- No significant change.

-300

Total, Separations Process Research Unit

-300

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 will continue in FY 2020. In addition, funding in FY 2020 and FY 2021 support cleanup of F-yard, Mohawk River sampling for radioactivity and assessment report, 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$15,300,000	\$15,000,000	-\$300,000
<ul style="list-style-type: none"> • Surveillance and maintenance activities to support site monitoring of storage for transuranic waste. • Support partial treatment of transuranic waste based on selected treatment alternative. • Complete cleanup of F-yard and Mohawk River studies. 	<ul style="list-style-type: none"> • Surveillance and maintenance activities to support site monitoring of storage for transuranic waste. • Support partial treatment of transuranic waste based on selected treatment alternative. • Complete cleanup of F-yard, and finish Mohawk River assessment. 	<ul style="list-style-type: none"> • No significant 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 being executed 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.

In meeting the Department's strategic goal, the Department 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 2021 Budget Request

The major activities planned for the West Valley Demonstration Project for FY 2021 focus on the ongoing demolition of the Main Plant Process Building; continuing site operations and maintenance; and disposition of newly generated waste.

FY 2020 and FY 2021 Key Milestones/Outlook

- (January 2020) Complete Main Plant Building Office Removal
- (February 2020) Complete Fuel Receiving and Storage Facility Asbestos Abatement
- (May 2020) Complete Utility Room Removal
- (September 2020) Complete Deactivation of Main Plant Process Building
- (November 2020) Begin Demolition of Main Plant Process Building
- (September 2020) Process, ship and dispose of newly generated mixed low-level radioactive waste, meeting requirements as specified in the Site Treatment Plan
- (September 2021) 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 course of 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. In addition, during Phase 1, additional site characterization and scientific studies will be conducted to facilitate consensus decision making for the remaining facilities or areas.
- 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 subsequent to the initial Departmental Record of Decision and New York State Energy Research and Development Authority Findings Statement. These decisions would address final closure of the high-level radioactive waste tanks, 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 March 17, 2020. DOE is currently in contract negotiations to add additional source term removal and incorporate lessons learned from nuclear facility demolitions across the DOE complex prior to executing demolition of the Main Plant Process Building. 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 NYSERDA contract was awarded in FY 2017 for development of a Supplemental Environmental Impact Statement to evaluate alternatives for completing DOE's mission at WVDP 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. Forty-four (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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Safeguards and Security				
OH-WV-0020 / Safeguards and Security-West Valley	3,133	4,196	4,298	+102
Non-Defense Environmental Cleanup				
Community, Regulatory and Program Support				
OH-WV-0100 / West Valley Site Services	0	200	0	-200
West Valley Demonstration Project				
OH-WV-0013 / Solid Waste Stabilization and Disposition-West Valley	17,980	3,110	9,110	+6,000
OH-WV-0040 / Nuclear Facility D&D-West Valley	57,020	72,105	79,003	+6,898
Subtotal, West Valley Demonstration Project	75,000	75,215	88,113	+12,898
Total, Non-Defense Environmental Cleanup	75,000	75,415	88,113	+12,698
Total, West Valley Demonstration Project	78,133	79,611	92,411	+12,800

**West Valley Demonstration Project
Explanation of Major Changes (\$K)**

FY 2021 Request vs FY 2020 Enacted

<p>Defense Environmental Cleanup Safeguards and Security OH-WV-0020 / Safeguards and Security-West Valley</p> <ul style="list-style-type: none"> • No significant change. 	+102
<p>Non-Defense Environmental Cleanup Community, Regulatory and Program Support OH-WV-0100 / West Valley Site Services</p> <ul style="list-style-type: none"> • Projects and activities that were developed with the local community utilizing FY 2020 funding will be completed in FY 2020. 	-200
<p>West Valley Demonstration Project OH-WV-0013 / Solid Waste Stabilization and Disposition-West Valley</p> <ul style="list-style-type: none"> • Increase supports acceleration of Main Plant Processing Building demolition. 	+6,000
<p>OH-WV-0040 / Nuclear Facility D&D-West Valley</p> <ul style="list-style-type: none"> • Increase supports acceleration of Main Plant Processing Building demolition. 	+6,898
<p>Total, West Valley Demonstration Project</p>	<p>+12,800</p>

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$4,196,000	\$4,298,000	+\$102,000
<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"> • 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 significant 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$3,110,000	\$9,110,000	+\$6,000,000
<ul style="list-style-type: none"> • Store legacy transuranic waste. • Store newly generated transuranic waste. • Ship and dispose all other newly generated waste. 	<ul style="list-style-type: none"> • Store legacy transuranic waste. • Store newly generated transuranic waste. • Shipping and dispose of all other newly generated waste. • Accelerate Main Plant Processing Building demolition. 	<ul style="list-style-type: none"> • Increase supports acceleration of 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$72,105,000	\$79,003,000	+\$6,898,000
<ul style="list-style-type: none"> • Maintain Site Services. • Complete deactivation of the Main Plant Process Building. • Continue removal of excess ancillary 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. 	<ul style="list-style-type: none"> • Maintain Site Services. • Continue demolition of the above grade portion of the Main Plant Process Building. • Continue removal of excess ancillary 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"> • Increase supports acceleration of Main Plant Processing Building demolition.

- Accelerate Main Plant Processing Building demolition.
-

West Valley Site Services (PBS: OH-WV-0100)

Overview

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

This funding will provide community and regulatory support to the Town of Ashford Community to provide funds to support the community. Funds will be used to complete projects in the community that have been directly impacted as a result of the West Valley Demonstration Project.

West Valley Site Services (PBS: OH-WV-0100)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$200,000	\$0	-\$200,000
<ul style="list-style-type: none"> • Work with the local community to develop a list of project and/or activities that can will accomplished. • Put agreement in place and manage activities. 	<ul style="list-style-type: none"> • No planned activities. 	<ul style="list-style-type: none"> • Projects and activities that were developed with the local community utilizing FY 20 funding will be completed in FY 20.

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. The Energy Technology Engineering Center was DOE's laboratory for nuclear and liquid metal research (non-defense). The Energy Technology Engineering Center is surplus to the Department's mission. There are 18 numbered structures remaining, consisting of three radiological facilities, two sodium facilities, and other miscellaneous structures. Current and planned activities at the site involve groundwater characterization and investigation to support development of a Final Environmental Impact Statement; 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. Complete the Court-ordered Environmental Impact Statement.
2. Complete Programmatic Agreement for the National Historic Preservation Act.
3. Issue Record of Decision.
4. Install final groundwater remedies.
5. Decontaminate and decommission remaining DOE-owned buildings in Area IV, consisting of 18 structures totaling about 75,000 sq. ft.
6. 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 2021 Budget Request

The Energy Technology Engineering Center's FY 2021 request will enable the site to continue progress toward completion of cleanup, including initiating decontamination and decommissioning of the remaining buildings and planning of the soil remediation. The site will complete the required Corrective Measures Implementation to support its final recommendations regarding groundwater. Additionally, the site will complete the Groundwater Interim Measures for areas that exceed 1,000 parts per billion for trichloroethylene.

FY 2020 & FY 2021 Key Milestones/Outlook

- (FY 2020) Complete Programmatic Agreement and publish a Record of Decision
- (FY 2020) Submit final groundwater Corrective Measure Study and the groundwater Corrective Measures Implementation plan, in compliance with the Consent Order with the State of California
- (FY 2020) Begin decontamination and decommissioning of remaining structures and remediation based on the Record of Decision
- (FY 2021) Complete decontamination and decommissioning of remaining structures and remediation based on the Record of Decision
- (FY 2021) Complete the required Corrective Measures Study based on Department of Toxic Substances Control approval to support its final recommendations regarding groundwater

Regulatory Framework

Regulation of the Energy Technology Engineering Center Closure project is segmented by different regulatory authorities. Prior decontamination and demolition activities of the radiologically contaminated facilities at the Energy Technology Engineering Center 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 DOE's 2008 Notice of Intent extensive studies of the site for radiological and chemical contamination have been conducted by U.S. EPA and DOE.

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 calendar year 2018. The Record of Decision was published in September 2019.

Contractual Framework

North Wind Incorporated is the contractor 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 may be exercised after the Record of Decision determines the scope of work.

CDM is the contractor supporting the development of the National Environmental Policy Act and other regulatory documentation.

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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
----------------------------	----------------------------	----------------------------	---

Non-Defense Environmental Cleanup

Small Sites

Energy Technology Engineering Center

CBC-ETEC-0040 / Nuclear Facility D&D-Energy Technology Engineering
Center

11,000 18,200 11,000 -7,200

Energy Technology Engineering Center
Explanation of Major Changes (\$K)

FY 2021 Request vs FY 2020 Enacted

Non-Defense Environmental Cleanup

Small Sites

Energy Technology Engineering Center

CBC-ETEC-0040 / Nuclear Facility D&D-Energy Technology Engineering Center

- Decrease reflects plan to complete decontamination and decommissioning of remaining structures. DOE/ETEC currently does not have a soils/groundwater Record of Decision. DOE and the State regulator must complete their environmental reviews.

-7,200

Total, Energy Technology Engineering Center

-7,200

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 impact 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$18,200,000	\$11,000,000	-\$7,200,000
<ul style="list-style-type: none"> Perform ongoing program support and operational services. Continue decontamination and decommissioning of remaining structures and continue planning soil and groundwater remediation based on the Record of Decision. 	<ul style="list-style-type: none"> Perform ongoing program support and operational services. Complete decontamination and decommissioning of remaining structures and continue planning soil and groundwater remediation in support of a Record of Decision on Soils & Groundwater. 	<ul style="list-style-type: none"> Decrease reflects plan to complete decontamination and decommissioning of remaining structures. DOE/ETEC currently does not have a soils/groundwater Record of Decision. DOE and the State regulator must complete their environmental reviews.

- Complete the required Corrective Measures Study to support its final recommendations regarding groundwater.
 - 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. In October 2000, 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 16,000,000 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 September 2019, the Project has shipped 10,000,000 tons of material.

Direct maintenance and repair at the Moab Uranium Mill Tailings Remedial Action Project is estimated to be \$515,000.

Highlights of the FY 2021 Budget Request

The FY 2021 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; excavating a portion of the disposal cell; and extracting contaminated groundwater and injecting freshwater to protect the Colorado River.

FY 2020 & FY 2021 Key Milestones/Outlook

- (September 2020) Excavate, transport, and dispose of approximately 900,000 tons of tailings.
- (September 2021) Excavate, transport, and dispose of over 900,000 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 UMTRA Project are the Remedial Action Contract performed by North Wind-Portage on a firm-fixed price and cost-plus fixed fee contract for a five-year period starting in October 2016 and the Technical Assistance Contract performed by S&K Logistics Services on a firm-fixed-price and time-and-materials contract 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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
----------------------------	----------------------------	----------------------------	---

Non-Defense Environmental Cleanup

Small Sites

Moab

CBC-MOAB-0031 / Soil and Water Remediation-Moab

45,000

45,000

47,653

+2,653

Moab
Explanation of Major Changes (\$K)

FY 2021 Request vs FY 2020 Enacted

Non-Defense Environmental Cleanup

Small Sites

Moab

CBC-MOAB-0031 / Soil and Water Remediation-Moab

- Increase supports an increased amount of mill tailings shipped in FY 2021 and upgrades to equipment and infrastructure. Potential equipment replacements would be articulated haul trucks, excavation equipment, and shipping containers. Infrastructure improvements, such as relocation of the dump ramp as the disposal cell is filled.

+2,653

Total, Moab

+2,653

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$45,000,000	\$47,653,000	+\$2,653,000
<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 from mill site to the disposal cell (up to 900,000 tons). Perform operations and maintenance of the materials handling system and infrastructure. Place tailings into the disposal cell. Continue equipment maintenance/replacement. 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 900,000 tons). Perform operations and maintenance of the materials handling system and infrastructure. Place tailings into the disposal cell. Continue equipment maintenance/replacement. Excavate a portion of the disposal cell. Place a portion of the interim cover. 	<ul style="list-style-type: none"> Increase supports an increased amount of mill tailings shipped in FY 2021 and upgrades to equipment and infrastructure. Potential equipment replacements would be articulated haul trucks, excavation equipment, and shipping containers. Infrastructure improvements, such as relocation of the dump ramp as the disposal cell is filled.

Other Sites

Overview

In supporting the Department of Energy 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 2021. 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 be fully transitioned to other DOE programs (e.g., Office of Science, Legacy Management, etc.). This account also includes a site/facility for which the Department 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 \$139,300,000 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. Additional cleanup will be performed in the Old Town and Bayview areas as funds become available. There is no FY 2021 funding requested.

Southwest Experimental Fast Oxide Reactor

Congress mandated in the FY 2014 Omnibus Appropriations Act that DOE develop a plan for the decommissioning and decontamination of the University of Arkansas' Southwest Experimental Fast Oxide Reactor and provided \$1,000,000 for this effort. The plan for the cleanup of Southwest Experimental Fast Oxide Reactor was submitted to the Committees on Appropriations of the House and Senate in 2015. DOE spent approximately \$100,000 to develop the plan, which also included a cost estimate for the decommissioning and decontamination of Southwest Experimental Fast Oxide Reactor. In the FY 2016 Omnibus Appropriations Bill, Non-Defense Energy and Water Appropriation, DOE was directed to provide \$9,500,000 to Southwest Experimental Fast Oxide Reactor.

DOE awarded a grant to the University of Arkansas for \$10,500,000 in FY 2016. This included \$9,500,000 (as directed by Congress), approximately \$900,000 (of remaining FY 2014 funds), and \$100,000 (for planning). DOE was directed by Congress to provide \$5,500,000 in FY 2017. The objective of this grant is to allow the University of Arkansas to decommission and decontaminate the Southwest Experimental Fast Oxide Reactor. This facility is owned by the University of Arkansas and the Department has no environmental liability at this facility. Physical completion of the demolition and waste shipping activities were completed in FY 2019. The grant closeout was completed at the end of FY 2019.

EM Consolidated Business Center

The EM Consolidated Business Center is located in Cincinnati, Ohio, and provides a wide range of activities supporting DOE's national environmental cleanup mission, from financial management and contracting to human resources and information resource management. The Consolidated Business Center 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. The EM Consolidated Business Center also serves as the lead EM office for new cleanup contract acquisitions needed to support the EM program mission. Additionally, the EM Consolidated Business Center administers Closure Sites activities for Rocky Flats, Fernald, Mound and provides 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, Brookhaven National Laboratory, and Stanford Linear Accelerator Center. The EM Consolidated Business Center also provides oversight of the cleanup efforts ongoing at Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory (excess facilities), 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 2021 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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Closure Sites				
Closure Sites Administration				
CBC-0100-EM / Litigation Support	1,789	1,987	2,087	+100
CBC-0100-FN / CBC Post Closure Administration - Fernald	1,100	1,100	1,100	0
CBC-0100-RF / CBC Post Closure Administration - Rocky Flats	2,000	1,900	1,800	-100
Subtotal, Closure Sites Administration	4,889	4,987	4,987	0
Non-Defense Environmental Cleanup				
Small Sites				
Lawrence Berkeley National Laboratory				
CBC-LBNL-0040 / Decontamination and Decommissioning-Lawrence Berkeley National Laboratory	35,000	31,000	0	-31,000
Other Sites				
CBC-0040-EF / Excess Office of Science Facilities	0	10,000	0	-10,000
Total, Small Sites	35,000	41,000	0	-41,000
Total, Other Sites	39,889	45,987	4,987	-41,000

Other Sites
Explanation of Major Changes (\$K)

FY 2021 Request vs FY 2020 Enacted
--

Defense Environmental Cleanup	
Closure Sites	
Closure Sites Administration	
CBC-0100-EM / Litigation Support	
<ul style="list-style-type: none"> • Increase reflects funding requirements for Fernald Workers II Settlement and post-closure administrative costs. 	+100
CBC-0100-FN / CBC Post Closure Administration - Fernald	
<ul style="list-style-type: none"> • No change. 	0
CBC-0100-RF / CBC Post Closure Administration - Rocky Flats	
<ul style="list-style-type: none"> • No significant change. 	-100
Non-Defense Environmental Cleanup	
Small Sites	
Lawrence Berkeley National Laboratory	
CBC-LBNL-0040 / Decontamination and Decommissioning-Lawrence Berkeley National Laboratory	
<ul style="list-style-type: none"> • No funding requested in FY 2021. 	-31,000
Other Sites	
CBC-0040-EF / Excess Office of Science Facilities	
<ul style="list-style-type: none"> • No funding requested in FY 2021. 	-10,000
<hr/>	
Total, Other Sites	-41,000

Excess Office of Science Facilities (PBS: CBC-0040-EF)

Overview

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

Congress has directed DOE-EM to survey Office of Science facilities for excess facilities that urgently need demolition, and to demolish simple buildings.

Excess Office of Science Facilities (PBS: CBC-0040-EF)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$10,000,000	\$0	-\$10,000,000
<ul style="list-style-type: none"> Canvas Office of Science facilities. Study sites to identify buildings for any sites that have non-rad buildings that are deteriorated. Demolish urgent buildings. 	<ul style="list-style-type: none"> No funding is requested in FY 2021. 	<ul style="list-style-type: none"> No funding requested in FY 2021.

Litigation Support (PBS: CBC-0100-EM)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

The EM Consolidated Business Center has responsibility to provide ongoing litigation support for all sites supported by the Business Center. The scope of this PBS is to provide litigation support related to these sites: Closure Sites – Rocky Flats, Fernald, Mound, etc., but also to provide legal/litigation support for all active EM Consolidated Business Center sites, including Separations Process Research Unit, Nevada, West Valley, Moab, Energy Technology Engineering Center, and EM work at Lawrence Berkeley National Laboratory, Brookhaven National Laboratory, Stanford Linear Accelerator Center, and any other site brought under the EM Consolidated Business Center purview.

Litigation Support (PBS: CBC-0100-EM)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$1,987,000	\$2,087,000	+\$100,000
<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"> Increase reflects funding requirements for Fernald Workers II Settlement and post-closure administrative costs.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$1,100,000	\$1,100,000	+\$0
<ul style="list-style-type: none"> • Support ongoing Fernald Workers II class action lawsuit and contract closeout. 	<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 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. The EM Consolidated Business Center has assumed responsibility for the litigation associated with the Rocky Flats Site. The scope of this PBS is to provide site litigation support related to the continuing class actions and other civil litigation activities of former site contractors. This 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$1,900,000	\$1,800,000	-\$100,000
<ul style="list-style-type: none"> • Support Rocky Flats Closure Project’s legal requirements. • Support Rocky Flats records vault lease and records management costs. • Pay/Reimburse Workers’ Compensation claims and support Contract Closeout. 	<ul style="list-style-type: none"> • Support Rocky Flats Closure Project’s legal requirements. • Support Rocky Flats records vault lease and records management costs. • Pay/Reimburse Workers’ Compensation claims and support Contract Closeout. 	<ul style="list-style-type: none"> • No significant change.

Decontamination and Decommissioning-Lawrence Berkeley National Laboratory (PBS: CBC-LBNL-0040)

Overview

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

DOE will deactivate, decommission and demolish various facilities in the Old Town and Bayview area of Lawrence Berkeley National Laboratory and remove associated contaminated soil to fulfill the Congressional mandate. This work will improve the health and safety by cleaning up existing contamination and improving the seismic standards of buildings within Department laboratory grounds.

Decontamination and Decommissioning-Lawrence Berkeley National Laboratory (PBS: CBC-LBNL-0040)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$31,000,000	\$0	-\$31,000,000
<ul style="list-style-type: none"> Complete deactivation and demolition of Old Town buildings 4 and 14. Commence deactivation and demolition activities at Old Town buildings 7 and 7C. Commence cleanup of the Bayview Parcel 1 area. 	<ul style="list-style-type: none"> No funding requested. 	<ul style="list-style-type: none"> No funding requested in FY 2021.

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. EM's Strategic Sourcing Initiative savings goal for FY 2020 is \$60,000,000 a 27.7 percent increase over the FY 2019 goal of \$47,000,000. In FY 2019, EM achieved a total cost savings of \$92,000,000 against the goal of \$47,000,000. As of January 2020, EM has achieved a total cost savings of \$15,700,000 against the FY 2020 goal of \$60,000,000.

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 and Native Hawaiian-serving institutions;
- Predominantly Black Institutions;
- Asian American and Native American Pacific Island-serving institutions; and

- Native American-serving nontribal institutions.

Technology Development

In FY 2021, 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, 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 2021 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 publically 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, greatly increases opportunities for cleanup innovation and enhances cleanup capabilities.

Mercury Storage Facility

The Mercury Export Ban Act of 2008 (P.L. 110-414) as amended by the Frank R. Lautenberg Chemical Safety for the 21st Century Act (P.L. 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. The facility is now operational and available for accepting elemental mercury in accordance with the Mercury Export Ban Act of 2008 (P.L. 110-414) as amended by the Frank R. Lautenberg Chemical Safety for the 21st Century Act (P.L. 114-182).

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 December 2019, 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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Defense Environmental Cleanup				
Innovation and Technology Development				
Mission Support				
HQ-TD-0100 / Technology Development	25,000	25,000	25,000	0
Program Support				
Mission Support				
EM-HBCU-0100 / Minority Serving Institution Partnerships Program	6,000	6,000	6,000	0
HQ-MS-0100 / Policy, Management, and Technical Support	6,979	6,979	6,979	0
Subtotal, Mission Support	12,979	12,979	12,979	0
Total, Defense Environmental Cleanup	37,979	37,979	37,979	0
Non-Defense Environmental Cleanup				
Management and Storage of Elemental Mercury				
Mission Support				
HQ-MSF-0100 / Management and Storage of Elemental Mercury	0	1,200	0	-1,200
Uranium Enrichment Decontamination and Decommissioning Fund				
U/Th Reimbursements				
Mission Support				
HQ-UR-0100 / Reimbursements to Uranium/Thorium Licensees	11,000	5,250	21,284	+16,034
Total, Total, Mission Support	48,979	44,429	59,263	+14,834

Mission Support
Explanation of Major Changes (\$K)

FY 2021 Request vs FY 2020 Enacted
--

Defense Environmental Cleanup		
Innovation and Technology Development		
Mission Support		
HQ-TD-0100 / Technology Development		
• No change.		0
Program Support		
EM-HBCU-0100 / Minority Serving Institution Partnerships Program		
• No change.		0
HQ-MS-0100 / Policy, Management, and Technical Support		
• No change.		0
Non-Defense Environmental Cleanup		
Management and Storage of Elemental Mercury		
HQ-MSF-0100 / Management and Storage of Elemental Mercury		
• EM will utilize offsetting collections for costs associated with Management and Storage of Elemental Mercury.		-1,200
Uranium Enrichment Decontamination and Decommissioning Fund		
U/Th Reimbursements		
HQ-UR-0100 / Reimbursements to Uranium/Thorium Licensees		
• Increased payments of approved claims to the eligible licensees.		+16,034
<hr/> Total, Mission Support		<hr/> +14,834

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 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 	<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 	<ul style="list-style-type: none"> No change.

indicate whether and how EM's commitment to safety is working.

- 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 perform analysis for long-term elemental mercury management and storage facility.

indicate whether and how EM's commitment to safety is working.

- 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.
- Start operations and begin acceptance and storage of elemental mercury including oversight and fee support.

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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$1,200,000	\$0	-\$1,200,000
<p>Management and Storage of Elemental Mercury</p> <ul style="list-style-type: none"> Funds long-term management and storage of elemental mercury generated within the United States. 	<ul style="list-style-type: none"> No request. 	<ul style="list-style-type: none"> EM will utilize offsetting collections for costs associated with Management and Storage of Elemental Mercury.

Minority Serving Institution 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 Institution Partnership Program to attract, develop, and retain the technical workforce at its national laboratories and production plants 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.

Goals for this partnership include:

- Increase number of Minority Serving Institution students who graduate with STEM degrees relevant to DOE mission areas and have had exposure to career opportunities at DOE sites.
- Strengthen and expand Minority Serving Institution research experience and competitiveness in DOE mission areas of interest.
- Increase visible participation of Minority Serving Institution faculty in DOE technical engagements and activities, such as collaborative research, technical workshops, and competitive processes.
- Target collaborations between accredited Minority Serving Institutions and DOE laboratories and plants that increase scientist-to-scientist interactions, applied research and engineering collaborations and/or implementation of research results, and access of Minority Serving Institutions to DOE facilities.
- Increase number of Minority Serving Institution graduates/postdocs hired into DOE’s technical and scientific workforce.

The Minority Serving Institutional Partnership Program aligns Minority Serving Institutional investments with the departmental mission in order to develop the needed skills and talent for DOE’s technical workforce at the laboratories and production plants, and to enhance the research and education at under-represented colleges and universities.

Minority Serving Institution Partnerships Program (PBS: EM-HBCU-0100)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$6,000,000	\$6,000,000	+\$0
<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 and production plants 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 and production plants required to execute its mission. 	<ul style="list-style-type: none"> • No change.

Technology Development (PBS: HQ-TD-0100)

Overview

This program is within the Defense Environmental Cleanup appropriation.

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, 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 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) radioactive liquid and solid waste treatment, storage and disposal, (2) soil and groundwater remediation, (3) nuclear materials and spent fuel management and disposition, (4) facility deactivation and decommissioning, and (5) public, worker, facility/asset, and environmental safety and security.

The FY 2021 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.

The FY 2021 Budget request also supports mission-enabling and mission-enhancing technologies, which enable work to be performed safer, with better quality, and more efficiently. Mission-enabling and mission-enhancing technologies are not intended to fully address a core mission challenge; instead, they 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. As the state-of-the-art in many other technology areas continue to advance, they offer alternatives or improvements to current baseline technologies.

Technology transfer from other sectors and the use of non-nuclear commercially available technologies will also enable mission completion. Generally, mission-enabling and mission-enhancing technologies provide incremental improvements to existing capabilities and processes. Their impact can be significant, particularly when EM's safety and defense-in-depth posture are enhanced, gains are made in performance and productivity, and emergency response and preparedness capabilities are improved. These technologies can also yield high-payoff, game-changing solutions.

In FY 2021, 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.

EM will continue to engage U.S. federal technologists and the international technical community to identify cross-cutting technologies and mutual interests in scientific and technological advancements. Collaborating with technologists in other federal agencies, participating on other federal technology programs and initiatives, and leveraging investments of public funds by other federal agencies are cornerstones of the EM mission innovation and technology.

In FY 2021, EM will continue to develop solutions and technologies that enable work to be performed safer, with better quality, and more efficiently. 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 transfer from other sectors and the use of “non-nuclear” commercially available technologies will also continue to enable mission completion. In addition, mission-enabling and mission-enhancing technologies provide incremental improvements to existing capabilities and processes. Their impact can be significant, particularly when EM’s safety and defense-in-depth posture are enhanced, gains are made in operational performance and productivity, mitigation of risks are realized, and emergency response and preparedness capabilities are improved. By the nature of their outcome, these technologies can yield high-payoff, game-changing solution.

Technology Development (PBS: HQ-TD-0100)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$25,000,000	\$25,000,000	+\$0
<ul style="list-style-type: none"> Continue projects that support innovations and enhancements for DOE-EM sites highest priority needs in the areas of tank waste and nuclear waste management, soil and groundwater remediation, and deactivation and decommissioning activities. Continue activities in the areas of Technetium-99, Mercury, Cesium-137 and Strontium-90, the creation and operation of test beds, and integration of advanced tooling for enhanced worker safety and productivity. Continue projects that support innovations and enhancements in the areas of tank waste and nuclear waste management, soil and groundwater remediation, and deactivation and decommissioning activities. 	<ul style="list-style-type: none"> Establishes test beds 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. Provides 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 technology & workforce advancements in AI areas (e.g., big data, machine learning, training, robotics/remote/autonomous systems for inspection, long-term monitoring, decision making) to meet critical EM mission cleanup and closure needs. 	<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 December 2019, 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 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$5,250,000	\$21,284,000	+\$16,034,000
<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 2019 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 but unpaid claims from FY 2020 and prior. 	<ul style="list-style-type: none"> Increased payments of approved claims to the eligible licensees.

Title X of the Energy Policy Act of 1992: Uranium/Thorium Reimbursement Program
 Status of Payments through Fiscal Year 2019 and Estimated Maximum Program Liability

(\$ Thousands)

<u>Licensees</u>	Total Payments FY 1994- FY 2019	Approved but Unpaid Claim Balances After FY 2019 Payments	Maximum Remaining Program Liability Including Estimated Costs in Approved Plans for Subsequent Remedial Action
Uranium			
American Nuclear Corp. Site			
American Nuclear Corporation	820	0	0
State of Wyoming	1,486	0	659
Atlantic Richfield Company ^a	32,306	0	0
Atlas Corporation/Moab Mill Reclamation Trust ^a	9,694	0	0
Cotter Corporation	3,411	0	3,413
Dawn Mining Company	15,841	3,309	3,309
Homestake Mining Company	94,549	0	52,061

<u>Licensees</u>	Total Payments FY 1994- FY 2019	Approved but Unpaid Claim Balances After FY 2019 Payments	Maximum Remaining Program Liability Including Estimated Costs in Approved Plans for Subsequent Remedial Action
Pathfinder Mines Corporation	10,790	0	304
Petrotoomics Company ^a	2,850	0	0
Rio Algom Mining LLC ^b	48,081	0	0
Tennessee Valley Authority	20,762	4,368	4,368
Umetco Minerals Corporation- CO	64,942	13,307	25,688
Umetco Minerals Corporation- WY	25,514	0	1,414
Western Nuclear, Incorporated	33,636	0	0
Subtotal, Uranium	364,682	20,984	91,216

<u>Licensees</u> Thorium	Total Payments FY 1994- FY 2019	Approved but Unpaid Claim Balances After FY 2019 Payments	Maximum Remaining Program Liability Including Estimated Costs in Approved Plans for Subsequent Remedial Action
West	398,304	0	1,310
Chicago ^c			
Subtotal, Thorium	398,304	0	1,310
Total, Uranium and Thorium	762,986	20,984	92,526

^a Reimbursements have been completed to the Atlantic Richfield Company, the licensees of the Moab site, the Petrotomics 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 Office of Environmental Management (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 the Department of Energy (DOE).

Highlights of the FY 2021 Budget Request

EM maintains a safe and secure posture in the EM complex, while maximizing the investment in cleanup activities. The FY 2021 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 2021, 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 (FTE), 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 40 percent of the current EM workforce available to retire in FY 2022.

In the FY 2021 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 telecom. 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 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Carlsbad				
Salaries and Benefits	10,216	10,367	9,466	-901
Travel	465	465	488	+23
Support Services	200	81	202	+121
Other Related Expenses	1,150	766	876	+110
Total, Carlsbad	12,031	11,679	11,032	-647
Idaho				
Salaries and Benefits	6,762	6,862	6,787	-75
Travel	185	185	194	+9
Support Services	93	54	94	+40
Other Related Expenses	663	255	505	+250
Total, Idaho	7,703	7,356	7,580	+224
Oak Ridge				
Salaries and Benefits	11,846	12,021	11,664	-357
Travel	150	150	158	+8
Support Services	1,502	509	1,517	+1,008
Other Related Expenses	1,858	1,896	1,415	-481
Total, Oak Ridge	15,356	14,576	14,754	+178
Portsmouth/Paducah Project Office				
Salaries and Benefits	9,825	9,970	9,585	-385
Travel	400	400	420	+20
Support Services	2,500	854	2,525	+1,671
Other Related Expenses	3,300	1,174	2,514	+1,340
Total, Portsmouth/Paducah Project Office	16,025	12,398	15,044	+2,646
Richland				
Salaries and Benefits	39,509	40,091	37,518	-2,573
Travel	550	550	578	+28
Support Services	761	684	769	+85
Other Related Expenses	5,399	3,869	4,112	+243
Total, Richland	46,219	45,194	42,977	-2,217
River Protection				
Salaries and Benefits	27,561	27,967	24,683	-3,284
Travel	500	500	525	+25
Support Services	250	854	253	-601
Other Related Expenses	4,420	3,222	3,366	+144
Total, River Protection	32,731	32,543	28,827	-3,716
Savannah River				
Salaries and Benefits	40,196	40,788	38,857	-1,931
Travel	450	450	473	+23
Support Services	1,963	854	700	-154
Other Related Expenses	1,641	2,318	1,250	-1,068

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Total, Savannah River	44,250	44,410	41,280	-3,130
Small Sites				
Salaries and Benefits	4,395	4,459	4,274	-185
Travel	150	150	158	+8
Support Services	645	314	651	+337
Other Related Expenses	960	730	730	0
Total, Small Sites	6,150	5,653	5,813	+160
Nevada Site Office				
Salaries and Benefits	2,480	2,516	2,508	-8
Travel	65	65	68	+3
Support Services	100	100	101	+1
Other Related Expenses	179	137	137	0
Total, Nevada Site Office	2,824	2,818	2,814	-4
Los Alamos Site Office				
Salaries and Benefits	4,820	4,892	5,038	+146
Travel	125	125	131	+6
Support Services	280	280	283	+3
Other Related Expenses	397	150	302	+152
Total, Los Alamos Site Office	5,622	5,447	5,754	+307
Field				
Salaries and Benefits	157,610	159,933	150,380	-9,553
Travel	3,040	3,040	3,193	+153
Support Services	8,294	4,584	7,095	+2,511
Other Related Expenses	19,967	14,517	15,207	+690
Total, Field	188,911	182,074	175,875	-6,199
Headquarters Operations				
Salaries and Benefits	48,379	49,111	45,396	-3,715
Travel	1,700	1,700	1,785	+85
Support Services	22,030	12,226	14,188	+1,962
Other Related Expenses	973	762	806	+44
Total, Headquarters Operations	73,082	63,799	62,175	-1,624
Headquarters Working Capital Fund				
Other Related Expenses	10,548	10,548	11,867	+1,319
Consolidated Business Center				
Salaries and Benefits	20,615	20,919	20,697	-222
Travel	380	380	400	+20
Support Services	1,985	2,000	2,005	+5
Other Related Expenses	2,979	1,399	2,266	+867
Total, Consolidated Business Center	25,959	24,698	25,368	+670
Environmental Management				
Salaries and Benefits	226,604	229,963	216,473	-13,490
Travel	5,120	5,120	5,378	+258
Support Services	32,309	18,810	23,288	+4,478

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Other Related Expenses	34,467	27,226	30,146	+2,920
Total, Environmental Management Full Time Equivalent	298,500	281,119	275,285	-5,834
	1,350	1,350	1,275	-75

Support Services and Other Related Expenses

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Support Services				
Technical Support				
Feasibility of Design Considerations	3,600	2,100	2,540	+440
System Definition	80	44	67	+23
Economic and Environmental Analysis	4,859	2,830	4,103	+1,273
Test and Evaluation Studies	80	46	68	+22
Surveys or Reviews of Technical Operations	8,600	5,010	6,262	+1,252
Total, Technical Support	17,219	10,030	13,040	+3,010
Management Support				
Directives Management Studies	1,900	1,105	1,105	-
Automatic Data Processing	2,000	1,165	1,689	+524
Training and Education	190	110	166	+56
Analysis of DOE Management Processes	695	600	1,000	+400
Reports and Analyses Management and General Administrative Support	10,305	5,800	6,288	+488
Total, Management Support	15,090	8,780	10,248	+1,468
Total, Support Services	32,309	18,810	23,288	+4,478
Other Related Expenses				
Rent to GSA	6,570	4,580	3,739	-841
Rent to Others	1,600	1,115	1,300	+185
Communication, Utilities, Misc.	2,908	2,030	2,547	+517
Printing and Reproduction	10	8	10	+2
Other Services	7,000	4,880	5,094	+214
Training	1,300	900	1,318	+418
Purchases from Gov. Accounts	475	330	481	+151

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Operation and Maintenance of Equipment	390	270	395	+125
Supplies and Materials	1,500	1,045	1,200	+155
Equipment	2,166	1,520	2,195	+675
Working Capital Fund	10,548	10,548	11,867	+1,319
Total, Other Related Expenses	34,467	27,226	30,146	+2,920

Program Direction (PBS: HQ-PD-0100)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$270,571,000	\$263,418,000	-\$7,153,000
Salaries and Benefits \$229,963,000	\$216,473,000	-\$13,490,000
<ul style="list-style-type: none"> Supports Federal salaries and benefits for EM's FTE level. 	<ul style="list-style-type: none"> Supports Federal salaries and benefits for EM's FTE level. 	<ul style="list-style-type: none"> Reflects 1% pay increase in civilian salaries, FERS increase, and additional funds for performance award pool increase in FY 2021 offset by reduction in FTE level.
Travel \$5,120,000	\$5,378,000	+\$258,000
<ul style="list-style-type: none"> Includes costs of transportation of persons, subsistence of travelers, incidental travel expenses, as well as funding to support 	<ul style="list-style-type: none"> Includes costs of transportation of persons, subsistence of travelers, incidental travel expenses, as well as funding to support 	<ul style="list-style-type: none"> Increase supports travel requirements.

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.

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.

Support Services \$18,810,000	\$23,288,000	+\$4,478,000
<ul style="list-style-type: none"> Support for 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"> Support for 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. 	<p>Increase provides information technology infrastructure, upgrades to EM’s budget and planning management system, and ongoing operations and maintenance of information technology systems.</p>
Other Related Expenses \$16,678,000	\$18,279,000	+\$1,601,000
<ul style="list-style-type: none"> Funds items such as training, supplies, and information technology equipment as well as field rent, utilities, communications, building and ground maintenance. EM will continue efficiencies for the reintegration of Federal staff to Government-owned facilities. 	<ul style="list-style-type: none"> Funds items such as training, supplies, and information technology equipment as well as field rent, utilities, communications, building and ground maintenance. EM will continue efficiencies for the reintegration of Federal staff to Government-owned facilities. 	<p>Increase reflects inflation for communication and utilities; building ground maintenance; information technology equipment leases and purchases; other services; and supplies and materials.</p>

WCF Program Direction (PBS: HQ-PDWCF-0100)

Activities and Explanation of Changes

FY 2020 Enacted	FY 2021 Request	Explanation of Changes FY 2021 Request vs FY 2020 Enacted
\$10,548,000	\$11,867,000	+\$1,319,000
Other Related Expenses \$10,548,000	\$11,867,000	+\$1,319,000
<ul style="list-style-type: none"> 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 flexible spending account and subsidy for Energy employees’ transit), corporate training services, health services, overseas presence, supply, and telecommunications. 	<ul style="list-style-type: none"> 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 2021.

**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 2019 Actual Cost	FY 2019 Planned Cost	FY 2020 Planned Cost	FY 2021 Planned Cost
Carlsbad	11,712	11,712	10,087	11,500
Idaho National Laboratory	24,613	24,613	25,106	25,608
Moab	800	800	484	515
Oak Ridge	54,820	68,648	80,362	64,586
Pacific Northwest National Laboratory	0	0	0	0
Paducah	23,929	32,683	31,655	32,849
Portsmouth	64,283	55,288	45,566	47,995
Richland Operations Office	118,802	99,545	209,882	228,312
Office of River Protection	97,493	81,787	71,287	73,899
Savannah River	194,517	194,517	185,106	180,262
Total, Direct-Funded Maintenance and Repair	590,969	569,593	659,535	665,526

Costs for Indirect-Funded Maintenance and Repair (including Deferred Maintenance Reduction)

(\$K)

	FY 2019 Actual Cost	FY 2019 Planned Cost	FY 2020 Planned Cost	FY 2021 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	5,796	5,912	6,462	6,149
Paducah	0	0	0	0
Portsmouth	0	14,043	0	0
Richland Operations Office	0	0	0	0
Office of River Protection	0	0	0	0
Savannah River	48,130	48,130	49,436	53,566
Total, Indirect-Funded Maintenance and Repair	53,926	68,085	55,898	59,715

**Environmental Management Research and Development
Research and Development (\$K)**

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 vs FY 2020
Basic	0	0	0	0
Applied	8,354	9,900	9,240	-660
Development	16,962	20,100	18,760	-1,340
Subtotal, R&D	25,316	30,000	28,000	-2,000
Equipment	0	0	0	0
Construction	0	0	0	0
Total, R&D	25,316	30,000	28,000	-2,000

**Environmental Management
Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)**

	FY 2019 Enacted Transfer	FY 2020 Enacted Projected Transfer	FY 2021 Request Projected Transfer	FY 2021 vs FY 2020
Technology Development and Deployment				
SBIR	800	800	800	+0
STTR	113	113	113	+0
Oak Ridge				
SBIR	96	160	96	-64
STTR	14	22	13	-9
Total, SBIR	896	960	896	-64
Total, STTR	127	135	126	-9

Safeguards and Security by Activity (\$K)

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Carlsbad				
Protective Forces	4,271	4,344	4,418	+74
Physical Security Systems	692	704	716	+12
Security Investigations	61	62	63	+1
Program Management	264	268	273	+5
Subtotal, Carlsbad	5,288	5,378	5,470	+92
Cyber Security	1,292	1,314	1,336	+22
Total, Carlsbad	6,580	6,692	6,806	+114
Oak Ridge				
Protective Forces	7,643	5,024	4,285	-739
Physical Security Systems	1,800	908	1,850	+942
Information Security	700	508	600	+92
Personnel Security	640	600	700	+100
Security Investigations	283	379	200	-179
Material Control and Accountability	600	395	405	+10
Program Management	277	206	220	+14
Subtotal, Oak Ridge	11,943	8,020	8,260	+240
Cyber Security	2,080	980	1,000	+20
Total, Oak Ridge	14,023	9,000	9,260	+260
Paducah				
Protective Forces	5,921	4,986	6,133	+1,147
Physical Security Systems	765	770	785	+15
Information Security	925	933	951	+18
Personnel Security	614	653	665	+12
Security Investigations	21	0	236	+236
Security Infrastructure/Construction	3,954	4,361	3,826	-535
Program Management	1,870	2,086	2,133	+47
Subtotal, Paducah	14,070	13,789	14,729	+940
Cyber Security	1,507	2,000	1,477	-523
Total, Paducah	15,577	15,789	16,206	+417

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Portsmouth				
Protective Forces	8,938	9,226	9,317	+91
Physical Security Systems	1,342	1,544	1,149	-395
Information Security	768	885	698	-187
Personnel Security	667	648	601	-47
Security Investigations	298	299	236	-63
Security Infrastructure/Construction	556	249	695	+446
Program Management	756	911	826	-85
Subtotal, Portsmouth	13,325	13,762	13,522	-240
Cyber Security	1,753	2,728	3,168	+440
Total, Portsmouth	15,078	16,490	16,690	+200
Richland				
Protective Forces	57,630	58,019	61,266	+3,247
Physical Security Systems	7,128	7,128	8,847	+1,719
Information Security	1,077	1,077	1,090	+13
Personnel Security	2,023	2,698	2,047	-651
Security Investigations	675	0	857	+857
Material Control and Accountability	1,327	1,053	1,069	+16
Program Management	7,025	7,025	10,226	+3,201
Subtotal, Richland	76,885	77,000	85,402	+8,402
Cyber Security	9,801	9,778	10,898	+1,120
Total, Richland	86,686	86,778	96,300	+9,522
Savannah River				
Protective Forces	104,231	104,734	102,209	-2,525
Physical Security Systems	11,490	15,944	15,279	-665
Information Security	1,534	2,807	2,690	-117
Personnel Security	7,768	9,082	8,704	-378
Security Investigations	77	61	65	+4
Material Control and Accountability	3,769	5,178	5,702	+524
Security Infrastructure/Construction	0	3,151	3,189	+38
Program Management	10,083	10,959	12,040	+1,081
Transportation	195	199	215	+16
Subtotal, Savannah River	139,147	152,115	150,093	-2,022
Cyber Security	24,210	22,037	21,118	-919

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Total, Savannah River	163,357	174,152	171,211	-2,941
West Valley Demonstration Project				
Protective Forces	2,552	3,039	3,642	+603
Security Investigations	4	0	0	0
Program Management	277	377	306	-71
Subtotal, West Valley Demonstration Project	2,833	3,416	3,948	+532
Cyber Security	300	780	350	-430
Total, West Valley Demonstration Project	3,133	4,196	4,298	+102
Total, Safeguards and Security	304,434	313,097	320,771	+7,674

Safeguards and Security (\$K)

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request	FY 2021 Request vs FY 2020 Enacted
Protective Forces	191,186	189,372	191,270	+1,898
Physical Security Systems	23,217	26,998	28,626	+1,628
Information Security	5,004	6,210	6,029	-181
Personnel Security	11,712	13,681	12,717	-964
Security Investigations	1,419	801	1,657	+856
Material Control and Accountability	5,696	6,626	7,176	+550
Security Infrastructure/Construction	4,510	7,761	7,710	-51
Program Management	20,552	21,832	26,024	+4,192
Transportation	195	199	215	+16
Subtotal, Safeguards and Security	263,491	273,480	281,424	+7,944
Cyber Security	40,943	39,617	39,347	-270
Total, Safeguards and Security	304,434	313,097	320,771	+7,674

DEPARTMENT OF ENERGY
Funding by Site Detail
Defense Environmental Cleanup
(Dollars in Thousands)

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request
Carlsbad Area Office			
Program Direction	11,878	11,679	11,032
Safeguards and Security	6,580	6,692	6,806
Total Carlsbad Area Office	18,458	18,371	17,838
Consolidated Business Center			
Closure Sites Administration	1,789	1,987	2,087
Program Direction	31,769	30,351	31,181
Total Consolidated Business Center	33,558	32,338	33,268
East Tennessee Technology Park (K25)			
Safeguards and Security	14,023	9,000	9,260
Total East Tennessee Technology Park (K25)	14,023	9,000	9,260
Fernald Environmental Management Project			
Closure Sites Administration	1,100	1,100	1,100
Total Fernald Environmental Management Project	1,100	1,100	1,100
Hanford Site			
River Corridor and Other Cleanup Operations	193,692	236,102	54,949
Central Plateau Remediation	660,358	654,800	498,335
18-D-404 Modification of Waste Encapsulation and Storage Facility	1,000	11,000	0
Richland	855,050	901,902	553,284
Safeguards and Security	86,686	86,778	96,300
Total Hanford Site	941,736	988,680	649,584
Idaho National Laboratory			
Idaho Cleanup and Waste Disposition	420,000	430,000	257,554
Idaho Excess Facilities D&D	10,000	0	0
Idaho Community and Regulatory Support	3,200	3,500	2,400
Total Idaho National Laboratory	433,200	433,500	259,954
Idaho Operations Office			
Program Direction	7,619	7,356	7,580
Total Idaho Operations Office	7,619	7,356	7,580
Lawrence Livermore National Laboratory			
Lawrence Livermore National Laboratory (LLNL)	1,704	1,727	1,764
LLNL Excess Facilities D&D	25,000	65,000	0
Total Lawrence Livermore National Laboratory	26,704	66,727	1,764
Los Alamos National Laboratory			
Los Alamos National Laboratory (LANL)	220,000	220,000	120,000
Total Los Alamos National Laboratory	220,000	220,000	120,000

Nevada Field Office			
Program Direction	3,881	2,818	2,814
Total Nevada Field Office	3,881	2,818	2,814
Nevada Operations Office			
Nevada Test Site	4,740	4,741	5,065
Total Nevada Operations Office	4,740	4,741	5,065
Nevada National Security Site			
Nevada Test Site	55,396	55,996	55,672
Total Nevada National Security Site	55,396	55,996	55,672
NNSA Albuquerque Complex			
Program Direction	5,233	5,447	5,754
Total NNSA Albuquerque Complex	5,233	5,447	5,754
Oak Ridge National Laboratory			
OR Nuclear Facility D&D	189,000	213,000	109,077
U233 Disposition Program	52,300	55,000	45,000
Total Oak Ridge National Laboratory	241,300	268,000	154,077
Oak Ridge Office			
Program Direction	15,623	14,576	14,754
Total Oak Ridge Office	15,623	14,576	14,754
Oak Ridge Reservation			
OR Cleanup and Waste Disposition	74,000	101,100	58,000
Total Oak Ridge Reservation	74,000	101,100	58,000
Oak Ridge Reservation (Off-Site)			
OR Community and Regulatory Support	5,700	5,900	4,930
Total Oak Ridge Reservation (Off-Site)	5,700	5,900	4,930
Office of River Protection			
Rad Liquid Tank Waste Stabilization and Disposition	771,947	775,000	597,757
18-D-16 Waste treatment and immobilization plant - LBL/Direct Feed LAW	655,000	776,000	609,924
15-D-409 Low Activity Waste Pretreatment System	56,053	0	0
01-D-16-A-D Waste Treatment and Immobilization Plant	15,000	15,000	50,000
01-D-16D High-Level Waste Facility	60,000	25,000	0
01-D-16E Pretreatment Facility	15,000	15,000	0
Construction - Office of River Protection	801,053	831,000	659,924
ORP Low-Level Waste Offsite Disposal	0	10,000	0
Office of River Protection (ORP)	1,573,000	1,616,000	1,257,681
Program Direction	32,270	32,543	28,827
Total Office of River Protection	1,605,270	1,648,543	1,286,508
Paducah Gaseous Diffusion Plant			
Program Direction	16,161	12,398	15,044
Safeguards and Security	15,577	15,789	16,206
Total Paducah Gaseous Diffusion Plant	31,738	28,187	31,250
Portsmouth Gaseous Diffusion Plant			
Safeguards and Security	15,078	16,490	16,690
Total Portsmouth Gaseous Diffusion Plant	15,078	16,490	16,690

Richland Operations Office			
Richland Community and Regulatory Support	10,121	10,121	2,500
Program Direction	46,260	45,194	42,977
Total Richland Operations Office	56,381	55,315	45,477
Rocky Flats Site			
Closure Sites Administration	2,000	1,900	1,800
Total Rocky Flats Site	2,000	1,900	1,800
Sandia National Laboratories			
Sandia National Laboratory (SNL)	2,600	2,652	4,860
Total Sandia National Laboratories	2,600	2,652	4,860
Savannah River Operations Office			
SR Community and Regulatory Support	11,249	11,249	4,989
Program Direction - Defense Environmental Cleanup	44,080	44,410	41,280
Safeguards and Security - Defense Environmental Cleanup	163,357	174,152	171,211
Total Savannah River Operations Office	218,686	229,811	217,480
Savannah River Site			
Savannah River Risk Management Operations	489,460	506,366	455,122
18-D-402 Emergency Operations Center Replacement, SR	1,259	6,792	0
20-D-402 Advanced Manufacturing Collaborative Facility (AMC)	0	25,000	25,000
20-D-401 Saltstone Disposal Unit #10, 11, 12	0	500	0
19-D-701 SR Security Systems Replacement	10,000	4,525	0
18-D-402 Saltstone disposal unit #8/9	7,577	20,000	65,500
17-D-402 Saltstone Disposal Unit #7	41,243	40,034	10,716
05-D-405 Salt Waste Processing Facility, SRS	130,000	21,200	0
Construction - Radioactive Liquid Tank Waste	188,820	111,259	101,216
Radioactive Liquid Tank Waste Stabilization and Disposition	696,869	820,106	970,332
Total Savannah River Site	1,376,408	1,444,523	1,526,670
Separations Process Research Unit			
Separations Processing Research Unit	15,000	15,300	15,000
Total Separations Process Research Unit	15,000	15,300	15,000
Washington Headquarters			
Program Direction	83,726	74,347	74,042
Program Support	12,979	12,979	12,979
Technology Development and Deployment	25,000	25,000	25,000
Total Washington Headquarters	121,705	112,326	112,021
Waste Isolation Pilot Plant			
Waste Isolation Pilot Plant (EM)	311,695	294,353	323,260
21-D-401 Hoisting Capability Project	0	0	10,000
15-D-411 Safety Significant Confinement Ventilation System, WIPP	84,212	58,054	0
15-D-412 Exhaust Shaft, WIPP	1,000	44,500	50,000
Construction - Waste Isolation Pilot Plant	85,212	102,554	60,000
Total Waste Isolation Pilot Plant	396,907	396,907	383,260
West Valley Demonstration Project			
Safeguards and Security	3,133	4,196	4,298
Total West Valley Demonstration Project	3,133	4,196	4,298

Y-12 Site Office

17-D-401 On-site Waste Disposal Facility	10,000	0	22,380
14-D-403 Outfall 200 Mercury Treatment Facility	76,000	70,000	20,500
Construction - Oak Ridge	86,000	70,000	42,880
OR Technology Development and Deployment	3,000	5,000	3,000
Oak Ridge (OR)	89,000	75,000	45,880
Total Y-12 Site Office	89,000	75,000	45,880

DEPARTMENT OF ENERGY
Funding by Site
Non-Defense Environmental Cleanup
(Dollars in Thousands)

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request
Brookhaven National Laboratory			
Small Sites	20,456	0	0
Total Brookhaven National Laboratory	20,456	0	0
Consolidated Business Center			
Small Sites	0	10,000	0
Total Consolidated Business Center	0	10,000	0
East Tennessee Technology Park (K25)			
Small Sites	10,000	10,000	0
Total East Tennessee Technology Park (K25)	10,000	10,000	0
Energy Technology Engineering Center			
Small Sites	11,000	18,200	11,000
Total Energy Technology Engineering Center	11,000	18,200	11,000
Hanford Site			
Fast Flux Test Reactor Facility (WA)	2,240	2,500	2,500
Total Hanford Site	2,240	2,500	2,500
Idaho National Laboratory			
Small Sites	10,000	12,800	11,000
Total Idaho National Laboratory	10,000	12,800	11,000
Lawrence Berkeley National Laboratory			
Small Sites	35,000	31,000	0
Total Lawrence Berkeley National Laboratory	35,000	31,000	0
Moab Site			
Small Sites	45,000	45,000	47,653
Total Moab Site	45,000	45,000	47,653
Paducah Gaseous Diffusion Plant			
Gaseous Diffusion Plants	50,345	56,456	57,580
Total Paducah Gaseous Diffusion Plant	50,345	56,456	57,580
Portsmouth Gaseous Diffusion Plant			
Gaseous Diffusion Plants	50,959	56,629	57,974
Total Portsmouth Gaseous Diffusion Plant	50,959	56,629	57,974
Washington Headquarters			
Management and Storage of Elemental Mercury	0	1,200	0
Total Washington Headquarters	0	1,200	0
West Valley Demonstration Project			
West Valley Demonstration Project	75,000	75,215	88,113
Community and Regulatory Support	0	200	0
Total West Valley Demonstration Project	75,000	75,415	88,113

DEPARTMENT OF ENERGY
Funding by Site
Uranium Enrichment Decontamination and Decommissioning Fund
(Dollars in Thousands)

	FY 2019 Enacted	FY 2020 Enacted	FY 2021 Request
East Tennessee Technology Park (K25)			
Oak Ridge Reservation (D&D Fund)	195,000	195,693	144,701
Pension and Community and Regulatory Support	17,258	17,655	15,000
Total East Tennessee Technology Park (K25)	212,258	213,348	159,701
Paducah Gaseous Diffusion Plant			
Paducah Gaseous Diffusion Plant (D&D Fund)	206,000	240,000	206,518
Pension and Community and Regulatory Support	2,102	2,094	2,099
Total Paducah Gaseous Diffusion Plant	208,102	242,094	208,617
Portsmouth Gaseous Diffusion Plant			
Portsmouth Gaseous Diffusion Plant (D&D Fund)	366,931	367,193	351,854
20-U-401 On-site Waste Disposal Facility	0	10,000	16,500
15-U-408 On-Site Waste Disposal Facility, Portsmouth	41,168	41,102	46,639
Construction - Uranium D&D Fund	41,168	51,102	63,139
Pension and Community and Regulatory Support	1,670	2,013	1,649
Total Portsmouth Gaseous Diffusion Plant	409,769	420,308	416,642
Washington Headquarters			
Uranium Enrichment D&D Fund-U Th Reimbursements	11,000	5,250	21,284
Total Washington Headquarters	11,000	5,250	21,284

GENERAL PROVISIONS—DEPARTMENT OF ENERGY
(INCLUDING TRANSFER AND CANCELLATION 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), and (h), 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) *EXCLUSIONS.—Subsections (d), (e), and (f) shall not apply to applied energy program funds transferred or reprogrammed under —*

(1) *the small business innovation research program under section 9 of the Small Business Act (15 U.S.C 638); or*
(2) *the small business technology transfer program under that section.*

([h]i) 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 2020 until the enactment of the Intelligence Authorization Act for fiscal year 2020.

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. (a) None of the funds made available in this or any prior Act under the heading "Defense Nuclear Nonproliferation" may be made available to enter into new contracts with, or new agreements for Federal assistance to, the Russian Federation.

(b) The Secretary of Energy may waive the prohibition in subsection (a) if the Secretary determines that such activity is in the national security interests of the United States. This waiver authority may not be delegated.

(c) A waiver under subsection (b) shall not be effective until 15 days after the date on which the Secretary submits to the Committees on Appropriations of both Houses of Congress, in classified form if necessary, a report on the justification for the waiver.

SEC. 306. 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. 307. 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 Interior-Bureau of Reclamation-Upper Colorado River Basin Fund" for the Bureau of Reclamation to carry out environmental stewardship and endangered species recovery efforts.]

[SEC. 308. (a) Of the unobligated balances available from amounts appropriated in prior Acts under the heading "Title III-Department of Energy-Energy Programs", \$12,723,000 is hereby rescinded.

(b) No amounts may be rescinded under (a) from amounts that were designated by the Congress as an emergency requirement pursuant to a concurrent resolution on the budget or the Balanced Budget and Emergency Deficit Control Act of 1985.]

[SEC. 309. Beginning in fiscal year 2021 and for each fiscal year thereafter, fees collected pursuant to subsection (b)(1) of section 6939f of title 42, United States Code, shall be deposited in "Department of Energy-Energy Programs-Non-Defense Environmental Cleanup" as discretionary offsetting collections.]

[SEC. 310. During fiscal year 2020 and each fiscal year thereafter, notwithstanding any provision of title 5, United States Code, relating to classification or rates of pay, the Southeastern Power Administration shall pay any power system dispatcher employed by the Administration a rate of basic pay and premium pay based on those prevailing for similar occupations in the electric power industry. Basic pay and premium pay may not be paid under this section to any individual during a calendar year so as to result in a total rate in excess of the rate of basic pay for level V of the Executive Schedule (section 5316 of such title).]

SEC. 307. Section 611 of the Energy and Water Development Appropriations Act, 2000 (P.L. 106-60; 10 U.S.C 2701 note) is amended as follows:

(a) *In subsection (a) in the matter preceding paragraph (1), by striking "the Army, acting through the Chief of Engineers" and inserting "Energy".*

(b) *In subsection (a)(6), by striking "by the Secretary of the Army, acting through the Chief of Engineers," and striking ", which may be transferred upon completion of remediation to the administrative jurisdiction of the Secretary of Energy".*

(c) *In subsection (a), by adding after paragraph (6) the following undesignated matter: "Upon completion of remediation of a site acquired by the Secretary of the Army prior to fiscal year 2021, the Secretary of the Army may transfer administrative jurisdiction of such site to the Secretary of Energy."*

(d) *In subsection (b), by striking "the Army, acting through the Chief of Engineers," and inserting "Energy".*

(e) *In subsection (c), by striking "amounts made available to carry out that program and shall be available until expended for costs of response actions for any eligible site" and inserting "'Other Defense Activities' appropriation account or successor appropriation account and shall be available until expended for costs of response actions for any eligible Formerly Utilized Sites Remedial Action Program Site".*

(f) *By redesignating subsection (f) as subsection (g).*

(g) *By inserting after subsection (e) the following new subsection:*

"(f) The Secretary of Energy, in carrying out subsection (a), shall enter into an agreement with the Secretary of the Army to carry out the remediation functions and activities described in subsections (a)(1) through (a)(6)."

SEC. 308. Section 2307 of the Energy Policy Act of 1992 (42 U.S.C 13526) is repealed.

SEC. 309. Notwithstanding section 161 of the Energy Policy and Conservation Act (42 U.S.C. 6241), the Secretary of Energy shall draw down and sell 15 million barrels of refined petroleum product from the Strategic Petroleum Reserve during fiscal year 2021. Proceeds from sales under this section shall be deposited into the general fund of the Treasury during fiscal year 2021, with the exception of \$242,000,000 from such proceeds to be deposited in the "Naval Petroleum and Oil Shale Reserves" account for comprehensive remediation of the Naval Petroleum Reserve-1 site near Elk Hills, California, to remain available until expended.

SEC. 310. Treatment of Lobbying and Political Activity Costs as Allowable Costs under Department of Energy Contracts. —

(a) *Allowable Costs. —*

(1) *Section 4801(b) of the Atomic Energy Defense Act (50 U.S.C. 2781(b)) is amended—*

(A) *by striking "(1)" and all that follows through "the Secretary" and inserting "The Secretary"; and*

(B) *by striking paragraph (2).*

(2) *Section 305 of the Energy and Water Development Appropriation Act, 1988, as contained in section*

101(d) of Public Law 100–202 (101 Stat. 1329–125), is repealed.

(b) Regulations Revised.—The Secretary of Energy shall revise existing regulations consistent with the repeal of 50 U.S.C. 2781(b)(2) and section 305 of Public Law 100–202 and shall issue regulations to implement 50 U.S.C. 2781(b), as amended by subsection (a) of this section, no later than 150 days after the date of the enactment of this Act. Such regulations shall be consistent with the Federal Acquisition Regulation 48 C.F.R. 31.205–22.

SEC. 311. Pursuant to a request by the Secretary of Defense, and upon determination by the Director of the Office of Management and Budget in consultation with the Secretary of Energy that such action is necessary, the Secretary of Energy may, with the approval of the Office of Management and Budget, transfer not to exceed \$2,500,000,000 of funds made available in this Act to the Department of Energy for National Nuclear Security Administration functions to the Department of Defense, to be merged with and to be available for the same purposes, and for the same time period, as the appropriation or fund to which transferred: Provided, That the Secretary of Energy shall notify the Congress promptly of all transfers made pursuant to this authority or any other authority in this Act: Provided further, That this transfer authority is in addition to any other transfer authority provided in this Act.

**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. 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. (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.