DOE/CF-0155
Volume 5

Department of Energy
FY 2020 Congressional Budget Request

Environmental Management

March 2019 Office of Chief Financial Officer Volume 5

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Printed with soy ink on recycled paper

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FUNDING BY APPROPRIATION

Department of Energy Budget by Appropriation	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted $	FY 2020 Request vs FY 2019 Enacted %
	($K)				
Energy and Water Development, and Related Agencies					
Energy Programs					
Energy Efficiency and Renewable Energy	2,321,778	2,379,000	343,000	-2,036,000	-85.6%
Electricity Delivery and Energy Reliability	261,329	0	0	0	N/A
Electricity	0	156,000	182,500	+26,500	+17.0%
Cybersecurity, Energy Security, and Emergency Response	0	120,000	156,500	+36,500	+30.4%
Nuclear Energy	1,205,056	1,326,090	824,000	-502,090	-37.9%
Fossil Energy Programs					
Fossil Energy Research and Development	726,817	740,000	562,000	-178,000	-24.1%
Naval Petroleum and Oil Shale Reserves	4,900	10,000	14,000	+4,000	+40.0%
Strategic Petroleum Reserve	260,716	235,000	174,000	-61,000	-26.0%
Strategic Petroleum Account	8,400	10,000	27,000	+17,000	+170.0%
Northeast Home Heating Oil Reserve	6,500	10,000	0	-10,000	-100.0%
Total, Fossil Energy Programs	**1,007,333**	**1,005,000**	**777,000**	**-228,000**	**-22.7%**
Uranium Enrichment Decontamination and Decommissioning (D&D) Fund	840,000	841,129	715,112	-126,017	-15.0%
Energy Information Administration	125,000	125,000	118,000	-7,000	-5.6%
Non-Defense Environmental Cleanup	298,400	310,000	247,480	-62,520	-20.2%
Science	6,259,903	6,585,000	5,545,972	-1,039,028	-15.8%
Advanced Research Projects Agency - Energy	353,314	366,000	-287,000	-653,000	-178.4%
Nuclear Waste Disposal (26M in DNWF 050)	0	0	90,000	+90,000	N/A
Departmental Administration	189,652	165,858	117,545	-48,313	-29.1%
Indian Energy Policy and Programs	0	18,000	8,000	-10,000	-55.6%
Inspector General	49,000	51,330	54,215	+2,885	+5.6%
International Affairs	0	0	36,100	+36,100	N/A
Title 17 - Innovative Technology Loan Guarantee Program	30,892	13,000	-160,659	-173,659	-1,335.8%
Advanced Technology Vehicles Manufacturing Loan Program	5,000	5,000	0	-5,000	-100.0%
Tribal Energy Loan Guarantee Program	1,000	1,000	-8,500	-9,500	-950.0%
Total, Energy Programs	**12,947,657**	**13,467,407**	**8,759,265**	**-4,708,142**	**-35.0%**
Atomic Energy Defense Activities					
National Nuclear Security Administration					
Federal Salaries and Expenses	407,595	410,000	434,699	+24,699	+6.0%
Weapons Activities	10,642,138	11,100,000	12,408,603	+1,308,603	+11.8%
Defense Nuclear Nonproliferation	1,999,219	1,930,000	1,993,302	+63,302	+3.3%
Naval Reactors	1,620,000	1,788,618	1,648,396	-140,222	-7.8%
Total, National Nuclear Security Administration	**14,668,952**	**15,228,618**	**16,485,000**	**+1,256,382**	**+8.3%**
Environmental and Other Defense Activities					
Defense Environmental Cleanup	5,988,048	6,024,000	5,506,501	-517,499	-8.6%
Other Defense Activities	840,000	860,292	1,035,339	+175,047	+20.3%
Defense Nuclear Waste Disposal (90M in 270 Energy)	0	0	26,000	+26,000	N/A
Total, Environmental and Other Defense Activities	**6,828,048**	**6,884,292**	**6,567,840**	**-316,452**	**-4.6%**
Total, Atomic Energy Defense Activities	**21,497,000**	**22,112,910**	**23,052,840**	**+939,930**	**+4.3%**
Power Marketing Administrations					
Southeastern Power Administration	0	0	0	0	N/A
Southwestern Power Administration	11,400	10,400	10,400	0	N/A
Western Area Power Administration	93,372	89,372	89,196	-176	-0.2%
Falcon and Amistad Operating and Maintenance Fund	228	228	228	0	N/A
Colorado River Basins Power Marketing Fund	-23,000	-23,000	-21,400	+1,600	+7.0%
Total, Power Marketing Administrations	**82,000**	**77,000**	**78,424**	**+1,424**	**+1.8%**
Federal Energy Regulatory Commission (FERC)	**0**	**0**	**0**	**0**	**N/A**
Subtotal, Energy and Water Development, and Related Agencies	**34,526,657**	**35,657,317**	**31,890,529**	**-3,766,788**	**-10.6%**
Excess Fees and Recoveries, FERC	-9,000	-16,000	-16,000	0	N/A
Title XVII Loan Guarantee Program Section 1703 Negative Credit Subsidy Receipt	0	-107,000	-15,000	+92,000	+86.0%
Sale of Northeast Gas Reserve	0	0	-130,000	-130,000	N/A
Sale of Northeast Home Heating Oil Reserve	0	0	-27,000	-27,000	N/A
Total, Funding by Appropriation	**34,517,657**	**35,534,317**	**31,702,529**	**-3,831,788**	**-10.8%**

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, $6,028,600,000]*$5,522,063,000*, to remain available until expended: Provided, That of such amount, [298,500,000]*$278,908,000* shall be available until September 30, [2020]2021, for program direction: Provided further, That of the unobligated balances from prior year appropriations available under this heading, [$4,600,000]*$15,562,000* is hereby rescinded: Provided further, That no amounts may be rescinded 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, 2019.)*

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, [$310,000,000]*$247,480,000*, to remain available until expended. *(Energy and Water Development and Related Agencies Appropriations Act, 2019.)*

Uranium Enrichment Decontamination and Decommissioning Fund

For Department of Energy expenses necessary in carrying out uranium enrichment facility decontamination and decommissioning, remedial actions, and other activities of title II of the Atomic Energy Act of 1954, and title X, subtitle A, of the Energy Policy Act of 1992, [$841,129,000]*$715,112,000*, to be derived from the Uranium Enrichment Decontamination and Decommissioning Fund, to remain available until expended, of which [$11,000,000]$21,035,000 shall be available in accordance with title X, subtitle A, of the Energy Policy Act of 1992[, including for the purchase of not to exceed one ambulance for replacement only]. *(Energy and Water Development and Related Agencies Appropriations Act, 2019.)*

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 2018 Enacted	FY 2019 Enacted	FY 2020 Request
Defense Environmental Cleanup	5,988,048	6,036,177	5,522,063
Non-Defense Environmental Cleanup	298,400	310,000	247,480
Uranium Enrichment Decontamination and Decommissioning Fund	840,000	841,129	715,112
Subtotal, Environmental Management	7,126,448	7,187,306	6,484,655
Use of Prior Year (Defense Environmental Cleanup)	0	-7,577	0
Rescission of Prior Year Balances	0	-4,600	0
Use of Prior Year Balances - Salt Waste Processing Facility (05-D-405)	0	0	-15,562
Total, Environmental Management	7,126,448	7,175,129	6,469,093

Overview

The Office of Environmental Management (EM) supports the challenges of the nation's Manhattan Project and Cold War legacy responsibilities. 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 resulted from six decades of nuclear weapons development and production and Government-sponsored nuclear energy research. It 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; EM is 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 has generally prioritized 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 continued to make progress in cleaning up the complex in FY 2018. Workers completed the demolition and decommissioning of two nuclear facilities at the Separations Process Research Unit, located at the Knolls Atomic Power Laboratory, Niskayuna, New York. The demolition and decommissioning of buildings H2 and G2 completes the last major portion of the SPRU project. These facilities were used from 1950 to 1953 to research and develop chemical processes to separate plutonium from other radioactive material and is located at the Office of Naval Nuclear Propulsion's Knolls Atomic Power Laboratory, in Niskayuna, New York. The buildings and associated sub-grade building foundations and tank vaults were highly contaminated with radioactive material. Demolition and decommissioning required cleanup to levels that upon final site grading and restoration of the area allow for potential future use by the laboratory without need to implement a radiation protection program.

The Defense Waste Processing Facility at the Savannah River Site successfully restarted operations in December 2017 after a 10 month outage to replace and upgrade equipment and facilities. One of the main tasks during the outage was to replace the glass melter which converts the waste under high temperature to a stable glass form. The melter operated for 14 years producing over 10 million gallons of a glass product in over 2800 canisters. Other work included the piping and equipment tie-ins to a new facility going through commissioning, the Salt Waste Processing Facility, which will provide a greater throughput of the high radioactivity fraction of tank waste when it begins operation.

November 30, 2017, marked the completion of the 618-10 Burial Ground Project. Completion marked the end of eight years of cleanup activities at one of the most contaminated waste sites located on the Hanford Site. The 618-10 burial ground once contained some of the most hazardous waste at the 580-square mile Hanford site. During cleanup, workers retrieved 2,201 55-gallon drums, miscellaneous debris, and 94 Vertical Pipe Units, housing radioactive waste, that were buried more than 20 feet below ground. In total, workers removed more than 512,000 tons of waste debris and contaminated soils, which was taken to Hanford's engineered, hazardous-waste landfill, called the Environmental Restoration Disposal Facility. Cleanup marks the progress we are making to clean up the legacy of the plutonium production along the Columbia River at Hanford.

At the Portsmouth Gaseous Diffusion Plant an innovative, first-of-a-kind, remotely operated, pipe crawling robot was deployed at one of the former uranium enrichment facilities to perform in situ, direct measurements of uranium-235 residues in large (30-inch to 42-inch) uranium enrichment process lines. The Pipe Crawling Assay Measurement System features RadPiper, which is a fully autonomous robot outfitted with a suite of onboard sensors and instrumentation. The Pipe Crawling Assay Measurement System was designed and tested using the consensus standards of ASME NQA-1 (Nuclear Quality Assurance-1). It is a significantly better alternative to the current method of assay, which involves labor-intensive hand surveys of the external surfaces of piping in elevated, space limited, and difficult-to-reach areas of the plant. RadPiper provides superior performance, safety and quality over that baseline technique. Initial cost savings range from $10 million to over $50 million for a single facility.

Reform Initiatives

To further the Department's mission, the Secretary reorganized to improve alignment of EM, the Office of Science, and our national labs. By leveraging the expertise of the national lab complex and exploring potential project management and contract approaches, we will be better positioned to solve complex challenges, manage costs and ensure the highest level of safety at our sites.

EM will seek to incentivize our contractors through use of innovative contracting approaches that emphasize successful achievement of outcomes. 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 principle idea is to pay more fee for early and under cost completion of work. The faster EM can achieve cleanup, the sooner EM can eliminate the significant costs associated with maintaining infrastructure at our sites. If these goals can be met, the program can begin to reduce the program's life cycle estimate that has increased over the past 8 years to over $369 billion.

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.

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.

Maximizing Value from EM's Existing Contracts

Recent examples of high value contract approaches include:

East Tennessee Decontamination and Decommissioning Contract

At Oak Ridge, the contract is a cost plus award fee contract with performance based incentives to perform decontamination and decommissioning, environmental cleanup and waste operations. Effective use of incentives has resulted in performance by the contractor to accomplish decontamination and decommissioning and final demolition of the K-24, K-31 and K-27 facilities on time with substantial savings over the baseline of $20.5M. The uranium contaminated facilities were large gaseous diffusion buildings that posed significant safety challenges due to their deteriorated condition and a number of technical challenges, including removal of technetium to meet on-site disposal requirements.

Disposition of U-233 from Building 3019

Also, at Oak Ridge, the contract was converted to a firm-fixed price after the decision to direct dispose as the first phase of U-233 material. That first phase of work was successfully completed ahead of schedule and within the negotiated firm-fixed price ceiling. An innovative approach has been negotiated for the second phase to process the remaining U-233 disposal as low activity waste (through downblending) also at a fixed price. The project schedule is being accelerated through recovery of thorium during the downblending process. The thorium will be further processed by a third party to yield actinium for use in cancer treatments. The proceeds from sale of the thorium for this ultimate medical use will be used to maintain an optimum schedule to remove the U-233 from Building 3019 to remove a significant risk from the Oak Ridge Reservation.

West Valley Cleanup and Decontamination and Decommissioning Contract

This contract is a cost plus award fee contract with performance based cost and schedule incentives. Effective use of incentives has resulted in performance by the contractor to accomplish 2 of the 4 contract milestones significantly ahead of schedule. On November 17, 2016, CHBWV completed the High-Level Waste Relocation and Storage Project over one year ahead of schedule and nearly $6 million under budget. The 275 canisters of vitrified high-level radioactive waste and three non-conforming canisters were relocated from the Main Plant Process Building to a long term interim storage pad located at the site. The High-Level Waste Relocation and Storage Project marks the first time in U.S. history that vitrified high level waste has been placed in long-term, outdoor passive storage. The storage configuration of the high level waste canisters is fully compliant with all state and federal regulations, and supports future off-site shipment of the high level waste canisters. On September 6, 2018, CHBWV completed the Legacy Waste Disposition project, which included disposition of 3,114 containers of legacy waste produced as a result of past activities at the site. This milestone was accomplished more than seven months ahead of schedule and slightly under budget. The cleanup segment consisted of processing, packaging and shipping more than 180,000 cubic feet of low-level legacy waste offsite for disposal; and processing transuranic waste for long-term storage pending the availability of a final disposition path. This achievement demonstrates the Department's commitment to the safe and compliant cleanup of the West Valley site.

End-State Contracting

The EM program will begin competing contracts as cost plus contracts with significant incentives for early and below cost achievement of end-states. Similar to the Rocky Flats contract, the earlier and the lower the cost for end-state achievement, the more fee will be provided to the contractor. In the case of Rocky Flats, the end-state was closure of the site, whereas other site end-states may be identified as cleanup of a major portion of a site or a specific functional completion (i.e., decontamination and decommissioning, soil/groundwater, etc.).

Since most of EM's remaining sites are so large and EM's contracts are generally competed for up to five years, the work to clean up the sites are generally presumed to be take longer than a contract period of performance. Regardless the plan is

for EM to identify the full scope of work needed for each site and the cost estimated to achieve the cleanup which is documented in the life cycle estimate. In addition, EM will identify relative risk for the various elements of work to be accomplished. The planned solicitations will not specify the method to achieve the cleanup, sequence of cleanup or end-state to be achieved by contract end. In the instance of EM's present sites, contract end-states will be determined through the competitive contract process.

The competing contractors will be asked to develop a strategy to maximize cleanup that can be accomplished over a nominal five year execution period. The proposals will be evaluated by how well the contractor demonstrates how much risk can be reduced for the lowest cost, assuming acceptable methods and by citing results on other contracts. EM's regulators have agreed to have discussions with offerors regarding cleanup methods and end-states that do not align with current agreements. Likewise, a proposal plan could impact established milestones, and regulator consultation is needed to determine their willingness to make changes. These regulatory consultations are also necessary for offerors to determine the suitability of alternate cleanup technologies or methods from EM's current plans.

A cogent overall strategy will be very important to the successful offeror to demonstrate as well. The contractors will have to make progress on difficult cleanup, not just less challenging scopes of work. EM will not select proposals that defer scope and increase the life-cycle, even if the contract period costs are proposed at a savings.

The first contract solicitations utilizing this approach were released in calendar year 2018 and are anticipated to be awarded in 2019. EM expects this approach to yield more innovative approaches to our planned cleanup. In addition, end-state incentivized contracts can yield $100s of millions in life cycle savings and the potential for mission completion decades sooner.

Highlights and Major Changes in the FY 2020 Budget Request

The FY 2020 investment of $6,469,093,000 in discretionary budget authority funds 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 2020, 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 2020 request supports general ramp up of the Liquid Waste program in preparation for the initiation of radioactive operations of the Salt Waste Processing Facility in FY 2020. Operation of this facility will significantly increase salt treatment capacity thus enabling increased risk reduction by removing and treating the liquid waste currently in underground storage tanks. To this effect, the Savannah River Site will work on a dozen tanks to prepare required feed, implement 24/7 operation in the Saltstone Facility, and complete final tie-ins. The Defense Waste Processing Facility will produce approximately 80-100 canisters of vitrified waste processed from tank waste and much work will be executed in support of regulatory commitments with the State of South Carolina. The FY 2020 request also supports continuing Saltstone Disposal Unit #7 cell construction; completing design and initiating construction of Saltstone Disposal Units #8 and #9; and initiating design of Saltstone Disposal Units #10, #11, and #12.

At the Idaho Site, the FY 2020 funding completes buried waste retrieval activities under the Accelerated Retrieval Project, and initiates accelerated decontamination and decommissioning of the Accelerated Retrieval Project structures facilitating the capping of the Subsurface Disposal Area. The request also supports initiation of Resource Conservation and Recovery Act closure of the Advance Mixed Waste Treatment Project allowing for decontamination, decommissioning and demolition of the treatment facility. FY 2020 funding continues certification and shipping of contact-handled transuranic waste to the Waste Isolation Pilot Plant, and continues transfers of spent nuclear fuel elements from wet to dry storage to meet the 2023 milestone. The funding request supports operation of the Integrated Waste Treatment Unit to process sodium

bearing waste. Simulant runs in FY 2018 proved the Denitration and Mineralization Reformer is a functional vessel and demonstrated success in managing particle size.

The Department is also working aggressively to complete and operate the treatment facilities to safely immobilize and dispose of tank waste at Hanford. This budget supports continued safe operations of the tank farms, and continued construction, startup and commissioning of the Waste Treatment and Immobilization Plant's Low-Activity Waste Facility, Balance of Facilities, Effluent Management Facility and Analytical Laboratory. These facilities are integral to the Department's plan to begin treating Hanford low-activity tank waste by December 31, 2023, as required by the consent decree.

The Waste Isolation Pilot Plant FY 2020 request supports disposal facility operations, regulatory and environmental compliance actions, continued progress on the line-item capital asset projects and significant investments in infrastructure that will focus on repairing and replacing the Waste Isolation Pilot Plant's degraded facility structures.

The FY 2020 budget supports the continued decontamination and decommissioning of the Portsmouth Gaseous Diffusion Plant, including the design and construction of an on-site waste disposal facility for disposition of waste from the future demolition of the Portsmouth Gaseous Diffusion Plant facilities. The FY 2020 budget also supports further stabilization of the Paducah Gaseous Diffusion Plant facilities; as well as continued operations of the Depleted Uranium Hexafluoride Conversion facilities at Portsmouth and Paducah. The support for the safe operation of the Depleted Uranium Hexafluoride Conversion facilities at Portsmouth and Paducah actively contributes to FY 2020 targets for the EM Corporate Performance metric: depleted and other uranium packaged for disposition.

At Oak Ridge the budget request supports the ongoing cleanup effort at the East Tennessee Technology Park, investment in mercury characterization and remediation technologies, and continued preparations for Critical Decision-2/3 approval and continued planning for construction of the Outfall 200 Mercury Treatment Facility at the Y-12 National Security Complex.

At West Valley, EM will continue to focus on completing decommissioning of the Main Plant Process Building and beginning demolition; continuing removal of excess ancillary facilities; and completing contract transition in FY 2020.

FY 2020 activities will continue to focus on surface and groundwater management at the Los Alamos National Laboratory. The Chromium Plume Control Interim Measure to control migration of a hexavalent chromium plume beneath Mortandad and Sandia Canyons will continue. Additionally Plume-Center Characterization activities will continue to investigate and develop corrective measures for remediation of the hexavalent chromium plume, and initiating design of the proposed remedies.

At Lawrence Livermore National Laboratory the FY 2020 budget request supports the completion of decommissioning and demolition activities of the B280 Pool Type Reactor and commencement of decommissioning and demolition activities of subsequent High Risk excess facilities.

EM's FY 2020 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 account to the extent practical. 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 cyber security requirements.
- Maintain site cyber security incident response capabilities.

- Upgrade and retire legacy information technology systems.
- Identity and secure high value assets.
- Remediate critical and high vulnerabilities that affect DOE information systems.
- Implement continuous diagnostic and mitigation implementation.
- Provide employee cyber security 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 2020, EM's share of the Working Capital Fund is estimated at $30,387,000, 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 share of the total Working Capital Fund between FY 2019 and FY 2020 remained the same.

EM's FY 2020 Program Direction Working Capital Fund allocation is $10,548,000.

EM's remaining FY 2020 Working Capital Fund request is $19,839,000. 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 2020 Working Capital Fund Estimate

	Program Direction	EM Cleanup	Total
A123	0	531	531
Building Occupancy	7,058	0	7,058
Copy Services	0	344	344
Corporate Business Systems	174	8,440	8,614
Corp Training Services	243	0	243
Financial Statement Audits	0	2,500	2,500
Health Services	137	0	137
Interagency Transfers	0	1,662	1,662
Mail & Transportation	0	205	205
Overseas Presence	326	0	326
Pension Studies	0	99	99
PMCDP	0	776	776
Print & graphics	0	171	171
Procurement Management	0	5,111	5,111
Supply	212	0	212
Telecom	2,398	0	2,398
Total	10,548	19,839	30,387

Environmental Management Funding by Congressional Control ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Closure Sites				
Closure Sites Administration	4,889	4,889	4,987	+98
Hanford Site				
Central Plateau Remediation	662,879	660,358	472,949	-187,409
Richland Community and Regulatory Support	10,121	10,121	5,121	-5,000
River Corridor and Other Cleanup Operations	183,692	193,692	139,750	-53,942
Construction				
18-D-404: Modification of Waste Encapsulation and Storage Facility, Richland, WA (PBS RL-0013C)	6,500	1,000	11,000	+10,000
Total, Hanford Site	**863,192**	**865,171**	**628,820**	**-236,351**
Idaho National Laboratory				
ID Excess Facilities D&D	10,000	10,000	0	-10,000
Idaho Cleanup and Waste Disposition	420,000	420,000	331,354	-88,646
Idaho Community and Regulatory Support	4,071	3,200	3,500	+300
Total, Idaho National Laboratory	**434,071**	**433,200**	**334,854**	**-98,346**
NNSA Sites				
Lawrence Livermore National Laboratory	1,175	1,704	1,727	+23
LLNL Excess Facilities D&D	100,000	25,000	128,000	+103,000
Los Alamos National Laboratory	220,000	220,000	195,462	-24,538
Nevada	60,136	60,136	60,737	+601
Sandia National Laboratories	2,600	2,600	2,652	+52
Separations Processing Research Unit	4,800	15,000	15,300	+300
Total, NNSA Sites	**388,711**	**324,440**	**403,878**	**+79,438**

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Oak Ridge				
OR Cleanup and Disposition	71,000	74,000	82,000	+8,000
OR Excess Facilities D&D	125,000	0	0	0
OR Nuclear Facility D&D	118,203	189,000	93,693	-95,307
OR Reservation Community and Regulatory Support	5,605	5,700	4,819	-881
OR Technology Development and Deployment	3,000	3,000	3,000	0
U233 Disposition Program	50,311	52,300	45,000	-7,300
Construction				
14-D-403: Outfall 200 Mercury Treatment Facility, OR (OR-0041)	17,100	76,000	49,000	-27,000
17-D-401: On-Site Disposal Facility	10,000	10,000	15,269	+5,269
Total, Construction	**27,100**	**86,000**	**64,269**	**-21,731**
Total, Oak Ridge	**400,219**	**410,000**	**292,781**	**-117,219**
Office of River Protection				
ORP Low-Level Waste Offsite Disposal	0	0	10,000	+10,000
Tank Farm Activities	719,000	771,947	677,460	-94,487
Waste Treatment and Immobilization Plant	8,000	15,000	15,000	0
Construction				
01-D-16D: High Level Waste Facility, RL	75,000	60,000	30,000	-30,000
01-D-16E: Pretreatment Facility, RL	35,000	15,000	20,000	+5,000
15-D-409: Low Activity Waste Pretreatment System, Hanford (ORP-0014)	93,000	56,053	0	-56,053
18-D-16: Waste Treatment and Immobilization Plant LBL/Direct Feed LAW	630,000	655,000	640,000	-15,000
Total, Construction	**833,000**	**786,053**	**690,000**	**-96,053**
Total, Office of River Protection	**1,560,000**	**1,573,000**	**1,392,460**	**-180,540**
Savannah River Site				
Radioactive Liquid Tank Waste Stabilization and Disposition	637,105	696,869	797,706	+100,837
Savannah River Risk Management Operations	482,960	489,460	490,613	+1,153
SR Community and Regulatory Support	11,249	11,249	4,749	-6,500

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Construction				
05-D-405: Salt Waste Processing Facility, SR	150,000	130,000	20,988	-109,012
18-D-402: Saltstone Disposal Unit #8/9, SR (SR-0014C)	500	7,577	51,750	+44,173
19-D-701: SR Security System Replacement	0	10,000	0	-10,000
20-D-401: Saltstone Disposal Unit 10 11 12	0	0	500	+500
17-D-402: Saltstone Disposal Unit #7, SR (SR-0014C)	30,000	41,243	40,034	-1,209
18-D-402: Emergency Operations Center	500	1,259	6,792	+5,533
20-D-402: Advanced Manufacturing Collaborative Facility (AMC)	0	0	50,000	+50,000
Total, Construction	**181,000**	**190,079**	**170,064**	**-20,015**
Total, Savannah River Site	**1,312,314**	**1,387,657**	**1,463,132**	**+75,475**
Program Support				
Mission Support	14,979	12,979	12,979	0
Program Direction	**300,000**	**298,500**	**278,908**	**-19,592**
Safeguards and Security	**298,102**	**304,434**	**317,622**	**+13,188**
Technology Development and Deployment				
Mission Support	35,000	25,000	0	-25,000
Waste Isolation Pilot Plant				
Waste Isolation Pilot Plant	270,971	311,695	299,088	-12,607
Construction				
15-D-411: Safety Significant Confinement Ventilation System, WIPP	86,000	84,212	58,054	-26,158
15-D-412: Utility Shaft	19,600	1,000	34,500	+33,500
Total, Construction	**105,600**	**85,212**	**92,554**	**+7,342**
Total, Waste Isolation Pilot Plant	**376,571**	**396,907**	**391,642**	**-5,265**
Total, Defense Environmental Cleanup	**5,988,048**	**6,036,177**	**5,522,063**	**-514,114**

Non-Defense Environmental Cleanup

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Fast Flux Test Reactor Facility D&D	**2,240**	**2,240**	**2,500**	**+260**
Gaseous Diffusion Plants				
Paducah Gaseous Diffusion Plant	50,345	50,345	51,450	+1,105
Portsmouth Gaseous Diffusion Plant	50,959	50,959	51,623	+664
Total, Gaseous Diffusion Plants	**101,304**	**101,304**	**103,073**	**+1,769**
Small Sites				
Brookhaven National Laboratory	2,000	20,456	0	-20,456
Energy Technology Engineering Center	9,000	11,000	18,199	+7,199
Idaho National Laboratory	11,972	10,000	12,800	+2,800
Lawrence Berkeley National Laboratory	41,000	35,000	0	-35,000
Moab	37,884	45,000	35,693	-9,307
Oak Ridge	8,000	10,000	0	-10,000
Southwest Experimental Fast Oxide Reactor (SEFOR)	10,000	0	0	0
Total, Small Sites	**119,856**	**131,456**	**66,692**	**-64,764**
West Valley Demonstration Project	**75,000**	**75,000**	**75,215**	**+215**
Total, Non-Defense Environmental Cleanup	**298,400**	**310,000**	**247,480**	**-62,520**
Uranium Enrichment Decontamination and Decommissioning Fund				
Oak Ridge	**194,673**	**195,000**	**109,439**	**-85,561**
Paducah				
Paducah Gaseous Diffusion Plant	205,530	206,000	207,215	+1,215
Portsmouth				
Portsmouth Gaseous Diffusion Plant	342,389	366,931	304,559	-62,372
Construction				
15-U-408: On-Site Waste Disposal Facility, Portsmouth (PO-0040)	38,882	41,168	41,102	-66
20-U-401: On Site Waste Disposal Facility (Cell Line 2&3)	0	0	10,000	+10,000
Total, Construction	**38,882**	**41,168**	**51,102**	**+9,934**

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Total, Portsmouth	**381,271**	**408,099**	**355,661**	**-52,438**
Pension and Community and Regulatory Support				
Oak Ridge	19,274	17,258	17,655	+397
Paducah Gaseous Diffusion Plant	1,725	2,102	2,094	-8
Portsmouth Gaseous Diffusion Plant	1,795	1,670	2,013	+343
Total, Pension and Community and Regulatory Support	**22,794**	**21,030**	**21,762**	**+732**
U/Th Reimbursements				
Mission Support	35,732	11,000	21,035	+10,035
Total, Uranium Enrichment Decontamination and Decommissioning Fund	**840,000**	**841,129**	**715,112**	**-126,017**
Total, Environmental Management	**7,126,448**	**7,187,306**	**6,484,655**	**-702,651**
Use of Prior Year (Defense Environmental Cleanup)	0	-7,577	0	+7,577
Rescission of Prior Year Balances	0	-4,600	0	+4,600
Use of Prior Year Balances - Salt Waste Processing Facility (05-D-405)	0	0	-15,562	-15,562
Total, Environmental Management	**7,126,448**	**7,175,129**	**6,469,093**	**-706,036**
Full Time Equivalents	**1,400**	**1,350**	**1,350**	**0**

SBIR/STTR:

- FY 2018 Transferred to the Office of Science: SBIR: $1,216; STTR: $172
- FY 2019 Projected Transfer to the Office of Science: SBIR: $896; STTR: $127
- FY 2020 Request: SBIR $416; STTR $59

Environmental Management
Funding by Budget Chapters ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Carlsbad	383,041	403,487	398,334	-5,153
Idaho	446,043	443,200	347,654	-95,546
Oak Ridge	639,771	646,281	428,875	-217,406
Paducah	273,156	274,024	276,648	+2,624
Portsmouth	448,284	475,806	425,987	-49,819
Richland	947,422	954,097	718,098	-235,999
River Protection	1,560,000	1,573,000	1,392,460	-180,540
Savannah River	1,471,438	1,551,014	1,642,509	+91,495
Lawrence Livermore National Laboratory	101,175	26,704	129,727	+103,023
Los Alamos National Laboratory	220,000	220,000	195,462	-24,538
Nevada	60,136	60,136	60,737	+601
Sandia Site Office	2,600	2,600	2,652	+52
Separations Process Research Unit	4,800	15,000	15,300	+300
West Valley Demonstration Project	78,098	78,133	78,411	+278
Brookhaven National Laboratory	2,000	20,456	0	-20,456
Energy Technology Engineering Center	9,000	11,000	18,199	+7,199
Moab	37,884	45,000	35,693	-9,307
Other Sites				
Closure Sites Administration	4,889	4,889	4,987	+98
Southwest Experimental Fast Oxide Reactor (SEFOR)	10,000	0	0	0
Lawrence Berkeley National Laboratory	41,000	35,000	0	-35,000
Subtotal, Other Sites	**55,889**	**39,889**	**4,987**	**-34,902**
Program Direction	300,000	298,500	278,908	-19,592
Mission Support	85,711	48,979	34,014	-14,965
Subtotal, Environmental Management	**7,126,448**	**7,187,306**	**6,484,655**	**-702,651**

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Use of Prior Year (Defense Environmental Cleanup)	0	-7,577	0	+7,577
Rescission of Prior Year Balances	0	-4,600	0	+4,600
Use of Prior Year Balances - Salt Waste Processing Facility (05-D-405)	0	0	-15,562	-15,562
Total, Environmental Management	**7,126,448**	**7,175,129**	**6,469,093**	**-706,036**

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 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Capital Operating Expenses Summary (including (Major Items of Equipment (MIE))							
Capital Equipment > $500K (including MIE)							
Plant Projects (GPP and IGPP) (<$20M)	245,782	16,773	46,433	20,750	109,430	77,046	-32,384
Total, Capital Operating Expenses	**245,782**	**16,773**	**46,433**	**20,750**	**109,430**	**77,046**	**-32,384**
Capital Equipment > $500K (including MIE)	0	0	0	0	0	0	0
Total, Capital Equipment (including MIE)	**245,782**	**16,773**	**46,433**	**20,750**	**109,430**	**77,046**	**-32,384**
Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <$20M)							
Carlsbad							
Procure and Install 24kV Switch Station for Salt Hoist	250	0	0	8	250	0	-250
Continuous Miner	4,000	0	0	0	4,000	0	-4,000
Public Address System	7,831	0	0	0	0	7,831	+7,831
Fire Water Loop Phase 1 (Loop, Pump and Tanks)	12,307	0	3,000	575	9,307	0	-9,307
Replace air compressors and compressed air treatment systems in Bldg 485	1,390	0	0	440	1,390	0	-1,390

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Fire Water Loop Phase 2 (Alarms)	8,000	0	0	0	8,000	0	-8,000
Electrical Substation Replacement	6,000	0	0	0	6,000	0	-6,000
Safety Significant Fire Suppression System (Waste Handling Building 411 Fire System)	4,000	0	0	0	4,000	0	-4,000
Fire Water Loop Phase 3 (Spurs to facilities)	9,969	0	0	0	0	9,669	+9,669
Salt Shaft Loading Pocket Salt Removal and Steel Replacement	2,036	0	0	0	2,036	0	-2,036
Total, Carlsbad	**55,483**	**0**	**3,000**	**1,023**	**34,983**	**17,500**	**-17,483**
Oak Ridge							
Perimeter Security Project	3,000	0	0	0	3,000	0	-3,000
Mercury Research Center	2,000	0	1,300	40	700	0	-700
2026 Building Modifications	13,000	0	800	467	12,200	0	-12,200
Multiple Y-12 Improvement Projects	20,400	0	2,400	1,336	9,000	9,000	0
Multiple ORNL Improvement Projects	24,500	0	6,500	5,820	9,000	9,000	-10,000
Viewing Tower/Equipment Building	20,579	2,579	8,000	501	10,000	0	0
T2 Buildout	900	0	900	0	0	0	0
Building 2026 Security Project	5,300	0	3,300	0	2,000	0	-2,000
History Center	6,091	6,091	0	1,564	0	0	0
SWSA 5	4,138	4,138	0	1,343	0	0	0
Perimeter Security Project	3,000	0	0	0	3,000	0	-3,000
Total, Oak Ridge	**99,908**	**12,808**	**23,200**	**11,071**	**45,900**	**18,000**	**-27,900**
Portsmouth							
Electrical Supply and Distribution GDP	3,086	0	0	0	0	3,086	+3,086
Total, Portsmouth	**3,086**	**0**	**0**	**0**	**0**	**3,086**	**+3,086**

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Richland							
Cesium and Strontium Capsule Project Integrated Disposal Facility (DFLAW Priority)[a]	6,500	0	3,000	1,750	500	3,000	+2,500
L-707, Advanced Electrical Meeting[a]	60	0	0	0	60	0	-60
L-781, 181D Vertical Turbine Pumps, Header, Instrumentation, Commission[a]	678	0	0	0	678	0	-678
L-826, 181B Vertical Turbine Pumps, Header, Instrumentation, Commission[a]	642	0	0	0	642	0	-642
L-849, Replace 200E 1.1M Gallon PW Tank[a]	5,704	0	237	0	0	5,467	+5,467
L-850, Replace 200W 1.1M Gallon PW Tank (DFLAW Priority)[a]	2,648	0	129	0	2,519	0	-2,519
L-854, 200E Sewer Consolidations (DFLAW Priority)[a]	4,522	0	2,948	514	1,574	0	-1,574
L-861, Single Circuit Distribution Pole Replacement (DFLAW priority) [a]	2,000	0	0	0	0	2,000	+2,000
L-888, 400 Area Fire Station[a]	8,045	0	166	0	650	7,229	+6,579
L-894, Raw Water Cross Connection Isolation 200E/W[a]	7,407	0	3,737	2,646	3,670	0	-3,670
L-895, Fire Protection Infrastructure for Plateau Raw Water[a]	7,893	0	851	136	6,152	890	-5,262
L-897, 200 Area Water Treatment Facility (DFLAW priority)[a]	2,264	0	700	1	1,564	0	-1,564
L-898, Area Mission Critical Distribution Feeders Replacement[a]	582	0	0	0	582	0	-582
L-905, Fire Alarm Reporting System[a]	4,318	0	0	0	500	3,818	+3,318
L-906, HFD Station 92 Extension[a]	750	0	0	0	750	0	-750
Total, Richland	**54,013**	**0**	**11,768**	**5,407**	**19,841**	**22,404**	**+2,563**

[a] These capital investments represent expenditures that may be performed in FY 2019 or FY 2020 based on emerging risks.

River Protection							
Construct 222-SL, 222SA Facility Replacement	9,353	0	4,500	0	1,953	7,400	+5,447
Install Exhausters in SY Farm*	0	0	0	0	0	0	0
Construct 222-S Archive Storage Facility	0	0	0	0	0	0	0

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Construct New Maintenance Shop	7,044	0	0	0	2,788	4,256	+1,468
Construct 222-S Ancillary Equipment Facility	0	0	0	0	0	0	0
Interim Barrier Installation (SX North)*	0	0	0	0	0	0	0
Interim Barrier Installation (SX)*	0	0	0	0	0	0	0
Total, River Protection	**16,379**	**0**	**4,500**	**0**	**4,741**	**11,656**	**+6,915**
*After further review of the project work scope it was determined that these items are not GPPs.							
Savannah River							
SRNL IGPPs[a]	7,930	3,965	3,965	0	0	0	0
Renovate 773-A B-138 Laboratory	0	0	0	828	0	0	0
Renovate Lab B-115 773A	0	0	0	243	0	0	0
Renovate Lab 107 773A	0	0	0	4	0	0	0
705-A Security Upgrades	0	0	0	45	0	0	0
Diesel Generator Replacement	375	0	0	0	0	375	+375
Lab C 159/163 Renovation 773A	2,250	0	0	75	1,250	1,000	-250
Lab B 126/130 Renovation 773A	700	0	0	262	0	700	+700
HVAC unit 735-A	375	0	0	445	0	375	+375
Relocate Glass Apparatus Fabrication Laboratory to C-Wing, 735-A	2,075	0	0	583	975	1,100	+125
Renovate Laboratory C-130, 773-A	950	0	0	0	950	0	-950
Upgrade SRNL Limited Area Public Address System	465	0	0	344	365	100	-265
Renovate Laboratory C-155 Hood and Gloveboxes, 773-A	1,175	0	0	780	425	750	+325
Total, Savannah River	**16,295**	**3,965**	**3,965**	**3,609**	**3,965**	**4,400**	**+435**
[a] Projects and allocation of the $4,400,000 request are preliminary. Final FY 2020 projects will reflect emerging or identified risks.							
Total, Plant Projects (GPP and IGPP) (Total Estimated (TEC) <$20M	**245,782**	**16,773**	**46,433**	**20,750**	**109,430**	**77,046**	**-32,384**

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Total, Capital Summary	**245,782**	**16,773**	**46,433**	**20,750**	**109,430**	**77,046**	**-32,384**

Environmental Management
Construction Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 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	5,039,515	630,000	454,096	655,000	640,000	-15,000
Other Project Costs (OPC)	0	0	0	0	0	0	0
01-D-16A-D WTP Subprojects A-D							
Total Estimate Cost (TEC)	TBD	2,513,318	75,000	26,276	60,000	30,000	-30,000
Other Project Costs (OPC)	0	0	0	0	0	0	0
01-D-16E Pretreatment Facility							
Total Estimate Cost (TEC)	TBD	3,692,050	35,000	6,283	15,000	20,000	+5000
Other Project Costs (OPC)	0	0	0	0	0	0	0
Total Estimate Cost (TEC)	**TBD**	**11,244,883**	**740,000**	**486,655**	**730,000**	**690,000**	**-40,000**
Other Project Costs (OPC)	0	0	0	0	0	0	0
Total Project Cost (TPC) 01-D-416	**TBD**	**11,244,883**	**740,000**	**486,655**	**730,000**	**690,000**	**-40,000**
05-D-405, Salt Waste Processing Facility, Aiken, SC							
Total Estimate Cost (TEC)	1,611,117	1,569,117	0	0	0	0	0
Other Project Costs (OPC)	710,883	378,983	150,000	127,945	130,000	20,988	-109,012
Total Project Cost (TPC) 05-D-405	**2,322,000**	**1,948,100**	**150,000**	**127,945**	**130,000**	**20,988**	**-109,012**

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
14-D-403, Outfall 200 Mercury Treatment Facility, OR (OR-0041)							
Total Estimate Cost (TEC)	199,208	28,508	16,000	15,015	76,000	49,000	-27,000
Other Project Costs (OPC)	24,792	11,894	1,100	0	0	0	0
Total Project Cost (TPC) 15-D-403	**224,000**	**40,402**	**17,100**	**15,015**	**76,000**	**49,000**	**-27,000**
15-U-408, On Site Waste Disposal Facility (PO-0040)							
Total Estimate Cost (TEC)	268,058	65,485	37,097	34,024	38,590	38,502	-88
Other Project Costs (OPC)	16,616	4,637	1,785	2,039	2,578	2,600	+22
Total Project Cost (TPC) 15-U-408	**284,674**	**70,122**	**38,882**	**36,063**	**41,168**	**41,102**	**-66**
15-D-409, Low Activity Waste Pretreatment System (Hanford) (ORP-0014)							
15-D-409-01: Tank Side Cesium Removal (TSCR) System Subproject							
Total Estimate Cost (TEC)	TBD	N/A	16,000	0	32,905	0	-32,905
Other Project Costs (OPC)	TBD	N/A	3,000	0	6,000	0	-6,000
Subtotal, *15-D-409-01: Tank Side Cesium Removal (TSCR) System Subproject*	TBD	N/A	19,000	0	38,905	0	-38,905
15-D-409-02: Full Capacity Low Activity Waste Pretreatment System							

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Total Estimate Cost (TEC)		171,000	77,000	0	23,148	0	-23,148
Other Project Costs (OPC)		10,657	200	0	0	0	0
Subtotal, *15-D-409-01: Tank Side Cesium Removal (TSCR) System Subproject*		181,657	77,200	0	23,148	0	-23,148
Total Project Cost (TPC) 15-D-409	**TBD**	**181,657**	**96,200**	**0**	**62,053**	**0**	**-62,053**
15-D-411, Safety Significant Confinement Ventilation System (WIPP) (CB-0080)							
Total Estimate Cost (TEC)	261,316	37,750	86,000	12,403	84,212	53,354	-30,858
Other Project Costs (OPC)	26,496	7,000	3,500	600	3,500	4,700	+1,200
Total Project Cost (TPC) 15-D-411	**287,785**	**44,750**	**89,500**	**13,003**	**87,712**	**58,054**	**-29,658**
15-D-412, Utility Shaft, formerly Exhaust Shaft (WIPP) (CB-0080)							
Total Estimate Cost (TEC)	TBD	41,500	19,600	3,449	1,000	34,500	+33,500
Other Project Costs (OPC)	TBD	3,500	1,900	76	638	0	-638
Total Project Cost (TPC) 15-D-412	**TBD**	**45,000**	**21,500**	**3,525**	**1,638**	**34,500**	**+32,862**
17-D-401, On Site Disposal Facility (OR-0041)							
Total Estimate Cost (TEC)	TBD	0	10,000	812	N/A	N/A	N/A
Other Project Costs (OPC)	TBD	26264	3,061	6,462	N/A	N/A	N/A
Total Project Cost (TPC) 17-D-401	**TBD**	**26,264**	**13,061**	**7,274**	**10,000**	**15,269**	**+5,269**

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
17-D-402, Saltstone Disposal Unit #7, SR (SR-0014C)							
Total Estimate Cost (TEC)	TBD	5,500	30,000	13,679	41,243	40,034	-1,209
Other Project Costs (OPC)	TBD	2,819	4,000	1,906	2,782	3,465	+683
Total Project Cost (TPC) 17-D-401	**TBD**	**8,319**	**34,000**	**15,585**	**44,025**	**43,499**	**-526**
18-D-401, Saltstone Disposal Unit #8 and #9, SR (SR-0014C)							
Total Estimate Cost (TEC)	TBD	0	500	178	7,577	51,750	+44,173
Other Project Costs (OPC)	TBD	0	500	290	3,250	5,000	+1,750
Total Project Cost (TPC) 18-D-401	**TBD**	**0**	**1,000**	**468**	**10,827**	**56,750**	**+45,923**
18-D-402, Emergency Operations Center Replacement, SR (SR-0042)							
Total Estimate Cost (TEC)	TBD	0	500	0	1,259	6,792	+5,533
Other Project Costs (OPC)	TBD	500	500	78	3,500	0	-3,500
Total Project Cost (TPC) 18-D-402	**TBD**	**500**	**1,000**	**78**	**4,759**	**6,792**	**+2,033**
18-D-404, Modifications of Waste Encapsulation and Storage Facility (RL-0013C)							
Total Estimate Cost (TEC)	TBD	0	6,500	876	1,000	11,000	+10,000
Other Project Costs (OPC)	TBD	2,000	500	2	2,000	2,500	+500
Total Project Cost (TPC) 18-D-404	**TBD**	**2,000**	**7,000**	**878**	**3,000**	**13,500**	**+10,500**
19-D-701, SR Security System Replacement							

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Total Estimate Cost (TEC)	TBD	0	0		10,000	0	-10,000
Other Project Costs (OPC)	TBD	0	0		0	0	0
Total Project Cost (TPC), 19-D-701	**TBD**	**0**	**0**	**0**	**10,000**	**0**	**-10,000**
20-D-401, Saltstone Disposal Unit 10. 11. 12							
Total Estimate Cost (TEC)	TBD	0	0	0	0	500	+500
Other Project Costs (OPC)	TBD	0	221	0	1,465	500	-965
Total Project Cost (TPC) 20-D-401	**TBD**	**0**	**221**	**0**	**1,465**	**1,000**	**-465**
20-U-401, On Site Waste Disposal Facility, Portsmouth, OH							
Total Estimate Cost (TEC)	TBD	0	0	0	0	9,400	+9,400
Other Project Costs (OPC)	TBD	0	0	0	0	600	+600
Total Project Cost (TPC) 20-U-401	**TBD**	**0**	**0**	**0**	**0**	**10,000**	**+10,000**
20-D-402, Advanced Manufacturing Collaborative Facility (AMC)							
Total Estimate Cost (TEC)	TBD	0	0	0	0	50,000	+50,000
Other Project Costs (OPC)	TBD	0	0	0	1,000	0	-1,000
Total Project Cost (TPC), 20-D-402	**TBD**	**0**	**0**	**0**	**1,000**	**50,000**	**+49,000**
Total All Construction Projects							
Total Estimate Cost (TEC)	TBD	**13,163,743**	**1,039,197**	**567,091**	**1,056,934**	**1,050,101**	**-6,833**

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Other Project Costs (OPC)	TBD	**448,254**	**170,267**	**139,398**	**156,713**	**40,353**	**-116,360**
Total Project Cost (TPC) All Construction Projects	**TBD**	**13,611,997**	**1,209,464**	**706,489**	**1,213,647**	**1,090,454**	**-123,193**

ANCILLARY TABLES

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

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Operating				
Carlsbad				
CB-0020	6,470	6,580	6,692	+112
CB-0090	21,854	25,500	26,500	+1,000
CB-0081	22,500	19,500	20,400	+900
CB-0080	216,617	220,000	234,688	+14,688
CB-0083	10,000	46,695	17,500	-29,195
Subtotal, Carlsbad	**277,441**	**318,275**	**305,780**	**-12,495**
Idaho				
ID-0100	4,071	3,200	3,500	+300
ID-0013	222,798	215,387	175,100	-40,287
ID-0014B	132,500	162,739	102,134	-60,605
ID-0030B	44,727	24,900	30,020	+5,120
ID-0012B-D	19,975	16,974	24,100	+7,126
ID-0040-EF	10,000	10,000	0	-10,000
Subtotal, Idaho	**434,071**	**433,200**	**334,854**	**-98,346**
Lawrence Livermore National Laboratory				
VL-LLNL-0031	900	1,175	1,312	+137
VL-FOO-0013B-D	275	529	415	-114
CBC-LLNL-0040	100,000	25,000	128,000	+103,000
Subtotal, Lawrence Livermore National Laboratory	**101,175**	**26,704**	**129,727**	**+103,023**
Los Alamos National Laboratory				
VL-FAO-0101	3,394	3,394	3,394	0
VL-LANL-0013	90,121	84,556	68,410	-16,146

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
VL-LANL-0030	126,485	132,050	123,658	-8,392
Subtotal, Los Alamos National Laboratory	**220,000**	**220,000**	**195,462**	**-24,538**
Mission Support				
HQ-MS-0100	6,979	6,979	6,979	0
HQ-TD-0100	35,000	25,000	0	-25,000
EM-HBCU-0100	8,000	6,000	6,000	0
Subtotal, Mission Support	**49,979**	**37,979**	**12,979**	**-25,000**
Nevada				
VL-NV-0100	4,578	4,740	4,741	+1
VL-NV-0030	37,537	32,998	35,134	+2,136
VL-NV-0080	18,021	22,398	20,862	-1,536
Subtotal, Nevada	**60,136**	**60,136**	**60,737**	**+601**
Oak Ridge				
OR-0100	5,605	5,700	4,819	-881
OR-TD-0100	3,000	3,000	3,000	0
OR-0013B	71,000	74,000	82,000	+8,000
OR-0041	37,093	35,000	31,886	-3,114
OR-0042	81,110	154,000	61,807	-92,193
OR-0020	17,605	14,023	9,000	-5,023
OR-0011D	50,311	52,300	45,000	-7,300
OR-0044-EF	125,000	0	0	0
Subtotal, Oak Ridge	**390,724**	**338,023**	**237,512**	**-100,511**
Other Sites				
CBC-0100-FN	1,000	1,100	1,100	0
CBC-0100-RF	3,889	2,000	1,900	-100
CBC-0100-EM	0	1,789	1,987	+198
Subtotal, Other Sites	**4,889**	**4,889**	**4,987**	**+98**
Paducah				
PA-0020	15,556	15,577	15,889	+312

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Portsmouth				
PO-0020	14,259	15,078	16,690	+1,612
Program Direction				
HQ-PD-0100	284,335	287,952	268,360	-19,592
HQ-PDWCF-0100	15,665	10,548	10,548	0
Subtotal, Program Direction	**300,000**	**298,500**	**278,908**	**-19,592**
Richland				
RL-0100	10,121	10,121	5,121	-5,000
RL-0013C	145,006	159,900	110,798	-49,102
RL-0030	132,363	132,158	106,600	-25,558
RL-0011	26,067	46,200	0	-46,200
RL-0041	115,650	119,500	105,000	-14,500
RL-0040	68,042	74,192	34,750	-39,442
RL-0012	42,610	13,900	0	-13,900
RL-0020	81,990	86,686	86,778	+92
RL-0201	316,833	308,200	255,551	-52,649
Subtotal, Richland	**938,682**	**950,857**	**704,598**	**-246,259**
River Protection				
ORP-0014	719,000	771,947	677,460	-94,487
ORP-0070	8,000	15,000	15,000	0
ORP-0014A	0	0	10,000	+10,000
Subtotal, River Protection	**727,000**	**786,947**	**702,460**	**-84,487**
Sandia Site Office				
VL-SN-0030	2,600	2,600	2,652	+52
Savannah River				
SR-0100	11,249	11,249	4,749	-6,500
SR-0013	43,386	41,425	48,562	+7,137
SR-0011C	323,482	332,947	342,958	+10,011
SR-0014C	637,105	696,869	797,706	+100,837

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
SR-0030	81,199	73,612	62,618	-10,994
SR-0020	159,124	163,357	179,377	+16,020
SR-0041	20,699	28,390	26,324	-2,066
SR-0042	14,194	13,086	10,151	-2,935
Subtotal, Savannah River	**1,290,438**	**1,360,935**	**1,472,445**	**+111,510**
Separations Process Research Unit				
VL-SPRU-0040	4,800	15,000	15,300	+300
West Valley Demonstration Project				
OH-WV-0020	3,098	3,133	3,196	+63
Subtotal, Operating	**4,834,848**	**4,887,833**	**4,494,176**	**-393,657**
Line Item Construction				
Carlsbad				
CB-0080	105,600	85,212	92,554	+7,342
Oak Ridge				
OR-0041	27,100	86,000	64,269	-21,731
Richland				
RL-0013C	6,500	1,000	11,000	+10,000
River Protection				
ORP-0014	93,000	56,053	0	-56,053
ORP-0060	740,000	730,000	690,000	-40,000
Subtotal, River Protection	**833,000**	**786,053**	**690,000**	**-96,053**
Savannah River				
SR-0014C	180,500	178,820	113,272	-65,548
SR-0042	500	11,259	56,792	+45,533
Subtotal, Savannah River	**181,000**	**190,079**	**170,064**	**-20,015**
Subtotal, Line Item Construction	**1,153,200**	**1,148,344**	**1,027,887**	**-120,457**
Subtotal, Environmental Management	**5,988,048**	**6,036,177**	**5,522,063**	**-514,114**

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Non-Defense Environmental Cleanup				
Operating				
Brookhaven National Laboratory				
BRNL-0041	2,000	20,456	0	-20,456
Energy Technology Engineering Center				
CBC-ETEC-0040	9,000	11,000	18,199	+7,199
Idaho				
ID-0012B-N	11,972	10,000	12,800	+2,800
Moab				
CBC-MOAB-0031	37,884	45,000	35,693	-9,307
Oak Ridge				
OR-0104	8,000	10,000	0	-10,000
Other Sites				
SEFOR	10,000	0	0	0
CBC-LBNL-0040	41,000	35,000	0	-35,000
Subtotal, Other Sites	**51,000**	**35,000**	**0**	**-35,000**
Paducah				
PA-0011	1,369	1,369	863	-506
PA-0011X	48,976	48,976	50,587	+1,611
Subtotal, Paducah	**50,345**	**50,345**	**51,450**	**+1,105**
Portsmouth				
PO-0011X	50,959	50,959	51,623	+664
Richland				
RL-0042	2,240	2,240	2,500	+260

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
West Valley Demonstration Project				
OH-WV-0040	60,147	57,020	72,105	+15,085
OH-WV-0013	14,853	17,980	3,110	-14,870
Subtotal, West Valley Demonstration Project	**75,000**	**75,000**	**75,215**	**+215**
Subtotal, Operating	**298,400**	**310,000**	**247,480**	**-62,520**
Uranium Enrichment Decontamination and Decommissioning Fund				
Operating				
Mission Support				
HQ-UR-0100	35,732	11,000	21,035	+10,035
Oak Ridge				
OR-0102	19,274	17,258	17,655	+397
OR-0040	194,673	195,000	109,439	-85,561
Subtotal, Oak Ridge	**213,947**	**212,258**	**127,094**	**-85,164**
Paducah				
PA-0103	1,725	2,102	2,094	-8
PA-0040	205,530	206,000	207,215	+1,215
Subtotal, Paducah	**207,255**	**208,102**	**209,309**	**+1,207**
Portsmouth				
PO-0104	1,020	1,020	2,013	+993
PO-0040	342,389	366,931	304,559	-62,372
PO-0103	775	650	0	-650
Subtotal, Portsmouth	**344,184**	**368,601**	**306,572**	**-62,029**
Subtotal, Operating	**801,118**	**799,961**	**664,010**	**-135,951**
Line Item Construction				
Portsmouth				
PO-0040	38,882	41,168	51,102	+9,934

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Subtotal, Environmental Management	**840,000**	**841,129**	**715,112**	**-126,017**
Subtotal, Environmental Cleanup	**7,126,448**	**7,187,306**	**6,484,655**	**-702,651**
Use of Prior Year (Defense Environmental Cleanup)	0	-7,577	0	+7,577
Rescission of Prior Year Balances	0	-4,600	0	+4,600
Use of Prior Year Balances - Salt Waste Processing Facility (05-D-405)	0	0	-15,562	-15,562
Total, Environmental Cleanup	**7,126,448**	**7,175,129**	**6,469,093**	**-706,036**

Summary

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Operating	4,834,848	4,887,833	4,494,176	-393,657
Line Item Construction	1,153,200	1,148,344	1,027,887	-120,457
Subtotal, Defense Environmental Cleanup	5,988,048	6,036,177	5,522,063	-514,114
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	298,400	310,000	247,480	-62,520
Line Item Construction	0	0	0	0
Subtotal, Non-Defense Environmental Cleanup	298,400	310,000	247,480	-62,520
Uranium Enrichment Decontamination and Decommissioning Fund				
Operating	801,118	799,961	664,010	-135,951
Line Item Construction	38,882	41,168	51,102	+9,934

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Subtotal, Uranium Enrichment Decontamination and Decommissioning Fund	840,000	841,129	715,112	-126,017
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	**7,126,448**	**7,187,306**	**6,484,655**	**-702,651**
Offsets	0	-12,177	-15,562	-3,385
Total, Environmental Cleanup	**7,126,448**	**7,175,129**	**6,469,093**	**-706,036**

Total Operating	5,934,366	5,997,794	5,405,666	-592,128
Total Line Item Construction	1,192,082	1,189,512	1,078,989	-110,523
Subtotal, Environmental Management	**7,126,448**	**7,187,306**	**6,484,655**	**-702,651**
Offsets	0	-12,177	-15,562	-3,385
Total, Environmental Management	**7,126,448**	**7,175,129**	**6,469,093**	**-706,036**

Environmental Management Federal Staffing

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Carlsbad	69	60	60	0
Idaho	43	40	40	0
Oak Ridge	76	75	75	0
Portsmouth/Paducah Project Office	60	57	57	0
Richland	233	230	230	0
River Protection	170	175	175	0
Savannah River	265	250	250	0
Small Sites	27	26	26	0
Nevada Site Office	16	15	15	0
Los Alamos Site Office	29	29	29	0
Subtotal, Field, Full-Time Equivalents	**988**	**957**	**957**	**0**
Headquarters Operations	275	263	263	0
Consolidated Business Center	137	130	130	0
Total, Field, Full-Time Equivalents	**1,400**	**1,350**	**1,350**	**0**

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 $22,418,419 in FY 2020.

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. WIPP continues operation of the Interim Ventilation System and Supplemental Ventilation System. To increase air flow to the WIPP underground, the Waste Isolation Pilot Plant two line-item capital projects that will make up the new permanent mine ventilation system need to be completed: the new safety significant confinement ventilation system (15-D-411) and utility shaft (formerly exhaust shaft) (15-D-412). 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 2020 to support waste emplacement operations include: sustainment of safety management program improvements; continued underground stabilization activities (e.g., geotechnical surveys, roof bolting, temporary shoring and closure of south portion of mine); 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; construction progress on the new safety significant confinement ventilation system and new utility shaft (formerly exhaust shaft); 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 2020 Budget Request

The funding request supports disposal facility operations, regulatory and environmental compliance actions, the Central Characterization Project to maintain progress toward legacy transuranic waste related milestones at generator sites, transuranic waste transportation capabilities, and continued progress on repairing or replacing infrastructure and the two line item capital asset projects.

The Waste Isolation Pilot Plant activities planned in FY 2020 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, resumption of mining, and continuation of waste emplacement operations using existing disposal panels. Key enhancements/improvements to be maintained in FY 2020 include: safety management programs, continued radiological contamination mitigation in the repository, emergency management capabilities, and contractor assurance system effectiveness. In FY 2020, 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 containers available for disposal of remote handled waste, and continuing to add hoisting capability for salt removal, material, and personnel evacuation.

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 2020. 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 2020, the transportation capability supports up to ten waste shipments per week to the Waste Isolation Pilot Plant, with expected shipments from Idaho Site, Los Alamos National Laboratory, Savannah River Site, Oak Ridge National Laboratory, Lawrence Livermore National Laboratory, Argonne National Laboratory and potentially other sites.

The FY 2020 request includes $34,500,000 in line-item funding for construction of the new utility shaft (formerly exhaust shaft) and $53,354,000 (construction) and $4,700,000 (other project costs) of the new safety significant confinement ventilation system. The new safety significant confinement ventilation system is a top priority because it will restore sufficient air flow in the Waste Isolation Pilot Plant underground to support simultaneous operations such as mine stability, new disposal panel mining, underground equipment and facility maintenance, and waste emplacement activities in both "clean" and contaminated underground areas. 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.

FY 2019 - 2020 Key Milestones/Outlook

- (First Quarter 2019) Commence firm fixed price construction contract for New Filter Building and Salt Reduction Building for the Safety Significant Ventilation System (15-D-411)
- (Second Quarter 2019) Submit the fifth Compliance Recertification Application to the Environmental Protection Agency
- (Third Quarter 2019) Achieve Critical Decision-2/3 to commence construction on the Utility Shaft (formerly Exhaust Shaft) (15-D-412)
- (2019-2020) Achieve significant progress in repair/replacement of critical infrastructure needed to increase the Waste Isolation Plant emplacement capacity
- (2019-2020) Complete Conceptual and Final Design for additional disposal panels and drifts to meet the Waste Isolation Pilot Plant Land Withdrawal Act limits and initiate regulatory activities for design and disposal approval
- (2019-2020) Commence conceptual and preliminary design for additional hoisting capability for salt removal, materials, and personnel to and from the Waste Isolation Pilot Plant underground
- (2019-2020) Complete the regulators' approval of additional shielded container designs for remote handled waste
- (First Quarter 2020) Award shaft sinking contract on the Utility Shaft (15-D-412)
- (Third Quarter 2020) 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)

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.

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 its subsequent Compliance Recertifications, verifying continued compliance from the Environmental Protection Agency in March 2006, November 2010, and July 2017. The next Compliance Recertification Application is due to be 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. 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. DOE is currently evaluating contracting strategy options for future years.

This 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 that provides management analysis, site integration, transportation services, transportation 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 for out-years. 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 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Waste Isolation Pilot Plant				
Waste Isolation Pilot Plant				
CB-0080 / Operate Waste Disposal Facility-WIPP	322,217	305,212	327,242	+22,030
CB-0081 / Central Characterization Project	22,500	19,500	20,400	+900
CB-0083 / Critical Infrastructure Repair/Replacement	10,000	46,695	17,500	-29,195
CB-0090 / Transportation-WIPP	21,854	25,500	26,500	+1,000
Subtotal, Waste Isolation Pilot Plant	**376,571**	**396,907**	**391,642**	**-5,265**
Safeguards and Security				
CB-0020 / Safeguards and Security	6,470	6,580	6,692	+112
Total, Defense Environmental Cleanup	**383,041**	**403,487**	**398,334**	**-5,153**

Carlsbad
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
Waste Isolation Pilot Plant	
CB-0080 / Operate Waste Disposal Facility-WIPP	
• Increase reflects maintaining operational resources to sustain improved Safety Management Programs and to potentially increase waste emplacement rates. Decrease in funding for 15-D-411 due to proposed completion in FY2020 and turnover in FY2021, therefore last year of funding. Increase for 15-D-412 (shaft sinking). New contract in place at end of FY2019 and start of construction November 2020.	+22,030
CB-0081 / Central Characterization Project	
• Increase reflects anticipated increase in support sites' transuranic waste characterization programs and transportation certification activities.	+900
CB-0083 / Critical Infrastructure Repair/Replacement	
• Decrease reflects planned progress on repair/replacement of infrastructure.	-29,195
CB-0090 / Transportation-WIPP	
• Increase reflects transportation activities from multiple locations required for sustained operations at a rate of up to ten shipments per week.	+1,000
Safeguards and Security	
CB-0020 / Safeguards and Security	
• No significant change.	+112
Total, Carlsbad	**-5,153**

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 2020 funding includes the following activities: continuing base operations while maintaining enhancements/improvements. Actions within this PBS include 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 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; management and oversight and interagency programs.

Increasing waste emplacement concurrent with other activities in the facility requires completion of a new permanent ventilation system, which consists of two line-item construction projects: the Safety Significant Confinement Ventilation System (15-D-411) and Utility Shaft (formerly Exhaust Shaft) (15-D-412).

In FY 2020, the Waste Isolation Pilot Plant will also be executing the regulatory processes for mining of additional disposal panels and drifts to allow for the Waste Isolation Pilot Plant Land Withdrawal Act disposal limits and for increasing the number of regulatory approved shielded containers available for disposal of remote handled waste. Work on pre-conceptual design will also be ongoing for needed additional hoisting capability for salt removal, material, and personnel evacuation.

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

Transuranic Waste Emplaced in the WIPP Repository:
On December 21, 2018, the Volume of Record Permit Modification Request was approved by the State of New Mexico (HWB 18-19 (P)). This permit modifies the way waste volume is calculated; therefore the chart showing the volume of transuranic waste emplaced at WIPP will need to be updated. The Carlsbad Field Office is evaluating and updates will be available after this implementation process is complete.

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

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$305,212	**$327,242**	**+$22,030**
• 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. • If not yet approved, continue support of Above Ground Storage Capability Permit Modification Request to the Hazardous Waste Storage Facility	• 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. • If not yet approved, continue support of Above Ground Storage Capability Permit Modification Request to the Hazardous Waste Storage Facility	• Increase reflects maintaining operational resources to sustain improved Safety Management Programs and to potentially increase waste emplacement rates. Decrease in funding for 15-D-411 due to proposed completion in FY2020 and turnover in FY2021, therefore last year of funding. Increase for 15-D-412 (shaft sinking). New contract in place at end of FY2019 and start of construction November 2020.

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.	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.	

Central Characterization Project (PBS: CB-0081)

Overview

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

This project consists of annual ongoing 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 direct 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 confirmation 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$19,500	**$20,400**	**+$900**
• Provide acceptable knowledge and procedural support, and mobile waste loading support at actively shipping generator sites. • Support generator site interface for the Central Characterization Project activities, Central Characterization Project administration, and Performance Demonstration Program for Resource Conservation and Recovery Act constituents. • Conduct Central Characterization Project	• Provide acceptable knowledge and procedural support, and mobile waste loading support at actively shipping generator sites. • Support generator site interface for the Central Characterization Project activities, Central Characterization Project administration, and Performance Demonstration Program for Resource Conservation and Recovery Act constituents. • Conduct Central Characterization Project	• Increase reflects anticipated increase in support sites' transuranic waste characterization programs and transportation certification activities.

certifications for transuranic waste disposition and transportation at the Savannah River Site, Oak Ridge National Laboratory, and Lawrence Livermore National Laboratory, and Los Alamos National Laboratory. Provide only transportation certification at Idaho National Laboratory (where Idaho National Laboratory funds waste certification).	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). The extended high waste emplacement rate beyond facility design and extremely corrosive environment, combined with minimal routine maintenance and repair has 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, nuclear safety, and ensure the capability to emplace waste at a production rate that supports EM's clean-up 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 waste emplacement capability, ensure mining of new repository space is complete in time to ensure waste emplacement is sustained, and to sustain mining and waste emplacement operations.

FY 2020 funding is requested for the projects in the table below.

Project Name	Current Status	Mission Impact	Resolution/Description	Duration	PY to Date	FY20	TPC ($K)
Public Address System Recapitalization	Current system does not comply with 30CFR 57, 29 CFR 1910, life safety portions of NFPA 101 and the WIPP HWFP Compensatory measures in place	Delay or prevent emergency response message; prevent critical life safety message from being heard Slow or no life safety action response Waste Handling interruptions Significant operations impacts	Procure subcontractor services for final design and installation of a Public Address System that is compliant with the applicable specifications.	FY20-21	0	15,127	15,127
Electrical Substations Replacement	Beyond design life Rusted and corroded housing with high potential for system 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	FY20	0	2,373	2,373
					0	17,500	17,500

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

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$46,695	**$17,500**	**-$29,195**
• Repair and replace the Waste Isolation Pilot Plant's degraded facility structures, systems, and components.	• Repair and replace the Waste Isolation Pilot Plant's degraded facility structures, systems, and components.	• Decrease reflects planned progress on repair/replacement of infrastructure.

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 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 2020 funding supports waste shipment capabilities between generator sites and waste shipment capabilities to the Waste Isolation Pilot Plant, as well as shipping coordination between generator sites and the Waste Isolation Pilot Plant and transportation corridor grants with stakeholders.

Transportation-WIPP (PBS: CB-0090)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$25,500	**$26,500**	**+$1,000**
• Provides transportation capabilities for up to ten shipments per week through the carrier contract. • Supports shipping corridor readiness, including training and associated stakeholder and regulatory grants, including Nuclear Regulatory Commission fees. • Maintains package certification and associated required maintenance for packages used: TRUPACT II's, Half PACTS, TRUPACT III's, and RH-72B's. • Continue transportation readiness and capability for inter-site shipments.	• Provides transportation capabilities for up to ten shipments per week through the carrier contract. • Supports shipping corridor readiness, including training and associated stakeholder and regulatory grants, including Nuclear Regulatory Commission fees. • Maintains package certification and associated required maintenance for packages used: TRUPACT II's, Half PACTS, TRUPACT III's, and RH-72B's. • Continue transportation readiness and capability for inter-site shipments.	• Increase reflects transportation activities from multiple locations required for sustained operations at a rate of up to ten shipments per week.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$6,580	**$6,692**	**+$112**
• Provide security coverage at the Waste Isolation Plant. • Provide cyber security to ensure DOE information resources are identified and protected.	• Provide security coverage at the Waste Isolation Plant. • Provide cyber security to ensure DOE information resources are identified and protected.	• No significant change.

Carlsbad
Capital Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 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)	55,483	0	3,000	1,023	34,983	17,500	-17,483
Total, Capital Operating Expenses	**55,483**	**0**	**3,000**	**1,023**	**34,983**	**17,500**	**-17,483**
Capital Equipment > $500K (including MIE)	0	0	0	0	0	0	+0
Total, Capital Equipment (including MIE)	**55,483**	**0**	**3,000**	**1,023**	**34,983**	**17,500**	**-17,483**
Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <$20M)							
Carlsbad							
Procure and Install 24kV Switch Station for Salt Hoist	250	0	0	8	250	0	-250
Continuous Miner	4,000	0	0	0	4,000	0	-4,000
Public Address System	7,831	0	0	0	0	15,127	+15,127
Fire Water Loop Phase 1 (Loop, Pump and Tanks)	12,307	0	3,000	574	9,307	0	-9,307
Replace air compressors and compressed air treatment systems in Bldg 485	1,390	0	0	441	1,390	0	-1,390
Fire Water Loop Phase 2 (Alarms)	8,000	0	0	0	8,000	0	-8,000
Electrical Substation Replacement	6,000	0	0	0	6,000	0	-6,000
Safety Significant Fire Suppression System (Waste Handling Building 411 Fire System)	4,000	0	0	0	4,000	0	-4,000
Fire Water Loop Phase 3 (Spurs to facilities)	9,969	0	0	0	0	2,373	+2,373
Salt Shaft Loading Pocket Salt Removal and Steel Replacement	2,036	0	0	0	2,036	0	-2,036
Total, Carlsbad	**55,483**	**0**	**3,000**	**1,023**	**34,983**	**17,500**	**-17,483**

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Total, Capital Summary	**55,483**	**0**	**3,000**	**1,023**	**34,983**	**17,500**	**-17,483**

Carlsbad
Construction Projects Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
15-D-411, Safety Significant Confinement Ventilation System (WIPP) (CB-0080)							
Total Estimate Cost (TEC)	261,316	37,750	86,000	12,403	84,212	53,354	-30,858
Other Project Costs (OPC)	26,496	7,000	3,500	600	3,500	4,700	+1,200
Total Project Cost (TPC) 15-D-411	**287,785**	**44,750**	**89,500**	**13,003**	**87,712**	**58,054**	**-29,658**
15-D-412, Utility Shaft, formerly Exhaust Shaft (WIPP) (CB-0080)							
Total Estimate Cost (TEC)	TBD	41,500	19,600	3,449	1,000	34,500	+33,500
Other Project Costs (OPC)	TBD	3,500	1,900	76	638	0	-638
Total Project Cost (TPC) 15-D-412	**TBD**	**45,000**	**21,500**	**3,525**	**1,638**	**34,500**	**+32,862**

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 2020 Request for the Safety Significant Confinement Ventilation System is $58,054,000: $53,354,000 for construction and $4,700,000 for other project costs.

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.

Significant Changes

This Construction Project Data Sheet is an update of the FY 2019 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

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 9)
CD-4 - Approve Start of Operations or Project Closeout
PB - Indicates the Performance Baseline

	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

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

Project Cost History

(Dollars in Thousands)

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

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. The Objective KPPs represent the desired project performance.

Performance Measure	Threshold	Objective
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.	540,000 cfm measured at the exhaust shaft collar on the surface.	Maintain concurrent mining, maintenance, and waste emplacement operations.
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.	540,000 cfm measured at the exhaust shaft collar on the surface 22 HEPA filter units with 1 HEPA unit in standby and 1 HEPA filter unit in maintenance mode.	Provide maintenance and filter medium replacement.
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.	Safety significant isolation dampers that will close within 75 seconds of initiation of an underground continuous air monitoring detection of a radioactive contamination event.	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

Outyears	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
Outyears	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
Outyears	3,364	3,364	11,748
Total, OPC (except D&D)	22,064	22,064	22,064
OPC D&D			
Outyears	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
Outyears	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
Outyears	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	Outyears	Total

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

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

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
Maintenance & Repair	287	287	8,323	8,323
Total	3,998	3,998	115,942	115,942

5. D&D Information

This project will design and construct a new ventilation system for the Waste Isolation Pilot Plant underground repository. The existing facilities 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 2020 Request for the Utility Shaft (formerly Exhaust Shaft) is $34,500,000: $34,500,000 for construction and $0 other project costs.

The most recent DOE Order 413.3B approved Critical Decision is Critical Decision-1 that was approved on December 23, 2015, with a preliminary cost range of $81,000,000 to $118,095,000 and Critical Decision-4 in the second quarter of fiscal year 2021. The project achieved Critical Decision 3A for long lead procurements and site preparations in the first quarter of fiscal year 2019. The project is anticipated to achieve Critical Decision 2/3 by third quarter of fiscal year 2019.

Significant Changes

This Construction Project Data Sheet is an update of the FY 2019 Construction Project Data Sheet and does not include a new start for the budget year.

This project will design and 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. The exhaust shaft has been renamed the utility shaft, which provides the best description for the multiple capabilities the shaft is expected to be utilized for in the future 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.

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	2QFY2018	2QFY2018	TBD	N/A	TBD
FY 2020	10/22/2014	12/10/2015	12/23/2015	3QFY2019	3QFY2019	3QFY2019	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 9)
CD-4 - Approve Start of Operations or Project Closeout
PB - Indicates the Performance Baseline

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

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. The Objective KPPs represent the desired project performance.

Performance Measure	Threshold	Objective
Provide an unfiltered exhaust pathway for mining dust from the underground repository at 150,000 cubic feet per minute ventilation flow rate through the new exhaust stack	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.	Provide an unfiltered exhaust pathway for mining dust.
Provide 520,000 cubic feet per minute of intake ventilation flow rate to the new air intake shaft (Shaft Number 5) for the underground repository.	520,000 cubic feet per minute of intake ventilation flow rate to the new air intake shaft (Shaft Number 5) at 4.5 inches water gauge.	Provide 500,000 cubic feet per minute.

3. Project Cost and Schedule

Financial Schedule

	(Dollars in Thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2015[a]	N/A	N/A	0
FY 2016	N/A	N/A	207
FY 2017	N/A	N/A	5,848
FY 2018	N/A	N/A	979
Total, Design	N/A	N/A	7,034
Construction			
FY 2018	N/A	N/A	0
FY 2019	N/A	N/A	27,681
FY 2020			35,489
Outyears	N/A	N/A	TBD
Total, Construction	N/A	N/A	TBD
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	34,500	34,500	35,489
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD

Other Project Cost (OPC)			
FY 2014	1,000	1,000	0
FY 2015	1,000	1,000	0
FY 2017	1,500	1,500	66
FY 2018	1,900	1,900	1,563
FY 2019	638	638	2,367
FY 2020	0	0	1,271
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Costs			
FY 2014	1,000	1,000	0
FY 2015	5,000	5,000	0
FY 2016	7,500	7,500	207
FY 2017	31,500	31,500	5,914
FY 2018	21,500	21,500	2,542
FY 2019	1,638	1,638	30,048
FY 2020	34,500	34,500	36,760
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

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

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			
Site Work	TBD	TBD	N/A
Long-lead Equipment	TBD	TBD	N/A
Construction	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
Conceptual Design	TBD	TBD	N/A
Independent Reviews & Estimates	TBD	TBD	N/A

Contingency	TBD	TBD	N/A
Other OPC	TBD	TBD	N/A
Total, OPC except D&D	TBD	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		Prior Years	FY 2017	FY 2018	FY 2019	FY 2020	Outyears	Total
FY 2016	TEC	11,500					TBD	TBD
	OPC	2,000					TBD	TBD
	TPC	13,500					TBD	TBD
FY 2017	TEC	11,500	2,533				TBD	TBD
	OPC	2,000	0				TBD	TBD
	TPC	13,500	2,533				TBD	TBD
FY 2018	TEC	11,500	30,000	19,600			TBD	TBD
	OPC	2,000	1,500	1,900			TBD	TBD
	TPC	13,500	31,500	21,500			TBD	TBD
FY 2019	TEC	11,500	30,000	19,600	1,000		TBD	TBD
	OPC	2,000	1,500	1,900	638		TBD	TBD
	TPC	13,500	31,500	21,500	1,638		TBD	TBD
FY 2020	TEC	11,500	30,000	19,600	1,000	34,500	TBD	TBD
	OPC	2,000	1,500	1,900	638	0	TBD	TBD
	TPC	13,500	31,500	21,500	1,638	34,500	TBD	TBD

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	FY 2021
Expected Useful Life (number of years)	32
Expected Future Start of decontamination and decommissioning 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	TBD	TBD	TBD	TBD
Utilities	TBD	TBD	TBD	TBD
Maintenance & Repair	TBD	TBD	TBD	TBD
Total	TBD	TBD	TBD	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 Ill (Construction) services through a competitive bid process.

Idaho

Overview

The Idaho Site supports the Department's cleanup of radioactive and chemical waste resulting from the Manhattan Project and Cold War activities. 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 (used) nuclear fuel and high-level waste from Idaho.

The Idaho Site has achieved significant risk reduction in treating challenging radioactive waste, decontaminating and decommissioning contaminated excess facilities, remediating contaminated soils, and transferring spent (used) nuclear fuel from wet storage to dry storage. Near-term remaining work includes continued Subsurface Disposal Area waste exhumation, processing of stored legacy remote-handled and contact-handled transuranic waste, closure of the tank farm and placement of all nuclear materials in safe storage ready for disposal.

Longer-term work scope will include any remaining legacy spent (used) nuclear fuel not acceptable for the Office of Nuclear Energy's missions, calcine waste disposition, decontamination and decommissioning of remaining excess facilities, and completing Comprehensive Environmental Response, Compensation and Liability Act Record of Decision cleanup requirements, including Test Area North groundwater remediation, completion of buried waste exhumations, and final caps.

Direct maintenance and repair at the Idaho Site is estimated to be $25,106,000.

Highlights of the FY 2020 Budget Request

The funding request continues progress in processing, characterizing, packing and shipping stored contact-handled and remote-handled transuranic waste. The Advanced Mixed Waste Treatment Facility will transition to cold standby in preparation for Resource Conservation & Recovery Act closure.

The funding request also continues progress toward treating the stored sodium bearing waste. A 30-day simulant run, conducted in 2018, demonstrated that the fluidization issues with the main process vessel have been resolved, which is critical to sustaining operations in the facility.

This request will complete buried waste exhumations. Nine out of nine retrieval areas will be completed.

This request also supports spent (used) nuclear fuel activities such as continued progress to meet the Idaho Settlement Agreement milestone of all spent (used) nuclear fuel out of wet storage by 2023, by transferring Experimental Breeder Reactor-II spent (used) nuclear fuel from the Chemical Processing Plant building-666 into dry storage at the Radioactive Scrap and Waste Facility and transferring Advanced Test Reactor spent (used) nuclear fuel from Chemical Processing Plant building-666 into dry storage at Chemical Processing Plant-603.

FY 2019 - 2020 Key Milestones/Outlook

- (February 2020) Complete all exhumation of targeted buried waste in the subsurface disposal area
- (April 2020) Complete the final design document for the subsurface disposal area cap
- (August 2020) Submit the draft phase I interim remedial action report for the subsurface disposal area

The following are the Idaho Cleanup Projects' regulatory milestones:

- (September 2020) Submit the 90 percent design for the Subsurface Disposal Area cap

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 Installation containing Three Mile Island fuel debris and some Fort St. Vrain spent (used) nuclear fuel. Five primary compliance agreements, amendments and consent orders executed between 1991 and 2015 govern cleanup work at the Idaho Site. Those five agreements encompass the majority of the cleanup requirements and commitments. The five 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 (used) nuclear fuel at the Idaho National Laboratory. The agreement specifies milestones such as the removal of all spent (used) nuclear fuel from the Idaho Site by January 1, 2035, treatment and offsite shipment of stored transuranic waste 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 (used) nuclear fuel for storage at the Idaho Site until the remaining sodium bearing waste is treated.

Site Treatment Plan: To fulfill requirements in the 1992 Federal Facility Compliance Act, the Idaho National Engineering Laboratory prepared the Idaho National Engineering Laboratory Site Treatment Plan to address the treatment and long-term storage of mixed waste (radioactive waste mixed with hazardous chemicals). The plan also has prescriptive 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 (used) 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 waste 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 options. 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 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 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 (used) 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 backlog of certified transuranic waste currently consists of more than 20,000 containers and at planned shipment rates the shipment of these containers will complete in 2023.
- Start-up challenges and associated delays in treating sodium bearing waste at the first-of-a-kind Integrated Waste Treatment Unit.
- Off-site disposition of the high-level radioactive waste and spent (used) nuclear fuel.
- Development and documentation of the technical and legal basis to disposition Sodium Bearing Waste.

Idaho

Funding ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Idaho National Laboratory				
Idaho Community and Regulatory Support				
ID-0100 / Idaho Community and Regulatory Support	4,071	3,200	3,500	+300
Idaho Cleanup and Waste Disposition				
ID-0012B-D / SNF Stabilization and Disposition-2012 (Defense)	19,975	16,974	24,100	+7,126
ID-0013 / Solid Waste Stabilization and Disposition	222,798	215,387	175,100	-40,287
ID-0014B / Radioactive Liquid Tank Waste Stabilization and Disposition-2012	132,500	162,739	102,134	-60,605
ID-0030B / Soil and Water Remediation-2012	44,727	24,900	30,020	+5,120
Subtotal, Idaho Cleanup and Waste Disposition	**420,000**	**420,000**	**331,354**	**-88,646**
ID Excess Facilities D&D				
ID-0040-EF / Idaho Excess Facilities D&D	10,000	10,000	0	-10,000
Total, Idaho National Laboratory	**434,071**	**433,200**	**334,854**	**-98,346**
Non-Defense Environmental Cleanup				
Small Sites				
Idaho National Laboratory				
ID-0012B-N / SNF Stabilization and Disposition-2012 (Non-Defense)	11,972	10,000	12,800	+2,800
Total, Idaho	**446,043**	**443,200**	**347,654**	**-95,546**

Idaho
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
Idaho National Laboratory	
ID Excess Facilities D&D	
ID-0040-EF / Idaho Excess Facilities D&D	
• No additional planned activities in FY2020.	-10,000
Idaho Cleanup and Waste Disposition	
ID-0012B-D / SNF Stabilization and Disposition-2012 (Defense)	
• Increase is attributed to the use of prior year carryover funds expensed in FY2019 for spent nuclear fuel movements and additional spent nuclear fuel movements in FY2020.	+7,126
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 Plant in FY2019.	-40,287
ID-0014B / Radioactive Liquid Tank Waste Stabilization and Disposition-2012	
• Decrease represents the completion of outage J at Integrated Waste Treatment Unit and the use of prior year carryover funds.	-60,605
ID-0030B / Soil and Water Remediation-2012	
• Increase is attributed to the use of prior year carryover funds expensed in FY2019 and sustainment of these activities in FY2020.	+5,120
Idaho Community and Regulatory Support	
ID-0100 / Idaho Community and Regulatory Support	
• Increase is a result of regulatory support required from the State of Idaho for increased closure reviews.	+300
Non-Defense Environmental Cleanup	
Small Sites	
ID-0012B-N / SNF Stabilization and Disposition-2012 (Non-Defense)	
• Increase reflects increased cost of operational requirements of facilities at Fort St. Vrain.	+2,800
Total, Idaho	**-95,546**

Idaho Excess Facilities D&D (PBS: ID-0040-EF)

Overview

This PBS can be found within the Defense Environmental Cleanup appropriation. This project supports acceleration of Decontamination & Decommissioning activities at several priority INL Facilities.

Idaho Excess Facilities D&D (PBS: ID-0040-EF)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$10,000	**$0**	**-$10,000**
• Perform decontamination & decommissioning of priority Idaho National Laboratory facilities and support decontamination & decommissioning planning for Radioactive Waste Management Complex closure.	• No planned activities.	• No additional planned activities in FY2020.

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 (used) nuclear fuel and managing the receipt of off-site spent (used) nuclear fuel shipments. EM currently manages and stores approximately 267 metric tons of spent (used) nuclear fuel at the Idaho Site and in Colorado. The EM plan includes the receipt of approximately 22 metric tons of spent (used) nuclear fuel from off-site locations, including Foreign and Domestic Research Reactor spent (used) nuclear fuel, from FY 2005 through disposition.

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

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$16,974	**$24,100**	**+$7,126**
• Maintain all dry spent (used) nuclear fuel storage facilities with accompanying spent (used) nuclear fuel in a safe and secure state. • Maintain the wet storage facility Chemical Processing Plant building-666 and dry storage at Chemical Processing Plant-603, with accompanying spent (used) nuclear fuel in a safe and secure state. • Retrieve Experimental Breeder Reactor II fuel from storage for transfer to the Materials and Fuels Complex. • Conduct scientific applied research and technology development activities to assure safe extended storage of spent (used) nuclear fuel and conduct planning and preliminary design for future disposition. • Receive and store up to 15 shipments of	• Maintain all dry spent (used) nuclear fuel storage facilities with accompanying spent (used) 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 (used) nuclear fuel in a safe and secure state. • Retrieve Experimental Breeder Reactor II fuel from storage for transfer to the Materials and Fuels Complex. • Conduct scientific applied research and technology development activities to assure safe extended storage of spent (used) nuclear fuel and conduct planning and preliminary design for future disposition. • Receive and store up to 15 shipments of	• Increase is attributed to the use of prior year carryover funds expensed in FY2019 for spent nuclear fuel movements and additional spent nuclear fuel movements in FY2020.

Advanced Test Reactor spent (used) nuclear fuel.

- Plan for receipt of foreign and domestic research reactor spent (used) nuclear fuel from off-site.

Advanced Test Reactor spent (used) nuclear fuel.

- Plan for receipt of foreign and domestic research reactor spent (used) nuclear fuel from off-site.

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.

In FY 2020, 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$215,387	**$175,100**	**-$40,287**
• 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 repackaging and characterizing contact-handled transuranic waste at the Advanced Mixed Waste Treatment Project. Transuranic waste will be certified for the Waste Isolation	• Maintain and operate the Radioactive Waste Management Complex infrastructure outside the subsurface disposal area including utility systems, project management, engineering, training, environmental safety and health and quality assurance. This project also includes monitoring of air, water, soils, and biota surveillance. • Continue certifying and shipping transuranic waste to the Waste Isolation Pilot Plant. • Treat and dispose mixed low-level radioactive	• Decrease represents completion of treatment and characterization of all Contact-Handled Transuranic Non-Sludge waste at Advanced Mixed Waste Treatment Plant in FY2019.

Pilot Plant disposal, and mixed low-level radioactive waste will be dispositioned off-site.

- 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.

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.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$162,739	**$102,134**	**-$60,605**
• Upon completion of Simulant 3, the Integrated Waste Treatment Unit will undergo outage J in preparation for hot operation. In case the simulant run is not successful, EM will initiate an alternatives analysis and develop contingency plans for treatment of the sodium bearing waste. • Maintain tank farm and systems necessary for safe delivery of sodium bearing waste until treatment is complete. • Continue providing Idaho Nuclear Technology and Engineering Center utilities, maintenance and operations for the process waste system, support laboratories, and existing process facilities. • Continue safe storage and management of calcine including study of retrieval options.	• Develop and further the regulatory path forward for disposal of the sodium bearing waste treatment product. • The Integrated Waste Treatment Unit will begin hot operations pending successful demonstration of the simulant run 3. • 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 safe storage and management of calcine including significant progress toward completing proof of principle for retrieving calcine from Bin Set #1.	• Decrease represents the completion of outage J at Integrated Waste Treatment Unit and the use of prior year carryover funds.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$24,900	**$30,020**	**+$5,120**
• 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 and Engineering Center) tank farm soils and groundwater.	• 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. • Complete 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 and Engineering Center) tank farm soils and groundwater.	• Increase is attributed to the use of prior year carryover funds expensed in FY2019 and sustainment of these activities in FY2020.

• 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.	• 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.

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 three major areas for environmental regulatory oversight and stakeholder interactions and support:
1) State of Idaho Department of Environmental Quality (Resource Conservation and Recovery Act compliance, Federal Facility Agreement/Consent Order), and Environmental Protection Agency support.
2) Support from United States Geological Survey
3) 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$3,200	**$3,500**	**+$300**
• Continue groundwater monitoring and subsurface investigation with analysis of contaminants and transport mechanisms affecting the Snake River Aquifer, both on-site and off-site. • Provide for site-wide environmental compliance and oversight. • Payment of fees for the Title V Air Permit and technical assistance for air quality compliance. • Provide grant to the State of Idaho Department of Environmental Quality. • Provide for Citizens Advisory Board requirements.	• 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.	• Increase is a result of regulatory support required from the State of Idaho for increased closure reviews.

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 (used) 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$10,000	**$12,800**	**+$2,800**
• 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 (used) nuclear fuel facility. • Continue to monitor Fort St. Vrain and Three Mile Island-2 Spent (used) nuclear fuel. • Operate new upgraded systems to meet Nuclear Regulatory Commission license conditions.	• 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 (used) nuclear fuel facility. • Continue to monitor Fort St. Vrain and Three Mile Island-2 Spent (used) nuclear fuel. • Operate new upgraded systems to meet Nuclear Regulatory Commission license conditions.	• Increase reflects increased cost of operational requirements of facilities at Fort St. Vrain.

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.

The Oak Ridge Office of Environmental Management is comprised of three portfolios based on site geographic locations, located within the boundary of the City of Oak Ridge. One-half million people live within a thirty mile radius of the Oak Ridge Reservation. These three site locations are surrounded and delineated by surface waters and/or groundwater that transport 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 $57,410,000 in FY 2020.

The Oak Ridge Operations Office plans to purchase the following vehicle in FY 2020: 1 Heavy Duty Truck.

Highlights of the FY 2020 Budget Request

The following represents the most significant near-term projects 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
- Complete preparation of Building 2026 to enable processing of the remaining Uranium-233 material at Oak Ridge National Laboratory
- Continue deactivation and demolition of remaining facilities at the East Tennessee Technology Park
- Continue slab and soil remediation at the East Tennessee Technology Park
- Complete processing of legacy-transuranic waste at the Transuranic Waste Processing Facility and continue 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 a new On-Site Waste Disposal Facility, to support the Y-12 National Security Complex and Oak Ridge National Laboratory cleanup
- Continue mercury-related technology development, including characterization, remediation, monitoring, and modeling

The FY 2020 request includes funding for two line-item construction projects: Outfall 200 Mercury Treatment Facility ($49,000,000) and On-Site Waste Disposal Facility ($15,269,000).

- 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 $49,000,000 requested for the Outfall 200 Mercury Treatment Facility project includes funding for design, 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 $15,269,000 requested for the On-Site Waste Disposal Facility project includes funding for design and other project costs.

FY 2019 and FY 2020 Key Milestones/Outlook

- (October 2018) Initiate Offsite Vendor Testing for the Transuranic Sludge Processing Facility Buildout Project
- (November 2018) Complete Y-12 Colex (column exchange) West Side Demolition
- (January 2019) Complete Outfall 200 Mercury Treatment Facility Early Site Preparation
- (September 2019) Complete Demolition of the Poplar Creek Facilities at the East Tennessee Technology Park
- (September 2019) Complete Building K-1037 Demolition Project
- (September 2020) Complete Transuranic Sludge Processing Test Facility Construction
- (September 2020) Complete preparation of Building 2026 for processing 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
    - 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.
    - Period of Performance - April 29, 2011 to July 31, 2020
    - Contract Value - $3.1B
    - 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.
    - 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 1.0 and cost performance index of 1.06. OREM 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
    - Scope - Processing of Environmental Management legacy transuranic debris waste at the Transuranic Waste Processing Center.
    - Period of Performance - A five-year period of performance ending October 2020
    - Contract Value - $228M.
    - Type - Hybrid contract which consists of Fixed Priced CLIN for maintenance, cost reimbursable for processing and fixed unit rates for movement of containers; however, OREM intends to convert the remaining options to firm-fixed price Contract Line Items based upon the remaining work and availability of historical information.
    - Performance – Contractor has consistently achieved excellent performance ratings and is expected to underrun the cost reimbursement portion of the contract by $7M.
- The Isotek Systems LLC contract
    - 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.
    - Period of Performance – Ends December 2024
    - Contract Value - $522M
    - 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.
    - 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
    - Scope – Construction of the Outfall 200 Mercury Treatment Facility located at the Y-12 National Security Complex.
    - Period of Performance – December 6, 2018 to December 5, 2022
    - Contract Value - $92M
    - Type – Firm-fixed price

    - Performance – The contractor was provided a Notice to Proceed in December 2018. The contractor is developing pre-construction submittals. However, no actual construction activities can begin until the submittals are approved. Contractor performance will be assessed once construction activities are underway.
- Characterization and Sampling Blanket Purchase Agreements
    - Scope – Tasks are competed among small business Blanket Purchase Agreements holders for characterization and sampling across the Oak Ridge Reservation.
    - Period of Performance- The current Blanket Purchase Agreements expired in October, but are being recompeted and will also include low-risk demolition and remediation work.
    - Contract Value - $20M
    - Type – All competed tasks have been awarded as firm-fixed price task orders.
    - Performance - The Blanket Purchase Agreements have enabled OREM 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.

Strategic Management

The Oak Ridge cleanup strategy includes near-term goals to: (1) complete cleanup and reindustrialize the East Tennessee Technology Park; (2) begin the processing campaign for the remaining Uranium-233 inventory; (3) complete transuranic debris processing; (4) begin construction of the Outfall 200 Mercury Treatment Facility at Y-12; (5) complete the design of a new on-site disposal facility called the On Site Waste Disposal Facility; (6) construct and operate the Transuranic Sludge Test Facility; and (7) 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 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Oak Ridge				
OR Cleanup and Disposition				
OR-0013B / Solid Waste Stabilization and Disposition-2012	71,000	74,000	82,000	+8,000
OR Excess Facilities D&D				
OR-0044-EF / Oak Ridge Excess Facilities D&D	125,000	0	0	0
OR Nuclear Facility D&D				
OR-0041 / Nuclear Facility D&D-Y-12	64,193	121,000	96,155	-24,845
OR-0042 / Nuclear Facility D&D-Oak Ridge National Laboratory	81,110	154,000	61,807	-92,193
Subtotal, OR Nuclear Facility D&D	**145,303**	**275,000**	**157,962**	**-117,038**
OR Reservation Community and Regulatory Support				
OR-0100 / Oak Ridge Reservation Community & Regulatory Support (Defense)	5,605	5,700	4,819	-881
OR Technology Development and Deployment				
OR-TD-0100 / Technology Development Activities - Oak Ridge	3,000	3,000	3,000	0
U233 Disposition Program				
OR-0011D / U233 Disposition Program	50,311	52,300	45,000	-7,300
Total, Oak Ridge	**400,219**	**410,000**	**292,781**	**-117,219**
Safeguards and Security				
OR-0020 / Safeguards and Security	17,605	14,023	9,000	-5,023
Total, Defense Environmental Cleanup	**417,824**	**424,023**	**301,781**	**-122,242**
Non-Defense Environmental Cleanup				

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Small Sites				
Oak Ridge				
OR-0104 / Community and Regulatory (Non-Defense)	8,000	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)	194,673	195,000	109,439	-85,561
Pension and Community and Regulatory Support				
Oak Ridge				
OR-0102 / East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration	19,274	17,258	17,655	+397
Total, Uranium Enrichment Decontamination and Decommissioning Fund	**213,947**	**212,258**	**127,094**	**-85,164**
Total, Oak Ridge	**639,771**	**646,281**	**428,875**	**-217,406**

Oak Ridge
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
Oak Ridge	
OR Cleanup and Disposition	
OR-0013B / Solid Waste Stabilization and Disposition-2012	
• Increase reflects additional funding required for operating the transuranic sludge processing test equipment and transition activities for the OREM cleanup follow-on contract.	+8,000
OR Nuclear Facility D&D	
OR-0041 / Nuclear Facility D&D-Y-12	
• Decrease reflects line item funding received in the FY 2019 enacted appropriations to ramp up Outfall 200 Mercury Treatment Facility construction activities and to accelerate preliminary design activities of the On Site Waste Disposal Facility.	-24,845
OR-0042 / Nuclear Facility D&D-Oak Ridge National Laboratory	
• Decrease reflects funding received in the FY 2019 enacted appropriations to address critical deferred maintenance at ORNL and to address excess facilities in the Central Campus area.	-92,193
OR Reservation Community and Regulatory Support	
OR-0100 / Oak Ridge Reservation Community & Regulatory Support (Defense)	
• Decrease reflects reduced funding requirements for State regulatory oversight.	-881
OR Technology Development and Deployment	
OR-TD-0100 / Technology Development Activities - Oak Ridge	
• No change.	0
U233 Disposition Program	
OR-0011D / U233 Disposition Program	
• Decrease reflects funding received in the FY 2019 enacted appropriations for planning and preparation for the Uranium-233 processing campaign.	-7,300
Safeguards and Security	
OR-0020 / Safeguards and Security	
• Decrease reflects use of prior year carryover funding.	-5,023

	FY 2020 Request vs FY 2019 Enacted
Non-Defense Environmental Cleanup	
Small Sites	
OR-0104 / Community and Regulatory (Non-Defense)	
• Decrease reflects funding received in the FY 2019 enacted appropriations for initiation of procurement activities for the remaining Memorandum of Agreement facilities construction commitments.	-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 major cleanup activities such as the Central Neutralization Facilities Decommissioning and Demolition Project, the Building K-1037 Demolition Project, and the Poplar Creek Facilities Project at ETTP and ramp down of workforce.	-85,561
Pension and Community and Regulatory Support	
OR-0102 / East Tennessee Technology Park Contract/Post-Closure Liabilities/Administration	
• No significant change.	+397
Total, Oak Ridge	**-217,406**

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

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS funds the storage and processing for the disposition of the Oak Ridge Reservation transuranic 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. Processing of legacy transuranic debris will continue, supporting certification of waste for disposal. The inventory of processed and certified transuranic waste will be safely stored at Oak Ridge until off-site shipments to the Waste Isolation Pilot Plant are complete.

This PBS 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 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$74,000	**$82,000**	**+$8,000**
• 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. • Continue processing of legacy contact-handled and remote-handled debris at the Transuranic Waste Processing Facility to meet regulatory milestones. • Fund transuranic waste characterization	• 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. • Complete processing of legacy contact-handled and remote-handled debris at the Transuranic Waste Processing Facility to meet regulatory milestones. • Fund transuranic waste characterization	• Increase reflects additional funding required for operating the transuranic sludge processing test equipment and transition activities for the OREM cleanup follow-on contract.

activities. • Obtain certification by the Central Characterization Project that the processed transuranic waste meets Waste Isolation Pilot Plant disposal criteria. Certified waste will be returned to storage pending shipments to Waste Isolation Pilot Plant. • Manage and store mixed low-level waste in compliance with regulations. • Continue technology maturation and planning for the transuranic sludge processing.	activities. • 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.	

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; 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$121,000	**$96,155**	**-$24,845**
• Continue routine surveillance and maintenance for EM-owned excess contaminated facilities at Y-12. • Operate the Environmental Management Waste Management Facility and other Oak Ridge Reservation landfills. • Continue implementing Oak Ridge Reservation	• Continue routine surveillance and maintenance for EM-owned excess contaminated facilities at Y-12. • Operate the Environmental Management Waste Management Facility and other Oak Ridge Reservation landfills. • Continue implementing Oak Ridge Reservation	• Decrease reflects line item funding received in the FY 2019 enacted appropriations to ramp up Outfall 200 Mercury Treatment Facility construction activities and to accelerate preliminary design activities of the On Site Waste Disposal Facility.

groundwater strategy.

- Complete Y-12 Colex West Side demolition.
- Initiate construction phase on the Outfall Mercury Treatment Facility.
- Initiate preliminary design activities of the On Site Waste Disposal Facility.

groundwater strategy.

- Continue construction of the Outfall Mercury Treatment Facility.
- Continue preliminary design activities of 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 which includes operations and surveillance and maintenance of liquid, gaseous, and process waste operations systems in support of the Office of Environmental Management and Office of Science missions. The scope includes maintenance and monitoring of more than 200 inactive facilities (including several inactive research reactors and isotope production facilities), three contaminated groundwater plumes, contaminated surface water, and numerous areas of soil and sediment contamination awaiting future decontamination, decommissioning, and environmental remediation actions. 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$154,000	**$61,807**	**-$92,193**
• 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. • Conduct infrastructure upgrades to the Liquid and Gaseous Waste Operations facilities to	• 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. • Conduct infrastructure upgrades to the Liquid and Gaseous Waste Operations facilities to	• Decrease reflects funding received in the FY 2019 enacted appropriations to address critical deferred maintenance at ORNL and to address excess facilities in the Central Campus area.

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.
- Initiate Central Campus cleanup projects at the Oak Ridge National Laboratory and address critical deferred maintenance.

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.
- Complete visitor access improvements to the X-10 Graphite Reactor National Historic Landmark.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$5,700	**$4,819**	**-$881**
• 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.	• 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.	• Decrease reflects reduced funding requirements for State regulatory oversight.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$3,000	**$3,000**	**+$0**
• Continue planned mercury technology development activities, to include focus areas related to understanding soil and groundwater source control, water chemistry and sediment	• Continue planned mercury technology development activities, to include focus areas related to understanding soil and groundwater source control, water chemistry and sediment	• No change.

manipulation, and ecological manipulation.	manipulation, and ecological manipulation.

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 preparation activities for the future 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$52,300	**$45,000**	**-$7,300**
• Continue required surveillance and maintenance and other activities at Building 3019 and Building 2026 to maintain a safe and secure condition. • Continue planning and preparation for the Uranium-233 processing campaign. • Begin construction and prepare for development of operational readiness activities for the Uranium-233 processing campaign.	• 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.	• Decrease reflects funding received in the FY 2019 enacted appropriations for planning and preparation for the Uranium-233 processing campaign.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$14,023	**$9,000**	**-$5,023**
• Provide safeguard and security services for the following major facilities: Poplar Creek facilities, K-1037, Centrifuge Facilities, Classified Burial Grounds, Environmental Management Waste Management Facility, Transuranic Waste Processing Facility, and the overall East Tennessee Technology Park will be applied in the areas of: protection program management, emergency response, Physical Security, information protection, Protective Force, Personnel Security, 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,	• Provide safeguard and security services for the following major facilities: K-27, K-1037, Centrifuge Facilities, Classified Burial Grounds, Environmental Management Waste Management Facility, Transuranic Waste Processing Facility, and the overall East Tennessee Technology Park will be applied in the areas of: protection program management, emergency response, Physical Security, information protection, Protective Force, Personnel Security, Cyber Security and Nuclear Material Control and Accountability. • Site security services will be applied using a graded, risk-based management approach supporting site cleanup mission priorities and protecting government equipment, materials,	• Decrease reflects use of prior year carryover funding.

information, and the site workforce.

information, and the site workforce.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$10,000	**$0**	**-$10,000**
• Complete construction of the K-25 History Center and install exhibits. • Initiate procurement activities for the remaining Memorandum of Agreement facilities construction commitments.	• No activities in FY 2020.	• Decrease reflects funding received in the FY 2019 enacted appropriations for initiation of procurement activities for the remaining Memorandum of Agreement facilities construction commitments.

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 last five large gaseous diffusion plants, K-27 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: remedial actions (including planning, removal actions, and development of Comprehensive, Environmental, Response, Compensation and Liability Act documentation); 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); 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$195,000	**$109,439**	**-$85,561**
• 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. • Perform pre-demolition and demolition activities on remaining facilities • Conduct characterization and slab and soil remediation of the main plant area, Zone 2. • Complete Central Neutralization Facilities Decommissioning and Demolition Project. • Complete the Building K-1037 Demolition Project. • Complete Poplar Creek Facilities Project.	• 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. • Perform pre-demolition and demolition activities on remaining facilities. • Conduct characterization and slab and soil remediation of the main plant area, Zone 2.	• Decrease reflects completion of major cleanup activities such as the Central Neutralization Facilities Decommissioning and Demolition Project, the Building K-1037 Demolition Project, and the Poplar Creek Facilities Project at ETTP and ramp down of workforce.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$17,258	**$17,655**	**+$397**
• Continue funding of contractor liabilities associated with post-retirement life, medical benefits and pensions.	• Continue funding of contractor liabilities associated with post-retirement life, medical benefits and pensions.	• No significant change.

Oak Ridge
Capital Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 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)	99,908	12,808	23,200	11,071	45,900	18,000	-27,900
Total, Capital Operating Expenses	**99.908**	**12,808**	**23,200**	**11,071**	**45,900**	**18,000**	**-27,900**
Capital Equipment > $500K (including MIE)	0	0	0	0	0	0	+0
Total, Capital Equipment (including MIE)	**99,908**	**12,808**	**23,200**	**11,071**	**45,900**	**18,000**	**-27,900**
Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <$20M)							
Oak Ridge							
Perimeter Security Project	3,000	0	0	0	3,000	0	-3,000
Mercury Research Center	2,000	0	1,300	40	700	0	-700
2026 Building Modifications	13,000	0	800	467	12,200	0	-12,200
Multiple Y-12 Improvement Projects	20,400	0	2,400	1,336	9,000	9,000	0
Multiple ORNL Improvement Projects	24,500	0	6,500	5,820	9,000	9,000	-10,000
Viewing Tower/Equipment Building	20,579	2,579	8,000	501	10,000	0	0
T2 Buildout	900	0	900	0	0	0	0
Building 2026 Security Project	5,300	0	3,300	0	2,000	0	-2,000
History Center	6,091	6,091	0	1,564	0	0	0
SWSA 5	4,138	4,138	0	1,343	0	0	0
Total, Oak Ridge	**99,908**	**12,808**	**23,200**	**11,071**	**45,900**	**18,000**	**-27,900**
Total, Plant Projects (GPP and IGPP) (Total Estimated (TEC) <$20M	**99,908**	**12,808**	**23,200**	**11,071**	**45,900**	**18,000**	**-27,900**

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Total, Capital Summary	**99,908**	**12,808**	**23,200**	**11,071**	**45,900**	**18,000**	**-27,900**

Oak Ridge
Construction Projects Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
14-D-403, Outfall 200 Mercury Treatment Facility, OR (OR-0041)							
Total Estimate Cost (TEC)	199,208	28,508	16,000	15,015	76,000	49,000	-27,000
Other Project Costs (OPC)	24,792	11.894	1,100	0	0	0	0
Total Project Cost (TPC) 15-D-403	**224,000**	**40,402**	**17,100**	**15,015**	**76,000**	**49,000**	**-27,000**
17-D-401, On Site Disposal Facility (OR-0041)							
Total Estimate Cost (TEC)	TBD	0	10,000	812	N/A	N/A	N/A
Other Project Costs (OPC)	TBD	26,264	3,061	6462	N/A	N/A	N/A
17-D-401, Environmental Management Disposal Facility (OR-0041)	**TBD**	**26,264**	**13,061**	**7.274**	**10,000**	**15,269**	**+5,269**
Total Project Cost (TPC) 17-D-401	**TBD**	**26,264**	**10,000**	**7,274**	**10,000**	**15,269**	**+5,269**

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 2020 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[a]	4Q FY2017	4Q FY2018	TBD	N/A	TBD	N/A	TBD
Phase 2	5/26/2016[a]	4Q FY2017	4Q FY2018	TBD	N/A	TBD	N/A	TBD
Phase 3	5/26/2016[a]	4Q FY2017	4Q FY2018	TBD	N/A	TBD	N/A	TBD
FY 2019								
Phase 1	5/26/2016[a]	4Q FY2017	4Q FY2018	TBD	N/A	TBD	N/A	TBD
Phase 2	5/26/2016[a]	4Q FY2017	4Q FY2018	TBD	N/A	TBD	N/A	TBD
Phase 3	5/26/2016[a]	4Q FY2017	4Q FY2018	TBD	N/A	TBD	N/A	TBD
FY 2020								
Phase 1	5/26/2016[a]	1/12/2018	8/24/2018	4Q FY2020	TBD	TBD	N/A	TBD
Phase 2	5/26/2016[a]	1/12/2018	8/24/2018	4Q FY2020	TBD	TBD	N/A	TBD
Phase 3	5/26/2016[a]	1/12/2018	8/24/2018	4Q FY2020	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 9)
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

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	N/A	N/A	0
FY 2018 Phase 1	N/A	N/A	1,000
FY 2019 Phase 1	N/A	N/A	16,000
FY 2020 Phase 1	N/A	N/A	8,000
Outyears Phase 1	N/A	N/A	1,396
Total, Design	N/A	N/A	26,396
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
Outyears Phase 1	N/A	N/A	TBD
Total, Construction			TBD
TEC			
FY 2017 Phase 1	N/A	N/A*	0
FY 2018 Phase 1	N/A	N/A	1,000
FY 2019 Phase 1	N/A	N/A	11,000

		(Dollars in Thousands)		
		Appropriations	Obligations	Costs
FY 2020	Phase 1	N/A	N/A	8,000
Outyears	Phase 1	N/A	N/A	TBD
Total TEC		N/A	N/A	TBD

*Congress appropriate funds for TPC beginning in FY17.

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	5,000	1,973	4,439
FY 2018	Phase 1	3,061	6,088	7,685
FY 2019	Phase 1	N/A	N/A	1,004
FY 2020	Phase 1	N/A	N/A	202
Outyears	Phase 1	N/A	N/A	TBD
Total, OPC except D&D		N/A	N/A	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	5,000	1,973	4,439
FY 2018	Phase 1	3,061	6,088	7,685
FY 2019	Phase 1	N/A	N/A*	1,004
FY 2020	Phase 1	N/A	N/A	202
Outyears	Phase 1	N/A	N/A	TBD
Total, OPC		N/A	N/A	TBD

*Congress appropriated funds for TPC beginning in FY17. However, OPC funds were also appropriated through FY18 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	11,000	1,973	4,439
FY 2018	Phase 1	13,061	22,088	8,685
FY 2019	Phase 1	10,000	10,000	17,004
FY 2020	Phase 1	15,269	15,269	8,202
Outyears	Phase 1	TBD	TBD	TBD
Total, TPC		TBD	TBD	TBD

* Congress appropriated funds for TPC beginning in FY17. However, OPC funds were also appropriated through FY 18 until CD-1 was approved.

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	21,396	N/A
Total Design	26,396	21,396	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	Out years	Total
FY 2018	TEC	6,000	1,000			TBD	TBD
	OPC	20,264	4,000			TBD	TBD
	TPC	26,264	5,000			TBD	TBD
FY 2019	TEC	6,000	1,000	4,690		TBD	TBD
	OPC	20,264	4,000	310		TBD	TBD
	TPC	26,264	5,000	5,000		TBD	TBD
FY 2020	TEC	6,000	10,000				
	OPC	20,264	3,061				
	TPC	26,264	13,061	10,000	15,269	TBD	TBD

* Congress appropriated funds for TPC beginning in FY17. However, OPC funds were also appropriated through FY 18 until CD-1 was approved.

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-1 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 2020 Request for the Outfall 200 Mercury Treatment Facility is $49,000,000.

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 2019 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 Mercury 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 2020 will be used to continue construction.

Critical Milestone History

Fiscal Quarter or Date

Request	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

[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 only estimates and are consistent with the validated performance baseline, which is pending Critical Decision-2 approval by the Project Management Executive.

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

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 Mercury 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 to support design and construction of the facility 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	3,119
FY 2020	N/A	N/A	3,226
FY 2021	N/A	N/A	2,951
FY 2021	N/A	N/A	2,414
FY 2023	N/A	N/A	1,126
FY 2024	N/A	N/A	1,126
FY 2025	N/A	N/A	1,124
Total, Design[d]	N/A	N/A	30,476[d]
Construction			
FY 2017	N/A	N/A	125
FY 2018	N/A	N/A	12,403
FY 2019	N/A	N/A	19,699
FY 2020	N/A	N/A	29,333
FY 2021	N/A	N/A	53,422

	(dollars in thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
FY 2022	N/A	N/A	17,665
FY 2023	N/A	N/A	12,048
FY 2024	N/A	N/A	12,018
FY 2025	N/A	N/A	12,019
Total, Construction	N/A	N/A	168,732
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	N/A	5,955
FY 2018	N/A	N/A	14,500
FY 2019	N/A	N/A	22,818
FY 2020	N/A	N/A	32,559
FY 2021	N/A	N/A	56,373
FY 2022	N/A	N/A	20,079
FY 2023	N/A	N/A	13,174
FY 2024	N/A	N/A	13,143
FY 2025	N/A	N/A	13,144
Total TEC	N/A	N/A	199,208
Other Project Cost (OPC)			
OPC except D&D			
FY 2012[a]	5,153	5,153	2,325
FY 2013[b]	253	253	2,937
FY 2014[c]	4,375	4,375	2,965
FY 2015	1,413	1,413	2,583
FY 2016	700	700	774
FY 2017	N/A	N/A	1,227
FY 2018	N/A	N/A	516
FY 2019	N/A	N/A	266
FY 2020	N/A	N/A	27
FY 2021	N/A	N/A	28
FY 2022	N/A	N/A	3,439
FY 2023	N/A	N/A	4,862
FY 2024	N/A	N/A	1,421
FY 2025	N/A	N/A	1,422
Total, OPC except D&D	N/A	N/A	24,792
OPC			
FY 2012[a]	5,153	5,153	2,325
FY 2013[b]	253	253	2,937
FY 2014[c]	4,375	4,375	2,965
FY 2015	1,413	1,413	2,583
FY 2016	700	700	774
FY 2017	N/A	N/A	1,227
FY 2018	N/A	N/A	516
FY 2019	N/A	N/A	266
FY 2020	N/A	N/A	27

	(dollars in thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
FY 2021	N/A	N/A	28
FY 2022	N/A	N/A	3,439
FY 2023	N/A	N/A	4,862
FY 2024	N/A	N/A	1,421
FY 2025	N/A	N/A	1,422
Total, OPC	N/A	N/A	24,792
Total Project Cost (TPC)			
FY 2012[a]	5,153	5,153	2,325
FY 2013[b]	253	253	2,937
FY 2014[c]	8,983	4,375	2,965
FY 2015	10,813	15,421	3,767
FY 2016	10,100	10,100	7,053
FY 2017	5,100	5,100	7,182
FY 2018	17,100	4,700	15,016
FY 2019	76,000	88,400	23,084
FY 2020	49,000	49,000	32,586
Outyears	41,498	41,498	127,085
Total, TPC	224,000	224,000	224,000

[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	15,204	13,944
Title III	13,156	12,608	13,156
Contingency	3,376	1,250	3,377
Total Design	30,476	29,062	30,476
Construction			
Construction	114,977	TBD	114,977
Early Site Preparation	19,000	TBD	19,000
Contingency	34,755	TBD	34,755
Total Construction	168,732	TBD	168,732
Total, TEC	199,208	TBD	199,208
Contingency, TEC	38,132	TBD	38,132
Other Project Cost (OPC)			

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
OPC except D&D			
Conceptual Design	7,300	TBD	7,300
Start-Up	6,850	TBD	6,850
Contingency	4,262	TBD	4,262
Other OPC	6,380	TBD	6,380
Total, OPC except D&D	24,792	TBD	24,792
Total, OPC	24,792	TBD	24,792
Contingency, OPC	4,262	TBD	4,262
Total, TPC	224,000	TBD	224,000
Total, Contingency	42,394	TBD	42,394

Schedule of Appropriation Requests

Request		Prior Years	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Outyears	Total
FY 2015 Request	TEC	14,008	TBD	TBD	TBD				TBD
	OPC	11,914	TBD	TBD	TBD				TBD
	TPC	25,202	TBD	TBD	TBD				TBD
FY 2016 Request	TEC	14,008	6,800	TBD	TBD				TBD
	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	4,000	16,000				TBD
	OPC	11,194	700	1,100	1,100				TBD
	TPC	25,202	10,100	5,100	17,100				TBD
FY 2019 Request	TEC	14,008	9,400	4,000	16,000	11,274	TBD	TBD	TBD
	OPC	11,194	700	1,100	1,100	0	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	5,100	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

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 is being competitively procured for the balance of construction.

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 $33,911,000.

Highlights of the FY 2020 Budget Request

This FY 2020 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 2019 and FY 2020 Key Milestones/Outlook

- (November 2018) Submit the Remedial Investigation Work Plan for the Sampling of the C-400 Complex, Including Around and Under the Slab of C-400 Cleaning Building.
- (January 2019) Complete Disposition of 22 colds trap stored in C-746-Q Building.
- (April 2019) Complete Deactivation of the C-400 Cleaning Building.
- (April 2019) Complete Deactivation of the C-360 Building.
- (July 2019) Complete Limited Area Footprint Reduction for Administrative Facilities (C-100, C-101, C-102, and C-304).
- (September 2019) Complete Construction of a Modular Firing Range.
- (September 2019) Initiate Demolition of the C-400 Cleaning Building.
- (October 2019) Initiate Characterization in C-333 Process Building.
- (September 2020) Complete Demolition of the C-400 Cleaning Building.
- (September 2020) Complete Characterization in C-331 Process Building.

Regulatory Framework

In May 1994, the Paducah site was placed on the United States Environmental Protection Agency's National Priorities List under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. The 1997 Federal Facility Agreement among the Department, the Commonwealth of Kentucky and the United States Environmental Protection Agency (Region 4) established the framework for cleanup at Paducah, instituted enforceable milestones, and coordinated site-specific cleanup requirements under the Comprehensive Environmental Response, Compensation, and Liability Act and the Resource Conservation and Recovery Act. The Department also achieved resolution of long-standing regulatory disputes through an Agreed Order with the Commonwealth of Kentucky.

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 2/1/2017 - 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 6/20/17 – 6/19/22. 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 – 10/01/2018. DOE exercised a twenty-two month option period from 10/02/18 through 09/30/2021.

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 focuses on the primary source of offsite groundwater contamination at the Paducah Site. Other environmental cleanup projects will be re-sequenced.

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 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Safeguards and Security				
PA-0020 / Safeguards and Security	15,556	15,577	15,889	+312
Non-Defense Environmental Cleanup				
Gaseous Diffusion Plants				
Paducah Gaseous Diffusion Plant				
PA-0011 / NM Stabilization and Disposition-Paducah Uranium Facilities Management	1,369	1,369	863	-506
PA-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	48,976	48,976	50,587	+1,611
Subtotal, Paducah Gaseous Diffusion Plant	**50,345**	**50,345**	**51,450**	**+1,105**
Uranium Enrichment Decontamination and Decommissioning Fund				
Paducah				
Paducah Gaseous Diffusion Plant				
PA-0040 / Nuclear Facility D&D-Paducah	205,530	206,000	207,215	+1,215
Pension and Community and Regulatory Support				
Paducah Gaseous Diffusion Plant				
PA-0103 / Paducah Community and Regulatory Support	1,725	2,102	2,094	-8
Total, Uranium Enrichment Decontamination and Decommissioning Fund	**207,255**	**208,102**	**209,309**	**+1,207**
Total, Paducah	**273,156**	**274,024**	**276,648**	**+2,624**

Paducah Project Office
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
Safeguards and Security	
PA-0020 / Safeguards and Security	
• No significant change.	+312
Non-Defense Environmental Cleanup	
Gaseous Diffusion Plants	
Paducah Gaseous Diffusion Plant	
PA-0011 / NM Stabilization and Disposition-Paducah Uranium Facilities Management	
• Decrease is attributable to lower polychlorinated biphenyls decontamination waste volumes as a result of roof repairs, reducing water intrusion into the process buildings.	-506
PA-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	
• Increase supports safety-related plant modifications needed for continued operations of four lines at the Depleted Uranium Hexafluoride Conversion Facility.	+1,611
Uranium Enrichment Decontamination and Decommissioning Fund	
Paducah	
PA-0040 / Nuclear Facility D&D-Paducah	
• Increase supports the initiation of radiological characterization in the C-333 Process Building to allow for uranium deposit removal.	+1,215
Pension and Community and Regulatory Support	
PA-0103 / Paducah Community and Regulatory Support	
• No significant change.	-8
Total, Paducah	**+2,624**

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$15,577	**$15,889**	**+$312**
• 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. • Complete construction of on-site firing range. • Continue Limited Area footprint reduction at the Northwest Corner of the plant. • Continue Limited Area footprint reduction for the process buildings. • Begin design of the modular security complex.	• 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. • Continue Limited Area footprint reduction at the Northwest Corner of the plant. • Continue Limited Area footprint reduction for the process buildings. • Construct the modular security complex.	• No significant change.

NM Stabilization and Disposition (PBS: PA-0011)

Overview

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

This PBS project scope includes management of legacy polychlorinated biphenyl remediation activities to maintain compliance with the Toxic Substances Control Act (40 CFR 761), the Uranium Enrichment Toxic Substances Control Act Federal Facilities Compliance Agreement of 1992, DOE Orders, and other applicable requirements. Polychlorinated biphenyls were used as coolant fluids and are a toxic environmental contaminant. The polychlorinated biphenyl collection and containment trough systems in the cascade buildings (C-310, C-315, C-331, C-333, C-335, and C-337) cover approximately 6,400,000 ft^2 and contain approximately 16,000 collection systems.

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

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$1,369	**$863**	**-$506**
• Continue to monitor activities related to polychlorinated biphenyls and to maintain cleanup, sampling, and decontamination of polychlorinated spills and leaks. • Maintain polychlorinated biphenyl collection and containment trough systems in the cascade buildings.	• Maintain cleanup, sampling, and decontamination of polychlorinated biphenyls spills and leaks. • Maintain polychlorinated biphenyls collection and containment trough systems in cascade buildings.	• Decrease is attributable to lower polychlorinated biphenyls decontamination waste volumes as a result of roof repairs, reducing water intrusion into the process buildings.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$48,976	**$50,587**	**+$1,611**
• Continue steady operations of the DUF6 conversion facility with emphasis on plant availability and achieving optimal throughput. • Package converted depleted uranium oxide and store on site. • Conduct cylinder surveillance and maintenance to keep material in a safe, stable condition.	• Continue operations of the DUF6 conversion facility. • Package converted depleted uranium oxide and store on site. • Conduct cylinder surveillance and maintenance to keep material in a safe, stable condition. • Complete annual plant maintenance outages.	• Increase supports safety-related plant modifications needed for continued operations of four lines at the Depleted Uranium Hexafluoride Conversion Facility.

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 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$206,000	**$207,215**	**+$1,215**
• 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 non-destructive assay characterization in process buildings. • Submit the Remedial Investigation Work Plan for the sampling around and under slab at C-400 Cleaning Building. • Initiate demolition of the C-400 Cleaning Building. • Initiate uranium deposit removal in C-331	• 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 Remedial Investigation Feasibility Study and submittal of regulatory documents. • Continue utilities and space optimizations to reduce power and water needs. • Initiate infrastructure projects to improve modes of transportation.	• Increase supports the initiation of radiological characterization in the C-333 Process Building to allow for uranium deposit removal.

Building. • Continue utilities and space optimizations to reduce power and water needs.	• Complete characterization activities in C-331 Building. • Continue uranium deposit removal in C-331 Building. • Complete demolition of the C-400 Cleaning Building. • Initiate characterization activities in C-333 Building.	

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.

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

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$2,102	**$2,094**	**-$8**
• Continue support to the Citizens Advisory Board to assist in the public participation activities required by the Comprehensive Environmental Response, Compensation, and Liability Act. • Continue to ensure requirements are met regarding the Federal Facility Agreement and Agreement-In-Principle grants.	• Continue support to the 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.	• No significant change.

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 $69,244,000 in FY 2020.

The Portsmouth Operations Office plans to purchase the following vehicle in FY 2020: one heavy rescue vehicle.

Highlights of the FY 2020 Budget Request

This FY 2020 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 2020 Budget Request includes funding the On-Site Waste Disposal Facility, Line Item Capital Project #1 (15-U-408) at $41,102,000 ($0 for design, $38,502,000 for construction, and $2,600,000 for other project cost) and includes funding the On-Site Waste Disposal Facility, Line Item Capital Project #2 (20-U-401) at $10,000,000 ($7,900,000 for design, $1,500,000 for construction, and $600,000 for other project cost). The mission of this project is to construct an on-site facility for the disposal of waste generated from the demolition of the Portsmouth Gaseous Diffusion Plant and associated facilities.

FY 2019 and FY 2020 Key Milestones/Outlook

- (October 2018) Initiate 5 Unit Plume Utility Relocation.
- (September 2019) Achieve Cumulative Deactivation of 8 of 16 Units in the Second Process Building (X-333).
- (September 2019) Complete Uranium Transfer for Paducah Type 3 Large Cylinders.
- (October 2019) Initiate Design and Construction of Second On-Site Waste Disposal Facility Capital Project.
- (July 2020) Complete On-Site Waste Disposal Facility Cell One Liner and North Leachate Transmission System.
- (July 2020) Complete Initial Leachate Treatment System for On-Site Waste Disposal Facility.
- (September 2020) Initiate Field Construction of the Water Managements System in Preparation of the First Process Building (X-326) Demolition.

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 late FY 2019 or 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. Compliance with DOE Order 435.1, Radioactive Waste Management is required for issuance of the Disposal Authorization Statement which is anticipated in the 3rd quarter of 2019.

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 2/1/2017 - 1/30/2022.
- 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 3/29/2016 - 3/28/2021.
- Portsmouth Mission Alliance, LLC, a fixed-price hybrid including both fixed-price and cost-reimbursable contract for infrastructure support services, covering the period of 4/25/2016 – 4/24/2019. The contract has the potential for a twenty-two month option period from 4/25/2019 – 2/24/2021.

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 which 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 has received approval of the Resource Conservation and Recovery Act Facility Investigation/Corrective Measure Study Work Plan from the Ohio Environmental Protection Agency as part of the decision making process for the Resource Conservation Recovery Act soil remediation Decision Documents.
- DOE will be completing the Resource Conservation Recovery Act Facility Investigation/Corrective Measure Study Report as 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-344 Facility.

- DOE will develop excavation work plans for the X-740 groundwater plume and the X-231B biodegradation plot in accordance with the agreement reached with the Ohio Environmental Protection Agency.

Portsmouth Project Office

Funding ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Safeguards and Security				
PO-0020 / Safeguards and Security	14,259	15,078	16,690	+1,612
Non-Defense Environmental Cleanup				
Gaseous Diffusion Plants				
Portsmouth Gaseous Diffusion Plant				
PO-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	50,959	50,959	51,623	+664
Uranium Enrichment Decontamination and Decommissioning Fund				
Portsmouth				
Portsmouth Gaseous Diffusion Plant				
PO-0040 / Nuclear Facility D&D-Portsmouth	381,271	408,099	355,661	-52,438
Pension and Community and Regulatory Support				
Portsmouth Gaseous Diffusion Plant				
PO-0104 / Portsmouth Community and Regulatory Support	1,020	1,020	2,013	+993
PO-0103 / Portsmouth Contract/Post-Closure Liabilities/Administration	775	650	0	-650
Subtotal, Portsmouth Gaseous Diffusion Plant	**1,795**	**1,670**	**2,013**	**+343**
Total, Uranium Enrichment Decontamination and Decommissioning Fund	**383,066**	**409,769**	**357,674**	**-52,095**
Total, Portsmouth	**448,284**	**475,806**	**425,987**	**-49,819**

Portsmouth Project Office
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
Safeguards and Security	
PO-0020 / Safeguards and Security	
• Increase maintains the security posture.	+1,612
Non-Defense Environmental Cleanup	
Gaseous Diffusion Plants	
Portsmouth Gaseous Diffusion Plant	
PO-0011X / NM Stabilization and Disposition-Depleted Uranium Hexafluoride Conversion	
• Increase supports safety-related plant modifications needed for operation of two of three lines at the Depleted Uranium Hexafluoride Conversion Facility.	+664
Uranium Enrichment Decontamination and Decommissioning Fund	
Pension and Community and Regulatory Support	
PO-0103 / Portsmouth Contract/Post-Closure Liabilities/Administration	
• Decrease reflects utilization of carryover funding for severance payments and litigation needs.	-650
PO-0104 / Portsmouth Community and Regulatory Support	
• Increase supports regulatory oversight activities to accelerate cleanup.	+993
Portsmouth	
PO-0040 / Nuclear Facility D&D-Portsmouth	
• Decrease reflects an offset by the resumption of uranium transfers (barter) pending renewal of Secretarial Determination needed to continue deactivation of the second Process building (X-333).	-52,438
Total, Portsmouth	**-49,819**

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$15,078	**$16,690**	**+$1,612**
• 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.	• 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.	• Increase maintains the security.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$50,959	**$51,623**	**+$664**
• Continue steady state operations of the DUF6 conversion facility with emphasis on plant availability and maintain optimum throughput. • Package converted depleted uranium oxide and store on site. • Conduct cylinder surveillance and maintenance, to keep existing material in a safe and stable condition.	• Continue operations of the DUF6 conversion facility. • Package converted depleted uranium oxide and store on site. • Conduct cylinder surveillance and maintenance to keep existing material in a safe and stable condition. • Conduct annual plant maintenance outages.	• Increase supports safety-related plant modifications needed for operation of two of three lines at the Depleted Uranium Hexafluoride Conversion Facility.

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 wastes generated from the site-wide cleanup, including wastes generated from the decontamination, decommissioning, and demolition of the Gaseous Diffusion Plant.

The FY 2020 Budget Request of $355,661,000 supports removal of high-risk radioactively contaminated equipment and hazardous materials from the uranium processing buildings, including $41,102,000 ($0 for design, $38,502,000 for construction, and $2,600,000 for other project costs) for the Portsmouth On-Site Waste Disposal Facility Capital Project #1 (15-U-408) and $10,000,000 ($7,900,000 for design, $1,500,000 for construction, and $600,000 for other project cost) for Portsmouth On-Site Waste Disposal Facility Capital Project #2 (20-U-401). The mission of this project is to construct an On-Site Waste Disposal Facility for waste 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$408,099	**$355,661**	**-$52,438**
• 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 deactivation of the second process building (X-333). • Continue 5 Unit Plume Excavation site preparation. • Continue Construction of On-Site Waste Disposal	• 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 deactivation of second process building (X-333). • Continue pre-demolition activities of first process building (X-326). • Initiate field construction of the Water	• Decrease reflects an offset by the resumption of uranium transfers (barter) pending renewal of Secretarial Determination needed to continue deactivation of the second Process building (X-333).

Facility Cell One and North Leachate Transmission System.

- Initiate pre-demolition activities of first process building (X-326).

Management System in preparation of the First Process Building Demolition (X-326).

- Complete Capital Project #1 Cell 1 Liner of the On-Site Waste Disposal Facility.
- Initiate design and construction of the On-Site Waste Disposal Facility Capital Project #2.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$650	**$0**	**-$650**
• 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.	• Planned activities using carryover funding: • 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.	• Decrease reflects utilization of carryover funding for severance payments and litigation needs.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$1,020	**$2,013**	**+$993**
• Support oversight activities of the Ohio Environmental Protection Agency. • Support the designated Site Specific Advisory Board.	• Support oversight activities of the Ohio Environmental Protection Agency. • Support the designated Site Specific Advisory Board.	• Increase supports regulatory oversight activities to accelerate cleanups.

Portsmouth
Capital Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 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)	3,086	0	0	0	0	3,086	+3,086
Total, Capital Operating Expenses	**3,086**	**0**	**0**	**0**	**0**	**3,086**	**+3,086**
Capital Equipment > $500K (including MIE)	0	0	0	0	0	0	+0
Total, Capital Equipment (including MIE)	**3,086**	**0**	**0**	**0**	**0**	**3,086**	**+3,086**
Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <$20M)							
Portsmouth							
Electrical Supply and Distribution GDP	3,086	0	0	0	0	3,086	+3,086
Total, Portsmouth	**3,086**	**0**	**0**	**0**	**0**	**3,086**	**+3,086**
Total, Capital Summary	**3,086**	**0**	**0**	**0**	**0**	**3,086**	**+3,086**

Portsmouth
Construction Projects Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
15-U-408, On Site Waste Disposal Facility (PO-0040)							
Total Estimate Cost (TEC)	268,058	65,485	37,097	34,024	38,590	38,502	-88
Other Project Costs (OPC)	16,616	4,637	1,785	2,039	2,578	2,600	+22
Total Project Cost (TPC) 15-U-408	**284,674**	**70,122**	**38,882**	**36,063**	**41,168**	**41,102**	**-66**
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	0	9,400	+9,400
Other Project Costs (OPC)	TBD	0	0	0	0	600	+600
Total Project Cost (TPC) 20-U-401	**TBD**	**0**	**0**	**0**	**0**	**10,000**	**+10,000**

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 2020 Request for the On-Site Waste Disposal Facility – Initial Infrastructure & Cell 1, 4, & 5 Liner Construction is $41,102,000.

DOE Order 413.3B approved Critical Decision for the On-Site Waste Disposal Facility – Initial Infrastructure & Cell 1, 4, & 5 Liner Construction project resulted in an approved Critical Decision-0, Approve Mission Need, Critical Decision-1, Approve Alternative Selection and Cost Range, and Critical Decision-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 TPC range for the On-Site Waste Disposal Facility CAP-1 Project was revised (CD-1R) to $250,000,000 to $340,000,000

Significant Changes

This Construction Project Data Sheet is an update to the FY 2019 Construction Project Data Sheet and does not include a new start for the budget year.

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

Successfully 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 Critical Decision 2/3 on April 10, 2018 with a TPC of $284,674,925.

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.

The On-Site Waste Disposal Facility 90 percent design has been concurred on by the Ohio Environmental Protection Agency (EPA) with comments being incorporated into the On-Site Waste Disposal Facility Final 100 percent design. The Interim Leachate Treatment System (ILTS) Phase 1 and ILTS Phase 2 is going through 90% design with anticipated submittal early FY 2019. The ILTS Phase 1 and Phase 2 (90%) Design package will then be submitted to Ohio EPA for review and concurrence followed by design being advanced to 100%. Upon completion of 100% design, construction of the ILTS will begin.

The following site preparatory activities have been completed: X-114A Facility decontamination and decommissioning/demolition; land clearing; Sedimentation Pond 2, 3, & 4 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, rough grading (~1.8M cubic yards of earthwork movement.).

Additionally, the following work is projected to be complete for late FY2018/FY2019: Phase 2 Potable water and sanitary sewer; Phase 2 Raw Water Line; Finish grading of On-Site Waste Disposal Facility Access and Construction Roads; Surface water control channels; Power and communications in preparation of future operations; Begin installation of North

Leachate Transmission System (including valve houses 1, 4, & 5); Temporary Sedimentation Basin A; excavation of 720 sandstone and Cell 1 bowl; and procurement of long-lead items (example: liner material).

Critical Milestone History

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

(fiscal quarter or date)

	CD-0	Conceptual Design Complete	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[a]	4Q FY2015	TBD	TBD	TBD	TBD	TBD
FY 2017	4Q FY2015	04/10/2014[a]	4Q FY2015	TBD	TBD	TBD	N/A	TBD
FY 2018	08/28/2015	04/10/2014[a]	08/28/2015	2Q FY2018	TBD	TBD	N/A	TBD
FY 2019	08/28/2015	04/10/2014[a]	08/28/2015	2Q FY2018	TBD	TBD	N/A	TBD
FY 2020	08/28/2015	04/10/2014[a]	08/28/2015	4/10/2018	2Q FY2018	4/10/2018	N/A	3Q FY 2024

[a] Conceptual Design was completed as part of the Remedial Investigation/Feasibility Study development prior to Critical Decision-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

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

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 (Critical Decision-0) for the On-Site Waste Disposal Facility Cell 1 Liner Construction Project on August 28, 2015 and the Mission Need (Critical Decision-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 PORTS 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 low-level waste disposal cell liner (Cell 1) of at least 7 acres (compacted clay liner) that includes a 3-foot clay barrier, secondary geosynthetic liner layer, leak detection layer, primary geosynthetic liner layer, and leachate collection layer.	6.5 Acres	7 Acres
Design and construct a low-level waste disposal cell liner (Cell 4) of at least 6.5 acres (compacted clay liner) that includes a 3-foot clay barrier, secondary geosynthetic liner layer, leak detection layer, primary geosynthetic liner layer, and leachate collection layer.	6.0 Acres	6.5 Acres
Design and construct a low-level waste disposal cell liner (Cell 5) of at least 6.5 acres (compacted clay liner) that includes a 3-foot clay barrier, secondary geosynthetic liner layer, leak detection layer, primary geosynthetic liner layer, and leachate collection layer.	6.0 Acres	6.5 Acres
Design and construct a Leachate Transmission System and Modular Leachate Treatment System with a minimum base flow design capacity of 50 gpm and a max 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	4,036
FY 2019	N/A	N/A	2,054
FY 2020	N/A	N/A	92
Outyears	N/A	N/A	0
Total, Design	N/A	N/A	15,017
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	29,988
FY 2019	N/A	N/A	48,027
FY 2020	N/A	N/A	38,350
Outyears	N/A	N/A	91,818

	(dollars in thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
Total, Construction	N/A	N/A	253,041
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	38,590	38,590	50,081
FY 2020	38,502	38,502	38,442
Outyears	88,384	88,384	91,818
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	2,578	2,578	3,558
FY 2020	2,600	2,600	2,595
Outyears	5,016	5,016	5,033
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	53,639
FY 2020	41,102	41,102	41,037
Outyears	93,400	93,400	96,851
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	14,879	TBD	N/A
Contingency	138	TBD	N/A
Total, Design	15,017	TBD	N/A
Construction			
Building & Site Work	233,723	TBD	N/A
D&D	563	TBD	N/A
Contingency	18,755	TBD	N/A
Total, Construction	253,041	TBD	N/A
Total, TEC	268,058	TBD	N/A
Contingency, TEC	18,893	TBD	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	0	TBD	N/A
Cold startup	2,339	TBD	N/A
Other OPC Costs	13,948	TBD	N/A
Contingency	329	TBD	N/A
Total, OPC except D&D	16,616	TBD	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	TBD	N/A
Contingency, OPC	329	TBD	N/A
Total, TPC	284,674	TBD	N/A
Total, Contingency	19,222	TBD	N/A

Schedule of Appropriation Requests

		(Dollars in Thousands)					
Request Year		Prior Years	FY 2018	FY 2019	FY 2020	Outyears	Total
FY 2015	TEC	158,528	76,725	52,073	0	0	287,326
	OPC	17,895	2,369	2,410	0	0	22,674

	TPC	176,423	79,094	54,483	0		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	66,717	35,984	TBD	TBD	TBD	TBD
	OPC	3,405	2,898	TBD	TBD	TBD	TBD
	TPC	70,122	38,882	TBD	TBD	TBD	TBD
FY 2019	TEC	65,445	35,984	39,668	TBD	TBD	TBD
	OPC	4,677	2,898	1,500	TBD	TBD	TBD
	TPC	70,122	38,882	41,168	TBD	TBD	TBD
FY 2020	TEC	65,485	37,097	38,590	38,502	88,384	268,058
	OPC	4,637	1,785	2,578	2,600	5,016	16,616
	TPC	70,122	36,063	41,168	41,102	93,400	284,674

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	1Q FY2022
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	TBD	65,000	TBD
Utilities	330	TBD	1,650	TBD
Maintenance	931	TBD	4,655	TBD
Total, Operations & Maintenance	14,261	TBD	71,305	TBD

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 first Process Building (X-326) is being prepared for demolition in FY 2019, 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 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.

Portsmouth is requesting funding in FY 2020 of $10,000,000 to initiate the design and construction of the On-Site Waste Disposal Facility CAP-2.

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

Significant Changes

This Construction Project Data Sheet is new and includes a new start for the FY 2020 budget year.

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

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-0R*	Conceptual Design Complete	CD-1	CD-2	Final Design Complete**	CD-3	Construction D&D Complete	CD-4
FY 2020	4Q FY2019	04/10/14***	4Q FY2019	4Q FY2019	4Q FY2020	4Q FY2019	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. A revised CD-0 (CD-0R) will be submitted and approved for the realigned On-Site Waste Disposal Facility CAP-2 Project (i.e., Remaining Infrastructure and Cell 2, 3, and 6 Liner Construction).*

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

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

CD-0 – Approve Mission Need 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
PB – Indicates the Performance Baseline

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

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 PORTS D&D Project mission (i.e., demolition of the next PORTS 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. The scope of the On-Site Waste Disposal Facility CAP-2 Project will be adjusted through a future revised CD-0R, *Approve Revised Mission Need*, anticipated in FY 2019. 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 plans to develop a combined CD-0R/1/2/3 package with approval anticipated during Fourth Quarter FY 2019.

Justification

The Ohio Environmental Protection Agency and the DOE have entered into a formal agreement regarding the decision-making process for the Portsmouth (PORTS) 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 PORTS 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 PORTS 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 PORTS 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	7,900	7,900	7,900
FY 2021	0	0	0
FY 2022	0	0	0
FY 2023	0	0	0
FY 2024	0	0	0
Outyears	0	0	0
Total, Design	7,900	7,900	7,900
Construction			
FY 2020	1,500	1,500	1,500
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2020	9,400	9,400	9,400
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
[Other Project Cost (OPC)]			
OPC except D&D			
FY 2020	600	600	600
Outyears	TBD	TBD	TBD
Total, OPC except D&D	TBD	TBD	TBD
OPC, D&D	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
OPC			
FY 2020	600	600	600
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2020	10,000	10,000	10,000
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	7,324	N/A	N/A
Contingency	576	N/A	N/A
Total, Design	7,900	N/A	N/A
Construction			
Building & Site Work	TBD	N/A	N/A
D&D	TBD	N/A	N/A
Contingency	TBD	N/A	N/A
Total, Construction	TBD	N/A	N/A
Total, TEC	TBD	N/A	N/A
Contingency, TEC	TBD	N/A	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	N/A	N/A
Cold startup	TBD	N/A	N/A
Other OPC Costs	TBD	N/A	N/A
Contingency	TBD	N/A	N/A
Total, OPC except D&D	TBD	N/A	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	TBD	N/A	N/A
Contingency, OPC	TBD	N/A	N/A
Total, TPC	TBD	N/A	N/A
Total, Contingency	TBD	N/A	N/A

Schedule of Appropriation Requests

(Dollars in Thousands)

Request Year		FY 2020	Outyears	Total
FY 2020	TEC	9,400	TBD	TBD
	OPC	600	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 (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	XXX	TBD
Utilities	TBD	TBD	XXX	TBD
Maintenance	TBD	TBD	XXX	TBD
Total, Operations & Maintenance	TBD	TBD	XXX	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 and the Pacific Northwest National Laboratory (managed by the Office of Science, Pacific Northwest Site Office).

The Hanford Site was established during World War II to produce plutonium for the nation's nuclear weapons. 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 torn down. Forty percent of the approximately 1 billion curies of human-made radioactivity that exist across the nuclear weapons complex reside 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 $103,966,000.

The Richland Operations Office plans to purchase the following vehicles in FY 2020: 2 Ladder Trucks; 1 Hazmat Truck; 3 Fire Engine Pumper Trucks; 2 Wildland Tanker Trucks; 2 Bucket Trucks; 2 Septic Trucks; 2 Potable Water Trucks; 2 Crew Cab 4x4; 8 Full Size Cargo Vans; 7 small cargo vans; 4 water trucks; 1 Digger Derrick Truck; 2 Truck Tractors; 2 Large Service Cargo Vans; 1 Refuse Truck; and 1 vapor tracking van.

Highlights of the FY 2020 Budget Request

Richland's FY 2020 budget request represents continued achievement of important cleanup progress required by the Tri-Party Agreement. In summary, the Richland budget request is designed to maintain safe operations; perform Hanford site-wide services; continue groundwater pump-and-treat operations; and continue waste site remediation in the River Corridor. Cleanup work is accomplished while maintaining safe and compliant waste management, decontamination and decommissioning, and groundwater capabilities in the Central Plateau.

The FY 2020 request includes funding for Line Item 18-D-404, the Waste Encapsulation and Storage Facility Modifications and Capsule Storage ($11,000,000). This capital project includes construction activities required to achieve safe, compliant, and cost-effective interim dry storage of the 1,936 cesium and strontium capsules currently stored at the Waste Encapsulation and Storage Facility. The line-item construction funding supports the mission need by modifying the Waste Encapsulation and Storage Facility to remove the capsules.

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 2019 & FY 2020 Key Milestones/Outlook

- (December 2018) M-024-69; Complete construction of all wells listed for CY 2018.

- (March 2019) M-026-07D; Submit to U. S. Environmental Protection Agency and Ecology an evaluation of development status of tritium treatment technology.
- (June 2019) M-091-03M; Submit revision of transuranic mixed waste and mixed low-level waste project management plan to Ecology.
- (September 2019) M-016-85A; Complete remote excavation of 300-296 waste site.
- (September 2019) M-091-47E; Certify or treat 280 cubic meters of transuranic, mixed waste or mixed low-level waste.
- (December 2019) M-016-176; Complete sludge removal from 105-KW Fuel Storage Basin.
- (December 2019) M-016-178; Initiate deactivation of 105-KW Fuel Storage Basin.
- (December 2019) M-024-70; Complete construction of all wells listed for CY 2019.
- (September 2020) M-085-72; Submit removal action Work Plan for 224B to EPA.
- (September 2020) M-085-100; Submit removal action Work Plan for 224T to EPA.
- (December 2020) M-024-71; Complete construction of all wells listed for CY 2020.

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. In October 2010, the Department of Energy and the Washington State Department of Ecology reached an agreement on revised timetables under the Tri-Party Agreement and a Consent Decree filed in the federal district court for cleanup on the Hanford Site. Tri-Party Agreement milestones have been updated in accordance with the Consent Decree.

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. Approval has been received from HQ to extend this contract for a period not to exceed 1 year through September 30, 2019.
- Mission Support Alliance, LLC, a cost-plus-award-fee contract with 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 first options have been exercised for the period of May 26, 2014, through May 25, 2019.
- HPM Corporation, a hybrid contract that includes firm-fixed price with award fee, cost reimbursement, and an Indefinite Delivery Indefinite Quantity component. This contract was awarded in 2012 for two years with four 1-year option periods. This contract was extended pending the award of the follow-on contract. DOE awarded the follow-on contract on December 31, 2018, with a 90-day transition. The follow-on contract is with HPM Corporation. It is a hybrid contract that includes firm-fixed price, cost reimbursement, and Indefinite Delivery Indefinite Quantity scope.

Richland is currently engaged in acquisition planning for successor contracts for cleanup activities at Hanford.

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 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Hanford Site				
Richland Community and Regulatory Support				
RL-0100 / Richland Community and Regulatory Support	10,121	10,121	5,121	-5,000
River Corridor and Other Cleanup Operations				
RL-0040 / Nuclear Facility D&D-Remainder of Hanford - 2035	68,042	74,192	34,750	-39,442
RL-0041 / Nuclear Facility D&D-River Corridor Closure Project	115,650	119,500	105,000	-14,500
Subtotal, River Corridor and Other Cleanup Operations	**183,692**	**193,692**	**139,750**	**-53,942**
Central Plateau Remediation				
RL-0011 / NM Stabilization and Disposition-PFP	26,067	46,200	0	-46,200
RL-0012 / SNF Stabilization and Disposition	42,610	13,900	0	-13,900
RL-0013C / Solid Waste Stabilization and Disposition- 2035	151,506	160,900	121,798	-39,102
RL-0030 / Soil and Water Remediation-Groundwater/Vadose Zone - 2035	132,363	132,158	106,600	-25,558
RL-0201 / Hanford Site Wide Services	316,833	308,200	255,551	-52,649
Subtotal, Central Plateau Remediation	**669,379**	**661,358**	**483,949**	**-177,409**
Total, Hanford Site	**863,192**	**865,171**	**628,820**	**-236,351**
Safeguards and Security				
RL-0020 / Safeguards and Security	81,990	86,686	86,778	+92
Total, Defense Environmental Cleanup	**945,182**	**951,857**	**715,598**	**-236,259**
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	2,240	2,240	2,500	+260
Total, Richland	**947,422**	**954,097**	**718,098**	**-235,999**

Richland
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
Hanford Site	
Central Plateau Remediation	
RL-0011 / NM Stabilization and Disposition-PFP	
• The decrease is associated with the completion of the decommissioning and demolition activity of the Plutonium Finishing Plant facilities to slab-on-grade.	-46,200
RL-0012 / SNF Stabilization and Disposition	
• The decrease reflects completion of transfer of sludge off the Columbia River to T Plant in the Central Plateau.	-13,900
RL-0013C / Solid Waste Stabilization and Disposition- 2035	
• The decrease is associated with a shift in priorities within the Environmental Management Program to focus on near term completions and higher risk scope at other sites. The decrease also reflects the anticipated availability of prior year funding.	-39,102
RL-0030 / Soil and Water Remediation-Groundwater/Vadose Zone - 2035	
• The decrease is associated with a shift in priorities within the Environmental Management Program to focus on near term completions and higher risk scope at other sites. The decrease also reflects the anticipated availability of prior year funding.	-25,558
RL-0201 / Hanford Site Wide Services	
• The decrease is associated with completion of various critical site infrastructure requirements in support of Direct Feed Low Activity Waste commissioning and startup. The decrease also reflects the anticipated availability of prior year funding.	-52,649
Richland Community and Regulatory Support	
RL-0100 / Richland Community and Regulatory Support	
• Decrease is associated with reduction for discretionary payments in lieu of taxes to focus on cleanup mission.	-5,000
River Corridor and Other Cleanup Operations	
RL-0040 / Nuclear Facility D&D-Remainder of Hanford - 2035	
• The decrease is associated with completion of PUREX Tunnel #2 stabilization.	-39,442
RL-0041 / Nuclear Facility D&D-River Corridor Closure Project	
• The decrease is associated with progress made in remediation of the highly contaminated 300-296 waste site under the 324 Building.	-14,500

	FY 2020 Request vs FY 2019 Enacted
Safeguards and Security	
RL-0020 / Safeguards and Security	
• No significant change.	+92
Non-Defense Environmental Cleanup	
Fast Flux Test Reactor Facility D&D	
RL-0042 / Nuclear Facility D&D-Fast Flux Test Facility Project	
• No significant change.	+260
Total, Richland	**-235,999**

NM Stabilization and Disposition-PFP (PBS: RL-0011)

Overview

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

The Plutonium Finishing Plant complex consists of several buildings that were used for defense production of plutonium nitrates, oxides and metal from 1950 through early 1989. This PBS implements actions to package and ship special nuclear materials and fuels to storage facilities; cleanout facilities and demolish them to slab-on-grade; and transition the below-grade structures to PBS RL-0040, Nuclear Facility Decommissioning & Decontamination - Remainder of Hanford. These actions can be grouped in the following key categories: 1) stabilization, packaging and shipment of the special nuclear materials and residues from the Plutonium Finishing Plant complex; 2) interim storage of special nuclear materials; 3) maintaining the facilities in a safe and secure manner until the completion of demolition; and 4) cleanout and demolition of facilities.

NM Stabilization and Disposition-PFP (PBS: RL-0011)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$46,200	**$0**	**-$46,200**
• Complete facility clean-out, demolition to slab-on-grade, and transition the below-grade structures to PBS RL-0040, Nuclear Facility Decommissioning & Decontamination – Remainder of Hanford.	• No planned activities.	• The decrease is associated with the completion of the decommissioning and demolition activity of the Plutonium Finishing Plant facilities to slab-on-grade.

SNF Stabilization and Disposition (PBS: RL-0012)

Overview

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

This PBS scope includes the stabilization, removal, and shipment of nuclear materials including spent (used) nuclear fuel and radioactively contaminated sludge from the 105 K West Basin. Waste to be removed includes 27 cubic meters of radioactively contaminated sludge that currently resides in engineered containers in the 105 K West Basin. This PBS currently supports the removal of the sludge from the 105 K West Basin for interim storage on the Central Plateau. After removal of sludge, PBS RL-0041 will disposition the 105 K West Basin and other K Basin Closure Project-related facilities, to achieve footprint reduction.

This PBS includes the design, procurement, construction, testing, commissioning, and operations of an integrated set of process/systems to remove radioactive sludge currently stored in the K West Basin. The overall Sludge Treatment Project is a two-phase retrieval, storage, and packaging strategy. Phase 1 is the retrieval and transfer of the sludge material now consolidated in the engineered containers in the K West Basin. The consolidated sludge originated from previous recovery campaigns and will be retrieved and transported to T Plant at Hanford's Central Plateau for temporary storage. The project has completed the construction of the sludge handling and supporting equipment and will complete operations to transfer the sludge from the 105 K-West Basin for storage in the Central Plateau in FY 2019. Phase 2 is treatment and packaging of the sludge for offsite shipment which will be performed under PBS RL-0013.

SNF Stabilization and Disposition (PBS: RL-0012)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$13,900	**$0**	**-$13,900**
• Provide support to operations of the Engineered Container Retrieval and Transfer System to transfer sludge to the Central Plateau.	• No planned activities.	• The decrease reflects completion of transfer of sludge off the Columbia River to T Plant in the Central Plateau.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$160,900	**$121,798**	**-$39,102**
• 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. • Continue project planning and design for dry storage options for the cesium and strontium capsules. • Maintain T Plant Complex in a safe, compliant, and cost-effective manner for	• 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	• The decrease is associated with a shift in priorities within the Environmental Management Program to focus on near term completions and higher risk scope at other sites. The decrease also reflects the anticipated availability of prior year funding.

acceptance/storage of low-level radioactive waste, mixed low-level radioactive waste, and transuranic waste (including single-shell 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.
- Repackage suspect transuranic/mixed waste to meet Federal and State regulations.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$132,158	**$106,600**	**-$25,558**
• Continue integration of site-wide groundwater and vadose zone cleanup activities, groundwater contamination monitoring, as well as operations, maintenance, and necessary modifications of existing remediation systems. • Continue to meet Tri-Party Agreement M-24 Well Drilling Commitments. • Continue progress toward completing decision documentation for the Comprehensive Environmental Response, Compensation and Liability Act Remedial Investigation/Feasibility Study process to obtain the final Records of Decisions for operable units in the River Corridor.	• Continue integration of site-wide groundwater and vadose zone cleanup activities, groundwater contamination monitoring, as well as operations, maintenance, and necessary modifications of existing remediation systems. • Continue to meet Tri-Party Agreement M-24 Well Drilling Commitments.	• The decrease is associated with a shift in priorities within the Environmental Management Program to focus on near term completions and higher risk scope at other sites. The decrease also reflects the anticipated availability of prior year funding.

- Support implementation of final remedies to stop contaminants from reaching the Columbia River.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$308,200	**$255,551**	**-$52,649**
• Services include, but are not limited to, roads and transportation services; electrical and water services; facility maintenance; network and software engineering; records management; and regulatory permits and fees. • Payment of required site-wide regulatory costs. • Support to site critical infrastructure, including required infrastructure for Direct Feed Low Activity Waste (DFLAW) commissioning and startup.	• Services include, but are not limited to, roads and transportation services; electrical and water services; facility maintenance; network and software engineering; records management; and regulatory permits and fees. • Payment of required site-wide regulatory costs. • Supports the transition costs associated with new Hanford Contracts.	• The decrease is associated with completion of various critical site infrastructure requirements in support of Direct Feed Low Activity Waste commissioning and startup. The decrease also reflects the anticipated availability of prior year funding.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$10,121	**$5,121**	**-$5,000**
• Support Washington and Oregon States' emergency preparedness, environmental oversight, Hanford Advisory Board and other related activities. • Support to Payment in Lieu of Taxes.	• Support Washington and Oregon States' emergency preparedness, environmental oversight, Hanford Advisory Board.	• Decrease is associated with reduction for discretionary payments in lieu of taxes to focus on cleanup mission.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$74,192	**$34,750**	**-$39,442**
• Support surveillance and maintenance activities necessary to ensure safety for waste sites and surplus facilities on Hanford's Central Plateau. Also supports core project management functions which includes: Environment, Safety and Health oversight, quality management, safety and job hazards analysis, technical support, and integration with site activities. • Support 200 Area risk mitigation activities focusing on PUREX Tunnel #2 stabilization.	• Support surveillance and maintenance activities necessary to ensure safety for waste sites and surplus facilities on Hanford's Central Plateau. Also supports core project management functions which 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.	• The decrease is associated with completion of PUREX Tunnel #2 stabilization.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$119,500	**$105,000**	**-$14,500**
• 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 K Area Remediation. • Provide support for the remediation of the 300-296 waste site under the 324 Building.	• 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. • Continue progress towards remediation of the highly contaminated 300-296 waste site under	• The decrease is associated with progress made in remediation of the highly contaminated 300-296 waste site under the 324 Building.

- Initiate characterization of the K West Basin.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$86,686	**$86,778**	**+$92**
• 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, Cyber Security 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, qualification, and training systems and facilities.	• 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, Cyber Security 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, qualification, and training systems and facilities.	• No significant change.

Nuclear Facility D&D-Fast Flux Test Facility Project (PBS: RL-0042)

Overview

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

This PBS scope includes deactivation and decommissioning of the Fast Flux Test Facility, a 400-megawatt (thermal) liquid metal (sodium) cooled fast neutron flux nuclear test reactor, and 44 support buildings and structures. The deactivation activities consist of: reactor de-fueling; disposition of 376 reactor fuel assemblies by washing, drying, loading in storage casks and transferring to appropriate storage locations; draining approximately 260,000 gallons of sodium from operating plant systems, reactor vessel, and fuel storage vessels; sodium residual cleaning of all plant systems and vessels; disposition of 260,000 gallons of bulk sodium by conversion to sodium hydroxide for use by the Waste Treatment Plant; and the shutdown of Fast Flux Test Facility auxiliary systems.

The Fast Flux Test Facility Project has completed the sodium drain from the Fast Flux Test Facility to the Sodium Storage Facility, stored the reactor nuclear fuel and placed the facility in long-term surveillance and maintenance.

Nuclear Facility D&D-Fast Flux Test Facility Project (PBS: RL-0042)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$2,240	**$2,500**	**+$260**
• 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.	• 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.	• No significant change.

Richland
Capital Summary ($K)

Pursuant to Section 3121 of the Ike Skelton National Defense Authorization Act for FY 2011 (P.L. 111-383), notification is being provided for general plant projects with a total estimated cost of more than $5 million planned for execution between FY 2019 and FY 2021.

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 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)	54,013	0	11,768	5,047	19,841	22,404	+2,563
Total, Capital Operating Expenses	**54,013**	**0**	**11,768**	**5,047**	**19,841**	**22,404**	**+2,563**
Capital Equipment > $500K (including MIE)	0	0	0	0	0	0	0
Total, Capital Equipment (including MIE)	**54,013**	**0**	**11,768**	**5,047**	**19,841**	**22,404**	**+2,563**
Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <$20M)							
Richland							
Cesium and Strontium Capsule Project Integrated Disposal Facility (DFLAW Priority)[a]	6,500	0	3,000	1,750	500	3,000	+2,500
L-707, Advanced Electrical Meeting[a]	60	0	0	0	60	0	-60
L-781, 181D Vertical Turbine Pumps, Header, Instrumentation, Commission[a]	678	0	0	0	678	0	-678
L-826, 181B Vertical Turbine Pumps, Header, Instrumentation, Commission[a]	642	0	0	0	642	0	-642
L-849, Replace 200E 1.1M Gallon PW Tank[a]	5,704	0	237	0	0	5,467	+5,467
L-850, Replace 200W 1.1M Gallon PW Tank (DFLAW Priority)[a]	2,648	0	129	0	2,519	0	-2,519
L-854, 200E Sewer Consolidations (DFLAW Priority)[a]	4,522	0	2,948	514	1,574	0	-1,574
L-861, Single Circuit Distribution Pole Replacement (DFLAW priority)[a]	2,000	0	0	0	0	2,000	+2,000

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
L-888, 400 Area Fire Station[a]	8,045	0	166	0	650	7,229	+6,579
L-894, Raw Water Cross Connection Isolation 200E/W[a]	7,407	0	3,737	2,646	3,670	0	-3,670
L-895, Fire Protection Infrastructure for Plateau Raw Water[a]	7,893	0	851	136	6,152	890	-5,262
L-897, 200 Area Water Treatment Facility (DFLAW priority)[a]	2,264	0	700	1	1,564	0	-1,564
L-898, Area Mission Critical Distribution Feeders Replacement[a]	582	0	0	0	582	0	-582
L-905, Fire Alarm Reporting System[a]	4,318	0	0	0	500	3,818	+3,318
L-906, HFD Station 92 Extension[a]	750	0	0	0	750	0	-750
Total, Richland	**54,013**	**0**	**11,768**	**5,047**	**19,841**	**22,404**	**+2,563**
Total, Plant Projects (GPP and IGPP) (Total Estimated (TEC) <$20M	**54,013**	**0**	**11,768**	**5,047**	**19,841**	**22,404**	**+2,563**
Total, Capital Summary	**54,013**	**0**	**11,768**	**5,047**	**19,841**	**22,404**	**+2,563**

[a] These capital investments represent expenditures that may be performed between FY 2019 and FY 2020 based on emerging risks.

Richland
Construction Projects Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
18-D-404, Modifications of Waste Encapsulation and Storage Facility (RL-0013C)							
Total Estimate Cost (TEC)	TBD	0	6,500	876	1,000	11,000	+10,000
Other Project Costs (OPC)	TBD	2,000	500	2	2,000	2,500	+500
Total Project Cost (TPC) 18-D-404	**TBD**	**2,000**	**7,000**	**878**	**3,000**	**13,500**	**+10,500**

18-D-404, Modification of Waste Encapsulation and Storage Facility
Hanford, Richland, WA
Project is for Design and Construction

1. Summary, Significant Changes and Schedule and Cost History

Summary:
The FY 2020 Request for the Modification of Waste Encapsulation and Storage Facility is $11,000,000.

The scope for this project change was approved on March 17, 2017 with a Total Project Cost of $41,500,000. This was a change from the CD-0 approved on November 5, 2015, which reflected a preliminary cost range or $93,000,000 to $150,000,000.

Significant Changes:
This Construction Project Data Sheet is an update of the FY 2019 Construction Project Data Sheet and does not include a new start for the budget year.

Line Item funding is being requested for Waste Encapsulation and Storage Facility (WESF) modifications to facilitate the radioactive cesium/strontium (Cs/Sr) capsule transfer system. This Construction Project Data Sheet is an updated submittal for the Design and construction funding required for Waste Encapsulation and Storage Facility modifications.

Appropriation delays (FY 2018 Continuing Resolution) caused a delay in the initiation of design work for WESF modifications.

A Federal Project Director (FPD) at the appropriate level has been assigned to this project and the FPD has approved this Construction Project Data Sheet.

Critical Milestone History

Fiscal Year (FY)	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	CD-4	D&D Complete
FY 2018 Request	11/5/2015	3QFY2017	4Q FY2018	TBD	TBD	TBD	TBD	N/A
FY 2019 Request	11/5/2015	4QFY2017	2QFY2018	TBD	TBD	TBD	TBD	N/A
FY 2020 Request	11/5/2015	4QFY2017	2QFY2018	1QFY2020	2QFY2019	1QFY2020	TBD	N/A

CD-0 –Mission Need approved
CD-1 – Approve Alternative Selection and Cost Range. CD-1 Submittal 4Q FY2017.
CD-2 – Approve Performance Baseline. CD-2 Submittal 4Q FY2019.
CD-3 – Approve Start of Construction. CD-3 Submittal 4Q FY2019.
CD-4 – Approve Start of Operations (Ready to transfer capsules out of WESF pool cells)
D&D Start – Start of Decommissioning and Decontamination (D&D) work
D&D Complete – Completion of D&D work

Notes:

No construction excluding approved long-lead procurement will be performed until the project's performance baseline has been updated and CD-3 has been approved.

Project Cost History

	(dollars in thousands)						
	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2018 Request	TBD	TBD	TBD	TBD	TBD	TBD	TBD
FY 2019 Request	7,500	TBD	TBD	TBD	TBD	TBD	TBD
FY 2020 Request	7,500	TBD	TBD	TBD	TBD	TBD	TBD

2. Project Scope and Justification

Scope:
The scope of the Management of the Cesium and Strontium Capsules Project includes the activities required to achieve safe, compliant, and cost-effective interim dry storage of the 1,936 cesium and strontium capsules currently stored at Waste Encapsulation and Storage Facility. Waste Encapsulation and Storage Facility cannot provide a continued capability to manage the capsules for an extended period of time. This Line Item construction supports the mission need by equipping Waste Encapsulation and Storage Facility to remove the capsules.

The scope of the Waste Encapsulation and Storage Facility modifications line item includes the following activities to support interim dry storage of the capsules currently stored at the Waste Encapsulation and Storage Facility:

- Design and completion of modifications necessary to support capsule retrieval, packaging, and transfer of capsules from the Waste Encapsulation and Storage Facility.
- Project and construction management, preparation of any required regulatory documents/permits and safety analyses, testing and system startup.

Justification:
This project is being conducted in accordance with project management principles in DOE Order 413.3B, Program and Project Management for the Acquisition of Capital Assets. The modifications are needed in order to remove the capsules from the Waste Encapsulation and Storage Facility pools for safety reasons.

3. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2018	6,500	6,500	6,500
FY 2019	1,000	1,000	1,000

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total, Design	7,500	7,500	7,500
Construction			
FY2020			11,000
Outyears			TBD
Total, Construction	N/A	N/A	26,000
TEC			
FY 2018	6,500	6,500	6,500
FY 2019	1,000	1,000	1,000
FY 2020	11,000	11,000	11,000
Outyears	TBD	TBD	TBD
Total TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC except D&D			
FY 2017	2,000	2,000	2,000
FY 2018	500	500	500
FY 2019	2,000	2,000	2,000
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total OPC except D&D	TBD	TBD	TBD
Total Project Cost (TPC) (Line Item only)			
FY 2017	2,000	2,000	2,000
FY 2018	7,000	7,000	7,000
FY 2019	3,000	3,000	3,000
FY 2020	11,000	11,000	11,000
Outyears	TBD	TBD	TBD
	TBD	TBD	TBD

4. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	6,500	TBD	N/A
Contingency	1,000	TBD	N/A
Total, Design	7,500	TBD	N/A

Construction			
Equip/Construction	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 Design	TBD	TBD	N/A
Support	TBD	TBD	N/A
Contingency	TBD	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

5. Schedule of Appropriation Requests

		($K)						
		Prior Years	FY2017	FY2018	FY2019	FY 2020	Outyears	Total
FY 2018 Request	TEC	0	0	6,500			TBD	TBD
	OPC	0	2,000	500			TBD	TBD
	TPC	0	2,000	7,000			TBD	TBD
FY 2019 Request	TEC	0	0	6,500	1,000		TBD	TBD
	OPC	0	2,000	500	0		TBD	TBD
	TPC	0	2,000	7,000	1,000		TBD	TBD
FY 2020 Request	TEC	0	0	6,500	1,000	11,000	TBD	TBD
	OPC	0	2,000	500	2,000	2,500	TBD	TBD
	TPC	0	2,000	7,000	3,000	13,500	TBD	TBD

6. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	FY 2023
Expected Useful Life (number of years)	2 years
Expected Future Start of D&D of this capital asset (fiscal quarter)	FY 2028

None is included in Line Item request.

(dollars in thousands)

	Annual Costs		Life Cycle Costs (based on 35 year period)	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Storage Operations	TBD	TBD	TBD	TBD
Utilities	TBD	TBD	TBD	TBD
Maintenance & Repair	TBD	TBD	TBD	TBD
Total	TBD	TBD	TBD	TBD

7. D&D Information

There is no new area being constructed in this construction project.

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

8. Acquisition Approach

To complete this project safely and in the most cost effective manner, DOE will direct the existing plateau remediation prime contractor to perform and manage this work. This approach makes the best use of site expertise and efficiently uses the existing contract. Continuity of design will be ensured by making a provision in the new plateau clean-up contract for assignment of the scope, regardless of the timing of a contract turnover.

The plateau remediation contractor organization will serve as the Design Authority responsible for establishing the design requirements and ensuring that design output documents accurately reflect the design basis. The Design Authority is responsible for design control and ultimate technical adequacy of the design process. These responsibilities are applicable whether the process is conducted fully in-house, partially contracted to outside organizations, or fully contracted to outside organizations. The Design Authority will carefully control and monitor each design tier to ensure the design inputs, design constraints, design analysis and calculations, and design requirements are identified, accurate, complete, and documented.

Subcontracts will be competitively awarded by the plateau remediation contractor for multiple work scopes (e.g., pad construction, Waste Encapsulation and Storage Facility modifications) to provide best value to the government. Various subcontractors will be used for support services such as technology development, permitting, and safety documentation. Subcontracting strategies for these services are to be determined based on the circumstances and work scope of each critical decision.

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), 18 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 56,000,000 gallons of waste make the mission uniquely complex.

The Department is working to construct and operate the treatment facilities and infrastructure to safely immobilize and dispose of Hanford’s tank waste. As planned, the Waste Treatment and Immobilization Plant at Hanford will include five facilities: Analytical Laboratory, Balance of Facilities, Low-Activity Waste 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. The Analytical Laboratory and Balance of Facilities support these vitrification activities. Since technical issues are being resolved for the Pretreatment Facility, the Department is pursuing a strategy to focus on completion of the Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory. In addition, work necessary to feed low-activity waste directly from tank farms to the Low-Activity Waste Facility (instead of routing waste through the Pretreatment Facility − an approach called direct-feed low-activity waste) is also being conducted to meet regulatory and legal milestones.

Pursuing the direct-feed low-activity waste strategy allows the Department to address the most mobile tank waste (liquid) in the near term. As part of this approach, the Department identified the need to construct an effluent management facility to manage the high volume of water generated while retrieving and 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 into 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 the Effluent Management Facility is estimated to be approximately $371,000,000 with planned completion in the third quarter of fiscal year 2021. To commence the immobilization of waste as soon as practicable without waiting for completion of the High-Level Waste and Pretreatment facilities, the Department is implementing an initial pretreatment strategy using tank-side cesium removal equipment to provide initial feed by December 2023 per the 2016 Amended Consent Decree. A follow-on pretreatment capability will be assessed, based on performance of the tank-side cesium removal equipment, as part of the overall Low-Activity Waste Pretreatment System.

In parallel with the direct-feed low-activity waste strategy, the Department is pursuing a Test Bed Initiative to evaluate and demonstrate an end-state, waste characteristics driven approach to open an additional waste disposition pathway to enhance the mission and mitigate risks to the workforce, the public, and the environment. This approach is based on using

waste treatment technology advances along with regulatory changes for commercial waste disposition facilities, allowing mixed low-level radioactive waste, resulting from pre-treated tank waste, to be disposed at the Waste Control Specialists (WCS) Federal Waste Facility. Successful deployment of this approach could economize existing double shell tank (DST) space, reduce risks, and achieve safe, meaningful, and near-term reduction in environmental risk and liability. The Test Bed Initiative will also serve to 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 tank waste.

The direct maintenance and repair activities at the Office of River Protection are estimated to be $81,787,000.

Highlights of the FY 2020 Budget Request

The Office of River Protection fiscal year 2020 budget request represents planned efforts for continued progress toward important cleanup required by the 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.

This fiscal year 2020 request includes a new Project Baseline Summary, ORP-TBI-0014A Low-Level Waste Offsite Disposal, which will support continuation of the test bed initiative. Phase 3, production scale, of the test bed initiative will begin in fiscal year 2020, targeting the treatment, immobilization, and disposal of approximately 300,000 to 500,000 gallons of tank waste. This phase would focus on demonstrating production level scalability of the approach, as well as firming the cost and schedule estimates for production level execution.

The fiscal year 2020 request also includes funding for one line-item project "01-D-416, the Waste Treatment and Immobilization Plant ($690,000,000)." The mission of the Waste Treatment and Immobilization Plant Project is to construct a treatment facility to blend waste from the tank farms with molten glass, which is placed into stainless steel canisters suitable for long-term storage of high-level waste and disposal of low-level waste.

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 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.)

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 Low-Activity

Waste Pretreatment System, 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., for coordinating the construction of Hanford's Waste Treatment and Immobilization Plant for the period December 11, 2000, through August 31, 2023 (interim date). It is a cost-plus-award-fee completion contract.
- Washington River Protection Solutions LLC, 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 extended the contract 12 months from October 1, 2018, through September 30, 2019. 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 Balance of Facilities and Analytical Laboratory necessary for the direct-feed low-activity waste approach. Construction of these facilities is mostly complete, with the exception of the Effluent Management Facility, with startup and commissioning activities continuing.

Operations costs of the Low-Activity Waste Facility, the Analytical Laboratory, and the majority of the Balance of Facilities are captured in a new control element that began in fiscal year 2016. The element captures activities supporting operations of Low-Activity Waste Facility, the Analytical Laboratory, and the Balance of Facilities post-project completion (Critical Decision 4).

The first phase of Waste Treatment and Immobilization Plant operations for the direct feed of the Low-Activity Waste Facility will vitrify low-activity tank wastes. Work will continue to define long-lead consumables and spare parts required to continue operations upon completion of hot commissioning. Once defined and taking into account the lead time, acquisitions, and storage of long-lead consumables and spare parts will be initiated. 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 while the designs advance to completion.

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.

River Protection

Funding ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Office of River Protection				
Tank Farm Activities				
ORP-0014 / Radioactive Liquid Tank Waste Stabilization and Disposition	812,000	828,000	677,460	-150,540
Waste Treatment and Immobilization Plant				
ORP-0060 / Major Construction-Waste Treatment Plant	740,000	730,000	690,000	-40,000
ORP-0070 / Waste Treatment Plant Commissioning	8,000	15,000	15,000	0
Subtotal, Waste Treatment and Immobilization Plant	**748,000**	**745,000**	**705,000**	**-40,000**
ORP Low-Level Waste Offsite Disposal				
ORP-0014A / Low-Level Waste Offsite Disposal	0	0	10,000	+10,000
Total, Office of River Protection	**1,560,000**	**1,573,000**	**1,392,460**	**-180,540**

River Protection
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
Office of River Protection	
ORP Low-Level Waste Offsite Disposal	
ORP-0014A / Low-Level Waste Offsite Disposal	
• This increase supports Low-Level Waste Offsite Disposal (previously known as Test Bed Initiative) pretreatment, immobilization, and off-site disposal of approximately 300,000 to 500,000 gallons of Hanford liquid tank waste. This initiative does not interfere with other key Hanford Tank Farms waste treatment efforts. This initiative will increase the available double-shell tank space for ongoing operations, further development of supplemental Low Activity Waste treatment and immobilization to augment Waste Treatment Plan operations, and achieve safe, meaningful, and near-term reduction in environmental risk and liability at the Hanford Site.	+10,000
Tank Farm Activities	
ORP-0014 / Radioactive Liquid Tank Waste Stabilization and Disposition	
• The decrease is consistent with the Department's focus on accomplishments Direct Feed Low Activity Waste.	
• In addition, the Department is now pursuing a two-phased approach to the Low-Activity Waste Pretreatment System project involving an initial pretreatment strategy using a tank-side cesium removal system to provide initial feed to support hot startup of the Low-Activity Waste Facility. The ongoing tank-side cesium removal activities including a portion of the tank farms upgrades for direct-feed low-activity waste in FY 2020 will be performed utilizing FY 2018 carry over funds.	-150,540
Waste Treatment and Immobilization Plant	
ORP-0060 / Major Construction-Waste Treatment Plant	
• The decrease reflects direct feed low activity waste strategy to provide near-term risk reduction.	-40,000
ORP-0070 / Waste Treatment Plant Commissioning	
• No change.	0
Total, River Protection	**-180,540**

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 (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, immobilization in grout of the three gallons was at the Perma-Fix Northwest Facility in Richland, Washington. The shipment of the immobilized mixed low-level waste to the Waste Control Specialists Federal Waste Facility near Andrews, Texas, for permanent disposal.

The Engineering Scale 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. The Engineering Scale is targeted for completion by December 2019. Phase 2 work in FY2019 has been initiated with EM Technology Development funding.

The Production Scale, will commence in FY2020, and 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 LAW 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$0	**$10,000**	**+$10,000**
The following activities in FY2019 are being performed through the Technology Development Program and are provided for comparability	• Evaluation of National Environmental Policy Act documentation and Waste Incidental to Reprocessing Determination documentation for	• This increase supports Low-Level Waste Offsite Disposal (previously known as Test Bed Initiative) pretreatment, immobilization, and off-

purposes:

- Complete Low-Level Waste Offsite Disposal Engineering Scale Environmental documentation
- Complete the design, fabrication and installation of Low-Level Waste Offsite Disposal equipment
- Process 2,000 gallons of tank waste
- Treat mixed low-level waste at an offsite commercial facility
- Dispose mixed low-level waste to Waste Control Specialist Federal Waste Facility.

potential updates following completion of Low-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.

site disposal of approximately 300,000 to 500,000 gallons of Hanford liquid tank waste. This initiative does not interfere with other key Hanford Tank Farms waste treatment efforts. This initiative will increase the available double-shell tank space for ongoing operations, further development of supplemental Low Activity Waste treatment and immobilization to augment Waste Treatment Plan operations, and achieve safe, meaningful, and near-term reduction in environmental risk and liability at the Hanford Site.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$828,000	**$677,460**	**-$150,540**
• Maintain Tank Farms in a safe and compliant manner. • Continue 222-S Laboratory operations. • Continue 242-A Evaporator campaigns. • Continue 242-A Evaporator operations and maintenance. • Continue Effluent Treatment Facility operations and upgrades. • Conduct Single-Shell/Double-Shell Tank Integrity assessments. • Continue tank farms preventive/corrective	**242-A Evaporator operations and upgrades to support direct-feed low-activity waste** • Design and construct replacement slurry waste transfer lines **Effluent Treatment Facility operation** • 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	• The decrease is consistent with the Department's focus on accomplishments Direct Feed Low Activity Waste. • In addition, the Department is now pursuing a two-phased approach to the Low-Activity Waste Pretreatment System project involving an initial pretreatment strategy using a tank-side cesium removal system to provide initial feed to support hot startup of the Low-Activity Waste Facility. The ongoing tank-side cesium removal activities including a portion of the tank farms upgrades

maintenance activities.

- Continue retrieval of Single-Shell Tanks in A/AX Farm.
- Continue upgrades to Double-Shell Tank AP-107 to support feed to Low-Activity Waste Pretreatment System.
- Perform preparations for retrieval of Single-Shell Tanks in B and T Farms.
- Continue Vapor Mitigation Strategies.
- Continue design, permitting activities and procurements for tank side cesium removal equipment.
- Complete Low Activity Waste Pretreatment System design.
- Start long lead procurements.
- Continue development of all permits required to initiate construction of the Low-Activity Waste Pretreatment System.
- Complete site preparation for the Low-Activity Pretreatment System.

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

- Brine Stabilization Field Work
- Chiller Upgrade
- UV-Oxidizer Replacement
- 4% Caustic Tank Upgrade
- Peroxide Vessel Upgrade
- Repair of Verification Tanks
- Evaporator Repairs
- Control System Upgrades
- Transfer Line tie-in to Waste Treatment and Immobilization Plant

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

- 222-SL Cold Laboratory Construction completion and activation (GPP)
- Tank Waste Characterization Sampling
- Direct-Feed Low-Activity Waste Sample Method Development

Tank Farm Integrity Program to prolong the lifespan of aging tanks

- Visual inspection of 12 single-shell tanks
- Annulus visual inspections of 9 double-shell tanks
- Ultrasonic testing of 3 double-shell tanks
- Tank chemistry control

Maintenance of aging facilities

- Cross-Site Transfer Line repair/activation
- Tank farm vapor mitigation strategies
- Preventative and corrective maintenance
- Critical spare parts management

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

- Interim Disposal Facility Performance Assessment

for direct-feed low-activity waste in FY 2020 will be performed utilizing FY 2018 carry over funds.

- Project and technical integration
- Immobilized Low-Activity Waste Transportation System
- 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

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 chemical tank waste at the Hanford Site. As presently planned, the Waste Treatment and Immobilization Plant complex will involve construction of five major facility complexes: Pretreatment Facility, High-Level Waste Facility, Low-Activity Waste Facility, Analytical Laboratory, and the Balance of Facilities. The Pretreatment Facility will separate the radioactive tank waste into low-activity and high-level 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.

Major Construction-Waste Treatment Plant (PBS: ORP-0060)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$730,000	$690,000	-$40,000

Low-Activity Waste Facility –
Engineering Design Activities:

- Continue Engineering Design Completion Lists for Various Systems including Uninterruptible Power Electrical, C5 Ventilation, Programmable Protection, Secondary Offgas/Vessel Vent Process
- Continue engineering support to construction, Engineering & Nuclear Safety, and commissioning
- Support of the Documented Safety Analysis development

Procurement Activities:

- Deliver Closed Circuit TV system
- Deliver Gas Analyzers
- Deliver Uninterruptible Power Supply

Construction Activities:

- Complete partition wall installation
- Finish +48 bulk piping installation
- Install closed circuit TV equipment
- Complete installation of unscheduled cable
- Install Secondary Offgas/Vessel Vent Process equipment panels
- Install communication cable all elevations
- Complete installation of Low-Activity Waste Facility annex instrument enclosures

Startup Activities:

- Continue system checkout
- Conduct component testing
- Continue procedure development

Commissioning Activities:

- Develop System Procedures
- Perform Initial Calibrations
- Develop and Conduct Training

Balance of Facilities / DFLAW/Effluent Management Facility –
Engineering Design Activities:

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, EL +3
- Complete installation of shield windows, EL +21
- Complete installation of Nitrogen Purge System for Shield Windows (all elevations)
- Complete installation of Process Cell Pipe Shielding, EL +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 Offgass 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

- The decrease reflects direct feed low activity waste strategy to provide near-term risk reduction.

- Develop Steam LPS/HPS/SCW ICN Software Design for LAW/EMF
- Develop Water DIW/DOW/PCW/PSW ICN Software Design for LAW/EMF
- Develop Evaporator ICN Software Design for LAW/EMF
- Develop and Issue Termination Schedule Rev. 0 (Issue Tie to Construction)
- Perform ICN Software Test for LAW/EMF - Steam LPS/HPS/SCW; LAW/EMF - Water DIW/DOW/PCW/PSW; LAW/EMF - Evaporator

Construction Activities:

- Complete remaining punchlist items to support system turnover for startup testing
- Provide support to system startup testing
- Install HDPE Coated and Insulated Pipe
- Install Unscheduled Electrical - EMF
- Install Embedded Conduit , Scheduled Conduit & Tray, and Electrical Tie-Ins
- Install Metal B Decking on Roof - EMF
- Install Platforms - Steel & Grating C3 and C5 Areas
- Perform Hydrotest
- EMF - Install Reboiler Separator Vessel
- EMF - Install Secondary Steam Generator and Condensate
- Backfill To Final Finish Grade
- Set Vendor Supplied Electrical Module Units

Startup Activities

- Support Construction T/O to Startup – Glass Former Storage, Chiller Compressor Plant, Steam Plant Facility
- Component Testing - Water Treatment Facility, Cooling Tower Facility, Chiller Compressor Plant, Steam Plant Facility
- Draft, Review & Approve Test Procedure - Handling System, Melter #1 & #2, Melter Feed Process Systems 1 & 2, Low-Activity Waste 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

Water Treatment Facility, Cooling Tower Facility, Chiller Compressor Plant, Steam Plant Facility
- Startup System Testing - Water Treatment Facility, Cooling Tower Facility, Steam Plant Facility, Chiller Compressor Facility
- Startup System Testing/Closeout and Turnover to Operations - Water Treatment Facility, Cooling Tower Facility
- Startup Systems Turnover and Prep for Testing - CME/SCE - Admin, Warehouse, and Combo Shop

Commissioning Activities
- Continue Operations Training
- Continue Facility Operations
- Continue Maintenance Training
- Continue Operation Support
- Continue - Operations Procedures

Analytical Laboratory –

Engineering Activities:
- Engineering Support to Construction

Construction Activities:
- Provide support to system startup testing
- Install system isolations and modifications to support DFLAW

Startup Activities
- Startup System Turnover and Prep for Testing for C2, C3 & C5 Ventilation Systems
- Startup Component & System Testing - Autosampling System, Radioactive Liquid Waste Disposal System, Stack Discharge Monitoring System, Chilled Water System, Plant Service Air System, Demineralized Water System, Low Pressure Steam System, C1 Ventilation System

Commissioning
- Continue Procedures Development Support
- Continue Operations Training
- Continue Maintenance Training
- 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 –

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

Procurement Activities:

1. Support procurement suspension activities

Construction Activities:
- Continue preservation maintenance activities

Pretreatment Facility –

Design Activities:
- Complete PT Technical Issue Resolution T4 - Final PJM Control Recommendation Study
- Complete PT Technical Issue Resolution T5 - Localized Corrosion Design Basis

Procurement Activities:
- Support procurement suspension activities

Construction Activities:
- Support facility preservation activities

- Continue Training Management & Program Support
- Continue Operations Training
- Continue Initial Calibrations
- Continue - Preservation Maintenance
- Continue Maintenance Training
- Continue Preventative Maintenance and Corrective Maintenance

High-Level Waste Facility (HLW) –

Design Activities:

- Support HLW baseline modification
- Design/support Radioactive Liquid Waste Disposal System Vessel (RLD-VSL-007/8) delivery

Procurement Activities:

- Support crane and vessel (RLD-VSL-007/8) deliveries

Construction Activities:

- Support facility preservation activities

Pretreatment Facility –

Design Activities:

- Complete PT Technical Issue Resolution T4 - Standard High Solids Vessel Design testing (mixing)
- Complete PT Technical Issue Resolution T4 - Final PJM Control Recommendation Study
- Complete PT Technical Issue Resolution T5 - Localized Corrosion Design Basis
- Complete PT Technical Issue Resolution T6 - Conceptual Design Study Rev. 0

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$15,000	**$15,000**	**+$0**
• 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.	• 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.	• No change.

Office of River Protection
Capital Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 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)	16,397	0	4,500	0	4,741	11,656	+6,915
Total, Capital Operating Expenses	**16,397**	**0**	**4,500**	**0**	**4,741**	**11,656**	**+6,915**
Capital Equipment > $500K (including MIE)	0	0	0	0	0		0
Total, Capital Equipment (including MIE)	**16,397**	**0**	**4,500**	**0**	**4,741**	**11,656**	**+6,915**
Plant Projects (GPP and IGPP) (Total Estimated Cost (TEC) <$20M)							
River Protection							
Construct 222-SL, 222SA Facility Replacement	9,353	0	4,500	0	1,953	7,400	+5,447
Install Exhausters in SY Farm*	0	0	0	0	0	0	0
Construct 222-S Archive Storage Facility	0	0	0	0	0	0	0
Construct New Maintenance Shop	7,044	0	0	0	2,788	4,256	+1,468
Construct 222-S Ancillary Equipment Facility	0	0	0	0	0	0	0
Interim Barrier Installation (SX North)*	0	0	0	0	0	0	0
Interim Barrier Installation (SX)*	0	0	0	0	0	0	0
Total, River Protection	**16,379**	**0**	**4,500**	**0**	**4,741**	**11,656**	**+6,915**
Total, Plant Projects (GPP and IGPP) (Total Estimated (TEC) <$20M	**16,379**	**0**	**4,500**	**0**	**4,741**	**11,656**	**+6,915**
Total, Capital Summary	**16,379**	**0**	**4,500**	**0**	**4,741**	**11,656**	**+6,915**

*After further review of the project work scope it was determined that the general nature of these items are not GPPs

Office of River Protection
Construction Projects Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 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	5,039,515	630,000	454,096	655,000	640,000	-15,000
Other Project Costs (OPC)	0	0	0	0	0	0	0
01-D-16A-D WTP Subprojects A-D							
Total Estimate Cost (TEC)	TBD	2,513,318	75,000	26,276	60,000	30,000	-30,000
Other Project Costs (OPC)	0	0	0	0	0	0	0
01-D-16E Pretreatment Facility							
Total Estimate Cost (TEC)	TBD	3,692,050	35,000	6,283	15,000	20,000	+5000
Other Project Costs (OPC)	0	0	0	0	0	0	0
Total Estimate Cost (TEC)	**TBD**	**11,244,883**	**740,000**	**486,655**	**730,000**	**690,000**	**-40,000**
Other Project Costs (OPC)	0	0	0		0	0	0
Total Project Cost (TPC) 01-D-416	**TBD**	**11,244,883**	**740,000**	**486,655**	**730,000**	**690,000**	**-40,000**
15-D-409, Low Activity Waste Pretreatment System (Hanford) (ORP-0014)							
15-D-409-01: Tank Side Cesium Removal (TSCR) System Subproject							
Total Estimate Cost (TEC)	TBD	N/A	16,000	0	32,905	0	-32,905
Other Project Costs (OPC)	TBD	N/A	3,000	0	6,000	0	-6,000
Subtotal, *15-D-409-01: Tank Side Cesium Removal (TSCR) System Subproject*	TBD	N/A	19,000	0	38,905	0	-38,905
15-D-409-02: Full Capacity Low Activity Waste Pretreatment System							

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Total Estimate Cost (TEC)		171,000	77,000	0	23,148	0	-23,148
Other Project Costs (OPC)		10,657	200	0	0	0	0
Subtotal, *15-D-409-01: Tank Side Cesium Removal (TSCR) System Subproject*		181,657	77,200	0	23,148	0	-23,148
Total Project Cost (TPC) 15-D-409	**TBD**	**181,657**	**96,200**	**0**	**62,053**	**0**	**-62,053**

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 2020 budget request for the Waste Treatment and Immobilization Plant is $690,000,000.

Since significant technical issues are being resolved for the Pretreatment Facility, the Department is pursuing a strategy to focus on completion of the Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory.

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 work to resolve the technical issues associated with 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 limited activities in a manner that ensures the 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 2019 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 2020 and 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 Congressional Notification	SEP 1995	SEP 1996	04/21/2003	4Q FY2005	04/21/2003	N/A	3Q FY2008
FY 2005	SEP 1995	SEP 1996	04/21/2003	4Q FY2005	04/21/2003	N/A	3Q FY2008
FY 2004 Reprogramming	SEP 1995	SEP 1996	04/21/2003	4Q FY2005	04/21/2003	N/A	3Q FY2008
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 Reprogramming	SEP 1995	SEP 1996	04/21/2003	1Q FY 2016	04/21/2003	N/A	1Q FY 2020
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

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	0	TBD	TBD	0	0	0	TBD
FY 2020	0	TBD	TBD	0	0	0	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.

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 not later than August 31, 2023. 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.

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 hot startup 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 for dispositioning 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.

The Department's Waste Treatment and Immobilization Plant Project is to design, build, and commission the waste treatment facilities. Through a process known as vitrification, 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.

When operating, the Waste Treatment and Immobilization Plant 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, limited activities for High-Level Waste and Pretreatment facilities will continue, including preservation and maintenance activities 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. The Objective Key Performance Parameters represent the desired project performance.

Performance Measure	Threshold	Objective
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

(Dollars in Thousands)

	Waste Treatment and Immobilization Plant Total			18-D-16, Waste Treatment and Immobilization Plant LBL/ Direct-Feed Low-Activity Waste			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	9,864,613	9,864,613	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[a]	690,000	690,000	741,615	520,264	520,264	549,439	74,736	74,736	75,040	95,000	95,000	117,136
FY 2017[a]	690,000	690,000	801,997	562,274	562,274	630,523	30,726	30,726	60,899	97,000	97,000	110,575
FY 2018[a]	740,000	740,000	690,000	630,000	630,000	630,000	75,000	75,000	25,000	35,000	35,000	35,000
FY 2019	730,000	690,000	690,000	655,000	655,000	655,000	60,000	60,000	60,000	15,000	15,000	15,000
FY 2020	690,000	690,000	690,000	640,000	640,000	640,000	30,000	30,000	30,000	20,000	20,000	20,000
Outyears	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Grand Total	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Costs updated to reflect actual expenditures for fiscal year 2016 and fiscal year 2017 and projected costs, obligations, and appropriations for fiscal year 2018.

6. Details of Project Cost Estimate

(Dollars in Thousands)

	Waste Treatment and Immobilization Plant Total			18-D-16, Waste Treatment and Immobilization Plant LBL/Direct-Feed Low-Activity Waste			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 2018	FY 2019	FY 2020	Outyears	Total
FY 2016	TEC/TPC	10,760,585	--	--		1,502,415	12,263,000
FY 2017	TEC/TPC	10,755,585	--	--		1,507,415	12,263,000
FY 2018	TEC/TPC	11,244,613	740,000			278,387	12,263,000
FY 2019	TEC/TPC	11,244,613	740,000	730,000		TBD	TBD
FY 2020	TEC/TPC	11,244,613	740,000	730,000	690,000	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:

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

The following actions are planned for the future:

6. Critical Decision 4a: Approve Start of Initial Operations (hot commissioning) for Direct Feed Low Activity Waste – TBD
7. 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.

15-D-409, Low-Activity Waste Pretreatment System
Hanford, Richland, Washington (ORP-0014)
Project is for Design and Construction

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

Summary
The fiscal year 2020 budget request for the Low-Activity Waste Pretreatment System is $0. Critical Decision 1 was approved on May 19, 2015, with a preliminary cost range of $220,000,000 to $470,000,000 and Critical Decision 4 schedule range of January 2021 to May 2025. Critical Decision 3A approval for the procurement of tank-side cesium removal equipment was approved in June 2018.

Significant Changes
This Construction Project Data Sheet is an update of the fiscal year 2019 Construction Project Data Sheet and does not include a new start for budget fiscal year 2020. Two subprojects have been established – Tank-Side Cesium Removal System and the full capability Low-Activity Waste Pretreatment System.

Tank-Side Cesium Removal System subproject (15-D-409-01): The Critical Decision 3A approval for the tank-side cesium removal subproject was obtained in June 2018.

Full Capability Low-Activity Waste Pretreatment System (15-D-409-02): Experience obtained from the tank-side cesium removal demonstration work will inform the Low-Activity Waste Pretreatment System final course of action and alternative project selection.

A federal project director has been assigned to the project.

2. Critical Milestone History

Overall Project (15-D-409)

	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	2Q FY2014	2Q FY2015	TBD	TBD	TBD	TBD	N/A	TBD
FY 2016	3/17/2014	2Q FY2015	2Q FY2015	TBD	TBD	TBD	N/A	TBD
FY 2017	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	TBD	N/A	TBD
FY 2018	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	TBD	N/A	TBD
FY 2019 Update	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	TBD	N/A	TBD
FY 2020	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	6/2018 (3A)	N/A	TBD

CD-0 – Approve Mission Need
Conceptual Design Complete – Estimated date the conceptual design will be completed
CD-1 – Approve Alternative Selection and Cost Range
CD-3a – Long Lead Procurement and Site Preparation
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated date the project design will be completed
CD-3 – Approve Start of Construction
D&D Complete – Completion of D&D work

CD-4 – Approve Start of Operations or Project Completion.

Tank-Side Cesium Removal System Subproject (15-D-409-01)

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2015	2Q FY2014							
FY 2016	3/17/2014	2Q 2015	2Q 2015					
FY 2017	3/17/2014	1/15/2015	5/19/2015					
FY 2018	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	TBD	N/A	TBD
FY 2019	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	TBD	N/A	TBD
FY 2019 Update	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	TBD	N/A	TBD
FY 2020	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	TBD	N/A	TBD

Full Capability Low-Activity Waste Pretreatment System (15-D-409-02):

Fiscal Quarter or Date

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2015	2Q FY2014							
FY 2016	3/17/2014	2Q 2015	2Q 2015					
FY 2017	3/17/2014	1/15/2015	5/19/2015					
FY 2018	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	TBD	N/A	TBD
FY 2019	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	TBD	N/A	TBD
FY 2019 Update	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	TBD	N/A	TBD
FY 2020	3/17/2014	1/15/2015	5/19/2015	TBD	TBD	TBD	N/A	TBD

CD-0 – Approve Mission Need
Conceptual Design Complete – Estimated date the conceptual design will be completed
CD-1 – Approve Alternative Selection and Cost Range
CD-2 – Approve Performance Baseline
Final Design Complete – Estimated date the project design will be completed
CD-3 – Approve Start of Construction
D&D Complete – Completion of D&D work
CD-4 – Approve Start of Operations or Project Completion.

3. Project Cost History

Overall Project (15-D-409)

(Dollars in Thousands)

Fiscal Year	TEC, Design	TEC, Construction	TEC, Total	OPC	TPC
FY 2015	60,000	TBD	TBD	TBD	TBD
FY 2016	TBD	TBD	TBD	TBD	TBD
FY 2017	TBD	TBD	TBD	TBD	TBD
FY 2018	TBD	TBD	TBD	TBD	TBD
FY 2019	TBD	TBD	TBD	TBD	TBD
FY 2020	TBD	TBD	TBD	TBD	TBD

4. Scope and Justification

Scope

This project will design and build a Low-Activity Waste Pretreatment System to treat tank waste and to produce a low-activity waste feed stream that meets the waste acceptance criteria of the Waste Treatment and Immobilization Plant Low-Activity Waste Facility. Operation of the Low-Activity Waste Pretreatment System and the Low-Activity Waste Facility will reduce environmental risk by immobilizing tank farm liquids, freeing up approximately 6,300,000 gallons of double-shell tank space, allowing additional single-shell tanks to be retrieved, and reduce startup risks of the Waste Treatment and Immobilization Plant.

The Low-Activity Waste Pretreatment System uses filtration and ion exchange to remove particles and radioactive cesium from liquid tank waste to produce a low-activity waste feed stream. The system will be designed with the throughput to provide sufficient feed to operate the two large Low-Activity Waste Facility melters at full capacity. The Low-Activity Waste Pretreatment System will be designed and deployed in a phased manner to correspond with the startup of the Low-Activity Waste Facility.

The Low-Activity Waste Pretreatment System project consists of the following subprojects:

- **Tank-Side Cesium Removal System subproject (15-D-409-01):** The initial phase will utilize tank-side cesium removal equipment to provide initial feed. The tank-side cesium removal subproject will construct the waste transfer system to feed waste from tank-side cesium removal to the Waste Treatment and Immobilization Plant and demonstrate the technology, methodology, procedures, and practices needed to provide the initial 5 million gallons of pretreated low-activity waste feed to the Waste Treatment and Immobilization Plant.
- **Full Capability Low-Activity Waste Pretreatment System (15-D-409-02):** Experience obtained from the tank-side cesium removal demonstration work, including design, fabrication, factory acceptance testing, permitting, and operations will inform the Low-Activity Waste Pretreatment System final course of action and alternative project selection.

Justification

The Low-Activity Waste Facility remains on schedule to meet interim milestones in the Amended Consent Decree, *State of Washington v. Dept. of Energy*, Case No. 2:08-CV-5085-RMP (March 11, 2016). Under the Amended Consent Decree, interim milestone D-00A-09, the Low-Activity Waste Facility must complete hot commissioning by December 31, 2023 – meaning "the point at which the LAW facility has demonstrated its ability to produce immobilized low-activity waste glass of acceptable quality." Provision of a Low-Activity Waste Pretreatment System capability is required to provide low-activity waste feed to the Low-Activity Waste Facility in advance of the startup of the Pretreatment Facility.

Operation of the Low-Activity Waste Pretreatment System along with Low-Activity Waste Facility also mitigates Waste Treatment and Immobilization Plant startup and commissioning risks, provides operational experience that can be applied

to High-Level Waste and Pretreatment facilities, and potentially accelerates overall low-activity waste immobilization through additional low-activity waste feed to both the Low-Activity Waste Facility and other potential supplemental low-activity waste immobilization facilities. Based on an estimated 10 years of operations, where the Low-Activity Waste Pretreatment System is the waste feed capability to the Low-Activity Waste Facility until the larger Pretreatment Facility begins operations, it is expected that 9,600 metric tons of tank waste sodium (15 percent of the tank farms sodium inventory) will be immobilized, reducing environmental risk and freeing up approximately 6,300,000 gallons of double-shell tank space, which can then be used to support waste retrievals from the older single-shell tanks to the newer and safer double-shell tanks.

The project is being conducted in accordance with 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 Threshold Key Performance Parameters will be a prerequisite for approval of Critical Decision 4. The Objective Key Performance Parameters represent the desired project performance.

<table>
<tr><th>Performance Measure</th><th>Threshold</th></tr>
<tr><td>System throughput</td><td>Capacity to support Waste Treatment and Immobilization Plant Low-Activity Waste Facility vitrification operations at 30 MT of glass per day, instantaneous rate.</td></tr>
<tr><td>Waste Treatment and Immobilization Plant Low-Activity Waste Facility vitrification Waste Acceptance Criteria</td><td>Performance for conceptual design defined by CCN 155899, “Early LAW Waste Receipt Criteria Revision,” April 8, 2008. Note: this performance parameter will be documented in 24590-WTP-ICD-MG-01-030, ICD-30 – Interface Control Document for Direct LAW Feed, prior to CD-2</td></tr>
<tr><td>Solids removal</td><td>Low-Activity Waste Pretreatment System shall be capable of removing undissolved (entrained) solids from tank supernatant waste. Strontium-90 and transuranic (TRU) waste shall be limited in the feed to Waste Treatment and Immobilization Plant as specified below.
<table>
<tr><th>Radionuclide</th><th>Maximum Radionuclide Concentration in Treated Low-Activity Waste, Ci/gmol Sodium</th></tr>
<tr><td>Strontium-90</td><td>1.12E-03</td></tr>
<tr><td>TRU[a]</td><td>1.30E-05</td></tr>
</table>
TRU is defined as alpha-emitting radionuclides with an atomic number greater than 92, with half-life greater than 20 years (HNF-EP-0063, Hanford Site Solid Waste Acceptance Criteria).</td></tr>
<tr><td>Cesium removal</td><td>The cesium-137 concentration in immobilized low-activity waste must be < 0.3 Ci/m^3 to meet DOE M 435.1-1, Radioactive Waste Management Manual, requirements for near surface disposal. The maximum cesium-137 concentration in the feed from Low-Activity Waste Pretreatment System to Waste Treatment and Immobilization Plant must be less than or equal to 1.68 x 10-5 Ci/gmol sodium, per CCN: 155899.</td></tr>
<tr><td>Environmental compliance</td><td>Comply with all applicable environmental regulations. For example, WAC 17 -303, “Dangerous Waste Regulations,” a subsection of which drives secondary containment for waste containing systems (e.g., encased waste transfer lines) and leak detection in secondary containment.</td></tr>
<tr><td>Facility flexibility</td><td>Low-Activity Waste Pretreatment System facility layout accommodates expansion (e.g., ion exchange cells can be added adjacent to the cross-flow filtration vault); vault walls are large and can accommodate additional penetrations.</td></tr>
</table>

5. Financial Schedule

Low-Activity Waste Pretreatment System funding is appropriated at the overall project level (15-D-409) and is allocated to the subprojects in the tables below.

Tank-Side Cesium Removal System Subproject (15-D-409-01)

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2018	N/A	N/A	N/A
FY 2018 Update	N/A	N/A	N/A
FY 2019	N/A	N/A	N/A
FY 2019 Update	10,000	10,000	TBD
FY 2020	0	0	TBD
Outyears	TBD	TBD	TBD
Total Design	TBD	TBD	TBD
Construction			
FY 2017	N/A	N/A	N/A
FY 2018	N/A	N/A	N/A
FY2018 Update	16,000	16,000	TBD
FY 2019	N/A	N/A	TBD
FY 2019 Update	22,905	22,905	TBD
FY 2020	0	0	TBD
Outyears	TBD	TBD	TBD
Total Construction	TBD	TBD	TBD
TEC			
FY 2018	16,000	16,000	TBD
FY 2019	32,905	32,905	TBD
FY 2020	0	0	TBD
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC			
FY 2018	3,000	3,000	TBD
FY 2019	6,000	6,000	TBD
FY 2020	0	0	TBD
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2018	19,000	19,000	TBD
FY 2019	38,905	38,905	TBD
FY 2020	0	0	TBD
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Full Capability Low-Activity Waste Pretreatment System (15-D-409-02): Financial schedule will be determined after tank-side cesium removal demonstration.

	(dollars in thousands)		
	Appropriations	**Obligations**	**Costs**
Total Estimated Cost (TEC)			
Design			
FY 2015	23,000	23,000	6,947
FY 2016	75,000	75,000	42,000
FY 2017	73,000	73,000	58,146
FY 2018	N/A	N/A	N/A
FY 2018 Update	77,000	77,000	TBD
FY 2019	N/A	N/A	TBD
FY 2019 Update	23,148	23,148	TBD
FY 2020	0	0	TBD
Outyears	TBD	TBD	TBD
Total Design	TBD	TBD	TBD
Construction			
FY 2017	N/A	N/A	N/A
FY 2018	N/A	N/A	N/A
FY 2018 Update	0	0	TBD
FY 2019	N/A	N/A	N/A
FY 2019 Update	0	0	TBD
FY 2020	TBD	TBD	TBD
Outyears	TBD	TBD	TBD
Total Construction	TBD	TBD	TBD
TEC			
FY 2015	23,000	23,000	6,947
FY 2016	75,000	75,000	42,000
FY 2017	73,000	73,000	58,146
FY 2018	N/A	N/A	N/A
FY 2018 Update	77,000	77,000	TBD
FY 2019	N/A	N/A	N/A
FY 2019 Update	23,148	23,148	TBD
FY 2020	0	0	TBD
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC			
FY 2014	4,397	4,397	4,397
FY 2015	5,278	5,278	5,278
FY 2016	382	382	382
FY 2017	600	600	600
FY 2018	200	200	200
FY 2019	0	0	0
FY 2020	0	0	0

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2014	4,397	4,397	4,397
FY 2015	28,278	28,278	12,225
FY 2016	75,382	75,382	42,382
FY 2017	73,600	73,600	58,146
FY 2018	77,200	77,200	TBD
FY 2019	23,148	23,148	TBD
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Overall Project (15-D-409)

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2015	23,000	23,000	6,947
FY 2016	75,000	75,000	42,000
FY 2017	73,000	73,000	58,146
FY 2018	93,000	93,000	TBD
FY 2018 Update	77,000	77,000	TBD
FY 2019	N/A	N/A	TBD
FY 2019 Update	33,148	33,148	TBD
FY 2020			TBD
Outyears	TBD	TBD	TBD
Total Design	TBD	TBD	TBD
Construction			
FY 2017	N/A	N/A	0
FY 2018	N/A	N/A	
FY2018 Update	16,000	16,000	TBD
FY 2019	N/A	N/A	TBD
FY 2019 Update	22,905	22,905	TBD
FY 2020	0	0	TBD
Outyears	TBD	TBD	TBD
Total Construction	TBD	TBD	TBD
TEC			
FY 2015	23,000	23,000	6,947
FY 2016	75,000	75,000	42,000
FY 2017	73,000	73,000	58,146
FY 2018	93,000	93,000	TBD
FY 2019	56,053	56,053	TBD

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2020	0	0	TBD
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
Other Project Cost (OPC)			
OPC			
FY 2014	4,397	4,397	4,397
FY 2015	5,278	5,278	5,278
FY 2016	382	382	382
FY 2017	600	600	600
FY 2018	3,200	3,200	3,200
FY 2019	6,000	6,000	6,000
FY 2020	0	0	TBD
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2014	4,397	4,397	4,397
FY 2015	28,278	28,278	12,225
FY 2016	75,382	75,382	42,382
FY 2017	73,600	73,600	58,146
FY 2018	96,200	96,200	TBD
FY 2019	62,053	62,053	TBD
FY 2020	0	0	TBD
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

6. Details of Project Cost Estimate

Overall Project (15-D-409)

	(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
Contingency	TBD	TBD	N/A
Total Construction	TBD	TBD	N/A

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
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
Conceptual Design	TBD	TBD	N/A
Office of Project Management Oversight & Assessments Reviews	TBD	TBD	N/A
Other, OPC	TBD	TBD	N/A
Total, OPC except for D&D	TBD	TBD	N/A
Total, OPC	TBD	TBD	N/A
Contingency, OPC	TBD	TBD	N/A
Total, Total Project Cost	TBD	TBD	N/A
Total, Contingency	TBD	TBD	N/A

7. Schedule of Appropriation Requests

Request		Prior Years	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Outyears	Total
FY 2015	TEC	23,000	0	0	0	0		TBD	TBD
	OPC	9,675	0	0	0	0		TBD	TBD
	TPC	32,675	0	0	0	0		TBD	TBD
FY 2016	TEC	23,000	75,000	0	0	0		TBD	TBD
	OPC	9,675	382	0	0	0		TBD	TBD
	TPC	32,675	75,382	0	0	0		TBD	TBD
FY 2017	TEC	23,000	75,000	73,000	0	0		TBD	TBD
	OPC	9,675	382	600	0	0		TBD	TBD
	TPC	32,675	75,382	73,600	0	0		TBD	TBD
FY 2018	TEC	23,000	75,000	73,000	93,000	0		TBD	TBD
	OPC	9,675	382	600	200	0		TBD	TBD
	TPC	32,675	75,382	73,600	93,000	0		TBD	TBD
FY 2018 Update	TEC	23,000	75,000	73,000	93,000	0		TBD	TBD
	OPC	9,675	382	600	3,200	0		TBD	TBD
	TPC	32,675	75,382	73,600	96,200	0		TBD	TBD
FY 2019	TEC	23,000	75,000	73,000	93,000	56,053		TBD	TBD
	OPC	9,675	382	600	200	0		TBD	TBD
	TPC	32,675	75,382	73,600	93,000	56,053		TBD	TBD
FY 2019 Update	TEC	23,000	75,000	73,000	93,000	56,053		TBD	TBD
	OPC	9,675	382	600	3,200	6,000		TBD	TBD
	TPC	32,675	75,382	73,600	96,200	62,053		TBD	TBD

Request		Prior Years	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Outyears	Total
FY 2020	TEC	23,000	75,000	73,000	93,000	56,053	0	TBD	TBD
	OPC	9,675	382	600	3,200	6,000	0	TBD	TBD
	TPC	32,675	75,382	73,600	96,200	62,053	0	TBD	TBD

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	TBD
Expected Useful Life (number of years)	30
Expected Future Start of D&D of this Capital Asset (fiscal quarter)	TBD

Related Funding Requirements

(Budget Authority in Millions of Dollars)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	**Previous Total Estimate**	**Current Total Estimate**	**Previous Total Estimate**
Operations and Maintenance	TBD	TBD	TBD	TBD

9. Decontamination and Decommissioning Information

This project is providing new capability and is not replacing a current capability.

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

An acquisition strategy for completion of the design and construction phase of this project was approved as part of Critical Decision 1. The acquisition strategy includes alternatives such as having the Tank Farms Contractor subcontract for construction services or the Department could directly contract with a construction firm or the Department could contract with another entity.

Subsequent to Critical Decision 1, the Assistant Secretary for the Office of Environmental Management endorsed the Acquisition Plan selected option where the tank farms prime contractor will subcontract for construction services. The tank-side cesium removal system equipment procurement, installation, and operation will be performed by the Tank Farms Project's prime contractor.

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, cleaning up the environment, deactivating and decommissioning unneeded 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. Inactive waste units will be remediated and contaminated groundwater will either be remediated or be under 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, which is a Government-owned, contractor operated facility to apply unique and specialized capabilities to assist our Nation in mitigating the hazards associate 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 applies its expertise and applied technology capabilities to assist sites across the DOE complex in meeting cleanup requirements.

Direct maintenance and repair at the Savannah River Site in FY 2020 is estimated to be $185,106,000.

Highlights of the FY 2020 Budget Request

The Nuclear Material Stabilization and Disposition Program will maintain and operate H Canyon/HB-Line in FY 2020 to disposition spent nuclear fuel, per Section 3137 of the National Defense Authorization Act for Fiscal Year 2001 (Public Law 106-398) and as amended by Section 3115 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136). In FY 2020, the Department will continue activities to down blend and package plutonium for disposal at the Waste Isolation Pilot Plant in Carlsbad, New Mexico.

The Solid Waste Stabilization and Disposition Program 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.

The Liquid Waste Program will achieve additional risk reduction through 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 2020 request includes funding for four line-item construction projects: Salt Waste Processing Facility ($20,988,000), Saltstone Disposal Unit #7 ($43,499,000), Saltstone Disposal Units #8 and #9 ($56,750,000), and Saltstone Disposal Unit #10-#12 ($1,000,000).

The mission of the Salt Waste Processing Facility project is to construct a large capacity facility to separate the highly radioactive component from the salt waste resulting from reprocessing and other radioactive liquids generated by nuclear materials production operations at the Savannah River Site. The $20,988,000 requested for the Salt Waste Processing Facility supports other project costs such as startup, testing, and cold commissioning. The Salt Waste Processing Facility is expected to begin treating radioactive salt waste in FY 2020. Operation of this facility will significantly increase salt treatment capacity thus enabling increased risk reduction by removing and treating the liquid waste currently in underground storage tanks. 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 $43,499,000 requested for the

Saltstone Disposal Unit #7 includes $40,034,000 for design and construction activities and $3,465,000 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 $56,750,000 requested for the Saltstone Disposal Units #8 and #9 project includes $51,750,000 for the Total Estimated Cost (design and construction activities) and $5,000,000 for other project costs. The mission of Saltstone Disposal Unit #10-#12 is to construct three cylindrical reinforced concrete tanks designed to contain approximately 30,000,000 gallons of Saltstone grout each. The $1,000,000 requested for the Saltstone Disposal Units #10-#12 project includes $500,000 for the Total Estimated Cost (design and construction activities) and $500,000 for other project costs.

The Soil and Water Remediation 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.

The Savannah River Community and Regulatory Support Program will support the Citizens Advisory Board, provide support to the States of South Carolina and Georgia for emergency management activities, and support South Carolina Department of Health and Environmental Control and the Environmental Protection Agency oversight and implementation of the Federal Facility Agreement.

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 2020 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 $50,000,000 in Total Estimated Cost requested for the Advanced Manufacturing Collaborative project 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.

The FY 2020 request will support the completion of the firewater supply system replacement in A-Area. Also included is a line-item construction project, the Emergency Operations Center Replacement ($6,792,000). The Emergency Operations Center Replacement project will replace existing Emergency Operations Center facilities that are in poor condition and past their design life. The $6,792,000 requested for this project is for the Total Estimated Cost (design and construction activities).

FY 2019 and 2020 Key Milestones/Outlook

- (October 2018) Submit D-Area Ash Rev. 0 Second EA ROD Remedial Alternative Selection in Support of DAOU (4 units).
- (November 2018) Federal Facility Agreement Appendix E for Fiscal Year 2019
- (December 2018) Submit Sixth Five-Year Remedy Review Report for SRS OUs with Native Soil Covers, Land Use Controls
- (January 2019) Submit G-Area Oil Seepage Basin (761-13G) OU Rev.0 ROD Remedial Alternative Selection
- (February 2019) Mechanical Completion of Field Work D-Area Ash Basin (488-1D)
- (February 2019) Issue Fifth Five - Year Remedy Review Report for SRS Operable Units with Operating Equipment
- (February 2019) Initiate Remedial Action Wetland Area at Dunbarton Bay in support of Steel Creek IOU
- (February 2019) Submit Lower Three Runs IOU Proposed Plan
- (February 2019) Mechanical Completion of Field Work D-Area Ash Basin (488-1D)
- (March 2019) Submit D-Area Coal Storage Area (484-17D) in support of DA GW OU Action Memo
- (March 2019) Initiate Upper Three Runs IOU Fifth Phase II Field Start
- (April 2019) Initiate Removal Action Start P-Area Groundwater OU TCE Plumes Discharging to Steel Creek
- (June 2019) Submit D-Area Ash Basin (488-1D) Rev.0 Record of Decision
- (June 2019) Submit D-Area Ash Basin (488-2D) Rev.0 Record of Decision
- (June 2019) Submit D-Area Ash Basin (488-4D) Rev. 0 Record of Decision
- (June 2019) Submit D-Area Coal Pile Runoff Basin (489-D) Rev.0 Record of Decision
- (June 2019) Issue Record of Decision (ROD) for D-Area Operable Unit (includes 10 sub-units with 10 associated milestones)
- (July 2019) Issue DAOU Second EA ROD Remedial Alternative Selection in Support of DAOU (4 units)
- (July 2019) Submit DAOU Second Early Action Land Use Control Implementation Plan (4 units)
- (July 2019) Submit Revision 0 Land Use Control Implementation Plan - D Area OU (10 milestones)
- July 2019) Submit Revision 0 LUCIP - D Area Operable Units (10 milestones)
- (July 2019) Initiate Sixth Phase II Field Start Steel Creek Integrator Operable Unit
- (September 2019) Issue Record of Decision G-Area Oil Seepage Basin (761-13G)
- (September 2019) Complete Operational Closure of 2 High Level Waste Tanks
- (September 2019) Complete Bulk Waste Removal Efforts for 1 Tank
- (September 2019) Submit G-Area Oil Seepage Basin (761-13G) OU Rev.0 CMI/RAIP
- (September 2019) Issue ROD Alternative Selection G-Area Oil Seepage Basin (761-13G)
- (October 2019) Submit LTR Integrator Operable Unit Rev. 0 ROD Remedial Alternative Selection
- (November 2019) Complete Bulk Waste Removal Efforts for Tank 10
- (November 2019) APPENDIX E for FY 2020
- (January 2020) 2013 RCRA Permit Renewal Application for the M-Area and Metallurgical Lab. HWMF (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 OUs with Native Soil Covers and/or Land Use Controls
- (April 2020) Initiate Removal Action Start D-Area Coal Storage Area (484-17D) in Support of DA GW OU
- (June 2020) Issue ROD LTR IOU Remedial Alternative Selection
- (June 2020) Start the Remedial Action for D-Area Groundwater Operable Unit
- (July 2020) F-Area HWMF-Reduce discharge from the plume of all constituents in the surface water at seep line
- (July 2020) F-Area HWMF – Evaluate the performance of Phase II and submit CAP
- (July 2020) H-Area HWMF - Reduce the discharge of constituents in the surface water at seep line.
- (July 2020) H-Area HWMF – Evaluate Phase II and submit CAP.
- (August 2020) Initiate Fifth Phase II Field Start Pen Branch IOU
- (Sept. 2020) Initiate Field Start ECODS N-1, Lumber Pile (631-2G), Sandblast Area CMN-001, Bld'g 690-N OU

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
- *Suspension Agreement, Federal Facility Agreement (FFA) High-Level Waste (HLW) Tank Milestones*, that suspended all the FY2017 milestones and beyond. The Suspension Agreement has a "sunset date" of May 30, 2019.

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 12 month period. 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 have been 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 supports the GAO process and fosters 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.
- 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 one 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 date of March 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 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Savannah River Site				
SR Community and Regulatory Support				
SR-0100 / Savannah River Community and Regulatory Support	11,249	11,249	4,749	-6,500
Savannah River Risk Management Operations				
SR-0011C / NM Stabilization and Disposition	323,482	332,947	342,958	+10,011
SR-0013 / Solid Waste Stabilization and Disposition	43,386	41,425	48,562	+7,137
SR-0030 / Soil and Water Remediation	81,199	73,612	62,618	-10,994
SR-0041 / Surveillance, Maintenance, and Deactivation	20,699	28,390	26,324	-2,066
SR-0042 / Infrastructure and Land Management	14,694	24,345	66,943	+42,598
Subtotal, Savannah River Risk Management Operations	**483,460**	**500,719**	**547,405**	**+46,686**
Radioactive Liquid Tank Waste Stabilization and Disposition				
SR-0014C / Radioactive Liquid Tank Waste Stabilization and Disposition-2035	817,605	875,689	910,978	+35,289
Total, Savannah River Site	**1,312,314**	**1,387,657**	**1,463,132**	**+75,475**
Safeguards and Security				
SR-0020 / Safeguards and Security	159,124	163,357	179,377	+16,020
Total, Defense Environmental Cleanup	**1,471,438**	**1,551,014**	**1,642,509**	**+91,495**

Savannah River
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 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) An increase in preparation of tanks for waste removal and sludge feed preparation to support Defense Waste Processing Facility operations and site indirect costs (+$29,531); 2) A decrease in Salt Waste Processing Facility line item project and Liquid Waste/ Salt Waste Processing Facility integration work to be completed prior to startup of Salt Waste Processing Facility (-$171,942)with a corresponding increase in preparation of tanks for waste removal and feed preparation in support of Salt Waste Processing Facility operations at planned rates (+$72,645); 3) An increase in Saltstone Disposal Unit projects due to construction ramp up in multiple Saltstone Disposal Units (+$44,932); 4) An increase in the area of Regulatory Commitments due to Tank Closure Cesium Removal Unit #1 operation and initiation of procurement of Tank Closure Cesium Removal Unit #2 to meet the Salt Dispute Resolution Agreement and an increase in preparation work of older-style tanks for bulk waste removal efforts to make progress towards operational closure and in support of feed preparation for Salt Waste Processing Facility and Defense Waste Processing Facility (+$30,630); and 5) higher contributions to Legacy Pension and Post-retirement Benefits (+$29,493).	+35,289
Savannah River Risk Management Operations	
SR-0011C / NM Stabilization and Disposition	
• The increase is attributable to H Canyon/HB-Line's portion of deactivation costs for shared analytical laboratory and an increase in legacy costs and pro rata share of other Site indirect costs.	+10,011
SR-0013 / Solid Waste Stabilization and Disposition	
• The increase is attributable to increased support for Waste Acceptance Criteria assessments needed to enable shipments to Waste Isolation Pilot Plant and Performance Assessment update of E Area.	+7,137
SR-0030 / Soil and Water Remediation	
• The decrease is attributed to early completion of D-Area Ash Project during FY 2019 as well as reduced required contribution to Site Indirects and Legacy Pension and Retirement Benefits.	-10,994
SR-0041 / Surveillance, Maintenance, and Deactivation	
• No significant change.	-2,066
SR-0042 / Infrastructure and Land Management	
• The increase is attributed to initiation of the Advanced Manufacturing Collaborative Line Item Project and includes completion of A-Area Firewater project and reflects the use of prior funding for the SR Security	+42,598

	FY 2020 Request vs FY 2019 Enacted
System Replacement Line Item Project.	
SR Community and Regulatory Support	
SR-0100 / Savannah River Community and Regulatory Support	
• The decrease is associated with reduction of discretionary payments in-Lieu-of-Taxes to support the focus on cleanup mission.	-6,500
Safeguards and Security	
SR-0020 / Safeguards and Security	
• The increase is attributable to maintenance and infrastructure projects; Protective Forces Collective Bargaining Agreements mandatory salary and benefits increases; EM Headquarters assessment for cyber initiatives; and emerging cyber security requirements.	+16,020
Total, Savannah River	**+91,495**

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. In addition, this project covers surveillance and maintenance for the Consolidated Incinerator Facility.

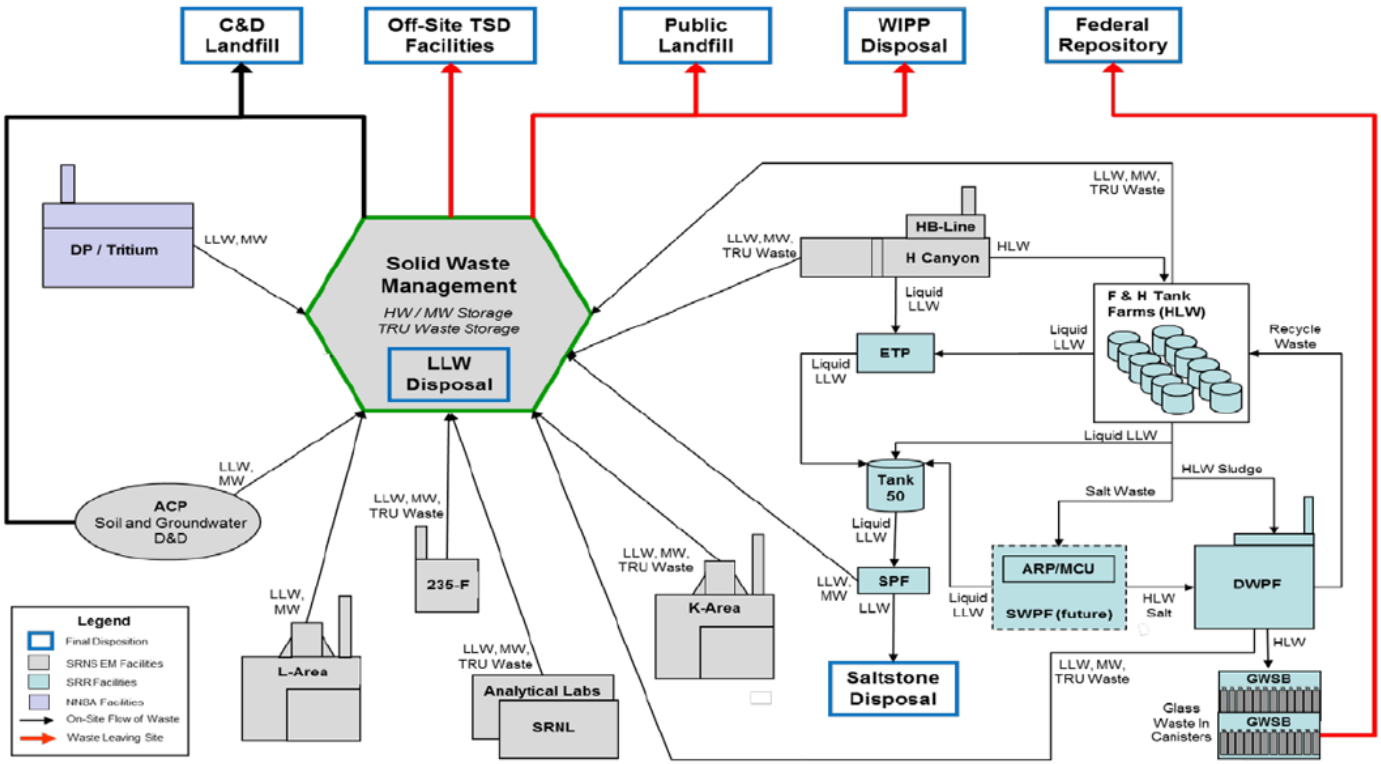
This PBS also includes direct maintenance and repair that are applicable to these areas.

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 2018, 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 2018, 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 2018, 727 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


C&D Landfill
Off-Site TSD Facilities
Public Landfill
WIPP Disposal
Federal Repository
DP / Tritium
LLW, MW
Solid Waste Management
HW / MW Storage
TRU Waste Storage
LLW Disposal
LLW, MW, TRU Waste
HB-Line
H Canyon
HLW
Liquid LLW
F & H Tank Farms (HLW)
Recycle Waste
ETP
Liquid LLW
Tank 50
HLW Sludge
Salt Waste
ACP Soil and Groundwater D&D
235-F
K-Area
SPF
LLW
ARP/MCU
SWPF (future)
HLW Salt
DWPF
HLW
GWSB
Glass Waste In Canisters
Saltstone Disposal
L-Area
Analytical Labs
SRNL
Legend
Final Disposition
SRNS EM Facilities
SRR Facilities
NNSA Facilities
On-Site Flow of Waste
Waste Leaving Site

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

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$41,425	**$48,562**	**+$7,137**
Solid Waste Management Program ($33,373) • Maintain Solid Waste management facilities to support site operation, including the construction debris landfill. • Support treatment/storage/disposal of up to 7,103 m^3 of newly generated low-level radioactive waste. • Support treatment/storage/disposal of up to 57 m^3 of mixed low-level radioactive waste. • Support treatment/storage/disposal of up to 52 m^3 of hazardous waste. • Support treatment/storage/disposal of sanitary waste. Legacy Pension and Post-Retirement Benefits at Employee Retirement Income Security Act Minimum ($8,052) • Contribute to the site Legacy Pension and Post-Retirement Benefits payment.	Solid Waste Management Program ($41,969) • 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 m^3 of newly generated low-level radioactive waste. • Support treatment/storage/disposal of up to 57 m^3 of mixed low-level radioactive waste. • Support treatment/storage/disposal of up to 52 m^3 of hazardous waste. • Support treatment/storage/disposal of sanitary waste. • Support required to update the Performance Assessment of E Area to demonstrate appropriate long-term protection of the public and environment following closure of the facilities. Legacy Pension and Post-Retirement Benefits at Employee Retirement Income Security Act Minimum ($6,593) • Contribute to the site Legacy Pension and Post-Retirement Benefits payment.	• The increase is attributable to increased support for Waste Acceptance Criteria assessments needed to enable shipments to Waste Isolation Pilot Plant and Performance Assessment update of E Area.

Soil and Water Remediation (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 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 68 closed waste units (approximately 900 acres) and at 63 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 5 major streams, the Savannah River Floodplain Swamp and the Savannah River to demonstrate effectiveness of remedial systems.

D Area Ash Project

Following the shut down and deactivation of the D-Area Powerhouse, the continued operations of the 488-1D and 488-2D Ash Basins, the 488-D and 488-4D Ash Landfills, and the 489-D Coal Pile Runoff Basin were no longer required. These have been closed in accordance with Comprehensive Environmental Response, Compensation, and Liability Act requirements, and South Carolina Solid Waste Landfill and Industrial Wastewater Treatment permit requirements. The closure included the installation of a geo-synthetic cover for 488-4D and the majority of 488-1D. The 488-2D Basin, the remaining portion of 488-1D Basin and Coal Pile Runoff Basin will serve as runoff basins. This meets the negotiated agreements with the South Carolina Department of Health and Environmental Control and U.S. Environmental Protection Agency identified in the Federal Facility Agreement and state regulations for industrial waste water treatment and solid waste landfills. Remaining scope includes submission of post-closure regulatory and DOE required documentation: Removal Action Report for D-Area coal Pile Runoff Basin (489-D) and 488-1D Ash Basin, and CD-4 Project Completion, respectively.

Federal Facility Agreement

The FY 2020 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 and the Regulators.

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 (PBS: SR-0030)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$73,612	**$62,618**	**-$10,994**
Soil and Water Remediation ($55,433) • Achieve compliance with over 65 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 and surveillance and maintenance at 68 closed waste units (approximately 900 acres) to prevent deterioration, and environmental releases. • Monitor, perform analysis 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	Soil and Water Remediation ($47,117) • Achieve compliance with over 65 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 and surveillance and maintenance at 68 closed waste units (approximately 900 acres) to prevent deterioration, and environmental releases. • Monitor, perform analysis 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	• The decrease is attributed to early completion of D-Area Ash Project during FY 2019 as well as reduced required contribution to Site Indirects and Legacy Pension and Retirement Benefits.

Completion Projects' inactive facilities to maintain safe and stable facility conditions.

D-Area Ash Project ($2,000)

- Complete closure of D-Area ash basins, remaining from operation of the deactivated, closed powerhouse in accordance with Comprehensive Environmental Response, Compensation, and Liability Act requirements, and South Carolina Solid Waste Landfill and Industrial Wastewater Treatment permit requirements. Submit post-closure regulatory document, Removal Action Report for D Area Coal Pile Runoff and Ash Basins, and DOE required CD-4 Project Completion document.

Next Phase of Regulatory Projects from Federal Facility Agreement ($2,314)

- Continue C Area groundwater remediation.

Legacy Pension and Post-Retirement Benefits at Employee Retirement Income Security Act Minimum ($13,865)

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

Completion Projects' inactive facilities to maintain safe and stable facility conditions.

Next Phase of Regulatory Projects from Federal Facility Agreement ($7,233)

- Continue C Area groundwater remediation.
- Remediate Wetland Area at Dunbarton Bay.
- Remediate D-Area Groundwater and Coal Storage Area.
- Execute F-Area Operable Unit Early Action.
- Implement activities defined in the Lower Three Runs Record of Decision

Legacy Pension and Post-Retirement Benefits at Employee Retirement Income Security Act Minimum ($8,268)

- 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 (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 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.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$28,390	**$26,324**	**-$2,066**
Facility Surveillance and Maintenance ($15,475) • Continue surveillance and maintenance of the F-Area Complex Facilities (F Canyon, FB-Line, and 235-F) as well as the Receiving Basin for Off-Site Fuels Facility. Building 235-F Risk Reduction ($8,385) • Perform 235-F risk reduction activities per Defense Nuclear Safety Board Implementation Plan to reduce risk to personnel and the environment by reducing residual Plutonium 238. Legacy Pension and Post-Retirement Benefits at Employee Retirement Income Security Act Minimum ($4,530) • Contribute to Legacy Pension and Post-Retirement Benefits payment.	Facility Surveillance and Maintenance ($17,073) • Continue surveillance and maintenance of the F-Area Complex Facilities as well as the Receiving Basin for Off-Site Fuels Facility. Building 235-F Risk Reduction ($4,569) • 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 planning for remaining deactivation of Building 235-F. Legacy Pension and Post-Retirement Benefits at Employee Retirement Income Security Act Minimum ($4,682) • Contribute to Legacy Pension and Post-Retirement Benefits payment.	• No significant change.

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 is 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 that infrastructure which 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 A-Area Firewater Supply Project replaces the 1950's vintage non-National Fire Protection Association code compliant fire water supply system whose pumps do not meet flow requirements and storage tank has deficiencies that required urgent repairs in 2016 to maintain structural integrity. A National Fire Protection Association code compliant fire water supply system is critical for the safety and operations of critical site facilities, which includes the Savannah River National Laboratory, Emergency Operations Center, Ecology Laboratory, equipment calibration shops, Site Security facilities (to include badging office), key Site communications buildings, and numerous support and administrative facilities housing over 2000 persons. The project will provide a fire water supply system compliant with National Fire Protection Association codes, site engineering standards, and meet the Savannah River National Laboratory Documented Safety Analysis and Technical Safety Requirements.

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 continues 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 which supply natural resource services to the Savannah River Site. The relationship of the following governmental organizations to the Site is through DOE direct contracts. 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 archeology assessment for the Savannah River Site. The Natural Resources Conservation Services supports the management of the natural resources.

Infrastructure and Land Management (PBS: SR-0042)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$24,345	**$66,943**	**+$42,598**
<u>General Site Infrastructure ($1,530)</u> • Continue the A-Area Firewater Supply Project which supports the replacement of fire water supply system to the Savannah River National Laboratory, current Emergency Operations Center location, and Savannah River Ecology Laboratory (operated and maintained by the University of Georgia). <u>Emergency Operations Center Replacement Project ($3,141)</u> • Initiate the conceptual design of the Emergency Operations Center Replacement project. This project will relocate the primary and secondary Savannah River Site Operations Center (site dispatch and communications center), the Emergency Operations Center (command and support center), and the Alternate Savannah River Site Operations Center from their current locations. • Support other project activities including preparation of project plans and analyses, Critical Decision approval preparation, and project management. <u>SR Security System Replacement ($10,000)</u> • Support design and construction related to replacement of existing E3S security system with DOE standard ARGUS system. <u>Land Management ($9,275)</u> • Manage 65,000 acres for red-cockaded woodpecker habitat. The Forest Service aided in	<u>General Site Infrastructure</u> • Complete A-Area Firewater Supply Project with carryover funds. <u>Emergency Operations Center Replacement Project ($6,792)</u> • Complete the conceptual design of the Emergency Operations Center Replacement project and develop the CD-1 package. <u>SR Security System Replacement</u> • Support design and construction related to replacement of existing E3S security system with DOE standard ARGUS system with prior year carryover. <u>Advanced Manufacturing Collaborative Project ($50,000)</u> • Support design activities required for Critical Decision documentation and construction activities. <u>Land Management ($9,146)</u> • 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 annually. Prescribed burns help reduce accumulations of forest fuel, improve the forestland health, manage habitats of threatened and endangered species, and restore native	• The increase is attributed to initiation of the Advanced Manufacturing Collaborative Line Item Project and includes completion of A-Area Firewater project and reflects the use of prior funding for the SR Security System Replacement Line Item Project.

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 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.
- 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.

Legacy Pension and Post-Retirement Benefits at Employee Retirement Income Security Act Minimum ($399)

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

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.

Historical Preservation ($689)

- Maintain program activities which include 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 at Employee Retirement Income Security Act Minimum ($316)

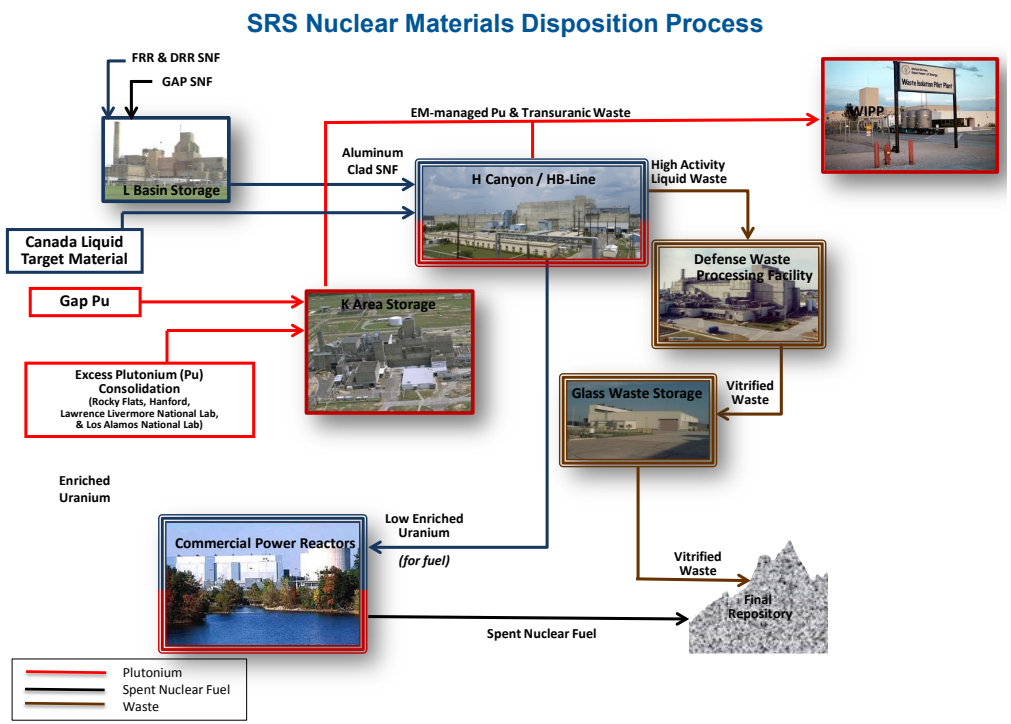
- Contribute to the site Legacy Pension and Post-Retirement Benefits payment.

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.

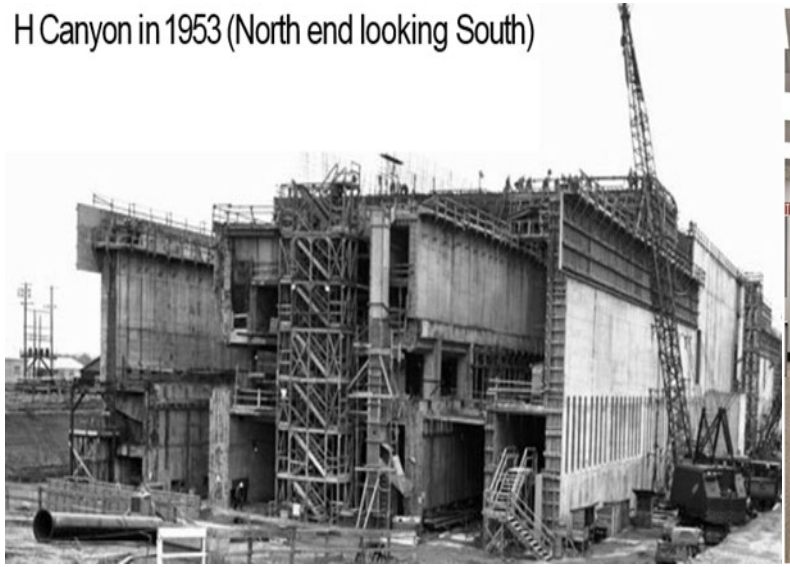


H-Area

The H-Area supports the DOE Enriched Uranium and Plutonium Disposition programs by reducing proliferation risks of nuclear materials in storage throughout the world while producing a product useful in the generation of commercial fuel. 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 air, conditioned air, 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 which allows hands on activities on a small scale compared to H Canyon operations and contains three process lines.

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.

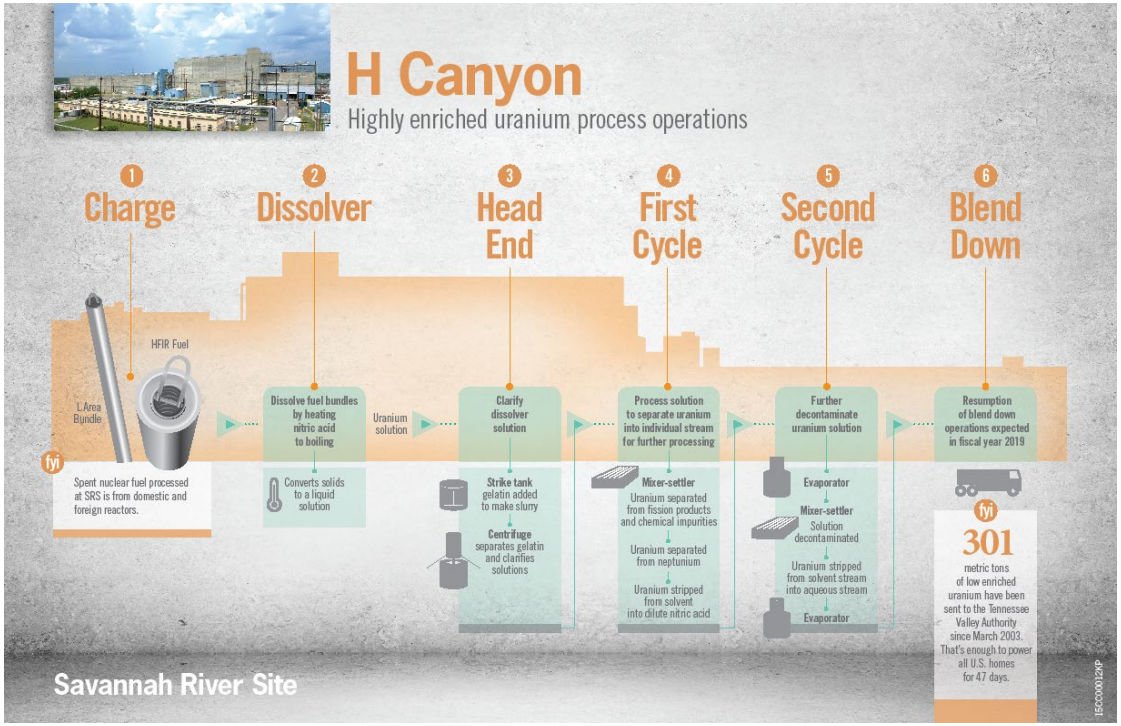


The primary mission of the H Canyon facility is to dissolve, purify, and blenddown surplus HEU from scrap and aluminum-clad HEU fuel to produce an LEU solution suitable for conversion to commercial reactor fuel. H Canyon has the capability to process irradiated aluminum-clad reactor fuel as well as unirradiated scrap materials from around the DOE complex. Currently, H Canyon is approved for the processing of up to 1,000 Material Test Reactor fuel bundles and 200 High Flux Isotope Reactor

cores to remove uranium for reuse. The uranium is blended down to 4.95% U-235 and reused in Tennessee Valley Authority commercial power reactors. H Canyon will also continue to receive and process liquid Canadian Highly Enriched Uranium target residue material. The 1,000 bundles of Material Test Reactor spent nuclear fuel and 200 High Flux Isotope Reactor cores represent approximately a third of the spent nuclear fuel inventory at the Savannah River Site.

HB-Line is a shielded glovebox processing facility which allows hands-on activities on a small quantity scale compared to H Canyon operations. HB-Line will be maintained in a lay-up condition to allow future processing of nuclear materials should the need be identified.

The end-state will be accomplished when all HEU identified to be dispositioned through H Canyon have been blended down and operating nuclear facilities have been deactivated and turned over 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 special nuclear materials storage facility designated for interim safe storage of plutonium and highly enriched uranium. 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 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 and special nuclear material facilities have been deactivated and turned over for final disposition.

L-Area

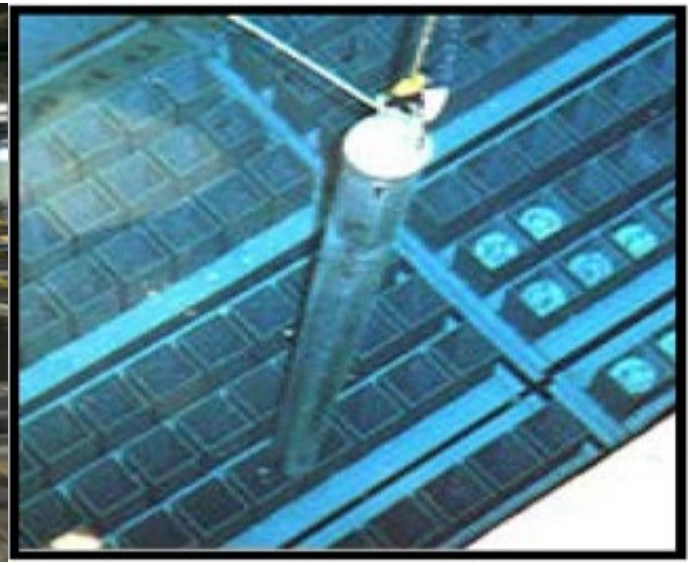
L-Area provides for the wet storage of spent nuclear fuel. The L Reactor was one of the five production reactor areas at Savannah River Site. In 1996 the disassembly basin of L Reactor (an underwater storage facility), referred to as L-Basin, was repurposed to safely handle and securely store spent nuclear 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 August 2018, L-Basin is approximately 90 percent full for Material Test Reactor type fuel storage, and 86 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.

NM Stabilization and Disposition (PBS: SR-0011C)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$332,947	**$342,958**	**+$10,011**
<u>Surveillance and Maintenance– H-Area ($164,317)</u> • Operate H Canyon in a safe and secure manner. • Continue to receive Gap plutonium from foreign countries in support of the National Nuclear Security Administration's nonproliferation program. • Perform infrastructure life extension activities including the exhaust tunnel repairs. • Support 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. <u>Surveillance and Maintenance – K-Area ($71,085)</u> • Maintain K-Area to safely and securely store special nuclear material. • Perform critical maintenance on facility perimeter intrusion system. • Support DOE's commitment to State of South Carolina regarding removal of 1 metric ton of plutonium. <u>Surveillance and Maintenance – L-Area ($37,180)</u> • 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. <u>Disposition of Spent Nuclear Fuel Through H-Canyon</u>	<u>Surveillance and Maintenance– H-Area ($175,079)</u> • Operate H Canyon in a safe and secure manner. • Continue to receive Gap plutonium from foreign countries in support of the National Nuclear Security Administration's nonproliferation program. • Perform infrastructure life extension activities including exhaust tunnel repairs. • 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. <u>Surveillance and Maintenance – K-Area ($73,139)</u> • Maintain K-Area to safely and securely store special nuclear material. • Perform critical maintenance on facility perimeter intrusion system. • Support DOE's commitment to State of South Carolina regarding removal of 1 metric ton of plutonium. <u>Surveillance and Maintenance – L-Area ($38,979)</u> • 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. <u>Additional Pu Downblending ($1,166)</u>	• The increase is attributable to H Canyon/HB-Line's portion of deactivation costs for shared analytical laboratory and an increase in legacy costs and pro rata share of other Site indirect costs.

($5,553)

- Increment above H-Canyon / HB-Line Surveillance and Maintenance costs (above) to disposition fuel and create space in L-Basin for planned shipments.
- Process spent nuclear fuel in coordination with receipt and processing of Canadian liquid material (funded by Canada).

Foreign and Domestic Fuel Receipts ($1,860)

- Continue to support foreign and domestic research reactor spent (used) nuclear fuel receipts.

Legacy Pension and Post-Retirement Benefits at Employee Retirement Income Security Act Minimum ($51,866)

- Contribute to the site Legacy Pension and Post-Retirement Benefits payment.
- 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 NNSA response to expedited removal of Plutonium from State of South Carolina.

Legacy Pension and Post-Retirement Benefits at Employee Retirement Income Security Act Minimum ($54,595)

- 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 35,000,000 gallons of legacy liquid radioactive waste containing approximately 249,000,000 curies currently stored in 43 underground storage tanks (as of September 30, 2018).

The Liquid Waste Program has reduced risk so far by:

- Producing 4,173 canisters with 61,100,000 curies immobilized in glass through the Defense Waste Processing Facility;
- Processing 7,049,835 gallons of salt waste through the Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit;
- Disposing over 12,500,000 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 September 2018, approximately 35,000,000 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 35,000,000 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 September 2018, the Defense Waste Processing Facility has produced 4,173 canisters immobilizing 61,100,000 curies in glass. It is projected that the Defense Waste Processing Facility will produce, in total, approximately 8,170 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 safely store 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 35,000,000 gallons of liquid radioactive waste stored in the tank farms. The waste inventory requires dissolution with water to allow transfer from tanks to processing facilities and to meet processing parameters. It is expected that the salt waste inventory of about 32,000,000 gallons will become at least 110,000,000 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. After the Salt Waste Processing Facility begins operations (i.e., processing of radioactive salt solution), the Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit will be taken offline, shut down, de-inventoried and flushed awaiting decontamination and decommissioning that will be performed under PBS-0030.

The Salt Waste Processing Facility construction was completed in May 2016. 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 per year. Processing salt waste through the Salt Waste Processing Facility is needed to disposition the majority of the waste stored in the tank farms (about 110 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 reduces delays in meeting its Federal Facilities Agreement commitments for waste removal, closure of non-compliant tanks, and the Site Treatment Plan milestone.

In 2019, the Liquid Tank Waste Stabilization and Disposition program plans to initiate the final tie-in work and complete most of the process modifications between liquid waste operating facilities and the Salt Waste Processing Facility. 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 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 minimize delay in meeting the Federal Facility Agreement milestone of removing waste and closing the old-style tanks by 2022 and 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, ash and furnace slag forming a "grout." The grout is poured into above-ground, cylindrical concrete tanks called Saltstone Disposal Units where it solidifies into saltstone, a non-hazardous 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. 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.
- *Suspension Agreement, Federal Facility Agreement (FFA) High-Level Waste (HLW) Tank Milestones,* that suspended all the FY2017 milestones and beyond. The Suspension Agreement has a "sunset date" of May 30, 2019.

Radioactive Liquid Tank Waste Stabilization and Disposition-2035 (PBS: SR-0014C)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$875,689	**$910,978**	**+$35,289**
Liquid Waste Operations ($555,026) • 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 melters, in a safe configuration, staffed and ready for operations. • Modify spaces of additional 180 canisters for double stacking effort in Glass Waste Storage Building #1 and purchase an additional 188 plugs. • Operate Effluent Treatment Facility at planned rate. • Perform Tank Farm operations activities, including waste transfers and removals. • Continue preparation of Sludge Batch 10 needed in FY 2021 to feed Defense Waste Processing Facility. • Operate Defense Waste Processing Facility to produce 40-50 canisters of vitrified high-level waste. Maintain liquid tank waste system, operational to process 300,000 gallons of H Canyon waste. • Initiate preparation of Tanks 34 and 35 for Sludge Batches. Salt Waste Processing ($171,942) • Support the Salt Waste Processing Facility start-up.	Liquid Waste Operations ($584,557) • 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. Maintain liquid tank waste system operational to receive and process 300,000 gallons of H Canyon waste. • Continue preparation of Tanks 34 and 35 and	• The increase is attributable to: 1) An increase in preparation of tanks for waste removal and sludge feed preparation to support Defense Waste Processing Facility operations and site indirect costs (+$29,531); 2) A decrease in Salt Waste Processing Facility line item project and Liquid Waste/ Salt Waste Processing Facility integration work to be completed prior to startup of Salt Waste Processing Facility (-$171,942)with a corresponding increase in preparation of tanks for waste removal and feed preparation in support of Salt Waste Processing Facility operations at planned rates (+$72,645); 3) An increase in Saltstone Disposal Unit projects due to construction ramp up in multiple Saltstone Disposal Units (+$44,932); 4) An increase in the area of Regulatory Commitments due to Tank Closure Cesium Removal Unit #1 operation and initiation of procurement of Tank Closure Cesium Removal Unit #2 to meet the Salt Dispute Resolution Agreement and an increase in preparation work of older-style tanks for bulk waste removal efforts to make progress towards operational closure and in support of feed preparation for Salt Waste Processing Facility and Defense Waste Processing Facility (+$30,630); and 5) higher contributions to Legacy Pension and Post-retirement Benefits (+$29,493).

- Process 600,000 – 1,000,000 gallons of salt solution through Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit and Tank Closure Cesium Removal prior to Salt Waste Processing Facility startup. Operations will be extended as long as possible to maximize salt processed to contribute to salt volumes committed in the SCDHEC Salt Dispute Resolution Agreement.
- Secure Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit operations and start 5-month outage to allow implementation of Salt Waste Processing Facility final tie-ins.
- Complete Liquid Waste/Salt Waste Processing Facility integration activities (H- Tank Farm blend and feed tanks, Defense Waste Processing Facility and Saltstone modifications, Saltstone increase from single shift operation to 2-shift operation) to support startup of 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 and 44 and initiate preparation of Tank 31 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

Saltstone Disposal ($56,317)

- Continue Saltstone Disposal Unit 7 cell construction and balance of plant.
- Continue Saltstone Disposal Units 8/9 design and initiate construction activities.

initiate preparation of Tank 39 for Sludge Batches to feed the Defense Waste Processing Facility.

Salt Waste Processing ($72,645)

- Complete hot commissioning and initiate radioactive waste operations, supporting 5 weeks operation of Salt Waste Processing Facility.
- Support execution of all required Liquid Waste System preparation and integration activities for the Salt Waste Processing Facility start-up in FY2020. Complete shutdown of the Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit prior to Salt Waste Processing Facility startup.
- 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 and 4th operating shifts 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.
- Complete preparation of Tank 27 and continue preparation of Tanks 31 and 44 for salt dissolution needed for salt batches to feed the Salt Waste Processing Facility.
- Initiate preparation of Tanks 28, 33, and 45 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.

Saltstone Disposal ($101,249)

- Continue Saltstone Disposal Unit 7 cell

- Support Saltstone Production Facility operations to support Salt Waste Processing Facility production rates.

Regulatory Commitments ($15,676)

- Complete feasibility study and report for the Tank Closure Cesium Removal demonstration in Tank 10 in H-Tank Farm.
- Continue preparation of Tank 9 and initiate preparation of Tanks 2, and 14 to minimize delay in meeting Federal Facility Agreement bulk waste removal efforts milestones and provide feed for Salt Waste Processing Facility and Tank Closure Cesium Removal effort.

Legacy pension and Post-Retirement Benefits at ERISA Minimum ($76,728)

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

construction and balance of plant.

- Initiate Saltstone Disposal Units 8/9 cell construction and balance of plant.
- Initiate Saltstone Disposal Units 10-12 Project.
- Support Saltstone Production Facility operations to support Salt Waste Processing Facility production rates.

Regulatory Commitments ($46,306)

- Complete preparation of Tank 9 and continue preparation of Tanks 2 and 14. Initiate preparation of Tank 1 to minimize delay in meeting Federal Facility Agreement bulk waste removal efforts milestones and provide feed for Salt Waste Processing Facility and Tank Closure Cesium Removal effort.
- Complete heel removal from Tank 15 to support Sludge Batch 10 readiness in FY 2021 and perform chemical cleaning in preparation for closure.
- Operate Tank Closure Cesium Removal Unit #1 assuming demonstration report supports use of this technology.
- Initiate procurement of Tank Closure Cesium Removal Unit #2, assuming success of Tank Closure Cesium Removal Unit #1.

Legacy pension and Post-Retirement Benefits at ERISA Minimum ($106,221)

- 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$11,249	**$4,749**	**-$6,500**
• Support Payments-in-Lieu-of-Taxes to Aiken, Allendale, and Barnwell counties ($6,500) • 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 ($3,246). • Provide support to Georgia and South Carolina Emergency Management Support ($438). • Support Interagency Agreement for the	• 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 ($3,246). • Provide support to Georgia and South Carolina Emergency Management Support ($438). • Support Interagency Agreement for the Environmental Protection Agency, Region 4 oversight of the Federal Facility Agreement	• The decrease is associated with reduction of discretionary payments in-Lieu-of-Taxes to support the focus on cleanup mission.

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).

($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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$163,357	**$179,377**	**+$16,020**
Safeguards and Security Program ($140,514) • 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. Cyber Security ($17,209) • Protects government information and technology systems in support of DOE missions executed at the Site. • Maintains the Savannah River Cyber Security capability in accordance with DOE Order 205.1B and emerging DOE cyber requirements. • Support identification, assessment and protection of mission critical information and information systems according to current threat vectors and risk posture. • Support Headquarters Cyber initiatives (amount	Safeguards and Security Program ($150,775) • 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. Cyber Security ($20,210) • 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	• The increase is attributable to maintenance and infrastructure projects; Protective Forces Collective Bargaining Agreements mandatory salary and benefits increases; EM Headquarters assessment for cyber initiatives; and emerging cyber security requirements.

derived based on Site to total PBS appropriation)

Legacy Pension and Post-Retirement Benefits at Employee Retirement Income Security Act Minimum ($5,634)

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

threat vectors and risk posture.

- Support Headquarters cyber initiatives (amount derived based on Site to total PBS appropriation)

Legacy Pension and Post-Retirement Benefits at Employee Retirement Income Security Act Minimum ($8,392)

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

Savannah River National Laboratory Crosscut
(dollars in thousands)

Savannah River National Laboratory	FY 2019 Enacted	FY 2020 Request[1]	FY 2019 vs FY 2020
Environmental Management			
Defense Environmental Cleanup			
Direct Funding -			
Savannah River	110,760	110,760	0
EM Headquarters	16,000	19,000	3,000
Office of River Protection	13,000	15,000	2,000
Paducah / Portsmouth	1,100	1,600	500
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**	**152,560**	**6,100**

[1] Numbers are estimates only.

The Savannah River National Laboratory executes approximately $250,000,000 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 2020 numbers noted above are estimates based on executed FY 2018 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2019 Enacted vs FY 2020 Request
	Savannah River	
$110,760	**$110,760**	**$0**
• 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. • Nuclear materials packaging development and	• 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. • Nuclear materials packaging development and documentation.	• No change

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.	• 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.	
EM Headquarters		
$16,000	**$19,000**	**$3,000**
• 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. • 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	• 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. • Technical studies for Headquarters including independent technical reviews, Technology Readiness Assessments, etc. • Long-term performance/durability studies of high- and low-level waste forms. • Technology Development and deployment of soil and groundwater remediation strategies and monitoring approaches. • Development of deactivation & decommissioning	• Increase reflects supports for integration of the Technology Development and Deployment program; assistance in the development of the EM Strategic Plan; engineering assessment resources to process/approach issues and events across the complex; and follow-on activities to maintain EM Lab Competencies.

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).	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). • 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. • Perform a Technical Assessment of Radioactive Waste Classification versus potential Disposal Options. • Follow-on activities to implement Competency Review Recommendations	
Office of River Protection		
$13,000	**$15,000**	**$2,000**
• 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	• 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,	• Increase reflects evaluations and studies in support of direct feed High Level Waste processing.

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. • Development of sludge retrieval and tank farm sampling technologies to reduce water load and minimize worker exposure.	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. • 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	**$1,600**	**$500**
• 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.	• 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 and on-site stored nickel ingots.	• Increase reflects a 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 and development of techniques for removal, development and application of virtual reality tools and continued packaging and transportation technical support.

	• Provide packaging and transportation technical support.	
	Carlsbad	
$1,000	**$1,000**	**$0**
• 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.	• 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. • Provide technical and program management support to the Office of the National TRU Program.	• No change
	Oak Ridge	
$1,000	**$1,000**	**$0**
• Deploy waste remediation technologies. • Provide engineering consultation and support for EM waste treatment missions.	• Deploy waste remediation technologies. • Provide engineering consultation and support for EM waste treatment missions. • Support to evaluation of closure options for Molten-Salt Reactor Experiment.	• No change
	Richland	
$2,100	**$2,500**	**+$400**
• 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	• 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	• 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.

remediation of Inactive Miscellaneous Underground Storage Tank program, including regulatory framework for accelerated closure.	remediation of Inactive Miscellaneous Underground Storage Tank program, 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	
	Los Alamos National Laboratory	
$300	**$500**	**+$200**
• Nuclear materials packaging studies. • Technical assistance for groundwater remediation. • Technical consultation to new Los Alamos National Laboratory EM Office	• Nuclear materials packaging studies. • Technical assistance for groundwater remediation. • Technical consultation to new Los Alamos National Laboratory EM Office. • Implement enhanced approaches to in-situ groundwater management.	• Increase reflects support for transuranic drum disposition, and assistance with groundwater issues.
	Idaho National Laboratory	
$1,200	**$1,200**	**$0**
• Nuclear Materials Packaging Studies. • Provide technical support to the Integrated Waste Treatment Unit facility in treatment of the Sodium Bearing Waste. • Support for disposition of other waste streams and nuclear materials	• Nuclear Materials Packaging 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	• No change

Savannah River
Capital Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
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)	16,295	3,965	3,965	3,609	3,965	4,400	+435
Total, Capital Operating Expenses	**16,295**	**3,965**	**3,965**	**3,609**	**3,965**	**4,400**	**+435**
Capital Asset Projects > $20M	0	0	0	0	0	0	+0
Total, Capital Asset Projects > $20M	**16,295**	**3,965**	**3,965**	**3,609**	**3,965**	**4,000**	**+435**
Plant Projects (GPP and IGPP) (Total Project Cost (TPC) <$20M)							
Savannah River							
SRNL IGPPs[a]	7,930	3,965	3,965	0	0	0	0
Renovate 773-A B-138 Laboratory	0	0	0	828	0	0	0
Renovate Lab B-115 773A	0	0	0	243	0	0	0
Renovate Lab 107 773A	0	0	0	4	0	0	0
705-A Security Upgrades	0	0	0	45	0	0	0
Diesel Generator Replacement	375	0	0	0	0	375	+375
Lab C 159/163 Renovation 773A	2,250	0	0	75	1,250	1,000	-250
Lab B 126/130 Renovation 773A	700	0	0	262	0	700	+700
HVAC unit 735-A	375	0	0	445	0	375	+375
Relocate Glass Apparatus Fabrication Laboratory to C-Wing, 735-A	2,075	0	0	583	975	1,100	+125
Renovate Laboratory C-130, 773-A	950	0	0	0	950	0	-950
Upgrade SRNL Limited Area Public Address System	465	0	0	344	365	100	-265
Renovate Laboratory C-155 Hood and Gloveboxes, 773-A	1,175	0	0	780	425	750	+325
Total, Savannah River	**16,295**	**3,965**	**3,965**	**3,609**	**3,965**	**4,400**	**+435**

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
[a] Projects and allocation of the $4,400,000 request are preliminary. Final FY 2020 projects will reflect emerging or identified risks.							
Total, Plant Projects (GPP and IGPP) (Total Project Cost (TPC) <$20M	**16,295**	**3,965**	**3,965**	**3,609**	**3,965**	**4,400**	**+435**
Total, Capital Summary	**16,295**	**3,965**	**3,965**	**3,609**	**3,965**	**4,400**	**+435**

Savannah River
Construction Summary ($K)

	Total	Prior Years	FY 2018 Enacted	FY 2018 Actuals	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
05-D-405, Salt Waste Processing Facility, Aiken, SC							
Total Estimate Cost (TEC)	1,611,117	1,569,117	0	0	0	0	0
Other Project Costs (OPC)	710,883	378,983	150,000	127,945	130,000	20,988	-109,012
Total Project Cost (TPC) 05-D-405	**2,322,000**	**1,948,100**	**150,000**	**127,945**	**130,000**	**20,988**	**-109,012**
17-D-402, Saltstone Disposal Unit #7, SR (SR-0014C)							
Total Estimate Cost (TEC)	TBD	5,500	30,000	13,679	41,243	40,034	-1,209
Other Project Costs (OPC)	TBD	2,819	4,000	1,906	2,782	3,465	+683
Total Project Cost (TPC) 17-D-402	**TBD**	**8,319**	**34,000**	**15,585**	**44,025**	**43,499**	**-526**
18-D-401, Saltstone Disposal Unit #8 and #9, SR (SR-0014C)							
Total Estimate Cost (TEC)	TBD	0	500	178	7,577	51,750	+44,173
Other Project Costs (OPC)	TBD	0	500	290	3,250	5,000	+1,750
Total Project Cost (TPC) 18-D-401	**TBD**	**0**	**1,000**	**468**	**10,827**	**56,750**	**+45,923**
18-D-402, Emergency Operations Center Replacement, SR (SR-0042)							
Total Estimate Cost (TEC)	TBD	0	500	0	1,259	6,792	+5,533
Other Project Costs (OPC)	TBD	500	500	78	3,500	0	-3,500
Total Project Cost (TPC) 18-D-402	**TBD**	**500**	**1,000**	**78**	**4,759**	**6,792**	**+2,033**
19-D-701, SR Security System Replacement Project							
Total Estimate Cost (TEC)	TBD	0	0	0	10,000	0	-10,000

Other Project Costs (OPC)	TBD	0	0	0	0	0	0
Total Project Cost (TPC) 18-D-402	**TBD**	**0**	**0**	**0**	**10,000**	**0**	**-10,000**
20-D-401, Saltstone Disposal Unit 10. 11. 12							
Total Estimate Cost (TEC)	TBD	0	0	0	0	500	+500
Other Project Costs (OPC)	TBD	0	221	0	1,465	500	-965
Total Project Cost (TPC) 18-D-404	**TBD**	**0**	**221**	**0**	**1,465**	**1,000**	**-465**
20-D-402, Advanced Manufacturing Collaborative Facility							
Total Estimate Cost (TEC)	TBD	0	0	0	0	50,000	+50,000
Other Project Costs (OPC)	TBD	0	0	0	1,000	0	-1,000
Total Project Cost (TPC) 18-D-404	**TBD**	**0**	**0**	**0**	**1,000**	**50,000**	**+49,000**

05-D-405, Salt Waste Processing Facility
Savannah River Site, Aiken, South Carolina
Project is for Construction Only (SR-0014C)

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

Summary

The FY 2020 Request for the Salt Waste Processing Facility project is $20,988,000.

The Deputy Secretary of Energy (the Chief Executive for Project Management, formerly the Secretarial Acquisition Executive) approved a Baseline Change Proposal establishing a new Total Project Cost of $2,322,000,000 and the Critical Decision-4 (CD-4) date of January 31, 2021.

Significant Changes

This Project Data Sheet is an update of the FY 2019 Congressional Project Data Sheet and does not include a new start for the budget year. Since our last update, the construction of the Next Generation Cold Chemical Feed Facility (NGS CCFF) was completed and turned over to Operations in December 2018. As evidenced by testing results, NGS CCFF will significantly increase SWPF throughput rates and result in substantial life-cycle savings once SWPF becomes operational. NGS was funded using SWPF TEC Construction funds.

The Department of Energy (DOE) and its contractor- initiated negotiations for the final phases of the project, including construction complete and commissioning, to determine the new contract value, subsequent revised Total Project Cost, and completion date change. The contract has been restructured to a Cost-Plus-Incentive Fee, plus cost cap arrangement for construction to go target cost of $530,000,000, as of January 1, 2013. The cost cap includes construction and commissioning support during construction. The estimated cost for the commissioning phase has also increased and will be completed on a cost-reimbursable basis.

The project requires additional funding due to the delay in the receipt of the 10 large vessels which impacted both project cost and schedule. This delay contributed to a significant cost overrun. Construction Complete has been re-negotiated and the Contract Modification has been signed. Commissioning (within the scope of this project), and One Year of Operations and Six Months Support (outside the scope of this project) will remain as-is in the contract. Commissioning (Other Project Cost Funds) cost increases were driven primarily by escalation due to the construction delays and incorporation of lessons learned from other DOE Commissioning Projects (e.g., Integrated Waste Treatment Unit at Idaho). The extended time realized drove increased staffing levels and longer durations for Commissioning activities (increase from 11 months to 29 months). The Department's internal review process, including preparation of an independent government cost estimate and performance of an external independent review, determined that the increases in duration were appropriate.

In the FY 2014 Omnibus Appropriations Bill, Congress appropriated all funding for the Total Project Cost of Project 05-D-405 Salt Waste Processing Facility within the construction line-item account. In prior years, the construction line-item account only contained appropriations for the Total Estimated Cost portion of the project. The Other Project Cost portion was included within PBS SR-0014C, Radioactive Liquid Tank Waste Stabilization and Disposition. In FY 2015, this project requested $135,000,000 for the Total Project Cost control point. In the FY 2015 Omnibus Appropriations Bill, Congress appropriated all funding for the Total Project Cost of Project 05-D-405 Salt Waste Processing Facility within the construction line-item account.

Hot Commissioning activities through December 2019 will be funded utilizing capital construction dollars. Hot commissioning activities in transition to operations as well as operation of SWPF will be funded utilizing operating dollars in PBS SR-0014C Liquid Tank Waste Stabilization and Disposition.

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 2005	06/25/2001		4Q FY 2004	4Q FY 2005	4Q FY 2005	4Q FY 2005	N/A	4Q FY 2008
FY 2006	06/25/2001		4Q FY 2004	3Q FY 2006	3Q FY 2006	3Q FY 2006	N/A	4Q FY 2009
FY 2007	06/25/2001		4Q FY 2004	3Q FY 2007	1Q FY 2008	3Q FY 2007	N/A	1Q FY 2011
FY 2008	06/25/2001		4Q FY 2004	3Q FY 2007	1Q FY 2008	3Q FY 2007	N/A	1Q FY 2011
FY 2007 Notification	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	4Q FY 2008	N/A	1Q FY 2014
FY 2009	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	4Q FY 2008	N/A	1Q FY 2014
FY 2008 Reprogramming	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	1Q FY 2014
FY 2010	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	1Q FY 2016
FY 2011	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	1Q FY 2016
FY 2012	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	1Q FY 2016
FY 2013	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	1Q FY 2016
FY 2012 Reprogramming	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	1Q FY 2016
FY 2014	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	TBD
FY 2013 Reprogramming	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	TBD
FY 2015	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	TBD
FY 2014 Notification	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	2Q FY 2021
FY 2016	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	2Q FY 2021
FY 2015 Reprogramming	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	2Q FY 2021
FY 2017	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	2Q FY 2021
FY 2018	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	2Q FY 2021
FY 2019	06/25/2001		4Q FY 2004	4Q FY 2007	4Q FY 2008	1Q FY 2009	N/A	2Q FY 2021
FY 2020	06/25/2001		08/12/2004	09/24/2007	09/22/2009	01/12/2009	N/A	2Q FY 2021

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 Project 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 (see Section 9)
CD-4 – Approve Start of Operations or Project Completion
PB – Indicates the Performance Baseline

(Fiscal Quarter or Date)

	Performance Baseline Validation	CD-2/3A	CD-3B	CD-3	CD-4
FY 2005	N/A	N/A	N/A	N/A	N/A
FY 2006	N/A	N/A	N/A	N/A	N/A
FY 2007	N/A	N/A	N/A	N/A	N/A
FY 2008	N/A	N/A	N/A	N/A	N/A
FY 2007 Notification	4Q 2007	4Q 2007	2Q2008	N/A	N/A
FY 2009	4Q 2007	4Q 2007	3Q2008	N/A	N/A
FY 2008 Reprogramming	4Q 2007	4Q 2007	4Q 2008	N/A	N/A
FY 2010	4Q 2007	4Q 2007	4Q 2008	1Q 2009	N/A
FY 2010	4Q 2007	4Q 2007	4Q 2008	1Q 2009	N/A
FY 2012	4Q 2007	4Q 2007	4Q 2008	1Q 2009	N/A
FY 2013	4Q 2007	4Q 2007	4Q 2008	1Q 2009	N/A
FY 2012 Reprogramming	4Q 2007	4Q 2007	4Q 2008	1Q 2009	N/A
FY 2014	4Q 2007	4Q 2007	4Q 2008	1Q 2009	N/A
FY 2013 Reprogramming	4Q 2007	4Q 2007	4Q 2008	1Q 2009	N/A
FY 2015	4Q 2007	4Q 2007	4Q 2008	1Q 2009	N/A
FY 2014 Notification	4Q 2014	4Q 2007	4Q 2008	1Q 2009	2Q 2021
FY 2016	4Q 2014	4Q 2007	4Q 2008	1Q 2009	2Q 2021
FY 2015 Reprogramming	4Q 2014	4Q 2007	4Q 2008	1Q 2009	2Q 2021
FY 2017	4Q 2014	4Q 2007	4Q 2008	1Q 2009	2Q 2021
FY 2018	4Q 2014	4Q 2007	4Q 2008	1Q 2009	2Q 2021
FY 2019	4Q 2014	4Q 2007	4Q 2008	1Q 2009	2Q 2021
FY 2020	4Q 2014	4Q 2007	4Q 2008	1Q 2009	2Q 2021

CD-2/3A - Site Preparation, Early Construction and Long Lead Procurement
CD-3B - Early Construction and Long Lead Procurement

Project Cost History

(Dollars in Thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2005	TBD	TBD	TBD or N/A	TBD	N/A	TBD or N/A	TBD or N/A
FY 2006	78,917	252,014	330,931	107,207	0	107,207	438,138
FY 2007	228,600	331,000	559,600	120,400	0	120,400	680,000
FY 2008	228,705	497,199	725,904	173,433	0	173,433	899,337
FY 2007 Notification	228,797	497,199	725,996	173,341	0	173,341	899,337
FY 2009	228,705	497,199	725,904	173,433	0	173,433	899,337
FY 2008 Reprogramming	243,705	482,199	725,904	173,433	0	173,433	899,337
FY 2010	243,705	895,151	1,138,856	200,692	0	200,692	1,339,548
FY 2011	243,705	895,151	1,138,856	200,692	0	200,692	1,339,548

(Dollars in Thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2012	243,705	895,151	1,138,856	200,692	0	200,692	1,339,548
FY 2013	243,705	895,151	1,138,856	200,692	0	200,692	1,339,548
FY 2012 Reprogramming	243,705	929,457	1,173,162	166,386	0	166,386	1,339,548
FY 2014	243,705	929,457	1,173,162	166,386	0	166,386	1,339,548
FY 2013 Reprogramming	243,705	1,071,417	1,315,122	166,386		166,386	1,481,508
FY 2015	243,705	1,178,417	1,422,122	171,983	0	171,983	1,594,105
FY 2014 Notification	243,705	1,367,412	1,611,117	710,883	0	710,883	2,322,000
FY 2016	243,705	1,367,412	1,611,117	710,883	0	710,883	2,322,000
FY 2015 Reprogramming	238,905	1,372,212	1,611,117	710,883	0	710,883	2,322,000
FY 2017	238,905	1,330,212	1,569,117	752,883	0	752,883	2,322,000
FY 2018	238,905	1,330,212	1,569,117	752,883	0	752,883	2,322,000
FY 2019	238,905	1,330,212	1,569,117	752,883	0	752,883	2,322,000
FY 2020	238,905	1,330,212	1,569,117	752,883	0	752,883	2,322,000

2. Project Scope and Justification

Scope

This project scope includes construction of a facility to treat large quantities of waste from reprocessing and other liquids generated by nuclear materials production operations at the Savannah River Site. Approximately 37,000,000 gallons of this waste is being stored on an interim basis in 45 underground waste storage tanks. Of the 37,000,000 gallons, approximately 3,000,000 gallons are sludge waste and approximately 34,000,000 gallons are salt waste, consisting of 16,500,000 gallons of solid salt cake and 17,500,000 gallons of salt supernate. Continued, long-term storage of this liquid waste in underground tanks poses an environmental risk. Waste volumes are subject to change because the supernate is evaporated to reduce its volume, sludge is being removed for processing and vitrification, and new waste is being transferred to the radioactive liquid waste tanks. In addition, water required for salt cake removal from the tanks and processing is presently expected to result in approximately 84 million gallons of salt and supernate solution to be processed.

This project scope includes design, construction, and cold commissioning of the Salt Waste Processing Facility to safely separate the high-activity fraction from the low-activity fraction of the radioactive liquid salt waste stored in underground tanks at the Savannah River Site. The Department has selected Caustic-Side Solvent Extraction as the preferred technology for separation of radioactive cesium from the salt wastes. Salt Waste Processing Facility processing also includes a separation step to remove strontium, uranium, plutonium, and neptunium from the waste by sorption onto granular monosodium titanate followed by filtration.

Justification

To comply with state and Federal regulatory agreements, all non-compliant storage waste tanks must be empty by 2028. The Department built the Defense Waste Processing Facility to vitrify high-level radioactive liquid waste into a stable form and store it for eventual disposal in a geologic repository. The ability to safely process the salt component of the radioactive liquid waste stored in underground storage tanks at the Savannah River Site is a crucial prerequisite for completing radioactive liquid waste disposal. Without a suitable method for salt management, the Department would not be able to place the radioactive liquid waste in a configuration acceptable for safe disposal.

The Salt Waste Processing Facility presently has a waste processing nameplate capacity of a nominal 7,300,000 gallons per year. The Salt Waste Processing Facility will consist of all buildings, equipment, and services required to provide a fully functioning facility for processing salt waste. The Salt Waste Processing Facility will contain necessary process areas, service areas, chemical storage areas, and administrative areas. The process building will contain shielded processing cells and chemical processing equipment. In-cell tanks and components will be of a closed-cell design for ease of maintenance,

replacement, and later decommissioning. The operating area will contain chemical feed pumps and tanks, hot and cold laboratories for testing samples, electrical and mechanical equipment areas, truck unloading area, and maintenance and decontamination areas. The chemical storage area will be located near the process building and will contain chemical storage tanks. Service and administrative spaces will be sized as required to accommodate the process facility.

A formal technical and programmatic risk assessment has been performed. The risk assessment concluded that the technical and programmatic risks are manageable.

The Savannah River Site Federal Facilities Agreement and Site Treatment Plan require production of (on average) 200 high level waste canisters per year at the Defense Waste Processing Facility. In order to minimize total canister production and avoid future shutdowns or slowdowns of the Defense Waste Processing Facility, a coupled feed (both sludge and salt) must be established and maintained. At this time, the Salt Waste Processing Facility is on the critical path for establishing the coupled feed.

In response to Defense Nuclear Facilities Safety Board concerns about the impacts of potential accidents involving radiological materials, the DOE Savannah River Operations Office directed on November 23, 2005, development of an Enhanced Preliminary Design that implemented a Performance Category 3 confinement approach.

In May 2007, development of a bottom-up cost estimate was completed to support the Critical Decision -2 package and further adjusted based on comments received from an External Independent Review, which resulted in a project cost estimate of $899,337,000 which is a $220,000,000 increase over an earlier rough order of magnitude estimate. The primary drivers for this increase were increased technical requirements resulting from the implementation of National Quality Assurance Standard 1 in lieu of International Standards Organization Standard 9001, resolution of structural/geotechnical issues, and additional Performance Category 3 requirements not identified during the initial rough order of magnitude estimate process. In addition, changes in how the project interpreted guidance on classification of Operating Funds as either Other Project Costs or Operating Costs accounted for approximately $53,000,000 of the $220,000,000 increase.

Early in the execution of Critical Decision -2/3A activities, design issues surrounding inability to secure sufficient critical design resources began to impact completion of design activities. This situation was further exacerbated by the volatility of the market, which began affecting the Critical Decision -3A procurements. Mitigation strategies were developed to deal with these issues. The revised Critical Decision -3 baseline was developed using the 90 percent design drawings, which estimated additional material and associated labor to install, and incorporated the cost of realized risk of material cost increases and design delays. The resulting baseline total project cost was $1,339,548,586, an increase of $440,211,586 over the Critical Decision -2 baseline estimate.

The cost and schedule confidence levels established at Critical Decision -3 in 2009 were a cost of $1,339,548,586 at a 95 percent confidence level and a completion date of October 2015, which included 126 weeks of schedule contingency at an 80 percent confidence level.

Since 2009, the project experienced significant delays as a result of the procurement and delivery of American Society of Mechanical Engineers process vessels and other Nuclear Quality Assurance-1 vendor performance issues related to engineered equipment. Despite significant involvement by the DOE Federal Project Director, Integrated Project Team, and Senior DOE leadership, these issues adversely impacted the cost and completion dates for construction completion and facility commissioning. This increase also reflects additional cost contingency at the 95% confidence level. The revised project costs are based on the project's independently validated baseline updated to reflect completion of Critical Decision -4, as established in accordance with the DOE Order 413.3B on project management.

The major elements of the cost increase are as follows:

- Construction
- Commissioning
- Other Project Costs

Construction costs increased as a result of cost and schedule impacts from delay in receipt of Large American Society of Mechanical Engineers Vessels as well as impacts from other NQA-1 procurements. In addition to the direct impacts from the two year schedule slip associated with the tank delay, inefficiencies while awaiting tank delivery caused a cumulative impact of nearly four years, from the January 2013 construction completion date established at Critical Decision -3 to the negotiated completion date of December 2016 represented in this baseline change. The cost increase reflects the additional periods of performance and associated overhead costs and level of effort expenses during that extended period. This increase has been approved in connection with contractual discussions with the Contractor in 2013 to establish a more appropriate contract structure, imposed a cost cap on construction, and was codified via Contract Modification 116 in June 2013. It is important to note that establishing a cost cap provided the Department with more contractual control of the construction work scope and transferred the risk associated with cost overruns from the Department to the contractor.

Commissioning increased as a result of escalation due to the construction delays and incorporation of lessons learned from other DOE Commissioning Projects (i.e., Integrated Waste Treatment Unit). This drove increased staffing levels and longer durations for Commissioning activities (increase from 11 months to 29 months).

Other Project Costs; which includes the Contractor Fee, Contingency/Management Reserve, and DOE/Management & Operations Contractor support, were increased. The increase in DOE/ Management & Operations Contractor support is due to the extended schedule and is based on actual costs to date projected to the end of the project. Because the schedule is extended from 2015 to 2021, this will require additional years of DOE/ Management & Operations Contractor support. The Contractor Fee has been reduced.

The total contingency increase recognizes uncertainties associated with commissioning, includes 26 months of schedule contingency, and includes the project management reserve. Under the cost reimbursable contract structure for commissioning, the Federal Project Director will manage and control all management reserve, as well as contingency. The contingency costs were informed by a DOE Risk Analysis and confirmed by the External Independent Review.

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
Process throughput rate	Demonstrate the ability to process at a throughput rate of 7,300,000 gallons /year.	
Waste Products Production	Demonstrate the ability to produce waste products that are within the established limits of the Waste Acceptance Criteria and/or Documented Safety Analysis of the receiving facilities (i.e., Defense Waste Processing Facility and Saltstone Production Facility).	
Cold Commissioning	Successful Cold Commissioning – The following tests will be conducted during Cold Commissioning to validate compliance: a. Chemical Sampling to Assess Product Compliance. b. Peak Throughput Performance Testing. c. Other Cold Commissioning Performance Testing (off-normal conditions, non-routine operations, maintenance, and environmental testing).	

3. Project Cost and Schedule

Financial Schedule

(Dollars in Thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2003	4,842	4,842	0
FY 2004	51,198	51,198	11,539
FY 2005	23,469	23,469	30,204
FY 2006	34,990	34,990	48,195
FY 2007	104,296	104,296	75,600
FY 2008[e]	20,110	20,110	53,063
FY 2009	0	0	16,588
FY 2010	0	0	3,716
Total, Design	238,905	238,905	238,905

(Dollars in Thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Construction			
FY 2005	5,792	5,792	0
FY 2006	495	495	0
FY 2007	0	0	1,907
FY 2008[e]	76,999	76,999	68,440
FY 2009	155,524	155,524	93,367
FY 2010	234,118	234,118	151,743
FY 2011	234,403	234,403	227,296
FY 2012[b]	204,377	204,377	197,479
FY 2013[c]	72,509	72,509	148,911
FY 2014	92,000	92,000	144,671
FY 2015	107,000	107,000	156,728
FY 2016	134,000	134,000	132,866
FY 2017	12,995	12,995	6,804
Total, Construction	1,330,212	1,330,212	1,330,212
TEC			
FY 2003	4,842	4,842	0
FY 2004	51,198	51,198	11,539
FY 2005	29,261	29,261	30,204
FY 2006	35,485	35,485	48,195
FY 2007	104,296	104,296	77,507
FY 2008[e]	97,109	97,109	121,503
FY 2009	155,524	155,524	109,955
FY 2010	234,118	234,118	155,459
FY 2011	234,403	234,403	227,296
FY 2012[b]	204,377	204,377	197,479
FY 2013[c]	72,509	72,509	148,911
FY 2014	92,000	92,000	144,671
FY 2015	107,000	107,000	156,728
FY 2016	134,000	134,000	132,866
FY 2017	12,995	12,995	6,804
Total, TEC	1,569,117	1,569,117	1,569,117

(Dollars in Thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Other Project Cost (OPC)			
OPC			
FY 2006	22,447	22,447	22,447
FY 2007	9,048	9,048	9,048
FY 2008	9,715	9,715	7,715
FY 2009	13,133	13,133	9,729
FY 2010	25,202	25,202	12,672
FY 2011	23,475	23,475	8,618
FY 2012[b]	0	0	8,044
FY 2013	7,963	7,963	17,052
FY 2014[e]	33,000	33,000	18,125
FY 2015[e]	28,000	28,000	37,540
FY 2016	60,000	60,000	66,857
FY 2017	147,000	147,000	102,253
FY 2018	150,000	150,000	136,608
FY 2019	130,000	130,000	149,242
FY 2020	20,988	20,988	73,959
FY 2021	72,912	72,912	72,974
Total, OPC	752,883	752,883	752,883
Total Project Cost (TPC)			
FY 2003	4,842	4,842	0
FY 2004	51,198	51,198	11,539
FY 2005	29,261	29,261	30,204
FY 2006	57,932	57,932	70,642
FY 2007	113,344	113,344	86,555
FY 2008[ae]	106,824	106,824	129,218
FY 2009	168,657	168,657	119,684
FY 2010	259,320	259,320	168,131
FY 2011	257,878	257,878	235,914
FY 2012[b]	204,377	204,377	205,523
FY 2013[c]	80,472	80,472	165,963
FY 2014	125,000	125,000	162,796
FY 2015	135,000	135,000	194,268
FY 2016	194,000	194,000	199,723
FY 2017	159,995	159,995	109,057
FY 2018	150,000	150,000	136,608

	(Dollars in Thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
FY 2019	130,000	130,000	149,242
FY 2020	20,988	20,988	73,959
FY 2021	72,912	72,912	72,974
Total, TPC[d]	2,322,000	2,322,000	2,322,000

[a]Includes a Congressional Reprogramming of $15,000,000 from the construction project (05-D-405) to Project Engineering and Design (03-D-414).
[b]FY 2012 includes a reduction in OPC funds and a corresponding increase in Total Estimated Cost funds of $34,305,510.
[c]FY 2013 reflects a reprogramming resulting in a reduction in Total Estimate Cost funds of $83,888,565 as a result of funding under an annualized continuing resolution.
[d]Beginning in FY 2014, the OPC was appropriated from the construction line-item account. Prior to FY 2014, the OPC was appropriated within PBS SR-0014C, Radioactive Liquid Tank Waste Stabilization and Disposition.
[e]FY 2008 includes a Congressional Reprogramming request to realign $4,800,000 from the Project Engineering and Design (03-D-414) to the Salt Waste Processing Facility construction project (05-D-404). No change in the Total Project Cost of $2,322,000,000.

Details of Project Cost Estimate

	(Dollars in Thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	238,905	243,705	206,705
Contingency	0	0	37,000
Total, Design	238,905	243,705	243,705
Construction			
Site Preparation	27,263	27,263	27,263
Equipment	171,893	171,893	89,508
Other Construction	1,095,212	1,132,256	316,428
Contingency	36,000	36,000	49,000
Total, Construction	1,330,212	1,367,412	482,199
Total, TEC	1,569,117	1,611,117	725,904
Contingency, TEC	36,000	36,000	86,000
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	0	0	0
Conceptual Design	14,133	14,133	14,445
Start-Up	299,750	257,750	96,940
Contingency	300,100	300,100	22,000
Other OPC	138,900	138,900	40,048
Total, OPC except D&D	752,883	710,883	173,433

	(Dollars in Thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total, OPC	752,883	710,883	173,433
Contingency, OPC	300,100	300,100	22,000
Total, TPC	2,322,000	2,322,000	899,337
Total, Contingency	336,100	336,100	108,000

Schedule of Appropriation Requests

Request		Prior Years	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Total
FY 2004	TEC	69,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	69,000
	OPC	11,967	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11,967
	TPC	80,967	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	80,967
FY 2005	TEC	69,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	69,000
	OPC	11,967	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11,967
	TPC	80,967	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	80,967
FY 2006	TEC	336,040	0	0	0	0	0	0	0	0	336,040
	OPC	103,960	0	0	0	0	0	0	0	0	103,960
	TPC	440,000	0	0	0	0	0	0	0	0	440,000
FY 2007 Performance Baseline	TEC	559,600	0	0	0	0	0	0	0	0	559,600
	OPC	120,400	0	0	0	0	0	0	0	0	120,400
	TPC	680,000	0	0	0	0	0	0	0	0	680,000
FY 2008	TEC	559,600	0	0	0	0	0	0	0	0	559,600
	OPC	120,400	0	0	0	0	0	0	0	0	120,400
	TPC	680,000	0	0	0	0	0	0	0	0	680,000
FY 2007 Congressional Notification	TEC	725,996	0	0	0	0	0	0	0	0	725,996
	OPC	170,286	3,055	0	0	0	0	0	0	0	173,341
	TPC	896,282	3,055	0	0	0	0	0	0	0	899,337
FY 2009	TEC	725,904	0	0	0	0	0	0	0	0	725,904
	OPC	170,286	3,147	0	0	0	0	0	0	0	173,433
	TPC	896,190	3,147	0	0	0	0	0	0	0	899,337

FY 2010	TEC	1,138,856	0	0	0	0	0	0	0	0	1,138,856
	OPC	200,692	0	0	0	0	0	0	0	0	200,692
	TPC	1,339,548	0	0	0	0	0	0	0	0	1,339,548
FY 2011	TEC	1,138,856	0	0	0	0	0	0	0	0	1,138,856
	OPC	195,289	5,403	0	0	0	0	0	0	0	200,692
	TPC	1,334,145	5,403	0	0	0	0	0	0	0	1,339,548
FY 2012	TEC	1,173,162	0	0	0	0	0	0	0	0	1,173,162
	OPC	160,983	5,403	0	0	0	0	0	0	0	166,386
	TPC	1,334,145	5,403	0	0	0	0	0	0	0	1,339,548
FY 2013	TEC	1,223,162	0	0	0	0	0	0	0	0	1,223,162
	OPC	110,983	5,403	0	0	0	0	0	0	0	116,386
	TPC	1,334,145	5,403	0	0	0	0	0	0	0	1,339,548
FY 2012 Reprogramming	TEC	1,223,162	0	0	0	0	0	0	0	0	1,223,162
	OPC	110,983	5,403	0	0	0	0	0	0	0	116,386
	TPC	1,334,145	5,403	0	0	0	0	0	0	0	1,339,548
FY 2014	TEC	1,321,725	92,000	0	0	0	0	0	0	0	1,413,725
	OPC	160,983	5,403	0	0	0	0	0	0	0	166,386
	TPC	1,482,708	97,403	0	0	0	0	0	0	0	1,580,111
FY 2013 Reprograming	TEC	1,223,122	92,000	0	0	0	0	0	0	0	1,315,122
	OPC	160,983	5,403	0	0	0	0	0	0	0	166,386
	TPC	1,384,105	97,403	0	0	0	0	0	0	0	1,481,508
FY 2015	TEC	1,223,122	92,000	107,000	0	0	0	0	0	0	1,422,122
	OPC	110,983	33,000	28,000	0	0	0	0	0	0	171,983
	TPC	1,334,105	125,000	135,000	0	0	0	0	0	0	1,594,105
FY 2014 Notification	TEC	1,223,122	92,000	107,000	134,000	54,995	0	0	0	0	1,611,117
	OPC	110,983	33,000	28,000	60,000	105,000	150,000	140,000	75,000	8,900	710,883
	TPC	1,334,105	125,000	135,000	194,000	159,995	150,000	140,000	75,000	8,900	2,322,000
FY 2016	TEC	1,223,122	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,611,117
	OPC	110,983	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	710,883
	TPC	1,334,105	125,000	135,000	194,000	159,995	150,000	140,000	75,000	8,900	2,322,000
FY	TEC	1,223,122	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,611,117

2015 Reprogramming	OPC	110,983	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	710,883
	TPC	1,334,105	125,000	135,000	194,000	159,995	150,000	140,000	75,000	8,900	2,322,000
FY 2017	TEC	1,223,122	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,611,117
	OPC	110,983	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	710,883
	TPC	1,334,105	125,000	135,000	194,000	160,000	150,000	140,000	75,000	8,895	2,322,000
FY 2018	TEC	1,223,122	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1,611,117
	OPC	110,983	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	710,883
	TPC	1,334,105	125,000	135,000	194,000	160,000	150,000	140,000	75,000	8,895	2,322,000
FY 2019	TEC	1,223,122	92,000	107,000	134,000	12,995	0	0	0	0	1,569,117
	OPC	110,983	33,000	28,000	60,000	147,000	150,000	130,000	75,000	18,900	752,883
	TPC	1,334,105	125,000	135,000	194,000	159,995	150,000	130,000	75,000	18,900	2,322,000
FY 2020	TEC	1,223,122	92,000	107,000	134,000	12,995	0	0	0	0	1,569,117
	OPC	110,983	33,000	28,000	60,000	147,000	150,000	130,000	20,988	72,912	752,883
	TPC	1,334,105	125,000	135,000	194,000	159,995	150,000	130,000	20,988	72,912	2,322,000

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2Q21
Expected Useful Life (number of years)	17
Expected Future Start of D&D	N/A

Related Funding requirements
(Budget Authority in Thousands of Dollars)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	76,922	72,649	1,307,674	1,235,033
Maintenance	13,078	12,351	222,326	209,967
Total, Operations & Maintenance	90,000	85,000	1,530,000	1,445,000

5. D&D Information

The new area being constructed in this project is not replacing existing facilities. As part of the EM cleanup efforts, sites have established unique projects to perform Decontamination and Decommissioning. An estimated 2,108,087 square feet

of buildings will have been removed from the Savannah River Sites inventory from Fiscal Year 2002 through Fiscal Year 2011. The square footage of this project will be offset against the Savannah River Site Decontamination and Decommissioning program's banked excess.

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 project acquisition strategy included the use of two separate contractors to perform conceptual design, which reduced project risk. Both contractors were awarded contracts in September 2002 and identified and managed technical and program risks through completion of conceptual design. Following completion of conceptual design, the Department selected one of the two contractors in January 2004 to perform preliminary and final design, construction, commissioning, and one year of operations. Design services were obtained through a competed contract with an Engineering, Procurement, and Construction contractor.

The contract has been restructured to a Cost-Plus-Incentive Fee, plus cost cap arrangement for construction to go target cost of $530,000,000, as of January 1, 2013. The cost cap includes construction and commissioning support during construction.

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) 2020 Request for the Saltstone Disposal Unit (SDU) 7 project is $40,034,000.

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 Construct*ion, 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 2019 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	2Q FY 2022

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[1]	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2017[2]	TBD	TBD	TBD	TBD	N/A	TBD	TBD
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

($ in thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2020PB	7,582	134,931	142,513	16,487	N/A	16,487	159,000

Note:
(1) Numbers are only estimates and are consistent with FY2016 Project Data Sheet submission.
(2) Numbers are only estimates and are consistent with the high end of the CD-1 cost range.

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
Outyears	25,736	25,736	25,736
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
Outyears	25,736	25,736	25,736
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	3,465	3,465	3,465
Outyears	3,421	3,421	3,421

	(dollars in thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
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	43,499	43,499	43,499
Outyears	29,157	29,157	29,157
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
Total, Contingency	26,500	26,500	26,500

Schedule of Appropriation Requests

Request		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	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	25,736	142,513
	OPC	1,201	1,618	4,000	2,782	3,465	3,421	16,487
	TPC	1,201	7,118	34,000	44,025	43,499	29,157	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 2020 Request for the Saltstone Disposal Units 8/9 project is $51,750,000.

The most recent DOE Order 413.3B approved Critical Decision is Critical Decision 1, which was approved on December 11, 2017, with a preliminary cost range of $225,000,000 to $350,000,000 and Critical Decision 4 of July 2025.

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 2019 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

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
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 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

*Note: Critical Decisions 2 and 3 are anticipated in 2QFY2019

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	500	500	178
FY 2019	1,328	1,328	1,328
FY 2020	2,708	2,708	2,708
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2019	6,249	6,249	6,249
FY 2020	49,042	49,042	49,042
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2018	500	500	178
FY 2019	7,577	7,577	7,577
FY 2020	51,750	51,750	51,750
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD

	(dollars in thousands)		
	Appropriations	Obligations	Costs
OPC			
FY 2018	500	500	290
FY 2019	3250	3250	3250
FY 2020	5000	5000	5000
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)	TBD	TBD	TBD
FY 2018	1,000	1,000	468
FY 2019	10,827	10,827	10,827
FY 2020	56,750	56,750	56,750
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			
Site Preparation	N/A	N/A	N/A
Equipment	N/A	N/A	N/A
Other Construction	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	N/A	400	N/A
Conceptual Design	N/A	N/A	N/A
Start-up	N/A	N/A	N/A
Contingency	TBD	TBD	N/A
Other OPC	TBD	TBD	N/A
Total, OPC except D&D	TBD	TBD	N/A

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

Schedule of Appropriation Requests

Request		Prior Years	FY 2018	FY 2019	FY 2020	Outyears	Total
FY 2018	TEC	0	500			TBD	TBD
	OPC	0	500			TBD	TBD
	TPC	0	1,000				TBD
FY 2019	TEC	0	500	7,577		TBD	TBD
	OPC	0	500	3,250		TBD	TBD
	TPC	0	1,000	10,827		TBD	TBD
FY 2020	TEC	0	500	7,577		TBD	TBD
	OPC	0	500	3,250	5,000	TBD	TBD
	TPC	0	1,000	10,827	56,750	TBD	TBD

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.

18-D-402, Emergency Operations Center Replacement
Savannah River Site, Aiken, South Carolina
Project is for Design and Construction (SR-0042)

1. Summary, Significant Changes and Schedule and Cost History

Summary

The FY 2020 Request for Emergency Operations Center Replacement is $6,792,000.

The most recent DOE O 413.3B approved Critical Decision is -0, which was approved on January 5, 2017 with a preliminary cost range of $30,000,000 to $81,000,000 and Critical Decision -4 range of FY 2020 to FY 2022.

Significant Changes

This Construction Project Data Sheet is an update of the FY 2019 Congressional Budget Request and does not include a new start for the budget year.

A Federal Project Director has not been assigned to this project. However, the Savannah River Site Manager and Program Manager have approved this Construction Project Data Sheet.

No significant changes to the project have occurred since submittal of the FY 2019 data sheet.

Critical Milestone History

(Fiscal Quarter or Date)

	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2018	01/05/2017	3Q FY2018	4Q FY2018	TBD	TBD	TBD	N/A	TBD
FY 2019	01/05/2017	3Q FY2018	4Q FY2018	TBD	TBD	TBD	N/A	TBD
FY 2020	01/05/2017	2Q FY2020	2Q FY2020	TBD	TBD	TBD	N/A	TBD

Note: Schedules are only estimates and are consistent with the high end of the schedule range.

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
PB – Indicates the Performance Baseline

Project Cost History

(Dollars in thousands)

	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2018	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2019	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	TBD	TBD	TBD	TBD	N/A	TBD	TBD

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

2. Project Scope and Justification

Scope

The scope of this project is to design and construct modern, code-compliant emergency management facilities necessary to respond to emergency event scenarios. The primary and alternate Savannah River Site Operations Center facilities (911 Centers) require approximately 10,000 square feet each, and the Emergency Operations Center requires approximately 15,000 square feet of space to accommodate approximately 120 people during peak emergency operations.

The primary and alternate Savannah River Site Operations Center facilities and the Emergency Operations Center will be relocated from their current locations.

Justification

Savannah River Site currently maintains a marginally habitable primary Savannah River Site Operations Center and Emergency Operations Center in the basement of Building 703-A, a building that is past its useful life and on the Site's Decontamination and Decommissioning list. Once the new facilities are relocated, the building will be turned over for closure.

Because Building 703-A is on the Decontamination and Decommissioning list, the facility is only minimally supported and is riddled with mold and mildew causing some employees to become sick and removed from their post. Asbestos is found throughout the facility, the majority of which has been roped off and vacated. The facility has experienced several failures related to water intrusion due to its below ground location and has ongoing utility failures due to the age of the utilities and deferred maintenance. The entire facility must continue to be heated and cooled to reduce the mold and mildew growth, making the cost of replacing a Heating Ventilation and Air Conditioning unit for a facility of this size with only 20% occupancy prohibitive. For the safety of the employees that work in these facilities, it is imperative they be moved to a safer, healthier environment.

The risk of losing functionality in the primary and/or alternate facilities is high, the consequence of which would cause the Site to be in a minimal (essential personnel only) state of operations for an undetermined amount of time until the facilities could be returned to acceptable functionality.

DOE Order 151.1D requires the Site to maintain an emergency command and communications/dispatch center at all times, as well as equivalent alternate facilities for each of the two functions. More extensive requirements are identified in National Fire Prevention Association 1221, *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*, and National Fire Prevention Association 72, *National Fire Alarm and Signaling Code*. The Savannah River Site Operations Center facilities, primary and alternate, are not in compliance with the requirements of National Fire Prevention Association 1221 including the location of the primary facility in a basement. In order to bring the facilities into compliance, all facilities must be relocated from their current locations.

The project is being executed 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

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)		
	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2018	500	0	0
FY 2019	1,259	0	0
FY 2020	6,792	TBD	1,000
Outyears	TBD	TBD	TBD
Total, Design	TBD	N/A	TBD
Construction			
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2018	500	0	0
FY 2019	1,259	0	0
FY 2020	6,792	TBD	TBD
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC			
FY 2017	500	500	500
FY 2018	500	500	500
FY 2019	3,500	3,500	2,000
FY 2020	0	0	1,500
Total Project Cost (TPC)			
FY 2017	500	500	500
FY 2018	1,000	1,000	500
FY 2019	4,759	4,759	2,000
FY 2020	6,792	TBD	2,500
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Note: Funds for long-lead equipment may be requested prior to project baseline validation if approved by the Acquisition Executive.

Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	TBD	TBD	N/A
Contingency	TBD	TBD	N/A
Total, Design	TBD	TBD	N/A
Construction			
Site Preparation	TBD	TBD	N/A
Equipment	TBD	TBD	N/A
Other Construction	TBD	TBD	N/A
Contingency	TBD	TBD	N/A
Total, Construction	TBD	TBD	N/A
Total, TEC	TBD	TBD	
Contingency, TEC	TBD	TBD	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	TBD	N/A
Conceptual Design	TBD	TBD	N/A
Start-Up	TBD	TBD	N/A
Contingency	TBD	TBD	N/A
Other OPC	TBD	TBD	N/A
Total, OPC except D&D	TBD	TBD	N/A
Total, OPC	TBD	TBD	
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	Type	Prior Years	FY 2017	FY 2018	FY 2019	FY 2020	Outyears	Total
FY 2018	TEC	0	0	500			TBD	TBD

	OPC	0	500	500			TBD	TBD
	TPC	0	500	1,000			TBD	TBD
FY 2019	TEC	0	0	500	1,259		TBD	TBD
	OPC	0	500	500	3,500		TBD	TBD
	TPC	0	500	1,000	4,759		TBD	TBD
FY 2020	TEC			500	1,259	6,792	TBD	TBD
	OPC	0	500	500	3,500	0	TBD	TBD
	TPC	0	500	1,000	4,759	6,792	TBD	TBD

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	4Q FY2024
Expected Useful Life (number of years)	30 Years
Expected Future Start of D&D	N/A

Related Funding Requirements

(Dollars in Thousands)

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

5. D&D Information

The new area being constructed in this project is replacing existing facilities; however, the costs of decommissioning and decontamination of the facilities that are being replaced are not included in the costs of this construction project.

The current facility that houses the Savannah River Site Operations Center and Emergency Operations Center is approximately 250,000 square feet. Once the Savannah River Site Operations Center and Emergency Operations Center are relocated, the existing facility will be available for decommissioning and decontamination.

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

6. Acquisition Approach

A project execution alternative was selected during FY 2018 by the PME based on the Independent Analysis of Alternatives completed. Also selected was an acquisition alternative that provides for the M&O to complete a conceptual design leading to CD-1. The approved conceptual design package will be used as the basis for a DOE Direct contract request for proposal, which will lead to a bid process and ultimate award of a design/build construction contract. The M&O will support DOE in the role of owner's representative throughout the project, conducting design reviews, and providing safety, security, and quality assurance support. An Acquisition Strategy will be developed and approved prior to CD-1.

19-D-701, SR Security System Replacement Project
Savannah River Site, Aiken, South Carolina
Project is for Design and Construction (SR-0042)

1. Summary, Significant Changes and Schedule and Cost History

Summary

This project was originally executed as an operating expense funded project. Beginning in FY 2019, Congress requested that the Total Estimated Cost of this project be appropriated in a capital line item construction account. This data sheet includes a full accounting of the total project cost expended in prior years. A total of $15M in OPEX funding was authorized for this project through FY 2018. These funds will be used to complete the majority of the first subproject. Of the $10M in TEC funds appropriated in FY 2019, $2.9M will be used to complete the H Area subproject construction scope. The remaining FY2019 appropriation will be used on K Area Argus design in FY2019 and FY2020.

The FY 2020 Request for the SR Security System Replacement project is $0.

A Federal Project Director has been assigned to this project.

The most recent DOE O 413.3B milestone approved for the project in its entirety is Critical Decision 1, which was approved on June 28, 2016 with a cost range of $49,423,000 to $91,469,000 and Critical Decision 4 range of FY 2022 to FY 2028.

This project is tailored, as allowed by DOE O 413.3B, to be managed as four distinct subprojects within the overall cost range established at Critical Decision 1. Each of four subprojects will have their own baseline, total project cost, and independent Critical Decision 2, 3, and 4 approvals. The final Critical Decision 4 approval will constitute project completion.

The first subproject, H Area, received combined Critical Decision 2 and 3 approvals on May 29, 2018 with a Total Project Cost of $17.9M and a scheduled completion date of April 30, 2020.

Significant Changes

This Construction Project Data Sheet (CPDS) does not include a new start for the budget year.

2. Critical Milestone History

Overall Project 19-D-701

(Fiscal Quarter or Date)

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3A	CD-3	D&D Complete	CD-4
2019	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	N/A	TBD	N/A	TBD
2020	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	N/A	TBD	N/A	TBD

H Area Subproject

(Fiscal Quarter or Date)

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3A	CD-3	D&D Complete	CD-4
FY 2019 PB	8/26/2015	8/08/2016	8/08/2016	5/29/2018	5/29/2018	8/28/2017	5/29/2018	N/A	4/30/2020
FY 2020 PB	8/26/2015	8/08/2016	8/08/2016	5/29/2018	5/29/2018	8/28/2017	5/29/2018	N/A	4/30/2020

K Area Subproject

(Fiscal Quarter or Date)

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3A	CD-3	D&D Complete	CD-4
FY 2019	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD
FY 2020	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD

L Area Subproject

(Fiscal Quarter or Date)

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3A	CD-3	D&D Complete	CD-4
FY 2019	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD
FY 2020	8/26/2015	8/08/2016	8/08/2016		TBD	TBD	TBD	N/A	TBD

SRNL/General Site Subproject

(Fiscal Quarter or Date)

Fiscal Year	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3A	CD-3	D&D Complete	CD-4
FY 2019	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD
FY 2020	8/26/2015	8/08/2016	8/08/2016	TBD	TBD	TBD	TBD	N/A	TBD

Note: Schedules are only estimates and are consistent with the high end of the schedule range.

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
PB – Indicates the Performance Baseline

3. <u>Project Cost History</u>

Overall Project 19-D-701

Fiscal Year	OPEX, Total	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019	15,000	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	15,000	TBD	TBD	TBD	TBD	N/A	TBD	TBD

H Area Subproject

Fiscal Year	OPEX, Total	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019 PB	15,000	0	2,937	2,937	0	N/A	0	17,937
FY 2020 PB	15,000	0	2,937	2,937	0	N/A	0	17,937

K Area Subproject

Fiscal Year	OPEX, Total	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019	0	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	0	TBD	TBD	TBD	TBD	N/A	TBD	TBD

L Area Subproject

Fiscal Year	OPEX, Total	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019	0	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	0	TBD	TBD	TBD	TBD	N/A	TBD	TBD

SRNL / General Site Subproject

Fiscal Year	OPEX, Total	TEC, Design	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2019	0	TBD	TBD	TBD	TBD	N/A	TBD	TBD
FY 2020	0	TBD	TBD	TBD	TBD	N/A	TBD	TBD

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

4. Project Scope and Justification

Scope

The scope of this project is to replace the existing E3S security system with the DOE Standard Argus System at SRS in the following areas: H-Area, K-Area, L-Area, and the remaining portion of the Savannah River National Laboratory and general site areas.

Justification

The SRS E3S security system has exceeded its useful life. Field installation of the E3S began in the late-1980's with the first subsystem operational in H-Area (December 1991). The last E3S area to become operational was F-Area in 1994. Since then a number of major upgrades have been implemented to improve the system and address issues with obsolescence. Although upgrades have been made, E3S components, including those installed during the last upgrade, are no longer commercially available, making it difficult to maintain E3S reliability. The existing E3S has experienced an increased failure rate, which has resulted in additional costly compensatory measures, including use of additional protective force resources, increased maintenance, and increased overtime costs.

The risk of catastrophic failure of the E3S system poses critical operational risks to H-Area, L-Area, K-Area, and SRNL. If there is a site-wide failure of E3S, additional security forces would need to be deployed and additional compensatory measures would need to be implemented that would severely slow down or stop operations in the Cat I/II facilities.

Key Performance Parameters
The 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
Replacement	Replace the vintage E3S systems in H-Area, L-Area, K-Area and finish the update of SRNL and general site areas with the Argus security system that has been adopted by the Department as meeting the Safeguards and Security Alarm Management and Control System Standard.	Replace the current, obsolete E3S security system with the DOE Standard system, Argus.
Installation	Integrate crossover or tie-ins during the replacement of the E3S systems with the H-Area CAS	Complete installation with appropriate integration with other systems and facilities with minimal impacts of cost and schedule to other programs and missions.
		Minimize interruptions and impact to Category II facility missions during installation, system tie-ins and operations of H-Area, L-Area, and K-Area and designated sections of SRNL and the general site.

5. Project Cost and Schedule

Financial Schedule

H Area Subproject

(Dollars in thousands)

	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	0	0	0
Total, Design	0	0	0
Construction			
FY 2019	2,937	2,937	2,937
FY 2020	0	0	0
Outyears	0	0	0

	Budget Authority (Appropriations)	Obligations	Costs
Total, Construction	2,937	2,937	2,937
TEC			
FY 2019	2,937	2,937	2,937
FY 2020	0	0	0
Outyears	0	0	0
Total, TEC	2,937	2,937	2,937
OPC			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	0	0	0
Total, OPC	0	0	0
OPEX[a]			
FY 2015	10,000	10,000	222
FY 2016	0	0	1,234
FY 2017	0	0	2,916
FY 2018	5,000	5,000	1,382
FY 2019	0	0	5,000
FY 2020	0	0	4,246
Total, OPEX	15,000	15,000	15,000
Total Project Cost (TPC)			
FY 2015[a]	10,000	10,000	222
FY 2016	0	0	1,234
FY 2017	0	0	2,916
FY 2018[a]	5,000	5,000	1,382
FY 2019	2,937	2,937	7,937
FY 2020	0	0	4,246
Outyears	0	0	0
Total, TPC	17,937	17,937	17,937

Note: Funds for long-lead equipment may be requested prior to project baseline validation if approved by the Project Management Executive.

[a] Funded by PBS SR-0020

K Area Subproject

	(Dollars in thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2019	7,063	7,063	3,000
FY 2020	0	0	4,063
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2019	7,063	7,063	3,000
FY 2020	0	0	4,063
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2019	7,063	7,063	3,000
FY 2020	0	0	4,063
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Note: Funds for long-lead equipment may be requested prior to project baseline validation if approved by the Project Management Executive.

L Area Subproject

	(Dollars in thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears (total project)	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Note: Funds for long-lead equipment may be requested prior to project baseline validation if approved by the Project Management Executive.

SRNL/General Site Subproject

	(Dollars in thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Note: Funds for long-lead equipment may be requested prior to project baseline validation if approved by the Project Management Executive.

Overall Project (19-D-701)

	(Dollars in thousands)		
	Budget Authority (Appropriations)	Obligations	Costs
Total Estimated Cost (TEC)			
Design			
FY 2019	7,063	7,063	3,000
FY 2020	0	0	4,063
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2019	2,937	2,937	2,937
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2019	10,000	10,000	5,937
FY 2020	0	0	4,063
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC			
FY 2019	0	0	0
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
OPEX[a]			
FY 2015	10,000	10,000	222
FY 2016	0	0	1,234
FY 2017	0	0	2,916
FY 2018	5,000	5,000	1,382
FY 2019	0	0	5,000
FY 2020	0	0	4,246
Total, OPEX	15,000	15,000	15,000
Total Project Cost (TPC)			

FY 2015	10,000	10,000	222
FY 2016	0	0	1,234
FY 2017	0	0	2,916
FY 2018	5,000	5,000	1,382
FY 2019	10,000	10,000	10,937
FY 2020	0	0	8,309
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

6. Details of Project Cost Estimate

H Area Subproject

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC) [a]			
Design			
Design	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, Design	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Construction			
Site Preparation	N/A	N/A	N/A
Equipment	N/A	N/A	N/A
Other Construction	2,937	N/A	2,937
Contingency	N/A	N/A	N/A
Total, Construction	2,937	N/A	2,937
Contingency	N/A	N/A	N/A
Total, TEC	**2,937**	N/A	**2,937**
Contingency, TEC	N/A	N/A	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	N/A	N/A	N/A
Conceptual Design	N/A	N/A	N/A
Start-Up	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Other OPC	N/A	N/A	N/A
Total, OPC	N/A	N/A	N/A
Contingency, OPC	N/A	N/A	N/A

Operating Expense Costs (OPEX) H Area Subproject Only [b]			
Conceptual Planning	221	275	221
Conceptual Design	1,234	1,924	1,234
Start-Up	3,473	412	3,473
Contingency	232	137	232
Design	1,753	5,063	1,753
Design Contingency	0	984	0
Other Project Costs	926	0	926
Site Preparation	0	0	0
Equipment	230	213	230
Other Construction [a]	4,074	11,489	4,074
Construction Contingency	2,857	2,943	2,857
Total, OPEX	**15,000**	**23,440**	**15,000**
Total H Area, TPC	**17,937**	**23,440**	**17,937**
Total H Area Contingency	**3,089**	**4,064**	**3,089**

[a] H Area was provided $15M in OPEX funding to complete $18M TPC baseline scope. TEC funding of $2.937M will be used from FY 2019 line item funding to execute construction scope for H Area and remaining prior year OPEX funding will be used to complete installation and close out the H Area Argus subproject.
[b] OPEX funding from PBS SR-0020 in prior years will be used to complete installation and close out the H Area Argus subproject. OPEX funding of $15M from PBS SR-0020 was used to fund the H Area Argus subproject baseline from FY15 – FY18. FY 2019 TEC of $2.937M will be obligated to complete H Area construction scope.

K Area Subproject

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC) [a]			
Design			
Design	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Design	TBD	N/A	TBD
Contingency			
Construction			
Site Preparation	TBD	N/A	TBD
Equipment	TBD	N/A	TBD
Other Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, TEC	TBD	**N/A**	**TBD**
Contingency, TEC	N/A	**N/A**	**N/A**
Other Project Cost (OPC)			
OPC except D&D			

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Conceptual Planning	TBD	N/A	TBD
Conceptual Design	TBD	N/A	TBD
Start-Up	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Other OPC	TBD	N/A	TBD
Total, OPC	TBD	**N/A**	**TBD**
Contingency, OPC	TBD	**N/A**	**TBD**
Total K Area, TPC	TBD	**N/A**	**TBD**
Total K Area, Contingency	TBD	**N/A**	**TBD**

L Area Subproject

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC) [a]			
Design			
Design	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Design	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Construction			
Site Preparation	TBD	N/A	TBD
Equipment	TBD	N/A	TBD
Other Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, TEC	TBD	**N/A**	**TBD**
Contingency, TEC	TBD	**N/A**	**TBD**
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	0	N/A	TBD
Conceptual Design	TBD	N/A	TBD
Start-Up	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Other OPC	TBD	N/A	TBD

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total, OPC	TBD	**N/A**	**TBD**
Contingency, OPC	TBD	**N/A**	**TBD**
Total L Area, TPC	TBD	**N/A**	**TBD**
Total L Area, Contingency	TBD	**N/A**	**TBD**

SRNL/General Site Subproject

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC) [a]			
Design			
Design	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Design	TBD	N/A	TBD
Contingency			
Construction			
Site Preparation	TBD	N/A	TBD
Equipment	TBD	N/A	TBD
Other Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Construction	TBD	N/A	TBD
Contingency			
Total, TEC	TBD	**N/A**	**TBD**
Contingency, TEC	TBD	**N/A**	**TBD**
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	TBD	N/A	TBD
Conceptual Design	TBD	N/A	TBD
Start-Up	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Other OPC	TBD	N/A	TBD
Total, OPC	TBD	**N/A**	**TBD**
Contingency, OPC	TBD	**N/A**	**TBD**

Total SRNL/Gen Site, TPC	TBD	**N/A**	**TBD**
Total SRNL/Gen Site, Contingency	TBD	**N/A**	**TBD**

Overall Project (19-D-701)

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC) [a]			
Design			
Design	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Design	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Construction			
Site Preparation	TBD	N/A	TBD
Equipment	TBD	N/A	TBD
Other Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, Construction	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Total, TEC	TBD	**N/A**	**TBD**
Contingency, TEC	TBD	**N/A**	**TBD**
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	0	N/A	TBD
Conceptual Design	TBD	N/A	TBD
Start-Up	TBD	N/A	TBD
Contingency	TBD	N/A	TBD
Other OPC	TBD	N/A	TBD
Total, OPC	TBD	**N/A**	**TBD**
Contingency, OPC	TBD	**N/A**	**N/A**
Operating Expense Costs (OPEX) H Area Subproject Only [b]			
Conceptual Planning	221	275	221
Conceptual Design	1,234	1,924	1,234
Start-Up	3,473	412	3,473
Contingency	232	137	232
Design	1,753	5,063	1,753
Design Contingency	0	984	0
Other Project Costs	926	0	926

Site Preparation	0	0	0
Equipment	230	213	230
Other Construction	4,074	11,489	4,074
Construction Contingency	2,857	2,943	2,857
Total, OPEX	**15,000**	**23,440**	**15,000**
Contingency, OPEX	**3,089**	**4,064**	**3,089**
Total Project, TPC	TBD	**N/A**	**TBD**
Total Project, Contingency	TBD	**N/A**	**TBD**

7. Schedule of Appropriation Requests ($K)

Request	Type	Prior Years	FY 2019	FY 2020	Outyears	Total
FY 2019	TEC	0	10,000	0	TBD	TBD
	OPC	0	0	0	TBD	TBD
	OPEX	15,000	0	0	TBD	TBD
	TPC	15,000	10,000	0	TBD	TBD
FY 2020	TEC	0	10,000	0	TBD	TBD
	OPC	0	0	0	TBD	TBD
	OPEX	15,000	0	0	TBD	TBD
	TPC	15,000	10,000	0	TBD	TBD

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	3Q FY2028
Expected Useful Life (number of years)	20 Years
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	900	N/A	30,000	N/A
Maintenance	300	N/A	10,000	N/A
Total, Operations & Maintenance	1,200	N/A	40,000	N/A

9. D&D Information

The EM Argus project is a one-for-one replacement project of the EM Security System associated with the Cat I/II Nuclear Facilities at SRS. There are no plans in place to D&D the system. D&D will occur commensurate with the D&D schedule for the facilities in which the system is installed.

10. Acquisition Approach

The site M&O contractor was determined to be the best contract alternative. The M&O has security cleared personnel already trained and qualified to perform work in the various areas and facilities associated with the project, the ability to use resources interchangeably between areas, and the ability to "turn off" the resources if funding issues arise without losing the resources by having to renegotiate or sever a fixed price contract. The M&O would simply redeploy the resources within the M&O entity. The M&O has also successfully installed the Argus system in other areas on site.

20-D-401, Saltstone Disposal Units 10-12
Savannah River Site, Aiken, SC (SR-0014C)
Project is for Design and Construction

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

Summary

The FY 2020 Request for the Saltstone Disposal Units 10-12 project is $1,000,000.

The most recent DOE Order 413.3B approved Critical Decision is Critical Decision 1, which was approved on December 21, 2018, with a cost range of $410,000,000 to $600,000,000 and Critical Decision 4 range of June 2028 to March 2030.

Saltstone Disposal Units 10-12 will be designed and constructed based on successful completion of Saltstone Disposal Unit 6, and incorporation of Lessons Learned. To facilitate a streamlined approach, approval of Approve Project Performance Baseline (Critical Decision 2) and Approve Start of Construction (Critical Decision 3) will be combined. Saltstone Disposal Units 10-12 will be designed and constructed as close to parallel as feasible to take advantage of efficiencies in mobilization and use of resources.

Significant Changes

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

In accordance with DOE Order 413.3B, the Federal Project Director has been assigned.

Critical Milestone History

(Fiscal Quarter or Date)

	CD-0	Conceptual Design Complete	CD-1	CD-2	Final Design Complete	CD-3	D&D Complete	CD-4
FY 2020	9/11/2017	N/A	12/21/2018	TBD	TBD	TBD	N/A	TBD

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
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

2. Project Scope and Justification

Scope

The Saltstone Disposal Units are required to provide the primary containment of Saltstone grout with sufficient capacity to support site closure goals and salt waste projections identified in the Liquid Waste System Plan. The mission need addressed by this project is critical for the final disposition of the decontaminated salt solution that is produced by the liquid waste system and without which the commitments made in the Federal Facilities Agreement with the State of South Carolina and the Environmental Protection Agency cannot be achieved.

The Saltstone Disposal Units 10-12 are the next in a series of projects that contain and disposition decontaminated salt solution (in the form of Saltstone grout) generated by the treatment of liquid nuclear waste at the Savannah River Site. Saltstone Disposal Units 10-12 project will construct three (3) 375 feet in diameter, 43 feet high, 32,000,000 gallon cylindrical large tank disposal cells based on American Water Works Association design. This will include all infrastructure necessary to accept Saltstone grout produced by the Saltstone Production facility with sufficient capacity to meet the estimated production rates identified in the Savannah River Site 'Liquid Waste System Plan.'

Justification

Built in the 1980s, the Z-Area Saltstone Facility applies a process that immobilizes low-level radioactive salt solution waste in grout. Dry materials are unloaded from dry bulk pneumatic trailers and conveyed to storage silos. The dry solids (fly ash, slag, and cement), are then discharged from the silos, weighed, and blended to produce a premix dry feed. Salt solution which is received from H-Area Waste Tank 50 through the Inter-area Transfer System through the Salt Feed Tank and premix are proportionally measured and fed to a mixer in the 210-Z process room to produce a Saltstone grout, which is pumped to the disposal units for permanent disposal. The grout hardens to form Saltstone that is a leach-resistant, non-hazardous solid waste form as defined by South Carolina Department of Health and Environmental Control regulations. The combination of the monolithic non-hazardous solid Saltstone waste form, concrete vault cell, and closure cap system controls migration of chemical and radioactive constituents to the environment. The Saltstone Disposal Unit projects have been initiated to provide landfill capacity for receipt of Low Activity Treated Waste grout. The need for the Saltstone Disposal Unit is driven by the Savannah River Site Liquid Waste Disposition Program Plan to accomplish cleanup objectives. Saltstone Disposal Unit projects provide the benefits of lower disposal cost for decontaminated salt solutions. The grout itself provides primary containment of the waste, and the walls, floor, and roof of the Disposal Units provide secondary containment. Saltstone Disposal Unit will be constructed in coordination with salt processing production rates.

The need date for all Saltstone Disposal Units is recorded in the Savannah River Site Liquid Waste System Plan, Revision 20. This plan documents the strategy of dispositioning the liquid waste in the Savannah River Site tank farm and meeting the Federal Facility Agreement for tank closure. It is a living document that is routinely updated to account for any changes that may affect the liquid waste system (e.g., funding fluctuations, changes in technology, facility availability, etc.).

The project contingency is based upon previous experience and risks associated with the successful construction of Saltstone Disposal Unit 6, which adapted a commercial reinforced concrete tank to a nuclear grade low level waste disposal cell.

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

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

Performance Measure	Threshold	Objective
Capacity	Provide saltstone grout containment capacity of no less than 30,000,000 gallons.	TBD
Throughput	Provide infrastructure capable of delivering saltstone grout at 100 gallons per minute minimum.	TBD
Leak Detection	Install a leak detection system in accordance with the Z-Area Industrial Solid Waste Landfill Permit requirements.	TBD

3. Project Cost and Schedule

Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Design			
FY 2020	500	500	500
Outyears	TBD	TBD	TBD
Total, Design	TBD	TBD	TBD
Construction			
FY 2020	0	0	0
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2020	500	500	500
Outyears	TBD	TBD	TBD
Total, TEC	TBD	TBD	TBD
OPC			
FY 2018	221	221	221
FY 2019	1,465	1,465	1,465

	(dollars in thousands)		
	Appropriations	Obligations	Costs
FY 2020	500	500	500
Outyears	TBD	TBD	TBD
Total, OPC	TBD	TBD	TBD
Total Project Cost (TPC)	TBD	TBD	TBD
FY 2018	221	221	221
FY 2019	1,465	1,465	1,465
FY 2020	1,000	1,000	1,000
Outyears	TBD	TBD	TBD
Total, TPC	TBD	TBD	TBD

Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design			
Design	TBD	N/A	N/A
Contingency	TBD	N/A	N/A
Total, Design	TBD	N/A	N/A
Construction			
Site Preparation	N/A	N/A	N/A
Equipment	N/A	N/A	N/A
Other Construction	TBD	N/A	N/A
Contingency	TBD	N/A	N/A
Fee	TBD		
Total, Construction	TBD	N/A	N/A
Total, TEC	TBD	N/A	N/A
Contingency, TEC	TBD	N/A	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	N/A	N/A	N/A
Conceptual Design	N/A	N/A	N/A
Start-up	N/A	N/A	N/A
Contingency	TBD	N/A	N/A
Other OPC	TBD	N/A	N/A
Total, OPC except D&D	TBD	N/A	N/A
Total, OPC	TBD	N/A	N/A
Total, Contingency			

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
	TBD	N/A	N/A
Total, TPC	TBD	N/A	N/A
Total, Contingency	TBD	N/A	N/A

Schedule of Appropriation Requests

Request		Prior Years	FY 2020	Outyears	Total
FY 2020	TEC	-	500	TBD	TBD
	OPC	1,686	500	TBD	TBD
	TPC	1,686	1,000	TBD	TBD

4. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2QFY2030
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)			
	Annual Costs		Life Cycle Costs	
COST ESTIMATED PER SALTSTONE DISPOSAL UNIT	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, 7, and 8/9 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 a new start for the FY 2020 budget year.

CD-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 innovate 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.

Total Estimated Cost funds are expected to complete final design in FY 2020 and initiate construction activities. A firm-fixed price procurement is planned.

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

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*	3Q FY2019*	4Q FY2019	TBD	TBD	N/A	N/A
FY 2020	03/06/2015	2Q FY2019*	3Q FY2019*	4Q FY2019	2Q FY2020	4Q FY2020	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
PB – Indicates the Performance Baseline

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

No construction, excluding for approved long lead procurement, 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 negatively affect 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 impact 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.

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
FY 2020			
Total, Design	N/A	N/A	2,795
	N/A	N/A	2,795
Construction			
FY 2020	N/A	N/A	6,000
Outyears	N/A	N/A	41,205
Total, Construction	N/A	N/A	50,000
TEC			
FY 2020	50,000	2,795	2,795
Outyears	0	41,205	41,208
Total, TEC	50,000	50,000	50,000
Total, TEC	50,000	50,000	50,000

	(dollars in thousands)		
	Appropriations	Obligations	Costs
OPC except D&D			
FY2015			323
FY2016			647
FY2017			1157
FY2018			0
FY2019			1000
FY2020			0
Outyears			6,000
Total, OPC except D&D	9127	9127	9127
D&D			
Total, D&D	N/A	N/A	N/A
OPC			
Total, OPC	9127	9127	9127
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	2,157	0	0
Move in costs	6,000	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	9,127	0	0
Contingency, OPC	0	0	0
Total, TPC	59,127	0	0
Total, Contingency	0	0	0

7. Schedule of Appropriation Requests

($K)

Request		Prior Years	FY 2015	FY 2016	FY 2017	FY 2018	2019	FY 2020	Outyears	Total
FY 2020	TEC	0	0	0	0	0	0	50,000	0	50,000
	OPC	0	323	647	1,157	0	1000	0	6,000	9,127
	TPC	0	0	0	0	0	0	0	0	59,127

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date) 1QFY 2023

Expected Useful Life (number of years)

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs (30 yrs.)	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations and Maintenance	1,700	0	51,000	0
Utilities	546	0	16,380	0
Real and Personal Prop Taxes	246	0	7,380	0
Total	2,492	0	74,760	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 Advanced Manufacturing Collaborative is planned as a negotiated firm-fixed-price contract. Non-Federal land is expected to be provided on the University of South Carolina-Aiken campus under a zero-dollar ground lease arrangement.

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 (D&D) 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. In FY 2020, $128,000,000 is being requested for decommissioning and demolition of additional high-risk excess facilities.

Highlights of the FY 2020 Budget Request

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. In addition to currently ongoing work on Building 280 (the Pool Type Reactor), additional NNSA facilities are ready for decommissioning and demolition, and work will begin on at least one of the following six facilities: Buildings 175, 212, 241, 251, 292, 343.

The majority of activities scheduled for FY 2020 for Site 300 are in support of the development of remedial solutions for contamination at Building 812, Building 850, and Building 865.

FY 2019 - FY 2020 Key Milestones/Outlook

- (January 2019) Finalize the Remedial Investigation/Feasibility Study for perchlorate in groundwater at Building 850.
- (May 2019) Finalize the Remedial Investigation/Feasibility Study for groundwater and non-metals in soil at Building 865.
- (June 2019) Initiate preliminary decontamination activities including asbestos removal, ancillary facility removal, and planning for demolition for Building 280.
-
- (September 2019) Restore ancillary facility site to create a laydown area for the future demolition contractor.
- (May 2020) Finalize the Remedial Investigation/Feasibility Study for metals and radionuclides in soil at Building 865.
- (September 2020) Complete the decommissioning and demolition of Building 280.
- (September 2020) Commence the decommissioning and demolition of subsequent High Risk excess facilities.

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 work EM is awarding an 8acontract to begin pre- decommissioning and demolition activities such as asbestos removal. In addition, EM is partnering with the U.S. Army Corps of Engineers (USACE) to use a USACE contract vehicle that will facilitate a quicker start on decommissioning. For the remaining NNSA-owned high-risk contaminated excess facilities, EM will use a Nationwide Deactivation and Decommissioning Indefinite Delivery-Indefinite Quantity contract that is currently in acquisition through the EM Consolidated Business Center and scheduled for award in May 2020.

Strategic Management

Position the Department of Energy to meet the challenges of the nation's Manhattan Project and Cold War legacy responsibilities:

- Complete decommissioning and demolition of High Risk excess facilities.
- 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 unacceptable 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.
- The extent of remediation needed to meet industrial use standards for soils associated with the decommissioning and demolition work of NNSA-owned high-risk contaminated excess facilities.

Lawrence Livermore National Laboratory

Funding ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 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)	275	529	415	-114
VL-LLNL-0031 / Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300	900	1,175	1,312	+137
Subtotal, Lawrence Livermore National Laboratory	**1,175**	**1,704**	**1,727**	**+23**
LLNL Excess Facilities D&D				
CBC-LLNL-0040 / LLNL Excess Facilities D&D	100,000	25,000	128,000	+103,000
Total, NNSA Sites	**101,175**	**26,704**	**129,727**	**+103,023**

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

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
NNSA Sites	
Lawrence Livermore National Laboratory	
VL-FOO-0013B-D / Solid Waste Stabilization and Disposition Support - Lawrence Livermore National Laboratory (Defense)	
• No significant change.	-114
VL-LLNL-0031 / Soil and Water Remediation-Lawrence Livermore National Laboratory - Site 300	
• No significant change.	+137
LLNL Excess Facilities D&D	
CBC-LLNL-0040 / LLNL Excess Facilities D&D	
• The increase reflects funding needed to complete the decontamination and decommissioning of the B280 Pool Type Reactor and commence decontamination and decommissioning activities on additional identified High Risk excess facilities.	+103,000
Total, Lawrence Livermore National Laboratory	**+103,023**

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$529	**$415**	**-$114**
• 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 renewed in 2017.	• 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.	• 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$1,175	**$1,312**	**+$137**
• Monitor groundwater to provide an indication of changes in plume size and extent that could impact human health, and provide data to	• Finalize the Remedial Investigation/Feasibility Study for metals and radionuclides in soil at Building 865.	• No significant change.

support the Remedial Investigation/Feasibility Study development for the Building 812/Operable Unit 9.

- Continue progress with risk assessment and fate and transport modeling at Building 812 to identify contaminants of concern and associated risks to support remedial alternative development.
- Continue the *in situ* bioremediation treatability study to support remedial alternative screening and selection for perchlorate contamination in Building 850 groundwater.
- Finalize the Remedial Investigation/Feasibility Study for Building 865.
- Initiate Proposed Plan for remedies at Building 865 and perchlorate contamination in groundwater at Building 850.

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS includes the 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$25,000	**$128,000**	**+$103,000**
• Remove Building 280 ancillary facilities 2801, 2802 and 2825. • Restore ancillary facility site to create a laydown area for the future demolition contractor.	• Complete the decommissioning and demolition of the B280 Pool Type Reactor. • Commence decommissioning and demolition of subsequent High Risk excess facilities.	• The increase reflects funding needed to complete the decontamination and decommissioning of the B280 Pool Type Reactor and commence decontamination and decommissioning activities on additional identified 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 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 was 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 was initially 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 2020 Budget Request

In FY 2020, 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 renegotiated 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 permit will continue and investigation and cleanup of several aggregate areas will be completed.

The FY 2020 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 Areas C and begin technical documentation and collaboration on MDAs A and T.

FY 2019 and FY 2020 Key Milestones/Outlook

- (August 2019) Complete the Deep Groundwater Investigation Report for RDX
- (August 2019) Complete Westbay wells reconfigurations and plug and abandonment
- (September 2019) TA-21 Letter report summarizing initiation of investigation activities associated with waste line at DP West (involves the D&D of Building 257)
- (September 2019) Continue to processing above-grade transuranic waste to include the processing, packaging, and shipping of the waste to the Waste Isolation Pilot Plant
- (September 2019) Continue to segregate, package, and ship mixed/low level waste for offsite disposal
- (September 2019) Continue evaluation for the recommendation related to the disposition of 33 shafts remote-handled transuranic waste
- (September 2019) Continue hexavalent chromium contamination plume control interim measure, with completion of amendment pilot tests the following year allowing remedy evaluation and development initiation in FY2020
- (September 2019) Complete investigation work plan for pits and trenches at Material Disposal Area A, with removal of two buried General's Tanks beginning in FY2020
- (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

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 on the removal of this waste from Waste Control Specialists. The Department's proposed plan is to separate the inventory into waste containers that can be shipped to the Waste Isolation Pilot Plant, and waste containers that will require treatment before being shipped. Thirty one successful shipments to the Waste Isolation Pilot Plant have been completed thus far. After receipt of this plan, the Texas Commission on Environmental Quality required a feasibility study to further evaluate the options for the waste requiring treatment. EM Los Alamos completed the feasibility study and provided a final version to the Texas Commission on Environmental Quality in June 2018. Texas Commission on Environmental Quality representatives were satisfied with the study. The path forward for the remaining containers stored at Waste Control Specialists is to evaluate the National Environmental Policy Act alternatives for dispositioning the remaining seventy seven containers currently being stored at Waste Control Specialist. 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, 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 is for a 95 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 95 days.

Strategic Management

Position the Department of Energy to meet the challenges of the nation's Cold War legacy responsibilities.

The EM-LA 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.
- 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 RDX 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 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 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	90,121	84,556	68,410	-16,146
VL-LANL-0030 / Soil and Water Remediation-LANL	126,485	132,050	123,658	-8,392
Subtotal, Los Alamos National Laboratory	**220,000**	**220,000**	**195,462**	**-24,538**

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

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
Los Alamos	
EMLA Cleanup Activities	
VL-LANL-0013 / Solid Waste Stabilization and Disposition-LANL Legacy	
• The decrease reflects operational capabilities at WIPP in FY2020 and aboveground inventory restrictions.	-16,146
VL-LANL-0030 / Soil and Water Remediation-LANL	
• The decrease reflects planned aggregate area remediation activities.	-8,392
EMLA Community and Regulatory Support	
VL-FAO-0101 / Miscellaneous Programs and Agreements in Principle	
• No change.	0
Total, Los Alamos National Laboratory	**-24,538**

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$84,556	**$68,410**	**-$16,146**
• 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. • Complete investigation work plan for pits and trenches at Material Disposition Area-A. • Continue management and disposition of mixed low-level waste/low-level waste and transuranic waste per regulatory agreement with the State of New Mexico.	• 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	• The decrease reflects operational capabilities at WIPP in FY2020 and aboveground inventory restrictions.

- Conduct safe operations of processing lines at Waste Characterization Reduction Repackaging Facility.
- Continue evaluation and recommendation on 33 remote-handled transuranic waste shafts.
- Conduct activities to certify legacy transuranic waste for future shipment 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.
- Certify and characterize treated nitrate salt drums.

remote-handled transuranic waste shafts.

- 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.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$132,050	**$123,658**	**-$8,392**
• 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; continue storm-water sampling to protect the regional drinking water supplies (Los Alamos, Santa Fe, and San Ildefonso Pueblo), sediment monitoring, mitigation and reporting	• 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	• The decrease reflects planned aggregate area remediation activities.

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 and required repairs at five Nuclear Environmental Sites.
- 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.
- Initiate planning for TA-21 closure projects.
- Continue activities associated with groundwater investigation for high explosives plume in Cañon de Valle (RDX).
- Install regional monitoring well for Cañon de Valle (RDX).
- Continue decontamination and decommissioning activities for process-contaminated facilities at Technical Area-21 which are co-located in the footprint of the structures.

reporting requirements 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.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$3,394	**$3,394**	**+$0**
• 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. • Provide for Citizens Advisory Board requirements.	• 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.	• 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 demolition and disposal (D&D) 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 (NNSS) and adjacent lands.

The EM Nevada Radioactive Waste Management Complex (RWMC) 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.

The EM Nevada Program plans to purchase the following replacement vehicles in FY 2020: 3 Trucks (4x4, 1 ton towing capacity).

Highlights of the FY 2020 Budget Request

The EM Nevada Program FY 2020 budget supports continued progress towards risk-informed closure of eight hundred sixty-eight (868) remaining subsurface contaminated groundwater and fifteen (15) contaminated soil and industrial-type sites; continued post-closure monitoring and maintenance; operation of the RWMC; 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 2019 and FY 2020 Key Milestones/Outlook

PBS VL-NV-0030:

- (February 2019) Submit Corrective Action Unit 576 Miscellaneous Radiological Sites and Debris Closure Report to the State of Nevada.
- (June 2019) Submit Annual Post-Closure Sampling Report for Groundwater sites to the State of Nevada.
- (June 2019) Submit Annual Post-Closure Inspection Report for Resource Conservation and Recovery Act (RCRA) permitted sites to the State of Nevada.
- (June 2019) Submit Annual Post-Closure Inspection Report for the Nevada Test and Training Range (NTTR) and Tonopah Test Range (TTR) sites to the State of Nevada.
- (June 2019) Submit Annual Post-Closure Inspection Report for the Nevada National Security Site (NNSS) sites to the State of Nevada.
- (July 2019) Submit Corrective Action Unit 97 Yucca Flat/Climax Mine Model Evaluation Completion Presentation to the State of Nevada.
- (August 2019) Submit Corrective Action Unit 99 Rainier Mesa/Shoshone Mountain Closure Report to the State of Nevada.
- (August 2019) Submit Corrective Action Unit 414 Clean Slate III Closure Report to the State of Nevada
- (August 2019) Submit Corrective Action Unit s 101/102 CY 2018 Annual Groundwater Annual Sampling Report to the State of Nevada.
- (September 2019) Submit Corrective Action Unit 101/102 Pahute Mesa Phase II Data Completion Presentation #5 to the State of Nevada.
- (June 2020) Submit Annual Post-Closure Inspection Report for the NTTR/TTR sites to the State of Nevada.
- (June 2020) Submit Annual Post-Closure Inspection Report for the NNSS sites to the State of Nevada.

- (June 2020) Submit Annual Post-Closure Sampling Report for Groundwater sites to the State of Nevada.
- (June 2020) Submit Annual Post-Closure Inspection Report for RCRA 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.

PBS VL-NV-0080:
- (September 2019) Continue disposal of low-level radioactive waste and mixed low-level radioactive waste; continue audits and certification programs; and maintain facilities and documents.
- (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.

PBS VL-NV-0100:
- (September 2019) Continue funding to the State of Nevada.
- (September 2020) Continue funding to the State of Nevada.

Regulatory Framework

EM Nevada Program work at the Nevada National Security Site and the Nevada Test and Training Range (NTTR) 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 (NNSS) is conducted through the issuance and execution of contracts to large and small businesses. The EM 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 (NNSA) contract at the Nevada National Security Site is a Management and Operating (M&O) 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.

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 completion of cleanup at DOE sites across the United States 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. It also supports disposal of waste generated by environmental restoration activities at the Nevada National Security Site.

Nevada

Funding ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
NNSA Sites				
Nevada				
VL-NV-0030 / Soil and Water Remediation-Nevada	37,537	32,998	35,134	+2,136
VL-NV-0080 / Operate Waste Disposal Facility-Nevada	18,021	22,398	20,862	-1,536
VL-NV-0100 / Nevada Community and Regulatory Support	4,578	4,740	4,741	+1
Subtotal, Nevada	**60,136**	**60,136**	**60,737**	**+601**

Nevada
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
NNSA Sites	
Nevada	
VL-NV-0030 / Soil and Water Remediation-Nevada	
• Increase is due to the start of monitoring well installation activities for Corrective Action Units 97 Yucca Flat/Climax Mine; start of Corrective Action Unit 99 Rainier Mesa/Shoshone Mountain post-closure annual monitoring and sampling; and contract transition of the Environmental Program Services contract.	+2,136
VL-NV-0080 / Operate Waste Disposal Facility-Nevada	
• Decrease is due to completion of engineered cap construction for the closed mixed low-level radioactive waste disposal cell (Cell 18).	-1,536
VL-NV-0100 / Nevada Community and Regulatory Support	
• No significant change.	+1
Total, Nevada	**+601**

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$32,998	**$35,134**	**+$2,136**
Groundwater Remediation: • Complete annual data collection and sampling of groundwater Corrective Action Units not closed. • Complete closure for Corrective Action Unit 99 Rainier Mesa/Shoshone Mountain. • Complete model evaluation activities for closure for Corrective Action Unit 97 Yucca Flat/Climax Mine. • Start Closure activities for Corrective Action Unit 97 Yucca Flat/Climax Mine. • Continue hydrologic and geologic data	Groundwater Remediation: • 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 flow and transport modeling for Corrective Action Units	• Increase is due to the start of monitoring well installation activities for Corrective Action Units 97 Yucca Flat/Climax Mine; start of Corrective Action Unit 99 Rainier Mesa/Shoshone Mountain post-closure annual monitoring and sampling; and contract transition of the Environmental Program Services contract.

analysis activities including groundwater flow and transport modeling for Corrective Action Units 101/102 Pahute Mesa.

Soil Remediation:

- Complete soil remediation and closure activities for one contaminated soil site at Corrective Action Unit 414 Clean Slates III.
- Complete closure activities for six contaminated soil sites at Corrective Action Unit 576 Miscellaneous Radiological Sites and Debris.
- 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.

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.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$22,398	**$20,862**	**-$1,536**
• 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-	• 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-	• Decrease is due to completion of engineered cap construction for the closed mixed low-level radioactive waste disposal cell (Cell 18).

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 engineered cap construction and closure report for the current mixed low-level radioactive waste disposal cell (Cell 18) per the permit with the State of Nevada.
- Continue facility expansion by constructing an engineered berm and drainage ditches.

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.

Nevada Community and Regulatory Support (PBS: VL-NV-0100)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This PBS provides support for Agreements-in-Principle with two state agencies: the Nevada Division of Emergency Management and the Nevada Division of Environmental Protection. This PBS also includes funding for the following: the annual Federal Facilities Agreement and Consent Order fee; and a grant with the State of Nevada to perform programmatic oversight and environmental and natural resource planning. The Nevada Site Specific Advisory Board is chartered by the DOE as an EM Site-Specific Advisory Board.

Nevada Community and Regulatory Support (PBS: VL-NV-0100)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$4,740	**$4,741**	**+$1**
• 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.	• 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.	• No significant change.

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 eight Environmental Restoration sites using cost effective approaches that meet regulatory requirements. The remaining cleanup scope includes three areas with contaminated groundwater in various stages of corrective action that require final remedies; and regulatory closure of five soil release sites that will transfer to the DOE National Nuclear Security Administration landlord. All Environmental Restoration activities are regulated by the 2004 Compliance Order on Consent signed by DOE, the Sandia Corporation and New Mexico Environment Department.

Highlights of the FY 2020 Budget Request

In FY 2020, 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 up to six new monitoring wells, may be implemented at the Burn Site Area of Concern. In FY 2020 there may be a public hearing associated with the selection of the final remedy for the Tijeras Arroyo Groundwater Area of Concern. At the Technical Area-V Groundwater Area of Concern, FY 2020 funding supports the Interim Measure/Treatability Study using In-Situ Bioremediation.

FY 2019 and FY 2020 Key Milestones/Outlook

- (FY 2019) Submit Monitoring Well Installation Work Plan to New Mexico Environment Department for Burn Site Groundwater.
- (September 2019) Complete Phase 1 injections, in Full-Scale Operation of in-situ bioremediation Treatability Study at the Tijeras Arroyo Groundwater Area of Concern.
- (FY 2019 - 2020) Performance Monitoring, Analysis & Validation at the Technical Area-V 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.

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 April 2017, 303 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 11 sites are considered "deferred active-mission" sites and bring a future cleanup liability.

The remaining eight sites are in various stages of the Resource Conservation and Recovery Act corrective action process. For closure of five soil sites, the required corrective actions and groundwater characterization have been completed, the New Mexico Environment Department has issued Certificates of Completion, and Sandia National Laboratories-New Mexico has completed their portion of the permit modification process for "corrective action complete" regulatory status. A public hearing is expected prior to the transfer of the five soil sites to the National Nuclear Security Administration's long-term stewardship program.

Three areas of groundwater contamination are being characterized to determine the remedial action to implement. 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 eight sites; the three groundwater areas of concern, and the regulatory (administrative) closure of five soil release sites. Three additional soil release sites are considered "deferred active-mission" sites.

The status and closure goals are:
(1) Complete corrective action process for the five soil sites and transition the sites to the National Nuclear Security Administration landlord;
(2) Burn Site Groundwater Area of Concern – additional discussions with the New Mexico Environment Department are required regarding additional monitoring wells to be installed in the near-term;
(3) 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 2019; and
(4) Technical Area-V Groundwater Area of Concern, Phase 1 injection will be completed in FY 2019 as a part of the phased Interim Measure /Treatability Study.

Sandia Site Office

Funding ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
NNSA Sites				
Sandia National Laboratories				
VL-SN-0030 / Soil and Water Remediation-Sandia	2,600	2,600	2,652	+52

Sandia Site Office
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
NNSA Sites	
Sandia National Laboratories	
VL-SN-0030 / Soil and Water Remediation-Sandia	
• No significant change.	+52
Total, Sandia Site Office	**+52**

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 2019 -2020 is to complete all necessary corrective actions at the five soils sites and the three groundwater areas of concern.

Three groundwater areas 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$2,600	**$2,652**	**+$52**
• Submit Monitoring Well Installation Work Plan to New Mexico Environment Department for Burn Site Groundwater. • Complete Phase 1 injections, in Full-Scale Operation of in-situ bioremediation Treatability Study at the Tijeras Arroyo Groundwater Area of Concern. • Continue field work implementation of the Interim Measure/Treatability Study at Technical Area-V Groundwater Area, including completion of the Phase 1 injection activities. • Support a public hearing associated with the selection of the final remedy for the Tijeras Arroyo Groundwater Area of Concern.	• 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.	• No significant change.

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 and 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 also contaminated with radioactivity. The scope of the Separations Process Research Unit project is to decontaminate and remove the nuclear facilities (including required 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 to the landlord, the Office of Naval Reactors.

The decommissioning contractor, AECOM (formerly URS Energy and Construction, Inc.), commenced open air demolition of Building H2 in late September 2010. During demolition, the contractor, in error, demolished a radioactively contaminated process vessel that should have been removed intact; this action caused an airborne release of radioactive contamination on the work site and adjacent Knolls Atomic Power Laboratory site work areas. The work was paused, the causes of the error identified, and a change in technical approach to the demolition effort was made. The contract modified establishing a cost share/cost cap agreement between DOE and AECOM. Per a U.S. EPA Administrative Order on Consent, DOE required the contractor to install tent enclosures with High Efficiency Particulate Air filtered ventilation systems over Buildings G2 and H2 and to remove as much of the contaminated equipment and concrete as possible within the tent enclosures prior to any further open air demolition.

Since 2010, the contractor has recovered and removed the radiological material source term from the buildings and demolished the buildings. In January 2013, it restarted decommissioning activities, performing work within the enclosures. In late June 2016, the contractor met the conditions in the contract task order to initiate open air demolition in G2 Building and subsequently started demolition. The contractor completed field work on the G2 and H2 buildings in calendar year 2018. Oak Ridge Institute of Science and Education will conduct F-Yard and Mohawk River Studies to confirm cleanup standards were met.

The contractor is obligated to complete the entire scope of the cleanup work on the contract, including any activities exceeding the maximum DOE cost. The contractor is currently bearing all of the costs of the work because the costs have exceeded the DOE cost cap. EM has recognized minimal additional costs and has adjusted the contract cost cap accordingly. The settlement of the rest of the costs is currently part of an ongoing mediation case.

Highlights of the FY 2020 Budget Request

The FY 2020 budget request of $15,300,000 enables the Separations Process Research Unit site to provide for completion of verification sampling; contractor demobilization and closeout activities associated with returning the land and facilities to the site landlord, Naval Reactors; complete cleanup of F-yard and Mohawk River studies; and initiation of procurement actions to transport, treat, and dispose of Separations Process Research Unit transuranic waste.

FY 2019 – FY 2020 Key Milestones/Outlook

- (FY 2019) Initiate procurement for containers for SPRU remote handled and contact handled transuranic waste compliant with the Waste Acceptance Criteria for WIPP.
- (FY-2019) Initiate procurement for the re-packaging, transportation, treatment, interim storage and disposition of Separations Process Research Unit transuranic waste.
- (FY2019) Initiate procurement for the cleanup of F-yard and the completion of Mohawk River studies.
- (FY 2020) Commence shipping transuranic waste for treatment at Idaho for disposition at WIPP.

Regulatory Framework

An Administrative Order on Consent was issued by the United States Environmental Protection Agency Region 2 in February 2011 for violations of the National Emissions Standards for Hazardous Air Pollutants regulations. This Administrative Order on Consent required that future decontamination and decommissioning activities occur within tent enclosures with ventilation units. The contractor successfully installed tent enclosures with ventilation systems over the structures, and completed activities for removal and shipment of tank sludge wastes, and continues to manage the Hillside Drain System. In 2016-2017, the tent enclosures were removed and open air demolition successfully began.

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 does not have a permitted storage area for hazardous waste and has requested 30-day extensions for generator storage of the mixed transuranic waste since December 2015. The New York State Department of Environmental Conservation has requested that the Department enter into a Consent Order to govern storage of the waste prior to eventual off-site disposition. The Consent Order was signed in February 2018. Additionally, SPRU submitted a Resource Conservation Recovery Act Part B application in 2018 to the State for continued interim storage of the transuranic waste. The storage permit application is still with the New York State of Environmental Conservation. The Separations Process Research Unit project is operating under a consent order.

Contractual Framework

Program planning and management at the Separations Process Research Unit is conducted through the issuance and execution of contracts to large and small businesses. Separations Process Research Unit develops near-term and long-term planning approaches in order to develop contract strategies and program/project plans at a more detailed level.

The Department has a cost-plus incentive fee task order in place under the Environmental Management Nationwide Indefinite Delivery/Indefinite Quantity Contract, which includes a cost cap which limits the government's liability to complete the task order for building demolition. This cost cap has been reached requiring the contractor to complete the base work scope at no additional cost to the government. The demolition contractor is expected to demobilize the first quarter FY19. All remaining work are operations efforts which will be contracted separately from the demolition contract.

Of note, cleanup of F-yard and the Mohawk River studies and transuranic waste treatment, processing, certification, and shipping are the responsibility of DOE and is not part of the demolition contract.

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.
- Commercial shipping containers Certificate of Compliance need to be modified to accept transuranic waste. This activity will be done in FY2019.
- SPRU transuranic waste will be packaged in containers that will allow SPRU remote handled waste to be managed as contact handled waste prior to shipping to WIPP.
- Idaho is the approved location to ship small sites waste for treatment. It is assumed Idaho will accept the shipment of SPRU transuranic waste beginning in FY2020 and complete shipments in FY2021.

Separations Process Research Unit

Funding ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
NNSA Sites				
Separations Processing Research Unit				
VL-SPRU-0040 / Nuclear Facility D&D-Separations Process Research Unit	4,800	15,000	15,300	+300

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

	FY 2020 Request vs FY 2019 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.

Under the terms of the site contract, the project reached the established cost cap prior to FY 2014. The site contractor will continue to fund activities necessary to complete the planned site cleanup and satisfy the contract scope requirements. DOE will continue to fund portions of the work attributable to Government actions, and require the contractor to complete the base work scope at no additional cost to the Government. The scope also includes transportation, treatment and possible return and interim storage 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$15,000	**$15,300**	**+$300**
• Complete contractor closeout. • Submit Critical Decision-4 to Headquarters. • Transfer land to Naval Reactors. • Initiate procurement for containers for SPRU remote handled and contact handled transuranic waste compliant with the Waste Acceptance Criteria for WIPP. • Initiate procurement for the cleanup of F-yard and the completion of Mohawk River studies. • Initiate procurement actions to transport and treat Separations Process Research Unit transuranic waste, return and provide interim storage. • Support the requirements of other transuranic waste management alternatives (repackaging,	• 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 clean-up of F-yard and Mohawk River studies.	• No significant change.

interim storage, certification and disposition)
being considered.

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.

The West Valley Office plans to purchase the following vehicles in FY 2020: Three 4x4 Pickups.

Highlights of the FY 2020 Budget Request

The major activities planned for the West Valley Demonstration Project for FY 2020 focus on continuing planning for demolition of the Main Plant Process Building; continuing removal of excess ancillary facilities; and completing contract transition.

FY 2019 and FY 2020 Key Milestones/Outlook

- (June 2019) Chemical Process Cell Waste Storage Area Demo/Removal/Restoration
- (September 2019) Process, ship and dispose of newly generated mixed low-level radioactive waste, meeting requirements as specified in the Site Treatment Plan
- (October 2019) Ancillary Areas – Manipulator Repair Shop, Contact Size Reduction Facility, Laundry, Plant Office Demo & Removal
- (March 2020) Waste Water Treatment Facility Demo/Removal/Restoration
- (March 2020) Main Plant Process Building – Deactivation Complete
- (March 2020) Process, ship and dispose of all newly generated low-level radioactive waste
- (September 2020) 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.
- Second Supplemental Cooperative Agreement, Supplemental Agreement to the Cooperative Agreement between DOE and the New York State Research and Development Authority Setting Forth Special Provisions for the Identification, Implementation and Management of the Phase I Studies for the Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western Nuclear Service Center (dated March 14, 2011).
- 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 eight to ten 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.
- A Phase 2 decision will be made within ten years after 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:

- West Valley Demonstration Project CH2M Hill BWXT West Valley, LCC, which has a contract period of performance from August 29, 2011, through an estimated completion date of March 18, 2020. There are no options on this cost plus incentive 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 WV 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 275 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 275 high-level radioactive waste canisters that were stored in the Main Plant Process Building (the original reprocessing facility) to a new on-site interim storage facility. The Main Plant Process Building and the Vitrification Facility will be deactivated and demolished consistent with the Environmental Impact Statement Record of Decision.

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 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Safeguards and Security				
OH-WV-0020 / Safeguards and Security-West Valley	3,098	3,133	3,196	+63
Non-Defense Environmental Cleanup				
West Valley Demonstration Project				
OH-WV-0013 / Solid Waste Stabilization and Disposition-West Valley	14,853	17,980	3,110	-14,870
OH-WV-0040 / Nuclear Facility D&D-West Valley	60,147	57,020	72,105	+15,085
Subtotal, West Valley Demonstration Project	**75,000**	**75,000**	**75,215**	**+215**
Total, West Valley Demonstration Project	**78,098**	**78,133**	**78,411**	**+278**

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

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
Safeguards and Security	
OH-WV-0020 / Safeguards and Security-West Valley	
• No significant change.	+63
Non-Defense Environmental Cleanup	
West Valley Demonstration Project	
OH-WV-0013 / Solid Waste Stabilization and Disposition-West Valley	
• Decrease is associated with completion of Vitrification Facility demolition and waste shipments; the completion of Main Plant Process Building deactivation as well as the early completion of disposal of all legacy waste.	-14,870
OH-WV-0040 / Nuclear Facility D&D-West Valley	
• Increase supports completion of the deactivation activities at the Main Plant Process Building to reduce risk.	+15,085
Total, West Valley Demonstration Project	**+278**

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$3,133	**$3,196**	**+$63**
• Continue to provide risk-based physical security program identifying and protecting the Department's personal, information and material resources. • Continue program management to oversee the security program including cyber security, training and qualifications for the West Valley Demonstration Project.	• 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 cyber security, training and qualifications for the West Valley Demonstration Project.	• 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$17,980	**$3,110**	**-$14,870**
• Process, ship and dispose of legacy low-level radioactive waste. • Process, ship and dispose of newly generated mixed low-level radioactive waste. • Process, ship and dispose of newly generated low-level radioactive waste. • Process and store legacy transuranic waste. • Process and store newly generated transuranic waste.	• Store legacy transuranic waste. • Store newly generated transuranic waste.	• Decrease is associated with completion of Vitrification Facility demolition and waste shipments; the completion of Main Plant Process Building deactivation as well as the early completion of disposal of all legacy waste.

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 275 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$57,020	**$72,105**	**+$15,085**
• Maintain Site Services. • Continue 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.	• 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.	• Increase supports completion of the deactivation activities at the Main Plant Process Building to reduce risk.

Brookhaven National Laboratory

Overview

The Office of Environmental Management (EM) is responsible for the transfer, management, cleanup, and ultimate deactivation, decommissioning and demolition of excess contaminated facilities and materials that are no longer required to support DOE's mission.

The High Flux Beam Reactor at the Brookhaven National Laboratory in Upton, New York, was a research reactor that operated from 1965 to 1996 when operations were suspended after tritium from the spent fuel canal was found in groundwater south of the reactor.

This project will remove or otherwise dispose of the Building 705, the High Flux Beam Reactor exhaust stack. The stack was designated as part of the High Flux Beam Reactor complex.

Regulatory Framework

Brookhaven National Laboratory was added to New York State's list of Inactive Hazardous Waste sites in 1980 and to the federal National Priorities List in 1989. A tri-party Federal Facilities Compliance Agreement, also known as the Interagency Agreement, was subsequently negotiated among the Department, the U.S. Environmental Protection Agency - Region II, and the New York State Department of Environmental Conservation.

In February 2009, the Office of Environmental Management and the U.S. Environmental Protection Agency, Region II signed *the Final Record of Decision for Area of Concern 31, High Flux Beam Reactor, Comprehensive Environmental Response, Compensation and Liability Information System # NY 78900008975.* The High Flux Beam Reactor stack must be removed by FY 2020, per the Record of Decision.

Program Accomplishments and Status

In April 2000, a Memorandum of Agreement was developed between EM, the Office of Nuclear Energy, and the Office of Science that transferred the management and ownership of the High Flux Beam Reactor to EM for stabilization and decontamination and decommissioning. The Memorandum of Agreement directed that decontamination and decommissioning end-state alternatives for the facility be developed and that planning, engineering, and activities required to achieve the selected end-state be conducted.

In November 2007, the Assistant Secretary for EM approved Critical Decision-2/3, Approve Project Performance Baseline/Approve Start of Construction, for the High Flux Beam Reactor decontamination and decommissioning. The work scope for the High Flux Beam Reactor project did not include the demolition of the stack at that time.

This 100-meter tall stack was initially constructed to provide an elevated exhaust of the High Flux Beam Reactor primary and secondary cooling air. The stack is no longer needed. Remediation activities include: isolation of utilities (e.g., electrical service), demolition and removal of the stack to the pedestal, final status survey, independent verification survey, packaging, transportation, and disposal of the waste, and restoration of the affected site.

In 2009, the American Recovery and Reinvestment Act provided funds to complete the stack removal. Work was initiated on the stack in 2010 but was suspended later that year prior to demolition due to safety concerns. The demolition effort was terminated in 2011. The Office of Science and EM co-signed the memorandum "Transfer and Realignment of Brookhaven National Laboratory Work Scope from the Office of Environmental Management to the Office of Science" in 2012 which stated that EM will remain responsible for completing the High Flux Beam Reactor stack demolition by FY 2020 as required by the Record of Decision. In 2016, EM submitted a Mission Need Statement and received approval from the Assistant Secretary for Critical Decision-0, Approve Mission Need. Critical Decision-1, Approve Design Scope and Project Cost and Schedule Range, was approved in FY 2018.

Highlights of the FY 2020 Budget Request

The FY 2020 budget request is based on the Energy and Water, Legislative Branch, and Military Construction and Veterans Affairs Appropriations Act, 2019 (Public Law No. 115-929) funding of $20,456,000, which would complete the Brookhaven High Flux Beam Reactor Stack Demolition project.

FY 2019 & FY 2020 Key Milestones/Outlook

Actions to complete the stack remediation (in order to meet the Record of Decision requirements) include the following:

- Complete acquisition planning for remediation contract in FY 2019. Establish contract and project management structure.

Planned FY 2019 is for completion of the following activities:

- Project planning, award of remediation contract and provide contract and project management.

Planned FY 2020 activities include the following:

- Complete demolition of HFBR stack, final site grading and final status survey.
- Development of documentation to closeout U.S. EPA Comprehensive Environmental Response, Compensation and Liability Act Record of Decision.

Strategic Management

The Department will continue planning activities for the High Flux Beam Reactor 100-meter stack remediation currently scheduled to be completed no later than 2020.

Brookhaven National Laboratory

Funding ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Non-Defense Environmental Cleanup				
Small Sites				
Brookhaven National Laboratory				
BRNL-0041 / Nuclear Facility D&D-High Flux Beam Reactor	2,000	20,456	0	-20,456

Brookhaven National Laboratory
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Non-Defense Environmental Cleanup	
Small Sites	
Brookhaven National Laboratory	
BRNL-0041 / Nuclear Facility D&D-High Flux Beam Reactor	
• FY 2019 funding will complete D&D activities.	-20,456
Total, Brookhaven National Laboratory	**-20,456**

Nuclear Facility D&D-High Flux Beam Reactor (PBS: BRNL-0041)

Overview

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

This PBS scope includes characterization, demolition, waste disposal, and area remediation/restoration activities of the Brookhaven High Flux Beam Reactor exhaust stack. The demolition of the Brookhaven High Flux Beam Reactor stack will be conducted as a response action under the Comprehensive Environmental Response, Compensation and Liability Act Record of Decision. It is identified as Area of Concern 9 under an Interagency Agreement, which serves as the Federal Facility Agreement between the Department, the United States Environmental Protection Agency, and New York State. A Feasibility Study was prepared to evaluate viable decommissioning alternatives and a Record of Decision was signed in 2009 requiring the completion of the demolition by 2020. DOE will maintain the facility in a safe state until remediation is completed and the surrounding area is verified to meet cleanup levels.

Nuclear Facility D&D-High Flux Beam Reactor (PBS: BRNL-0041)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$20,456	**$0**	**-$20,456**
• Continue planning activities for the High Flux Beam Reactor 100-meter Stack demolition, which is scheduled to be completed no later than 2020.	• Complete planning activities and demolish stack	• FY 2019 funding will complete D&D activities.

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 2020 Budget Request

The Energy Technology Engineering Center's FY 2020 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 1000 parts per billion for trichloroethylene.

FY 2019 & FY 2020 Key Milestones/Outlook

- (2019) Issue the Final Environmental Impact Statement and Record of Decision
- (2019) Complete Programmatic Agreement
- (2019) Submit final groundwater Corrective Measure Implementation plan, in compliance with the Consent Order with the State of California
- (2019) Continue decontamination and decommissioning planning of remaining structures and remediation based on the Record of Decision
- (2020) Begin decontamination and decommissioning of remaining structures and remediation based on the Record of Decision

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 issued in FY 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 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Non-Defense Environmental Cleanup				
Small Sites				
Energy Technology Engineering Center				
CBC-ETEC-0040 / Nuclear Facility D&D-Energy Technology Engineering Center	9,000	11,000	18,199	+7,199

Energy Technology Engineering Center
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Non-Defense Environmental Cleanup	
Small Sites	
Energy Technology Engineering Center	
CBC-ETEC-0040 / Nuclear Facility D&D-Energy Technology Engineering Center	
• Increase to complete decontamination and decommissioning of remaining structures.	+7,199
Total, Energy Technology Engineering Center	**+7,199**

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. Due to the 2007 Court decision, DOE is unable to conduct further decontamination and decommissioning activities until the completion of an Environmental Impact Statement for Area IV and the Northern Buffer Zone and issuance of the associated Record of Decision. The Final Environmental Impact Statement and the Record of Decision are planned to be completed in FY 2019.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$11,000	**$18,199**	**+$7,199**
• Perform ongoing program support and operational services. • Complete and issue Final Environmental Impact Statement and the Record of Decision. • Submit the Final groundwater Corrective	• Perform ongoing program support and operational services. • Complete decontamination and decommissioning of remaining structures and continue planning soil and groundwater remediation based on the	• Increase to complete decontamination and decommissioning of remaining structures.

Measure Implementation plan in compliance with the Consent Order with the State of California.

- Initiate decontamination and decommissioning of remaining structures based on Record of Decision and continue planning for soil remediation based on the Record of Decision.

Record of Decision.

- Complete the required Corrective Measures Study to support its final recommendations regarding groundwater.

Moab

Overview

The Moab Uranium Mill Tailings Remedial Action (UMTRA) 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 December 2018, the Project has shipped 9,402,000 tons of material.

Direct maintenance and repair at the Moab UMTRA Project is estimated to be $484,000.

The Moab Project Office plans to purchase the following replacement vehicles in FY 2020: 3 Sterling Haul Trucks and 1 Caterpillar Compactor.

Highlights of the FY 2020 Budget Request

The FY 2020 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; and extracting contaminated groundwater and injecting freshwater to protect the Colorado River.

FY 2019 & FY 2020 Key Milestones/Outlook

- (September 2019) Excavate, transport, and dispose of approximately 770,000 tons of tailings.
- (September 2020) Excavate, transport, and dispose of approximately 450,000 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 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Non-Defense Environmental Cleanup				
Small Sites				
Moab				
CBC-MOAB-0031 / Soil and Water Remediation-Moab	37,884	45,000	35,693	-9,307

Moab
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Non-Defense Environmental Cleanup	
Small Sites	
Moab	
CBC-MOAB-0031 / Soil and Water Remediation-Moab	
• Decrease reflects a revised shipping schedule of mill tailings (from 4 trains/week to 2 trains/week).	-9,307
Total, Moab	**-9,307**

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$45,000	**$35,693**	**-$9,307**
• 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 770,000 tons). • Perform operations and maintenance of the materials handling system and infrastructure. • Place tailings into the disposal cell. • Continue equipment maintenance/replacement.	• 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 450,000 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.	• Decrease reflects a revised shipping schedule of mill tailings (from 4 trains/week to 2 trains/week).

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 2020. 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 seven years, Congress has provided $129,464,000 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 2020 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. The project will be completed in FY 2019.

EM Consolidated Business Center

The 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. Closure Sites – Rocky Flats, Fernald, Mound, etc., but also to provide legal/litigation support for all active EMCBC sites, including SPRU, Nevada, West Valley, Moab, ETEC, and EM work at LBNL, BNL, SLAC, and any other site brought under the EMCBC purview. The Consolidated Business Center also provides oversight of the cleanup efforts ongoing at Lawrence Berkeley National Laboratory, 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 2020 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 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Closure Sites				
Closure Sites Administration				
CBC-0100-EM / Litigation Support	0	1,789	1,987	+198
CBC-0100-FN / CBC Post Closure Administration - Fernald	1,000	1,100	1,100	0
CBC-0100-RF / CBC Post Closure Administration - Rocky Flats	3,889	2,000	1,900	-100
Subtotal, Closure Sites Administration	**4,889**	**4,889**	**4,987**	**+98**
Non-Defense Environmental Cleanup				
Small Sites				
Southwest Experimental Fast Oxide Reactor (SEFOR)				
SEFOR / SEFOR	10,000	0	0	0
Lawrence Berkeley National Laboratory				
CBC-LBNL-0040 / Decontamination and Decommissioning-Lawrence Berkeley National Laboratory	41,000	35,000	0	-35,000
Total, Small Sites	**51,000**	**35,000**	**0**	**-35,000**
Total, Other Sites	**55,889**	**39,889**	**4,987**	**-34,902**

Other Sites
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
Closure Sites	
Closure Sites Administration	
CBC-0100-EM / Litigation Support	
• No significant change.	+198
CBC-0100-FN / CBC Post Closure Administration - Fernald	
• No Change.	0
CBC-0100-RF / CBC Post Closure Administration - Rocky Flats	
• No significant change.	-100
Non-Defense Environmental Cleanup	
Small Sites	
Lawrence Berkeley National Laboratory	
CBC-LBNL-0040 / Decontamination and Decommissioning-Lawrence Berkeley National Laboratory	
• No funding is requested in FY 2020.	-35,000
Total, Other Sites	**-34,902**

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 EMCBC sites, including SPRU, Nevada, West Valley, Moab, ETEC, and EM work at LBNL, BNL, SLAC, and any other site brought under the EMCBC purview.

Litigation Support (PBS: CBC-0100-EM)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$1,789	**$1,987**	**+$198**
• Provide ongoing litigation support to sites supported by the EM Consolidated Business Center.	• Provide ongoing litigation support to sites supported by the EM Consolidated Business Center.	• No significant change.

CBC Post Closure Administration – Fernald (PBS: CBC-0100-FN)

Overview

This PBS is within the Defense Environmental Cleanup appropriation.

This Post-Closure Administration PBS scope includes the Fernald Closure Project post closure administration and litigation support.

CBC Post Closure Administration - Fernald (PBS: CBC-0100-FN)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$1,100	**$1,100**	**+$0**
• Support ongoing Fernald Workers II class action lawsuit and contract closeout requirements.	• Fund the Fernald Workers II class action lawsuit and contract closeout at the Fernald closure site.	• 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$2,000	**$1,900**	**-$100**
• 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.	• 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.	• 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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$35,000	**$0**	**-$35,000**
• Complete deactivation and demolition of Old Town buildings 4 and 14. • Commence deactivation and characterization activities at Old Town buildings 7 and 7C. • Commence cleanup of the Bayview BioEPIC building footprint.	• Complete demolition of Old Town buildings 7 and 7C. • Continue cleanup of the Bayview BioEPIC building footprint.	• No funding is requested in FY 2020.

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 savings goal for FY 2019 is $47M, a 2.7 percent increase over the FY 2018 goal of 45.8 percent. As of November 30, 2018, EM has currently achieved a savings of $8.9M for FY 2019.

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.

Cleanup Innovation and Technology

In FY 2020, the Cleanup Innovation and Technology Program will continue to facilitate the use of innovative solutions and state-of-the-art technology to reduce costs, accelerate schedules, and mitigate vulnerabilities with the overall objectives of enhancing worker, operational and environmental safety; improve work performance, productivity and quality; and reduce the government's environmental and financial liability created by defense nuclear weapons development and production. 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 2020 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. Mission-enablers target filling technological mission gaps, uncertainties, and risks that have site-wide or program-wide implications, broad applications, and the potential for dramatic reduction to lifecycle costs and schedules, as well as mission liabilities. Recognizing that many mission enabling technologies are commercially available in non-nuclear industry sectors, have been developed by entrepreneurial technologists, and exist in federal agencies to support highly specialized and mission-specific objectives, EM seeks and exploits the transfer of these technologies to support nuclear cleanup. The test bed initiatives will play a key role in demonstrating the functionality, operability and readiness of these technologies for use in nuclear applications.

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. EM continues to enter into agreements and arrangements for interagency cooperation and collaboration.

EM's technology portfolio will leverage and harness the expertise, resources, and capabilities of universities and colleges. Academia supports EM in four distinct roles: (1) as an expert-based resource for conducting basic and applied scientific research and for providing engineering solutions; (2) as a pool of recognized subject matter experts to support technical peer reviews and independent technical assessments; (3) as incubators and pipelines for EM's future workforce; and (4) as a resource for third-party independent analysis, testing validation, and verification.

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 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. Additional environmental analyses and implementing options for storage and management services (e.g., leasing arrangements) are on-going.

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 2018, 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]

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[1] DOE has fulfilled its reimbursement obligation to one of the ten sites, Rio Algom Mining LLC. This company will continue to complete its remediation efforts.

Mission Support

Funding ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup				
Program Support				
Mission Support				
HQ-MS-0100 / Policy, Management, and Technical Support	6,979	6,979	6,979	0
EM-HBCU-0100 / Minority Serving Institution Partnerships Program	8,000	6,000	6,000	0
Subtotal, Mission Support	**14,979**	**12,979**	**12,979**	**0**
Innovation and Technology Development				
Mission Support				
HQ-TD-0100 / Cleanup Innovation and Technology	35,000	25,000	0	-25,000
Total, Defense Environmental Cleanup	**49,979**	**37,979**	**12,979**	**-25,000**
Uranium Enrichment Decontamination and Decommissioning Fund				
U/Th Reimbursements				
Mission Support				
HQ-UR-0100 / Reimbursements to Uranium/Thorium Licensees	35,732	11,000	21,035	+10,035
Total, Mission Support	**85,711**	**48,979**	**34,014**	**-14,965**

Mission Support
Explanation of Major Changes ($K)

	FY 2020 Request vs FY 2019 Enacted
Defense Environmental Cleanup	
Innovation and Technology Development	
Mission Support	
HQ-TD-0100 / Cleanup Innovation and Technology	
– The reduction of Technology Development activities reflects EM's focus on supporting the Low-Level Waste Offsite Disposal (previously known as Test Bed Initiative) at the Office of River Protection. A new Congressional Control point at the Office of River Protection has been proposed to fund the Low-Level Waste Offsite Disposal project in accordance with the FY 2019 report language. EM will continue to focus efforts on demonstrating and deploying innovative technologies and cleanup approaches that lead to closure in the areas of tank waste and nuclear waste management, soil and groundwater remediation, and deactivation and decommissioning activities utilizing prior year uncosted balances.	-25,000
Program Support	
EM-HBCU-0100 / Minority Serving Institution Partnerships Program	
– No change.	0
HQ-MS-0100 / Policy, Management, and Technical Support	
– No change.	0
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.	+10,035
Total, Mission Support	**-14,965**

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$6,979	**$6,979**	**+$0**
– Continue support for DOE's Strategic Sourcing Initiative to purchase commodities through a supply chain framework, which results in cost avoidance on purchases. – Continue support for various Secretarial and Departmental initiatives, including the Defense Contracts Audit Agency audits, Government Industry Data Exchange Program and Consolidated Accounting Investment System. – Continue to provide expertise in the areas of safety, health and security, emergency management, quality assurance, nuclear criticality safety, and risk management. – Continue to provide support to instill safety awareness by utilizing the National Safety Council to conduct surveys which will indicate whether and how EM's commitment to safety is working.	– Continue support for DOE's Strategic Sourcing Initiative to purchase commodities through a supply chain framework, which results in cost avoidance on purchases. – Continue support for various Secretarial and Departmental initiatives, including the Defense Contracts Audit Agency audits, Government Industry Data Exchange Program and Consolidated Accounting Investment System. – Continue to provide expertise in the areas of safety, health and security, emergency management, quality assurance, nuclear criticality safety, and risk management. – Continue to provide support to instill safety awareness by utilizing the National Safety Council to conduct surveys which will indicate whether and how EM's commitment to safety is working.	– No change.

– Continue to provide support to various advisory groups such as the Nuclear Regulatory Commission, National Academy of Sciences and Low-Level Radioactive Waste Forum, to obtain technical assistance and expertise that indirectly supports EM mission objectives. – Continue to provide support to packaging and transportation stakeholders outreach grants. – Continue to provide rapid response from technical experts or "External/Internal" review teams to address emerging, imminent technical issues impeding site cleanup and closure. – Continue to provide technical solution projects designed to reduce near-term technical risks and technical assistance to include site troubleshooting, consulting, scientific or technical problem solving. – Continue to perform analysis for long-term elemental mercury management and storage facility.	– 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.

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 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$6,000	**$6,000**	**+$0**
• 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.	• 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.	– No change.

Cleanup Innovation and Technology (PBS: HQ-TD-0100)

Overview

This program is within the Defense Environmental Cleanup appropriation.

The Cleanup Innovation and Technology Program will continue several mission-enabling activities, including cooperation and collaboration with technologists in other federal agencies, participation on other federal technology programs and interagency, and engagement with interagency coordination groups. EM will continue its engagement with colleges and universities, and cooperation with international partners with common and mutually beneficial interests.

The Cleanup Innovation and Technology 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 safely. 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 2020 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 2020 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 2020, 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's technology portfolio will leverage the expertise, resources, and capabilities of US universities and colleges. Academia will support EM in four distinct roles: (1) as an expert-based resource for conducting early-stage and applied scientific research and for providing engineering solutions; (2) as a pool of recognized subject matter experts to support technical peer reviews and independent technical assessments; (3) as incubators and pipelines for EM's future workforce; and (4) as a source of independent testing, verification, and confirmatory evaluation. EM will work to improve the technical training of its workforce through Science, Technology, Engineering, and Math (STEM) education, experiential learning, and apprenticeships.

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. EM will continue to enter into agreements and arrangements with its national laboratories, other federal agencies, and international partners to work on innovative solutions to help reduce the government's cleanup liability, accelerate schedules, and mitigate mission vulnerabilities, including strategies to enhance worker safety, health and protection.

In FY 2020, 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.

Cleanup Innovation and Technology (PBS: HQ-TD-0100)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$25,000	**$0**	**-$25,000**
• 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. • Continue activities in the areas of Technetium-99, Mercury, Cesium-137 and Strontium-90, the	Prior year uncosted balances will be utilized to support the following: • 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	– The reduction of Technology Development activities reflects EM's focus on supporting the Low-Level Waste Offsite Disposal (previously known as Test Bed Initiative) at the Office of River Protection. A new Congressional Control point at the Office of River Protection has been proposed to fund the Low-Level Waste Offsite

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.	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.	Disposal project in accordance with the FY 2019 report language. EM will continue to focus efforts on demonstrating and deploying innovative technologies and cleanup approaches that lead to closure in the areas of tank waste and nuclear waste management, soil and groundwater remediation, and deactivation and decommissioning activities utilizing prior year uncosted balances.

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 2018, 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]

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[1] DOE has fulfilled its reimbursement obligation to one of the ten sites, Rio Algom Mining LLC. This company will continue to complete its remediation efforts.

Reimbursements to Uranium/Thorium Licensees (PBS: HQ-UR-0100)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$11,000	**$21,035**	**+$10,035**
– 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 2018 and prior.	– 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.	– 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 2018 and Estimated Maximum Program Liability

($ Thousands)

Licensees	Total Payments FY 1994-FY 2018	Approved but Unpaid Claim Balances After FY 2018 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	643
Atlantic Richfield Company[a]	32,306	0	0
Atlas Corporation/Moab Mill Reclamation Trust[a]	9,694	0	0
Cotter Corporation	3,411	0	3,333
Dawn Mining Company	14,430	4,720	4,720
Homestake Mining Company	90,062	0	55,328
Pathfinder Mines Corporation	10,790	0	297
Petrotomics Company[a]	2,850	0	0
Rio Algom Mining LLC[b]	48,081	0	0
Tennessee Valley Authority	19,351	5,778	5,779
Umetco Minerals Corporation-CO	63,531	14,645	26,809
Umetco Minerals Corporation-WY	24,532	978	2,363
Western Nuclear, Incorporated	33,560	0	77
Subtotal, Uranium	354,904	26,121	99,349

Licensees	Total Payments FY 1994-FY 2018	Approved but Unpaid Claim Balances After FY 2018 Payments	Maximum Remaining Program Liability Including Estimated Costs in Approved Plans for Subsequent Remedial Action
Thorium			
West Chicago[c]	397,083	0	2,472
Subtotal, Thorium	397,083	0	2,472
Total, Uranium and Thorium	751,987	26,121	101,821

[a] Reimbursements have been completed to the Atlantic Richfield Company, the licensees of the Moab site, and the Petrotomics Company.

[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 2020 Budget Request

EM maintains a safe and secure posture in the EM complex, while maximizing the investment in cleanup activities. The FY 2020 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.

The Richland Operations Office, Office of River Protection, Savannah River, Idaho, Portsmouth and Paducah, Carlsbad, and Headquarters offices have hired critical positions such as contract specialists, general engineers, and physical scientists to meet the cleanup mission.

In FY 2020, EM will work aggressively to ensure our programs have the appropriate expertise to meet mission requirements in the most efficient and effective manner possible. For example, recent retirements have resulted in a significant loss of program engineering experience. EM leadership recognizes that a skills mix challenge continues to exist. Hiring for experienced and skilled engineers is planned by EM to ensure knowledge transfer from expert to junior engineers.

In the FY 2020 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 flexible spending account and subsidy for Energy employees' transit), 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 flexible spending account and subsidy for Energy employees' transit), 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 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Carlsbad				
Salaries and Benefits	11,120	10,216	10,267	+51
Travel	380	465	465	0
Support Services	0	200	81	-119
Other Related Expenses	1,050	1,150	766	-384
Total, Carlsbad	**12,550**	**12,031**	**11,579**	**-452**
Idaho				
Salaries and Benefits	7,136	6,762	6,796	+34
Travel	150	185	185	0
Support Services	80	93	54	-39
Other Related Expenses	350	663	255	-408
Total, Idaho	**7,716**	**7,703**	**7,290**	**-413**
Oak Ridge				
Salaries and Benefits	11,733	11,846	11,905	+59
Travel	220	150	150	0
Support Services	745	1,502	509	-993
Other Related Expenses	2,600	1,858	1,896	+38
Total, Oak Ridge	**15,298**	**15,356**	**14,460**	**-896**
Portsmouth/Paducah Project Office				
Salaries and Benefits	10,630	9,825	9,874	+49
Travel	350	400	400	0
Support Services	1,250	2,500	854	-1,646
Other Related Expenses	1,500	3,300	1,174	-2,126
Total, Portsmouth/Paducah Project Office	**13,730**	**16,025**	**12,302**	**-3,723**

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Richland				
Salaries and Benefits	36,341	39,509	39,706	+197
Travel	370	550	550	0
Support Services	1,000	761	684	-77
Other Related Expenses	2,960	5,399	3,869	-1,530
Total, Richland	**40,671**	**46,219**	**44,809**	**-1,410**
River Protection				
Salaries and Benefits	27,980	27,561	27,698	+137
Travel	400	500	500	0
Support Services	1,250	250	854	+604
Other Related Expenses	2,500	4,420	3,222	-1,198
Total, River Protection	**32,130**	**32,731**	**32,274**	**-457**
Savannah River				
Salaries and Benefits	41,776	40,196	40,396	+200
Travel	525	450	450	0
Support Services	1,250	1,963	854	-1,109
Other Related Expenses	2,800	1,641	2,318	+677
Total, Savannah River	**46,351**	**44,250**	**44,018**	**-232**
Small Sites				
Salaries and Benefits	4,786	4,395	4,416	+21
Travel	130	150	150	0
Support Services	460	645	314	-331
Other Related Expenses	1,000	960	730	-230
Total, Small Sites	**6,376**	**6,150**	**5,610**	**-540**
Nevada Site Office				
Salaries and Benefits	2,566	2,480	2,492	+12
Travel	80	65	65	0
Support Services	50	100	100	0
Other Related Expenses	160	179	137	-42
Total, Nevada Site Office	**2,856**	**2,824**	**2,794**	**-30**

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Los Alamos Site Office				
Salaries and Benefits	4,478	4,820	4,845	+25
Travel	125	125	125	0
Support Services	300	280	280	0
Other Related Expenses	200	397	150	-247
Total, Los Alamos Site Office	**5,103**	**5,622**	**5,400**	**-222**
Field				
Salaries and Benefits	158,546	157,610	158,395	+785
Travel	2,730	3,040	3,040	0
Support Services	6,385	8,294	4,584	-3,710
Other Related Expenses	15,120	19,967	14,517	-5,450
Total, Field	**182,781**	**188,911**	**180,536**	**-8,375**
Headquarters Operations				
Salaries and Benefits	51,244	48,379	48,639	+260
Travel	1,770	1,700	1,700	0
Support Services	19,860	22,030	12,226	-9,804
Other Related Expenses	1,500	973	762	-211
Total, Headquarters Operations	**74,374**	**73,082**	**63,327**	**-9,755**
Headquarters Working Capital Fund				
Other Related Expenses	15,665	10,548	10,548	0
Consolidated Business Center				
Salaries and Benefits	20,810	20,615	20,718	+103
Travel	500	380	380	0
Support Services	3,955	1,985	2,000	+15
Other Related Expenses	1,915	2,979	1,399	-1,580
Total, Consolidated Business Center	**27,180**	**25,959**	**24,497**	**-1,462**

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Environmental Management				
Salaries and Benefits	230,600	226,604	227,752	+1,148
Travel	5,000	5,120	5,120	0
Support Services	30,200	32,309	18,810	-13,499
Other Related Expenses	34,200	34,467	27,226	-7,241
Total, Environmental Management	**300,000**	**298,500**	**278,908**	**-19,592**
Full Time Equivalents	**1,400**	**1,350**	**1,350**	**0**

Support Services and Other Related Expenses

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Support Services				
Technical Support				
Feasibility of Design Considerations	3,570	3,600	2,100	-1,500
System Definition	79	80	44	-36
Economic and Environmental Analysis	5,358	4,859	2,830	-2,029
Test and Evaluation Studies	71	80	46	-34
Surveys or Reviews of Technical Operations	8,306	8,600	5,010	-3,590
Total, Technical Support	17,384	17,219	10,030	-7,189
Management Support				
Directives Management Studies	1,814	1,900	1,105	-795
Automatic Data Processing	1,728	2,000	1,165	-835
Training and Education	186	190	110	-80
Analysis of DOE Management Processes	671	695	600	-95
Reports and Analyses Management and General Administrative Support	8,417	10,305	5,800	-4,505
Total, Management Support	12,816	15,090	8,780	-6,310
Total, Support Services	30,200	32,309	18,810	-13,499
Other Related Expenses				
Rent to GSA	6,887	6,570	4,580	-1,990
Rent to Others	552	1,600	1,115	-485
Communication, Utilities, Misc.	2,125	2,908	2,030	-878
Printing and Reproduction	60	10	8	-2
Other Services	5,214	7,000	4,880	-2,120
Training	1,370	1,300	900	-400
Purchases from Gov. Accounts	462	475	330	-145

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Operation and Maintenance of Equipment	375	390	270	-120
Supplies and Materials	350	1,500	1,045	-455
Equipment	1,140	2,166	1,520	-646
Working Capital Fund	15,665	10,548	10,548	-
Total, Other Related Expenses	34,200	34,467	27,226	-7,241

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$287,952	**$268,360**	**-$19,592**
Salaries and Benefits $226,604	**$227,752**	**+$1,148**
• Supports Federal salaries and benefits for EM's planned FTE level of 1,400, including FTEs within EM/Human Capital Management and Performance Shared Service Center.	• Supports Federal salaries and benefits for EM's planned FTE level of 1,350.	• Reflects increase for Federal benefits contributions for 1,350 FTEs.
Travel $5,120	**$5,120**	**+$0**
• Includes costs of transportation of persons, subsistence of travelers, incidental travel expenses, as well as funding to support permanent change of duty station in accordance with federal travel regulations. In addition, travel costs associated for detail assignments at EM sites and training and participation at professional conferences. Includes travel costs associated with the EM/HC Management and Performance Shared Service Center.	• Includes costs of transportation of persons, subsistence of travelers, incidental travel expenses, as well as funding to support permanent change of duty station in accordance with federal travel regulations. In addition, travel costs associated for detail assignments at EM sites and training and participation at professional conferences.	• No change.
Support Services $32,309	**$18,810**	**-$13,499**
• 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.	• 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.	• EM will use uncosted carryover funds for administrative, technical, and IT-related support services. Newly hired Federal staff will perform work, such as procurement and technical services, previously supported by contractor staff.
Other Related Expenses $23,919	**$16,678**	**-$7,241**

• Funds Federal training, supplies, and information technology equipment as well as field rent, communications and utilities. Provides for expenses for those FTEs in EM/Human Capital Management and Performance Shared Service Center. EM will continue efficiencies for the reintegration of Federal staff to Government-owned facilities.	• 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.	• EM will use uncosted carryover funds to support field rent, communication and utilities; other services; supplies and materials; and equipment.

WCF Program Direction (PBS: HQ-PDWCF-0100)

Activities and Explanation of Changes

FY 2019 Enacted	FY 2020 Request	Explanation of Changes FY 2020 Request vs FY 2019 Enacted
$10,548	**$10,548**	**+$0**
Other Related Expenses $10,548	**$10,548**	**+$0**
• 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.	• 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.	• No change.

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 2018 Actual Cost	FY 2019 Planned Cost	FY 2020 Planned Cost
Carlsbad	11,000	11,712	22,418
Idaho National Laboratory	24,132	24,613	25,106
Moab	800	800	484
Oak Ridge	73,563	68,648	57,410
Pacific Northwest National Laboratory	0	0	0
Paducah	31,292	32,683	33,911
Portsmouth	41,407	55,288	72,203
Richland Operations Office	99,550	99,545	103,966
Office of River Protection	75,642	81,787	80,389
Savannah River	177,473	194,517	185,106
Total, Direct-Funded Maintenance and Repair	534,859	569,593	580,993

Costs for Indirect-Funded Maintenance and Repair (including Deferred Maintenance Reduction)

($K)

	FY 2018 Actual Cost	FY 2019 Planned Cost	FY 2020 Planned Cost
Carlsbad	0	0	0
Idaho National Laboratory	0	0	0
Moab	0	0	0
Oak Ridge	0	0	0
Pacific Northwest National Laboratory	5,591	5,912	5,862
Paducah	0	0	0
Portsmouth	25,168	14,043	0
Richland Operations Office	0	0	0
Office of River Protection	0	0	0
Savannah River	46,860	48,130	49,436
Total, Indirect-Funded Maintenance and Repair	77,619	68,085	55,298

Environmental Management Research and Development
Research and Development ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 vs FY 2019
Basic	0	0	0	0
Applied	12,540	9,240	4,290	-4,950
Development	25,460	18,760	8,710	-10,050
Subtotal, R&D	38,000	28,000	13,000	-15,000
Equipment	0	0	0	0
Construction	0	0	0	0
Total, R&D	**38,000**	**28,000**	**13,000**	**-15,000**

Environmental Management
Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR)

	FY 2018 Enacted Transfer	FY 2019 Enacted Projected Transfer	FY 2020 Request Projected Transfer	FY 2020 Request vs FY 2019 Enacted
Technology Development and Deployment				
SBIR	1,120	800	0	-800
STTR	158	113	0	-113
Office of River Protection				
SBIR	0	0	320	320
STTR	0	0	45	45
Oak Ridge				
SBIR	96	96	96	0
STTR	14	14	14	0
Total, SBIR	**1,216**	**896**	**416**	**-480**
Total, STTR	**172**	**127**	**59**	**-68**

Safeguards and Security by Activity ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Carlsbad				
Protective Forces	4,161	4,271	4,344	+73
Physical Security Systems	692	692	704	+12
Security Investigations	61	61	62	+1
Program Management	264	264	268	+4
Subtotal, Carlsbad	**5,178**	**5,288**	**5,378**	**+90**
Cyber Security	1,292	1,292	1,314	+22
Total, Carlsbad	**6,470**	**6,580**	**6,692**	**+112**
Oak Ridge				
Protective Forces	11,225	7,643	5,274	-2,369
Physical Security Systems	1,800	1,800	908	-892
Information Security	700	700	508	-192
Personnel Security	640	640	600	-40
Security Investigations	283	283	129	-154
Material Control and Accountability	600	600	395	-205
Program Management	277	277	206	-71
Subtotal, Oak Ridge	**15,525**	**11,943**	**8,020**	**-3,923**
Cyber Security	2,080	2,080	980	-1,100
Total, Oak Ridge	**17,605**	**14,023**	**9,000**	**-5,023**
Paducah				
Protective Forces	5,900	5,921	5,644	-277
Physical Security Systems	765	765	770	+5
Information Security	925	925	933	+8
Personnel Security	614	614	653	+39
Security Investigations	21	21	0	-21
Security Infrastructure/Construction	3,954	3,954	4,358	+404
Program Management	1,870	1,870	2,086	+216
Subtotal, Paducah	**14,049**	**14,070**	**14,444**	**+374**
Cyber Security	1,507	1,507	1,445	-62
Total, Paducah	**15,556**	**15,577**	**15,889**	**+312**

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Portsmouth				
Protective Forces	8,119	8,938	10,656	+1,718
Physical Security Systems	1,342	1,342	1,323	-19
Information Security	768	768	766	-2
Personnel Security	667	667	660	-7
Security Investigations	298	298	271	-27
Security Infrastructure/Construction	556	556	525	-31
Program Management	756	756	942	+186
Subtotal, Portsmouth	**12,506**	**13,325**	**15,143**	**+1,818**
Cyber Security	1,753	1,753	1,547	-206
Total, Portsmouth	**14,259**	**15,078**	**16,690**	**+1,612**
Richland				
Protective Forces	53,209	57,630	57,630	0
Physical Security Systems	6,120	7,128	7,128	0
Information Security	1,077	1,077	1,077	0
Personnel Security	2,448	2,023	2,023	0
Security Investigations	272	675	675	0
Material Control and Accountability	1,053	1,327	1,327	0
Program Management	8,033	7,025	7,140	+115
Subtotal, Richland	**72,212**	**76,885**	**77,000**	**+115**
Cyber Security	9,778	9,801	9,778	-23
Total, Richland	**81,990**	**86,686**	**86,778**	**+92**
Savannah River				
Protective Forces	79,998	104,231	105,190	+959
Physical Security Systems	25,140	11,490	16,008	+4,518
Information Security	1,534	1,534	2,818	+1,284
Personnel Security	7,768	7,768	9,119	+1,351
Security Investigations	77	77	61	-16
Material Control and Accountability	3,769	3,769	5,179	+1,410
Security Infrastructure/Construction	3,914	0	7,689	+7,689
Program Management	10,083	10,083	10,993	+910
Transportation	195	195	195	0
Subtotal, Savannah River	**132,478**	**139,147**	**157,252**	**+18,105**
Cyber Security	26,646	24,210	22,125	-2,085

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Total, Savannah River	**159,124**	**163,357**	**179,377**	**+16,020**
West Valley Demonstration Project				
Protective Forces	2,517	2,552	2,708	+156
Security Investigations	4	4	0	-4
Program Management	277	277	282	+5
Subtotal, West Valley Demonstration Project	**2,798**	**2,833**	**2,990**	**+157**
Cyber Security	300	300	206	-94
Total, West Valley Demonstration Project	**3,098**	**3,133**	**3,196**	**+63**
Total, Safeguards and Security	**298,102**	**304,434**	**317,622**	**+13,188**

Safeguards and Security ($K)

	FY 2018 Enacted	FY 2019 Enacted	FY 2020 Request	FY 2020 Request vs FY 2019 Enacted
Protective Forces	165,129	191,186	191,446	+260
Physical Security Systems	35,859	23,217	26,841	+3,624
Information Security	5,004	5,004	6,102	+1,098
Personnel Security	12,137	11,712	13,055	+1,343
Security Investigations	1,016	1,419	1,198	-221
Material Control and Accountability	5,422	5,696	6,901	+1,205
Security Infrastructure/Construction	8,424	4,510	12,572	+8,062
Program Management	21,560	20,552	21,917	+1,365
Transportation	195	195	195	0
Subtotal, Safeguards and Security	**254,746**	**263,491**	**280,227**	**+16,736**
Cyber Security	43,356	40,943	37,395	-3,548
Total, Safeguards and Security	**298,102**	**304,434**	**317,622**	**+13,188**

Department Of Energy

FY 2020 Congressional Budget

Funding by Appropriation by Site

($K)

Defense Environmental Cleanup	FY 2018 Total Enacted	FY 2019 Enacted	FY 2020 Request
Carlsbad Area Office			
Waste Isolation Pilot Plant			
Operation and Maintenance	10,000	46,695	17,500
Central Characterization Project	22,500	19,500	20,400
Total, Waste Isolation Pilot Plant	**32,500**	**66,195**	**37,900**
Program Direction			
Carlsbad	12,176	12,031	11,579
Safeguards and Security			
Waste Isolation Pilot Plant	6,470	6,580	6,692
Total, Carlsbad Area Office	**51,146**	**84,806**	**56,171**
Consolidated Business Center			
Closure Sites			
Miamisburg	0	1,789	1,987
Program Direction			
Consolidated Business Center	33,482	32,109	30,107
Total, Consolidated Business Center	**33,482**	**33,898**	**32,094**
East Tennessee Technology Park (K25)			
Safeguards and Security			
Oak Ridge Reservation	17,605	14,023	9,000
Total, East Tennessee Technology Park (K25)	**17,605**	**14,023**	**9,000**
Fernald Environmental Management Project			
Closure Sites			
Fernald	1,000	1,100	1,100
Total, Fernald Environmental Management Project	**1,000**	**1,100**	**1,100**
Hanford Site			
Hanford Site			
Central Plateau Remediation	669,379	661,358	533,949
River Corridor & Other Cleanup Operations	183,692	193,692	89,750
Total, Hanford Site	**853,071**	**855,050**	**623,699**
Safeguards and Security			
Richland/Hanford Site	81,990	86,686	86,778
Total, Hanford Site	**935,061**	**941,736**	**710,477**

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FY 2020 Congressional Budget

Funding by Appropriation by Site

($K)

Defense Environmental Cleanup	FY 2018 Total Enacted	FY 2019 Enacted	FY 2020 Request
Idaho National Laboratory			
Idaho National Laboratory			
Idaho Community and Regulatory Support	4,071	3,200	3,500
Idaho Clean-up and Waste Disposition	420,000	420,000	331,354
ID Excess Facilities D&D	10,000	10,000	0
Total, Idaho National Laboratory	**434,071**	**433,200**	**334,854**
Total, Idaho National Laboratory	**434,071**	**433,200**	**334,854**
Idaho Operations Office			
Program Direction			
Idaho	7,738	7,703	7,290
Total, Idaho Operations Office	**7,738**	**7,703**	**7,290**
Lawrence Livermore National Laboratory			
NNSA Sites			
Lawrence Livermore National Laboratory	1,175	1,704	1,727
LLNL Excess Facilities D&D	100,000	25,000	128,000
Total, NNSA Sites	**101,175**	**26,704**	**129,727**
Total, Lawrence Livermore National Laboratory	**101,175**	**26,704**	**129,727**
Los Alamos National Laboratory			
NNSA Sites			
Los Alamos National Laboratory	220,000	220,000	195,462
Total, Los Alamos National Laboratory	**220,000**	**220,000**	**195,462**
Nevada Field Office			
Program Direction			
Nevada	2,730	2,824	2,794
NNSA Sites			
Nevada	22,599	27,138	25,603
Total, Nevada Field Office	**25,329**	**29,962**	**28,397**
Nevada National Security Site			
NNSA Sites			
Nevada	37,537	32,998	35,134
Total, Nevada National Security Site	**37,537**	**32,998**	**35,134**
NNSA Albuquerque Complex			
Program Direction			
Los Alamos	5,016	5,622	5,400
Total, NNSA Albuquerque Complex	**5,016**	**5,622**	**5,400**

Department Of Energy

FY 2020 Congressional Budget

Funding by Appropriation by Site

($K)

Defense Environmental Cleanup	FY 2018 Total Enacted	FY 2019 Enacted	FY 2020 Request
Oak Ridge National Laboratory			
Oak Ridge Reservation			
Nuclear Facility D & D, ORNL	81,110	154,000	61,807
U233 Disposition Program	50,311	52,300	45,000
OR Excess Facilities D&D	125,000	0	0
Total, Oak Ridge Reservation	**256,421**	**206,300**	**106,807**
Total, Oak Ridge National Laboratory	**256,421**	**206,300**	**106,807**
Oak Ridge Office			
Oak Ridge Reservation			
Nuclear Facility D & D, Y-12	27,100	86,000	64,269
Program Direction			
Oak Ridge	15,065	15,356	14,460
Total, Oak Ridge Office	**42,165**	**101,356**	**78,729**
Oak Ridge Reservation			
Oak Ridge Reservation			
Clean-up and Disposition	71,000	74,000	82,000
Total, Oak Ridge Reservation	**71,000**	**74,000**	**82,000**
Oak Ridge Reservation (Off-Site)			
Oak Ridge Reservation			
ORR Community and Regulatory Support	5,605	5,700	4,819
Total, Oak Ridge Reservation (Off-Site)	**5,605**	**5,700**	**4,819**
Office of River Protection			
Office of River Protection			
Tank Farm Activities	719,000	771,947	677,460
Waste Treatment Plant	748,000	745,000	705,000
ORP Test Bed Initiative	0	0	10,000
Total, Office of River Protection	**1,467,000**	**1,516,947**	**1,392,460**
Program Direction			
Office of River Protection	29,907	32,731	32,274
Total, Office of River Protection	**1,496,907**	**1,549,678**	**1,424,734**
Paducah Gaseous Diffusion Plant			
Program Direction			
Paducah/Portsmouth	13,303	16,025	12,302
Safeguards and Security			
Paducah	15,556	15,577	15,889
Total, Paducah Gaseous Diffusion Plant	**28,859**	**31,602**	**28,191**

Department Of Energy

FY 2020 Congressional Budget

Funding by Appropriation by Site

($K)

Defense Environmental Cleanup	FY 2018 Total Enacted	FY 2019 Enacted	FY 2020 Request
Portsmouth Gaseous Diffusion Plant			
Safeguards and Security			
Portsmouth	14,259	15,078	16,690
Total, Portsmouth Gaseous Diffusion Plant	**14,259**	**15,078**	**16,690**
Richland Operations Office			
Hanford Site			
Community and Regulatory Support	10,121	10,121	5,121
Office of River Protection			
Tank Farm Activities	93,000	56,053	0
Program Direction			
Richland	42,039	46,219	44,809
Total, Richland Operations Office	**145,160**	**112,393**	**49,930**
Rocky Flats Site			
Closure Sites			
Rocky Flats	3,889	2,000	1,900
Total, Rocky Flats Site	**3,889**	**2,000**	**1,900**
Sandia National Laboratories			
NNSA Sites			
Sandia	2,600	2,600	2,652
Total, Sandia National Laboratories	**2,600**	**2,600**	**2,652**
Savannah River Operations Office			
Savannah River Sites			
Community and Regulatory Support	11,249	11,249	4,749
Program Direction			
Savannah River	41,055	44,250	44,018
Safeguards and Security			
Savannah River Site	159,124	163,357	179,377
Total, Savannah River Operations Office	**211,428**	**218,856**	**228,144**
Savannah River Site			
Savannah River Sites			
Site Risk Management Operations	483,460	500,719	547,405
Radioactive Liquid Tank Waste Stabilization and Disposition	817,605	875,689	910,978
Total, Savannah River Sites	**1,301,065**	**1,376,408**	**1,458,383**
Total, Savannah River Site	**1,301,065**	**1,376,408**	**1,458,383**
Separations Process Research Unit			
NNSA Sites			
Separations Processing Research Unit	4,800	15,000	15,300
Total, Separations Process Research Unit	**4,800**	**15,000**	**15,300**

Department Of Energy

FY 2020 Congressional Budget

Funding by Appropriation by Site

($K)

Defense Environmental Cleanup	FY 2018 Total Enacted	FY 2019 Enacted	FY 2020 Request
Washington Headquarters			
Program Direction			
Headquarters	97,489	83,630	73,875
Program Support			
Program Support	14,979	12,979	12,979
Technology Development			
Technology Development	35,000	25,000	0
Total, Washington Headquarters	**147,468**	**121,609**	**86,854**
Waste Isolation Pilot Plant			
Waste Isolation Pilot Plant			
Operation and Maintenance	322,217	305,212	327,242
Transportation	21,854	25,500	26,500
Total, Waste Isolation Pilot Plant	**344,071**	**330,712**	**353,742**
Total, Waste Isolation Pilot Plant	**344,071**	**330,712**	**353,742**
West Valley Demonstration Project			
Safeguards and Security			
West Valley	3,098	3,133	3,196
Total, West Valley Demonstration Project	**3,098**	**3,133**	**3,196**
Y-12 Site Office			
Oak Ridge Reservation			
Nuclear Facility D & D, Y-12	37,093	35,000	31,886
OR Technology Development and Deployment	3,000	3,000	3,000
Total, Oak Ridge Reservation	**40,093**	**38,000**	**34,886**
Total, Y-12 Site Office	**40,093**	**38,000**	**34,886**
Total, Defense Environmental Cleanup	**5,988,048**	**6,036,177**	**5,522,063**

Department Of Energy

FY 2020 Congressional Budget

Funding by Appropriation by Site

($K)

Non-Defense Environmental Cleanup	FY 2018 Total Enacted	FY 2019 Enacted	FY 2020 Request
Brookhaven National Laboratory			
Small Sites			
Small Sites	2,000	20,456	0
Total, Brookhaven National Laboratory	**2,000**	**20,456**	**0**
East Tennessee Technology Park (K25)			
Small Sites			
Oak Ridge – ETTP	8,000	10,000	0
Total, East Tennessee Technology Park (K25)	**8,000**	**10,000**	**0**
Energy Technology Engineering Center			
Small Sites			
Small Sites	9,000	11,000	18,199
Total, Energy Technology Engineering Center	**9,000**	**11,000**	**18,199**
Hanford Site			
Fast Flux Test Reactor Facility			
Fast Flux Test Reactor Facility	2,240	2,240	2,500
Total, Hanford Site	**2,240**	**2,240**	**2,500**
Idaho National Laboratory			
Small Sites			
Small Sites	11,972	10,000	12,800
Total, Idaho National Laboratory	**11,972**	**10,000**	**12,800**
Lawrence Berkeley National Laboratory			
Small Sites			
Small Sites	41,000	35,000	0
Total, Lawrence Berkeley National Laboratory	**41,000**	**35,000**	**0**
Miamisburg Site			
Small Sites			
Southwest Experimental Fast Oxide Reactor	10,000	0	0
Total, Miamisburg Site	**10,000**	**0**	**0**
Moab Site			
Small Sites			
Small Sites	37,884	45,000	35,693
Total, Moab Site	**37,884**	**45,000**	**35,693**
Paducah Gaseous Diffusion Plant			
Gaseous Diffusion Plants			
Gaseous Diffusion Plants	50,345	50,345	51,450
Total, Paducah Gaseous Diffusion Plant	**50,345**	**50,345**	**51,450**

Department Of Energy

FY 2020 Congressional Budget

Funding by Appropriation by Site

($K)

Non-Defense Environmental Cleanup	FY 2018 Total Enacted	FY 2019 Enacted	FY 2020 Request
Portsmouth Gaseous Diffusion Plant			
Gaseous Diffusion Plants			
Gaseous Diffusion Plants	50,959	50,959	51,623
Total, Portsmouth Gaseous Diffusion Plant	**50,959**	**50,959**	**51,623**
West Valley Demonstration Project			
West Valley Demonstration Project			
West Valley Demonstration Project	75,000	75,000	75,215
Total, West Valley Demonstration Project	**75,000**	**75,000**	**75,215**
Total, Non-Defense Environmental Cleanup	**298,400**	**310,000**	**247,480**

Department Of Energy

FY 2020 Congressional Budget

Funding by Appropriation by Site

($K)

Uranium Enrichment Decon. & Decom. Fund	FY 2018 Total Enacted	FY 2019 Enacted	FY 2020 Request
East Tennessee Technology Park (K25)			
Uranium Enrichment D&D Fund			
Pension & comm & Reg Suport Oak Ridge	19,274	17,258	17,655
Oak Ridge	194,673	195,000	109,439
Total, Uranium Enrichment D&D Fund	**213,947**	**212,258**	**127,094**
Total, East Tennessee Technology Park (K25)	**213,947**	**212,258**	**127,094**
Paducah Gaseous Diffusion Plant			
Uranium Enrichment D&D Fund			
Pens & Comm & Reg Support Paducah	1,725	2,102	2,094
Paducah Gaseous Diffusion Plant	205,530	206,000	207,215
Total, Uranium Enrichment D&D Fund	**207,255**	**208,102**	**209,309**
Total, Paducah Gaseous Diffusion Plant	**207,255**	**208,102**	**209,309**
Portsmouth Gaseous Diffusion Plant			
Uranium Enrichment D&D Fund			
Pens & Comm & Reg Support Portsmouth	1,795	1,670	2,013
Portsmouth Gaseous Diffusion Plant	381,271	408,099	355,661
Total, Uranium Enrichment D&D Fund	**383,066**	**409,769**	**357,674**
Total, Portsmouth Gaseous Diffusion Plant	**383,066**	**409,769**	**357,674**
Washington Headquarters			
U/TH Reimbursements			
U/TH Reimbursements	35,732	11,000	21,035
Total, Washington Headquarters	**35,732**	**11,000**	**21,035**
Total, Uranium Enrichment Decon. & Decom. Fund	**840,000**	**841,129**	**715,112**

GENERAL PROVISIONS—DEPARTMENT OF ENERGY
(INCLUDING TRANSFER OF FUNDS)

SEC. 301. (a) No appropriation, funds, or authority made available by this title for the Department of Energy shall be used to initiate or resume any program, project, or activity or to prepare or initiate Requests For Proposals or similar arrangements (including Requests for Quotations, Requests for Information, and Funding Opportunity Announcements) for a program, project, or activity if the program, project, or activity has not been funded by Congress.

(b)(1) Unless the Secretary of Energy notifies the Committees on Appropriations of both Houses of Congress at least 3 full business days in advance, none of the funds made available in this title may be used to—

(A) make a grant allocation or discretionary grant award totaling $1,000,000 or more;

(B) make a discretionary contract award or Other Transaction Agreement totaling $1,000,000 or more, including a contract covered by the Federal Acquisition Regulation;

(C) issue a letter of intent to make an allocation, award, or Agreement in excess of the limits in subparagraph (A) or (B); or

(D) announce publicly the intention to make an allocation, award, or Agreement in excess of the limits in subparagraph (A) or (B).

(2) The Secretary of Energy shall submit to the Committees on Appropriations of both Houses of Congress within 15 days of the conclusion of each quarter a report detailing each grant allocation or discretionary grant award totaling less than $1,000,000 provided during the previous quarter.

(3) The notification required by paragraph (1) and the report required by paragraph (2) shall include the recipient of the award, the amount of the award, the fiscal year for which the funds for the award were appropriated, the account and program, project, or activity from which the funds are being drawn, the title of the award, and a brief description of the activity for which the award is made.

(c) The Department of Energy may not, with respect to any program, project, or activity that uses budget authority made available in this title under the heading "Department of Energy—Energy Programs", enter into a multiyear contract, award a multiyear grant, or enter into a multiyear cooperative agreement unless—

(1) the contract, grant, or cooperative agreement is funded for the full period of performance as anticipated at the time of award; or

(2) the contract, grant, or cooperative agreement includes a clause conditioning the Federal Government's obligation on the availability of future year budget authority and the Secretary notifies the Committees on Appropriations of both Houses of Congress at least 3 days in advance.

(d) Except as provided in subsections (e), (f), and (g), the amounts made available by this title shall be expended as authorized by law for the programs, projects, and activities specified in the "Conference" column in the "Department of Energy" table included under the heading "Title III—Department of Energy" in the joint explanatory statement accompanying this Act.

(e) The amounts made available by this title may be reprogrammed for any program, project, or activity, and the Department shall notify, and obtain the prior approval of, the Committees on Appropriations of both Houses of Congress at least 30 days prior to the use of any proposed reprogramming that would cause any program, project, or activity funding level to increase or decrease by more than $5,000,000 or 10 percent, whichever is less, during the time period covered by this Act.

(f) None of the funds provided in this title shall be available for obligation or expenditure through a reprogramming of funds that—

(1) creates, initiates, or eliminates a program, project, or activity;

(2) increases funds or personnel for any program, project, or activity for which funds are denied or restricted by this Act; or

(3) reduces funds that are directed to be used for a specific program, project, or activity by this Act.

(g)(1) The Secretary of Energy may waive any requirement or restriction in this section that applies to the use of funds made available for the Department of Energy if compliance with such requirement or restriction would pose a substantial risk to human health, the environment, welfare, or national security.

(2) The Secretary of Energy shall notify the Committees on Appropriations of both Houses of Congress of any waiver under paragraph (1) as soon as practicable, but not later than 3 days after the date of the activity to which a requirement or restriction would otherwise have applied. Such notice shall include an explanation of the substantial risk under paragraph (1) that permitted such waiver.
(h) The unexpended balances of prior appropriations provided for activities in this Act may be available to the same appropriation accounts for such activities established pursuant to this title. Available balances may be merged with funds in the applicable established accounts and thereafter may be accounted for as one fund for the same time period as originally enacted.

SEC. 302. Funds appropriated by this or any other Act, or made available by the transfer of funds in this Act, for intelligence activities are deemed to be specifically authorized by the Congress for purposes of section 504 of the National Security Act of 1947 (50 U.S.C. 3094) during fiscal year **[**2019**]***2020* until the enactment of the Intelligence Authorization Act for fiscal year **[**2019**]***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. The Secretary of Energy may not transfer more than $274,833,000 from the amounts made available under this title to the working capital fund established under section 653 of the Department of Energy Organization Act (42 U.S.C. 7263): *Provided*, That the Secretary may transfer additional amounts to the working capital fund after the Secretary provides notification in advance of any such transfer to the Committees on Appropriations of both Houses of Congress: *Provided further*, That any such notification shall identify the sources of funds by program, project, or activity: *Provided further*, That the Secretary shall notify the Committees on Appropriations of both Houses of Congress before adding or removing any activities from the fund.**]**

SEC. **[**306**]***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. 307. (a) NEW REGIONAL RESERVES.—The Secretary of Energy may not establish any new regional petroleum product reserve unless funding for the proposed regional petroleum product reserve is explicitly requested in advance in an annual budget submission and approved by the Congress in an appropriations Act.
(b) The budget request or notification shall include—
(1) the justification for the new reserve;
(2) a cost estimate for the establishment, operation, and maintenance of the reserve, including funding sources;
(3) a detailed plan for operation of the reserve, including the conditions upon which the products may be released;
(4) the location of the reserve; and
(5) the estimate of the total inventory of the reserve.**]**

SEC. **[**308**]***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. Section 310 of the Omnibus Appropriations Act, 2009 (Public Law 111–8; 50 U.S.C. 2743a note) and section 306 of the Consolidated Appropriations Act, 2012 (Public Law 112–74; 50 U.S.C. 2743a) are repealed.

SEC. 308. Not to exceed 5 percent of any appropriation made available for Department of Energy activities funded in this Act may be transferred between such appropriations, but no such appropriation, except as otherwise provided, shall be increased or decreased by more than 5 percent by any such transfers, and notification of any such transfers shall be submitted promptly to the Committees on Appropriations of the House of Representatives and the Senate.

SEC. 309. (*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), 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. 310. Notwithstanding provisions of title 5, United States Code, the Southeastern Power Administration shall pay power system dispatchers at basic pay and premium pay rates that are based on those prevailing for similar occupations in the electric power industry. Pay may not be paid, by reason of this section, at a rate in excess of the rate of basic pay for level V of the Executive Schedule.

SEC. 311. Section 3131 of the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106–65; 10 U.S.C. 2701 note) is amended by striking "or the defense activities of the Department of Energy".

(Energy and Water Development and Related Agencies Appropriations Act, 2019.)

TITLE V – GENERAL PROVISIONS

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 joint explanatory statement accompanying this 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 joint explanatory statement accompanying this 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.

SEC. 505. 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), 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 2020, 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 functions and activities described in subsections (a)(1) through (a)(6).".*

[SEC. 505. For an additional amount for "Department of the Interior—Bureau of Reclamation—Water and Related Resources", $21,400,000, to remain available until expended, for transfer to Reclamation's Upper Colorado River Basin Fund to carry out environmental stewardship and endangered species recovery efforts pursuant to the Grand

Canyon Protection Act of 1992 (Public Law 102–575), Public Law 106–392, the Colorado River Basin Project Act (43 U.S.C. 1551(b)), and the Act of April 11, 1956 (commonly known as the "Colorado River Storage Project Act") (43 U.S.C. 620n). This division may be cited as the "Energy and Water Development and Related Agencies Appropriations Act, 2019".**]**

(Energy and Water Development and Related Agencies Appropriations Act, 2019.)