

***Environmental Management  
Richland Operations Office  
FY 2012 Public Workshop Briefing***



**U.S. Department of Energy**

***May 25, 2010***

# Key Points

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- The U.S. Department of Energy (DOE), Richland Operations Office (RL) is committed to significant accomplishment in cleaning up the Hanford Site and meeting our compliance commitments
- This briefing reflects the proposed milestones in the Tri-Party Agreement (TPA) tentative agreements dated March 29, 2010 (M-15) and April 20, 2010 (M-91)
- This briefing presents work scope accomplishments to be performed in Fiscal Year (FY) 2012 as part of the base budget request

# DOE-RL Profile

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\*\*\* \$ in 000's throughout presentation \*\*\*

PBS	PBS Title	FY10 Omnibus	FY 2011 President's Budget	FY 2012 Request Allocation
RL-0011	NM Stabilization and Disposition - PFP	\$84,518	\$64,969	\$205,446
RL-0012	SNF Stabilization and Disposition	\$123,566	\$94,016	\$120,822
RL-0041	Nuclear Facility D&D - River Corridor Closure Project	\$333,283	\$386,028	\$360,804
<b>Subtotal 2012</b>	<b>2012 Accelerated Completion</b>	<b>\$541,367</b>	<b>\$545,013</b>	<b>\$687,072</b>
RL-0013	Solid Waste Stabilization and Disposition - 200 Area	\$126,975	\$135,026	\$329,319
RL-0030	Soil and Water Remediation - Groundwater/Vadose Zone	\$198,009	\$129,629	\$264,780
RL-0040	Nuclear Facility D&D - Remainder of Hanford	\$101,789	\$139,641	\$214,600
RL-0100	Richland Community and Regulatory Support	\$21,940	\$19,620	\$26,338
<b>Subtotal 2035</b>	<b>2035 Accelerated Completion</b>	<b>\$448,713</b>	<b>\$423,916</b>	<b>\$835,037</b>
RL-0020	Safeguards and Security	\$82,771	\$69,234	\$74,066
RL-0042	Nuclear Facility D&D - Fast Flux Test Facility Project	\$7,652	\$3,659	\$2,703
<b>Total - RL</b>	<b>Office Base Funding Total</b>	<b>\$1,080,503</b>	<b>\$1,041,822</b>	<b>\$1,598,878</b>

*Five Year Plan Target - \$1,120,185;  
Total Request meets EO 12088*





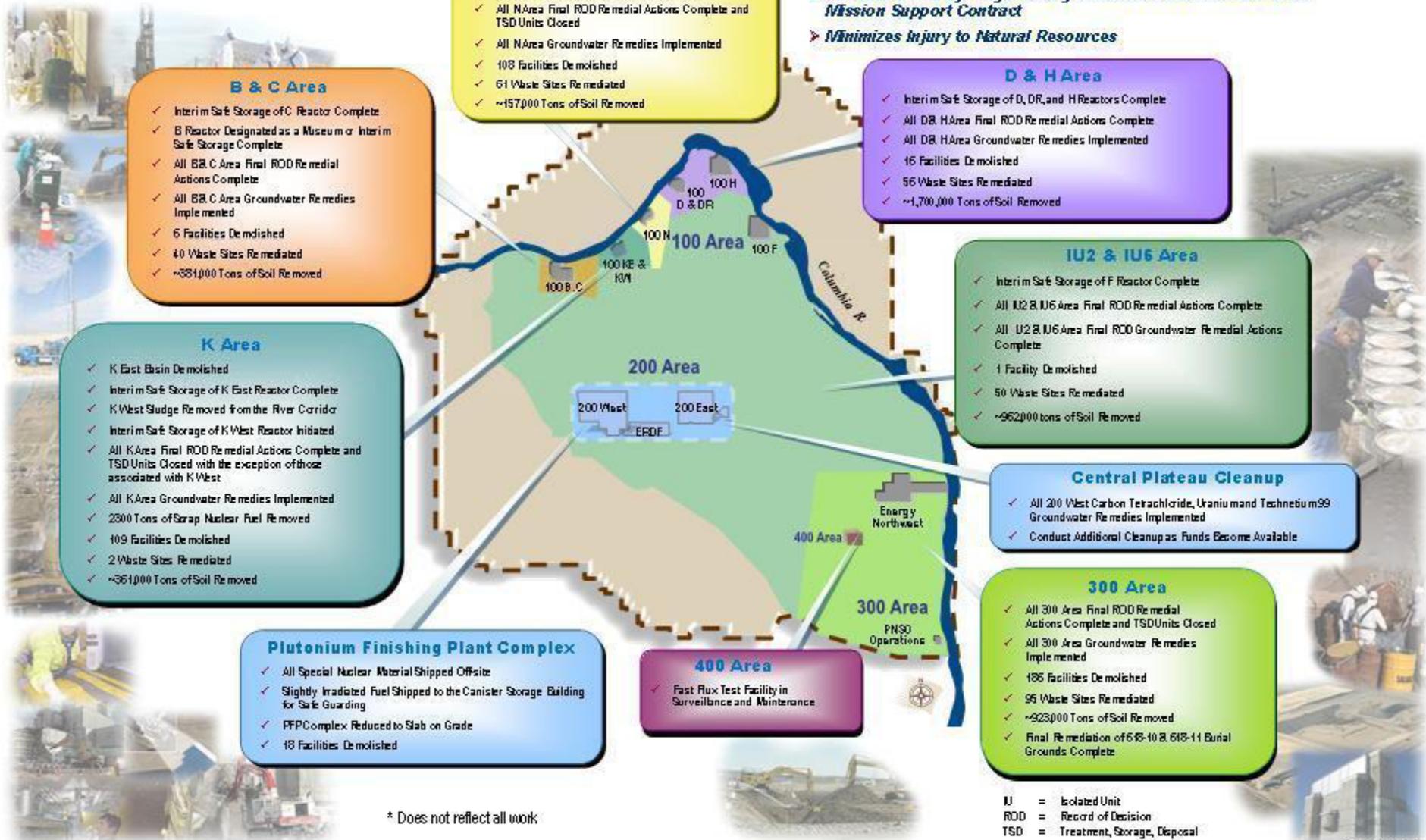
# The 2015 Vision

## Hanford Site Cleanup

### Safe and Effective Cleanup that Protects the Columbia River

#### Richland Operations Office

- Reduces the Active Site Footprint of Cleanup to 75 Square Miles (586 to 75)
- Significantly Reduces Long-Term Mortgage Costs
- At Completion, Shifts Emphasis and Resources to Full Scale Cleanup of the Central Plateau (75 square miles)
- Reduces Costs by "Right Sizing" Hanford's Infrastructure via a Mission Support Contract
- Minimizes Injury to Natural Resources



\* Does not reflect all work

# DOE-RL Cleanup Priorities

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- Maintain Safe & Compliant Facilities and Provide Essential Services
  - Safeguards and Security
- Execute DOE-RL 2015 Vision and Achieve Regulatory/TPA Compliance
  - Columbia River Corridor cleanup/demolition of facilities, waste sites, and groundwater along the Columbia River Corridor (includes removal of sludge from the K West (KW) Basin)
  - Complete Remedial Investigation/Feasibility Study process for River Corridor
  - Plutonium Finishing Plant Decontamination and Decommissioning (D&D)
  - Central Plateau Groundwater
  - Central Plateau - waste site remediation (with Outer Area priority)
  - Continue Remedial Investigation/Feasibility Study (RI/FS) process for Central Plateau
  - Retrieve suspect Transuranic (TRU) waste from underground storage
  - Repack TRU waste for certification and shipment
  - Central Plateau D&D activities [other than Plutonium Finishing Plant (PFP)]
  - Mixed Low-Level Waste (MLLW) Treatment
  - Fast Flux Test Facility (FFTF) D&D
- Community & Regulatory Requirements
- Replace, Renovate, and Restructure Essential Infrastructure to Support Hanford Cleanup

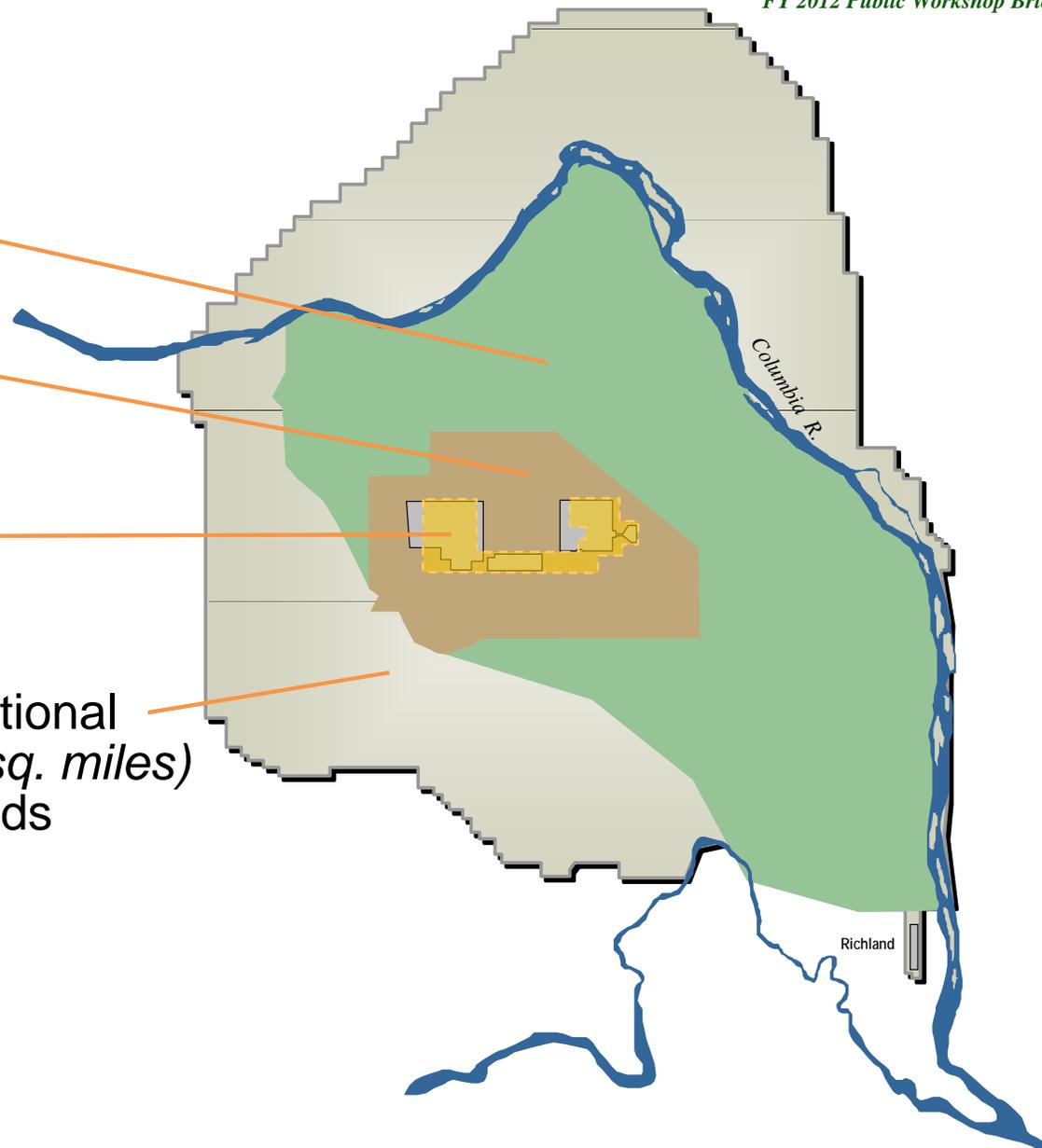
# Shrinking the Footprint of Active Site Cleanup

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## Work in four areas

-  River Corridor (~210 sq. miles)
-  Central Plateau, Outer Zone (~65 sq. miles)
-  Central Plateau, Inner Zone (~10 sq. miles)
-  Hanford Reach National Monument (~300 sq. miles) (including Arid Lands Ecology Reserve)



# River Corridor (~210 sq. mi.)

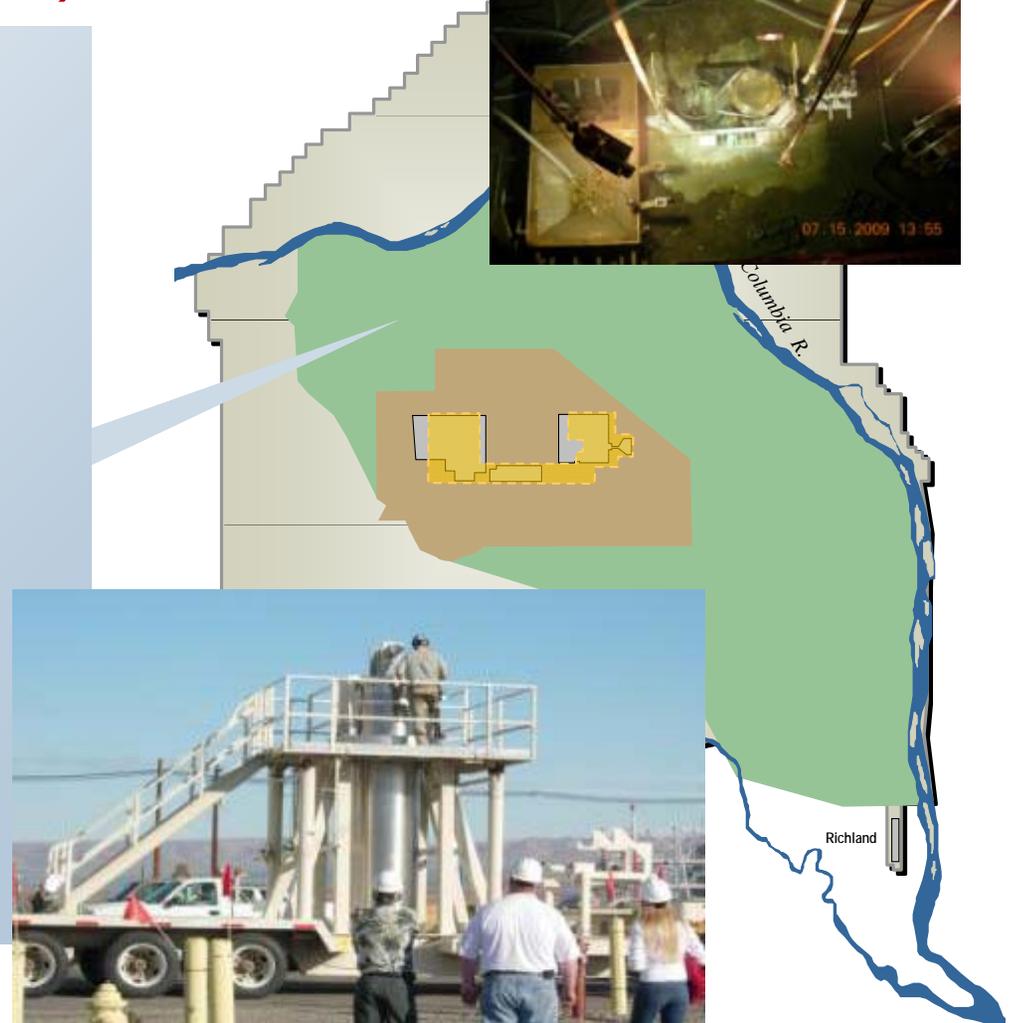
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## Spent Nuclear Fuel Stabilization/Disposition (RL-0012)

### 100 K Area

- Provides operation and maintenance support to maintain the Cold Vacuum Drying Facility and the KW Basin in a safe and compliant manner. Funding also supports minimum required surveillance and maintenance activities (\$28,105)
- Provides site-wide services allocation (\$34,532)
- Disposition Knock-Out Pot Sludge from the KW Basin to the Canister Storage Building (CSB). Obtain DOE-RL approval of Phase I combined Critical Decision 2/3 points, Project Final Design and Baseline, and related TPA M-16 milestones (\$58,185)



# River Corridor (~210 sq. mi.)

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- River Corridor Cleanup (\$306,814)
  - 1) Complete the interim remedial actions for the 100 D Area (M-016-47)
  - 2) Complete the interim remedial actions for the 100 H Area (M-016-51)
  - 3) Complete the interim remedial actions for 100-IU-2 and 100-IU-6 (M-016-56)
  - 4) Complete interim remediation for all 300 Area "inside the fence" waste sites north of Apple Street (M-016-74)
  - 5) Complete 105-N reactor interim safe storage (ISS) (M-093-20)
  - 6) Complete the selected removal and/or remedial actions for 11 of the high priority facilities in the 300 Area (M-094-08).
  - 7) Operate the Environmental Restoration Disposal Facility (ERDF)
- Achieve initiation of ISS of the 105-K East (KE) Reactor, D4 100K Area facilities and initiate waste site remediation in the 100K Area in support of the M-16 TPA milestones (\$38,540)
- B Reactor (\$5,000)
- Provide necessary general utilities, fire department, and analytical services to support minimum safe operations (\$10,450)

## Nuclear Facility D&D – River Corridor Closure Project (RL-0041)



# River Corridor (~210 sq. mi.)

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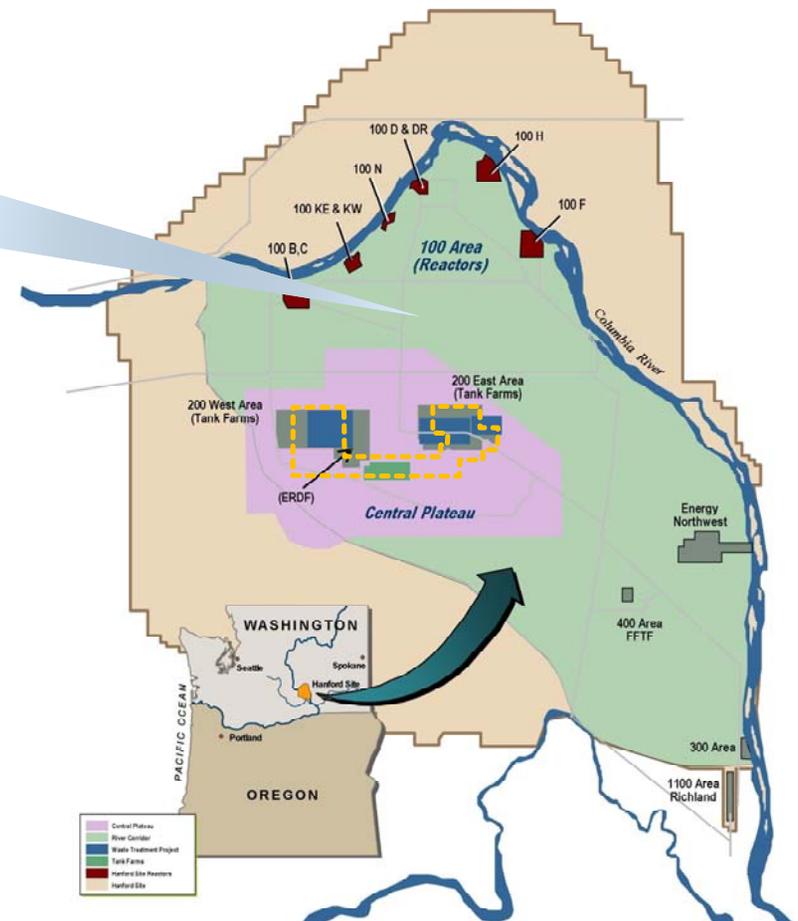
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- Completes modifications and expansions of existing groundwater remediation systems in support of final remedies (\$39,502)
  1. Complete expansion of the 100-NR-2 apatite permeable sequestration/reactive barrier vadose zone/aquifer from 900 feet to 1500 feet in the groundwater and from 300 feet to 900 feet in the vadose zone
  2. Treat expansion area (600 feet) upper vadose zone at 100-NR-2 with selected technology
- Completes characterization and decision documentation for the CERCLA RI/FS process and obtain the final Records of Decision for the 100 and 300 Area groundwater River Corridor Operable Units (100-HR-3, 100-KR-4, 100-NR-2, 100-FR-3, 100-BC-5, and 300-FF-5). All proposed plans are required to be submitted no later than 12/31/2011 (\$15,742)

The following TPA milestone-driven key decision documents are submitted to lead regulatory agencies:

- M-015-68-T01: Submit CERCLA RI/FS Report and Proposed Plan (PP) for 100-BC-1, 100-BC-2, and 100-BC-5 Operable Units
- M-015-62-T01: Submit FS Report and PP for 100-NR-1 and 100-NR-2 Operable Units
- M-015-64-T01: Submit CERCLA RI/FS Report and PP for 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units
- M-015-72-T01: Submit FS/PP for 300-FF-2 and 300-FF-5 Operable Units

## Groundwater Protection (RL-0030)



# 100D Area Groundwater

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## Groundwater Protection (RL-0030)



*Chromium (VI)  
Contamination  
~ 40,000 ug/l*



# River Corridor Pump & Treat Systems

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River Corridor Pump and Treatment Systems	Capacity
100-KR-4	300 gpm
100-KW	200 gpm
100-KX	600 gpm
100-DX	600 gpm
100-HX	800 gpm
<b>Total Capacity in 2012</b>	<b>2500 gpm</b>



**Groundwater Protection  
(RL-0030)**

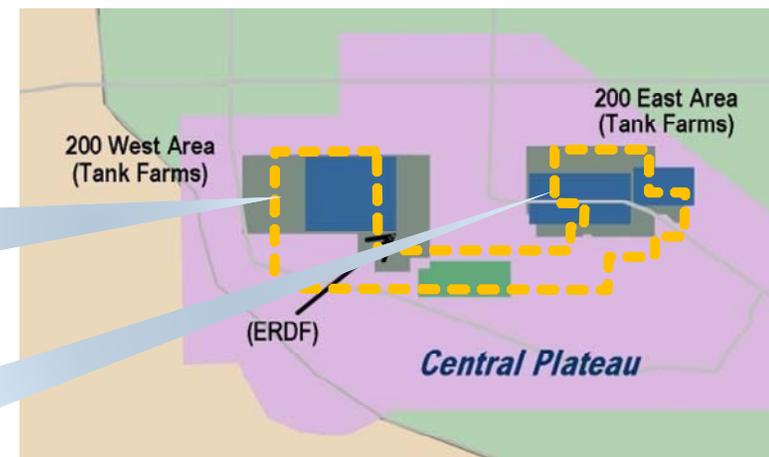
# Central Plateau

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- Provides site-wide service allocation (\$60,308)
  - Continues 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. Deploys chemical and biological treatment to select areas in support of final remedies (\$106,853)
    - 1) Complete operational testing of the groundwater system for treating Technisium -99 (Tc-99) at S-SX tank farm
    - 2) Begin initial operation of 200W pump and treat system
  - Completes characterization and supporting decision documentation needed to complete the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) RI/FS process and obtain the final Records of Decision for the Central Plateau groundwater Operable Units and Outer Area waste sites. Continue deep vadose zone studies (\$6,667)
  - Completion of the Record of Decision for implementing the final remedies for the 200-PW-1,3, 6 and 200-CW-5 Operable Units. Achieves significant progress towards completing the remaining necessary characterization and supporting decision documentation needed to complete the CERCLA RI/FS process and obtain final Records of Decision for the Central Plateau Inner Area, Canyon Facilities, and surrounding waste sites (\$22,403)
  - Accomplishes the expansion of the 200W groundwater treatment well network to address the final remedy associated with the 200-UP-1 (\$12,309)
- Achieves D&D of interim remediation and treatability test systems which will not continue to be employed as part of the final cleanup Records of Decision (\$996)

## Groundwater Protection (RL-0030)



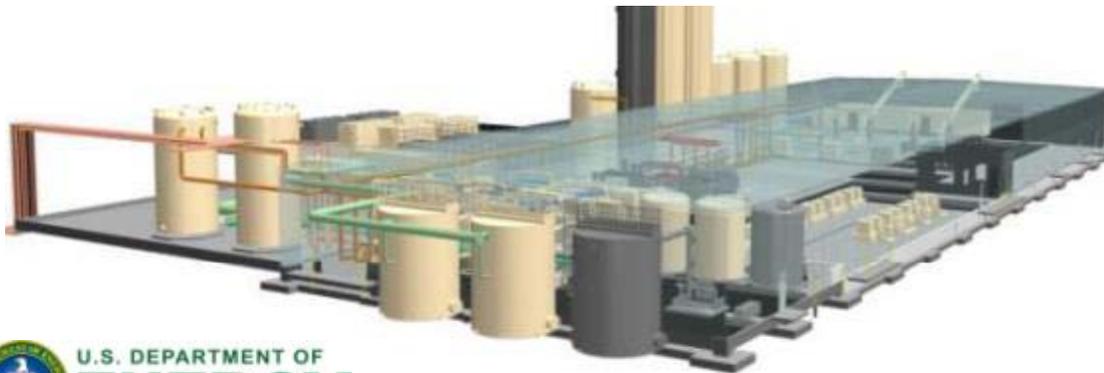
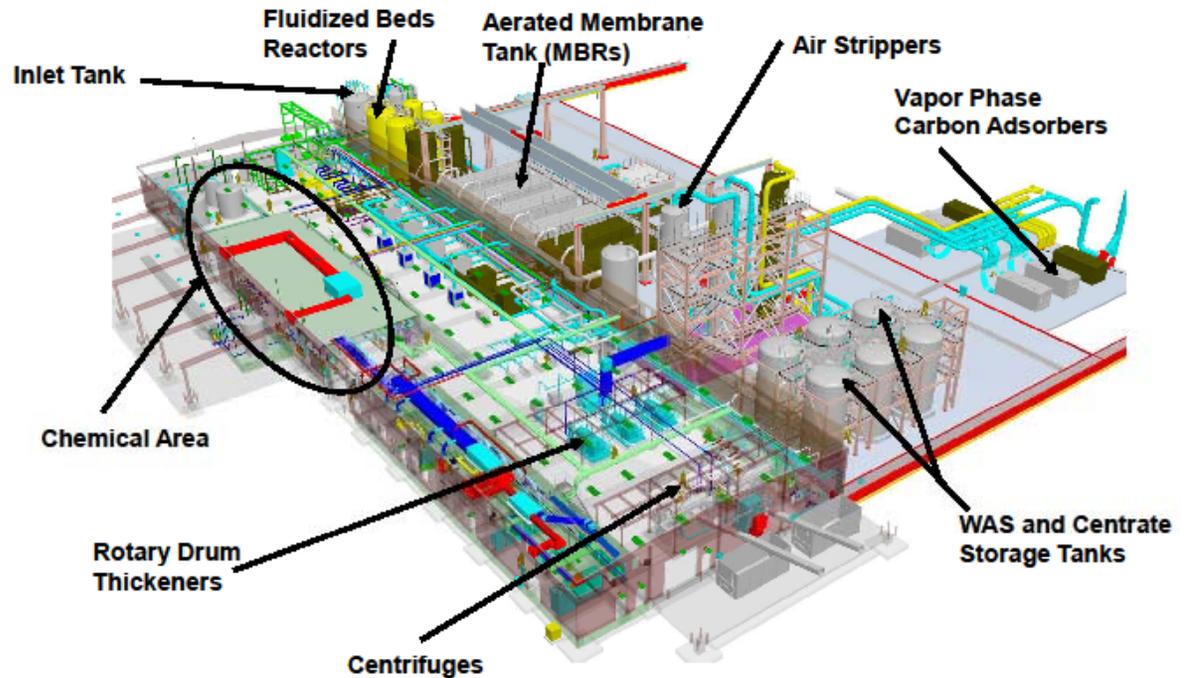
# 200W Pump and Treat System

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## Groundwater Protection (RL-0030)

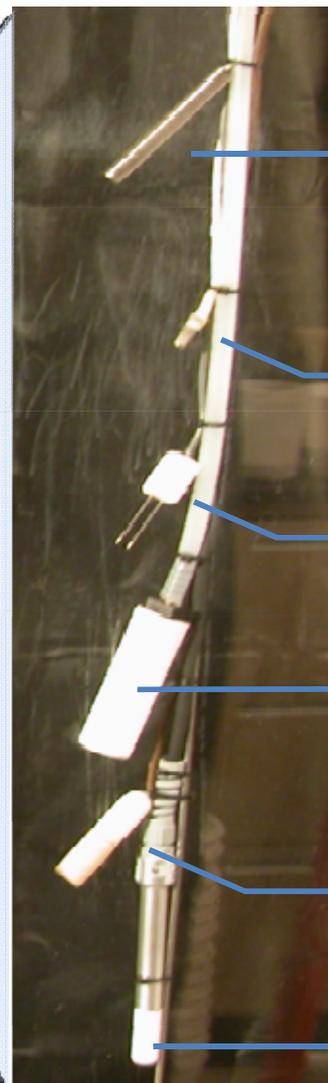
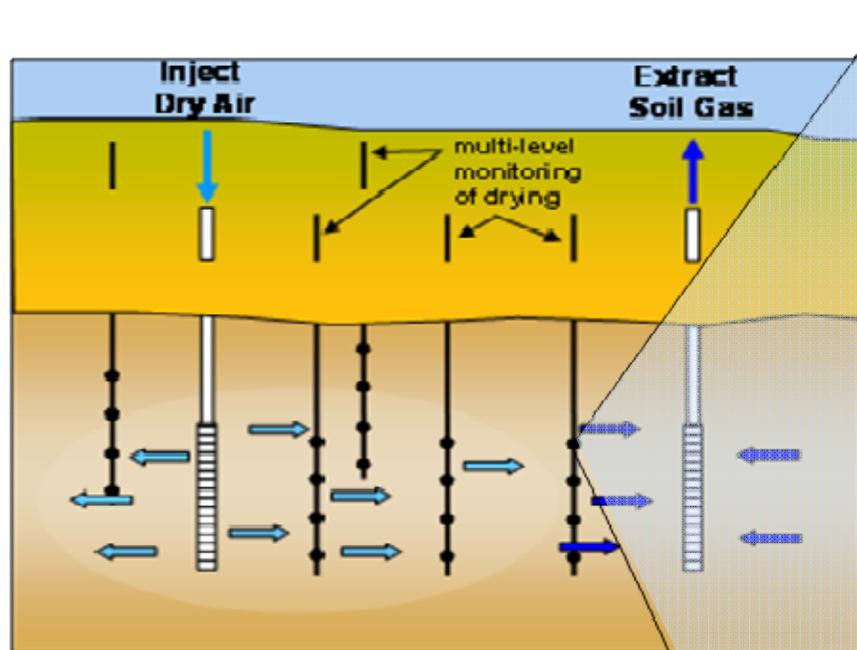
Initial – 1250 gpm  
Full Capacity – 2500 gpm



# Deep Vadose Zone Treatability Test

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**Thermistor, temperature**

**Psychrometer, water potential**

**Heat Pulse Sensor, moisture content**

**Gas Sampler, tracer**

**Heat Dissipation Unit, water potential**

**Humidity Probe, relative humidity**

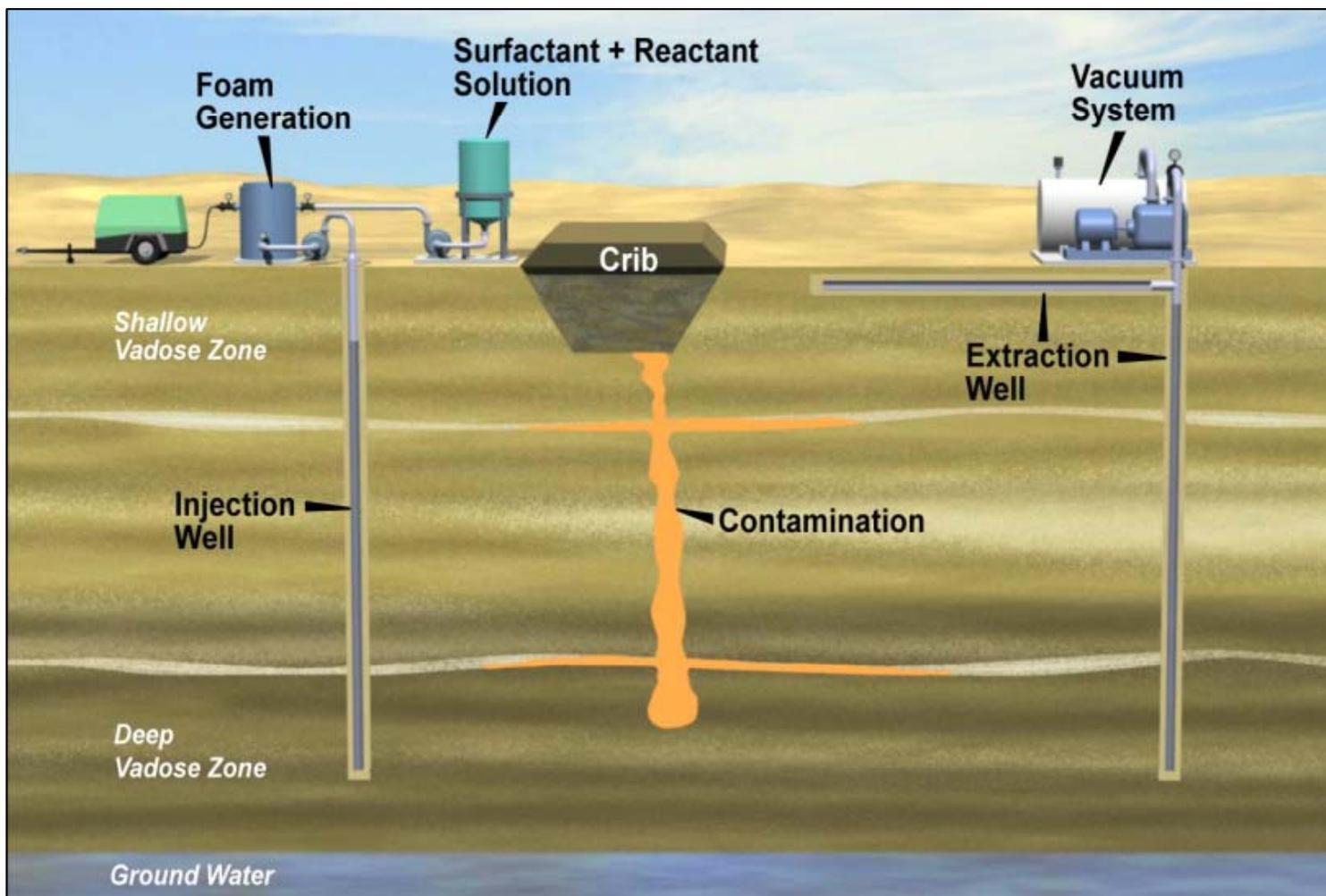
**Groundwater Protection  
(RL-0030)**

# Foam Delivery Technology

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## Groundwater Protection (RL-0030)

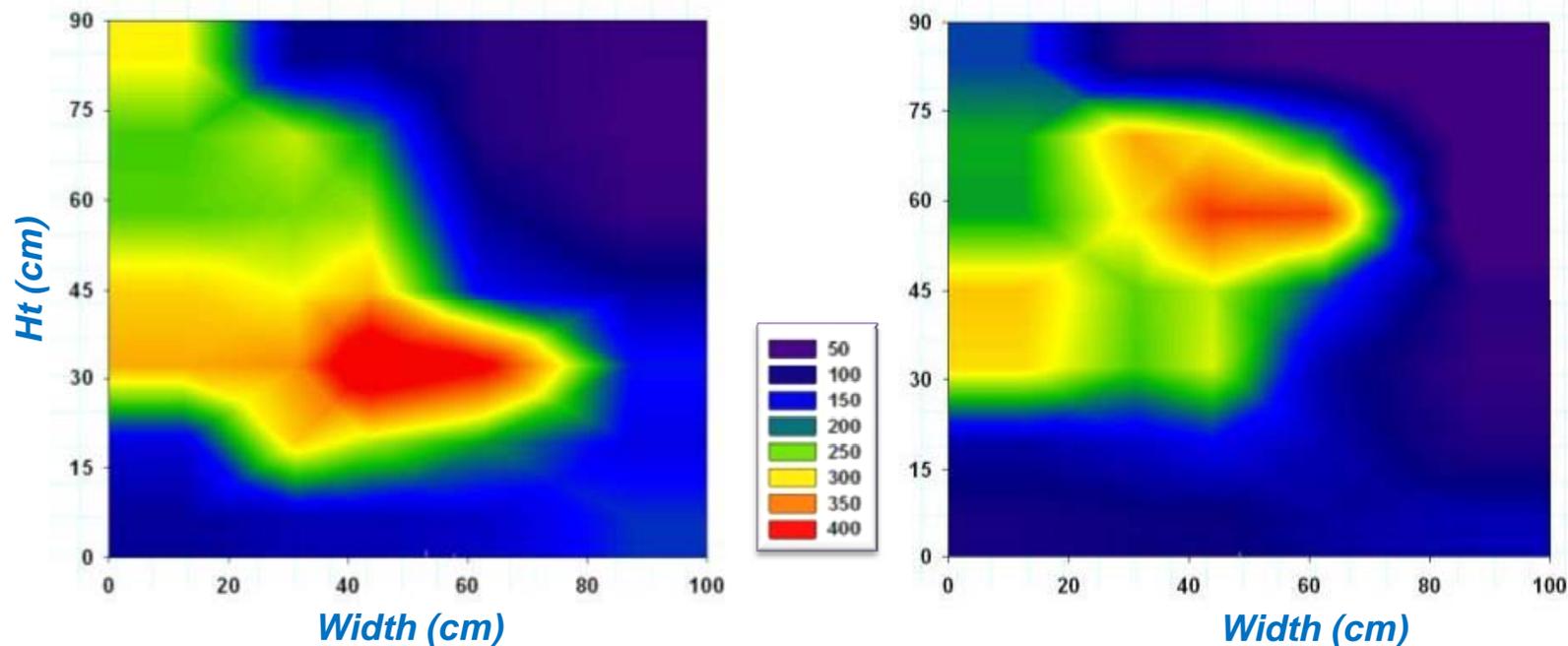


# Surfactant Distribution

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## Groundwater Protection (RL-0030)



- Reactant Carrier foam:
  - Surfactant & Reactant (sodium phosphates) Compatible
  - Zones of fine sediment control mobility & distribution
- Surfactant/P Concentration is higher [400 – 500 parts per million (ppm)] in fine sediment

# Central Plateau

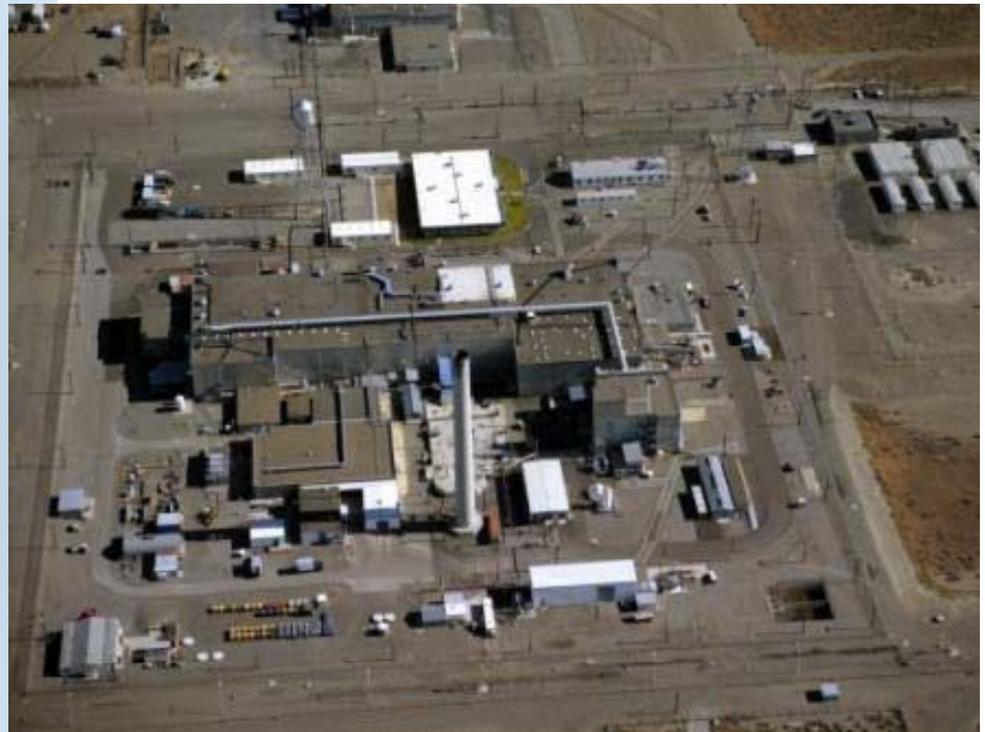
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## ***Plutonium Finishing Plant Closure Project***

- Achieve the necessary minimum safe and essential services for over forty radiological and nuclear PFP facilities(\$19,651)
- Provides site-wide services allocation (\$23,215)
- Program management and support activities necessary for minimum safe operations and essential services (\$5,592)
- Perform deactivation and decommissioning activities to achieve 'ready-for-demolition' of decontamination 234-5Z, 291-Z, 291-Z Stack, 243-Z, 2721-Z, 236-Z (PRF), 242-Z, 2736-Z/ZB Complex and ancillary facilities (\$156,988)

## ***Nuclear Material Stabilization/ Disposition – PFP (RL-0011)***



# Central Plateau

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## Plutonium Finishing Plant Closure Project

2012 goal is to be demolition ready

- Vital safety systems removed- heating, ventilation, and air conditioning (HVAC), fire protection, criticality
- Contaminated ducts and filter boxes removed
- Contaminated process and vacuum lines removed
- 236-Z Plutonium Reclamation Facility gloveboxes removed
- 242-Z Tank Room strip out
- Facilities cold and dark

## Nuclear Material Stabilization/ Disposition – PFP (RL-0011)



# Central Plateau

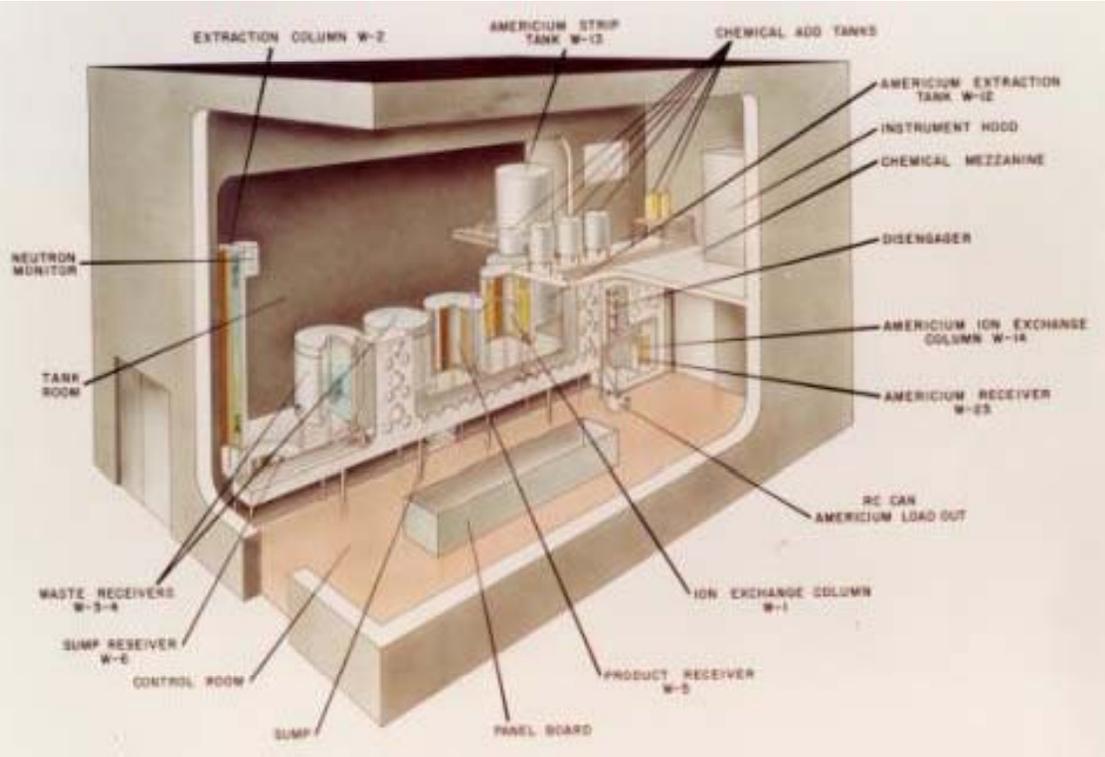
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## *Nuclear Material Stabilization/ Disposition – PFP (RL-0011)*



**236-Z, Plutonium Reclamation Facility Glovebox Removal**



**Waste Treatment & Americium Recovery Facility  
242-Z Tank Room Decontamination and Removal**

## Central Plateau

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- Provides site-wide services allocation (\$17,414)
- Provide steam for critical site heating systems; maintain DOE-RL integrated baseline and baseline certification (\$45,257)
- Provide realistic training for the safety and health of workers at approximately 36,000 student training days. Maintain HAMMER (Volpentest training and education center) facilities in a ready-to-serve state (\$7,533)
- Provide site infrastructure upgrades, replacements and repairs. Replacement of crane and rigging; general plant facilities HVAC replacements; fire truck and mobile response unit replacement; Hanford Local Area Network (HLAN) upgrades; roadway repair and sealing; water line replacement, and installation of potable water lines (\$20,176)

### *Nuclear Facility D&D – Remainder of Hanford (RL-0040)*



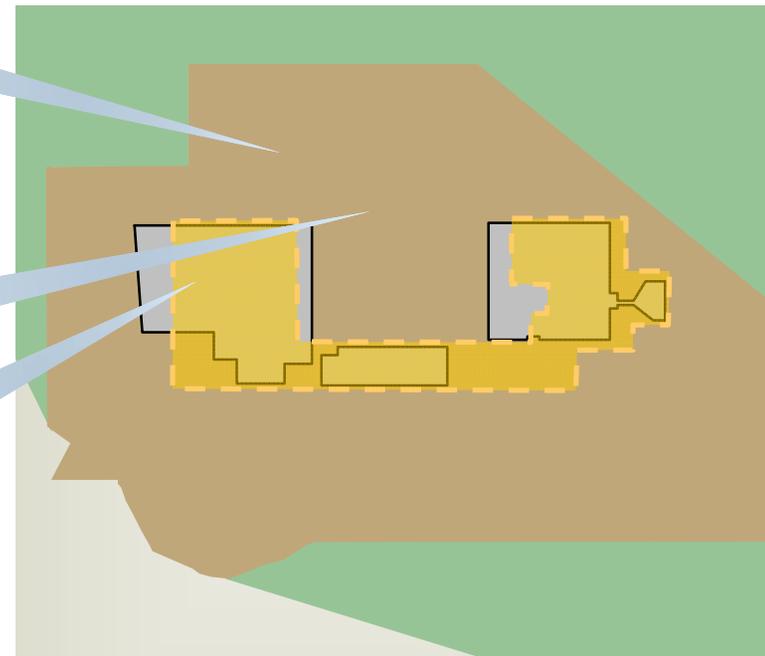
# Central Plateau

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## *Nuclear Facility D&D – Remainder of Hanford (RL-0040)*

- Provide surveillance and maintenance activities to ensure safety for inactive waste sites and facilities on Hanford's Central Plateau (\$13,555)
- Perform waste site remediation activities in the Outer Area \$31,350
- Perform U Plant canyon D&D; and U Area waste site remediation (\$79,315)



# Central Plateau

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- Provide surveillance and maintenance activities to ensure safety for inactive waste sites and facilities on Hanford's Central Plateau (\$13,555)

## ***Nuclear Facility D&D – Remainder of Hanford (RL-0040)***



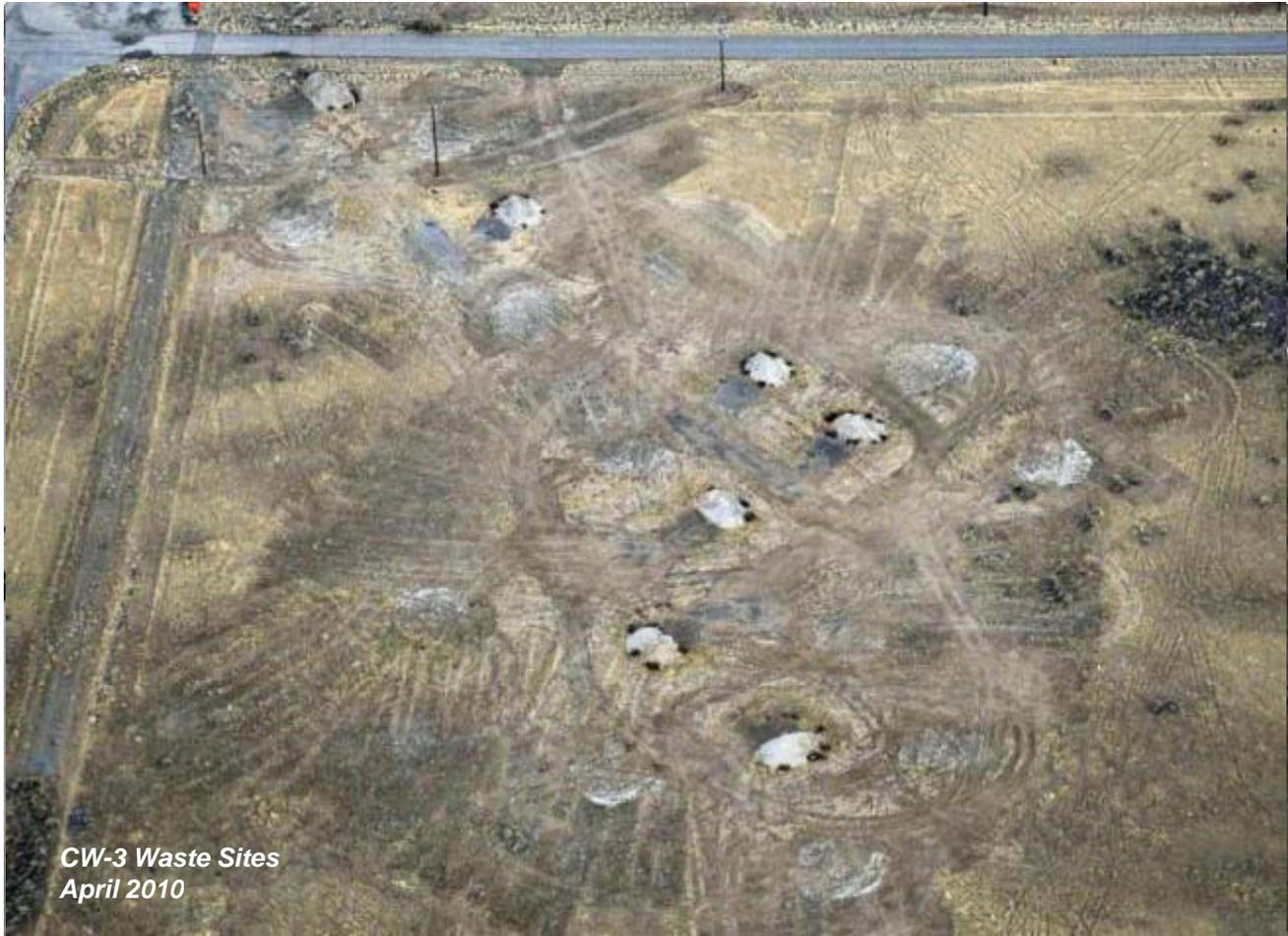
## Central Plateau

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- Perform waste site remediation activities in the Outer Area \$31,350

### ***Nuclear Facility D&D – Remainder of Hanford (RL-0040)***



*CW-3 Waste Sites  
April 2010*

## Central Plateau

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- Perform waste site remediation activities in the Outer Area \$31,350

### ***Nuclear Facility D&D – Remainder of Hanford (RL-0040)***



## Central Plateau

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- Perform waste site remediation activities in the Outer Area \$31,350

### *Nuclear Facility D&D – Remainder of Hanford (RL-0040)*



# Central Plateau

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- Perform U Plant canyon D&D; and U Area waste site remediation (\$79,315)

## Nuclear Facility D&D – Remainder of Hanford (RL-0040)

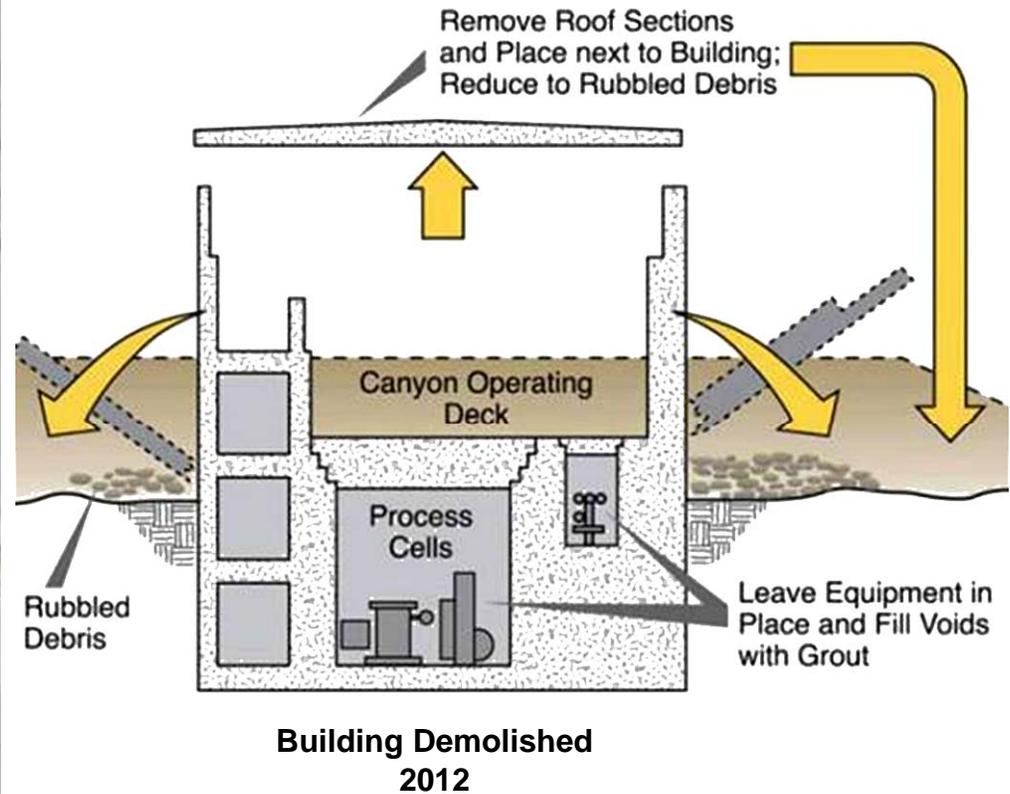


# Central Plateau

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## Nuclear Facility D&D – Remainder of Hanford (RL-0040)



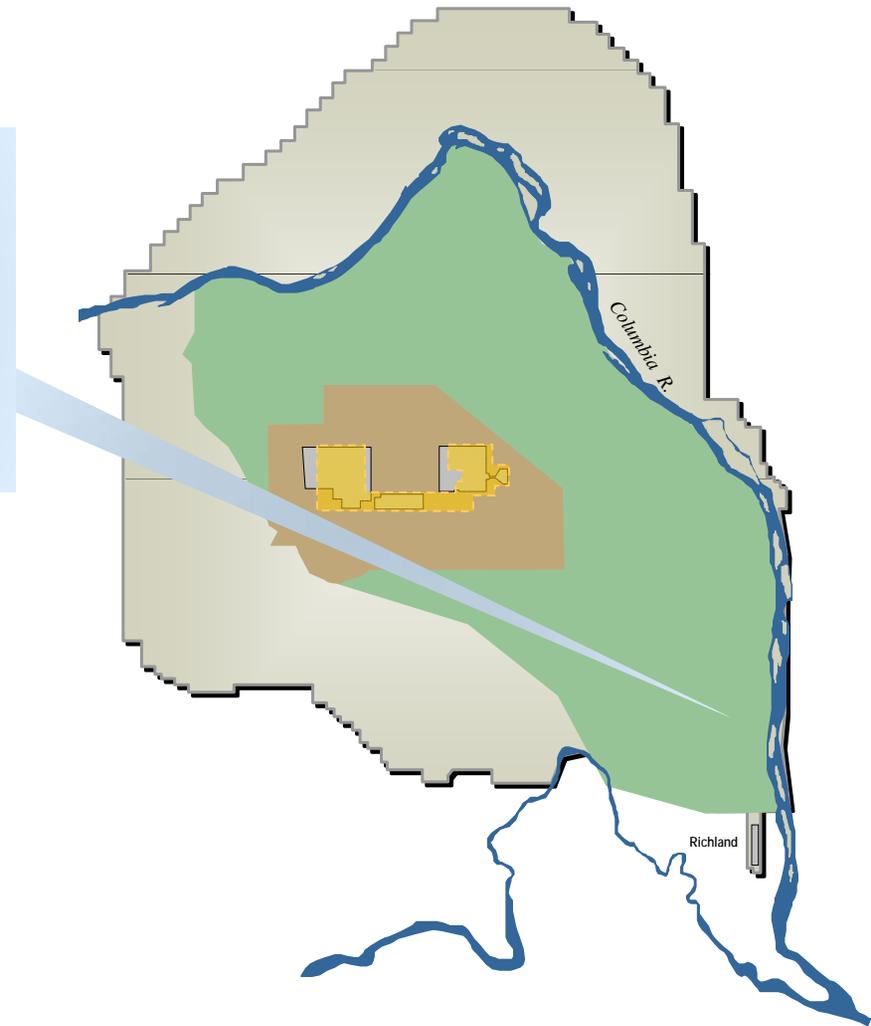
## River Corridor (~210 sq. mi.)

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### *Nuclear Facility D&D FFTF (RL-0042)*

- Provide surveillance and maintenance activities necessary to ensure minimum safety for FFTF and support facilities which includes residual and stored bulk sodium at FFTF (\$1,896)
- Provides site-wide services allocation (\$807)



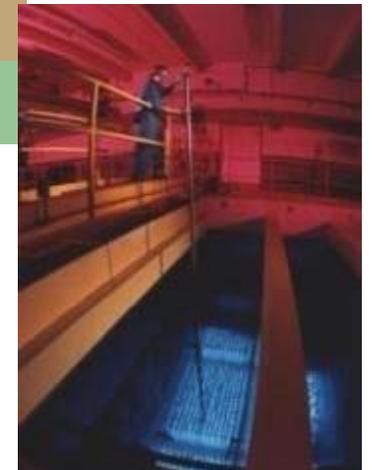
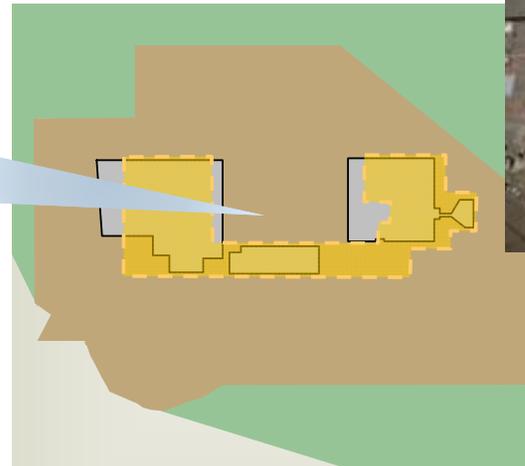
# Central Plateau

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- Provide base operations necessary to support safe and compliant storage of spent nuclear fuel (SNF). Included are activities to operate and maintain the CSB and 200 Area Interim Storage Area (ISA) facilities (6,483)
- Provide minimum project management and support necessary to ensure overall waste management project compliance to applicable requirements (\$22,016)
- Operate and maintain the Waste Encapsulation Storage Facility (WESF) for compliant storage of the cesium and strontium capsules (\$8,222)
- Provide minimum safe operations for the Central Waste Complex (CWC); including Solid Waste base operations, Mixed Waste Disposal Trenches, Integrated Disposal Facility (IDF), and ERDF interface (\$8776)
- Provides site-wide services allocation (\$50,257)

## Solid Waste Stabilization/ Disposition (RL-0013C)



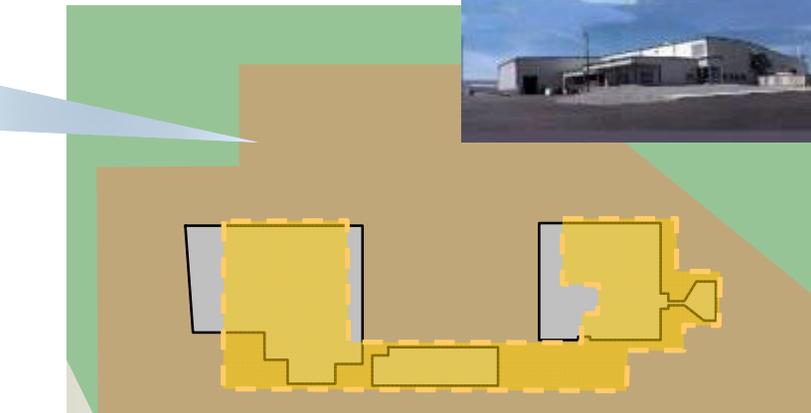
# Central Plateau

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- Maintain the T Plant Complex in a safe and compliant condition (\$6,753)
- Maintain the Waste Receiving and Processing (WRAP) Facility in a safe and compliant condition (\$7,168)
- Provide base operations and necessary upgrades to treat Hanford Site effluents in accordance with state permit requirements. The Liquid Effluent Facility supports ongoing site cleanup activities including: groundwater remediation; radioactive waste tank volume reduction; and disposal facility leachate as required by permit requirements (\$24,551)
- Provide the base operations at T Plant necessary to support the receipt and storage of K-Basin sludge (\$9,671)

## Solid Waste Stabilization/ Disposition (RL-0013C)



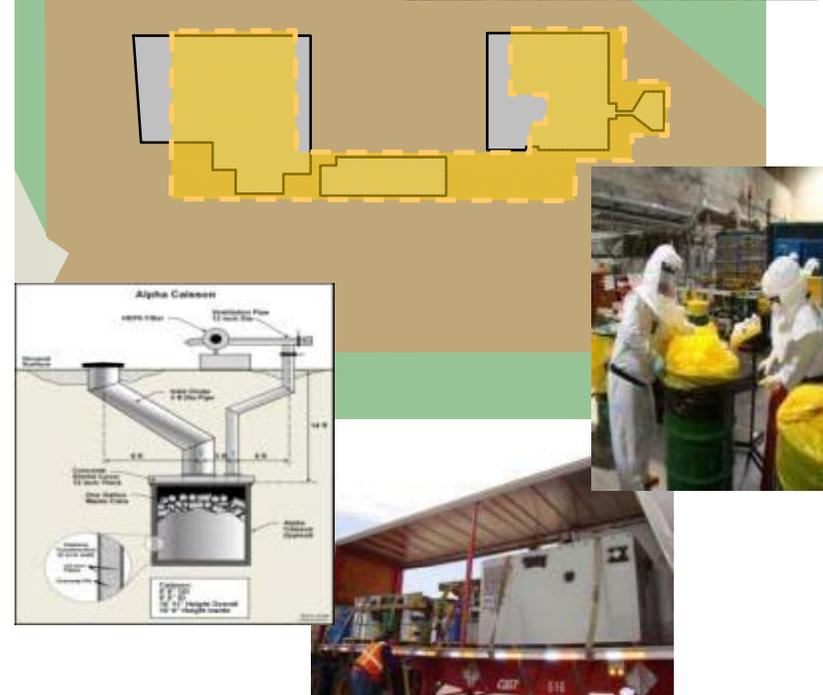
# Central Plateau

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- Provide incremental project management and support operations necessary to store, treat and disposition low-level waste, MLLW, and TRU waste from contract-handled (CH) TRU retrieval (\$5,497)
- Complete TPA M-91-46 compliance milestones for repackaging CH TRU Waste; includes WRAP and CWC Base Operations necessary to support repackaging and TRU waste shipment capability (\$14,094)
- Support Central Characterization Project (CCP) to characterize, certify, and ship TRU waste to Waste Isolation Pilot Plant (WIPP) (\$20,026)
- Complete annual commitment to TPA M-91-40 and M-91-44 milestones for CH TRU Retrievably Stored Waste (\$37,363)
- Treat generated waste in accordance with M-91-42, M-91-43, and/or 435.1 compliance waste (\$10,123)
- Provide for equipment necessary to retrieve and process remote-handled (RH) TRU waste from the burial grounds, including RH TRU from the 200W Area alpha caissons as required by TPA Milestone M-91-41 (\$80,897)
- Process large container CH TRU waste in support of TPA milestone M-091-44 (\$13,300)
- Conduct and complete readiness activities required in order to receive found fuel from Hanford projects (\$1,268)
- Provides support activities for the IDF authorization basis, updates to associated Performance Assessment and permits (\$680)
- Cesium and Strontium Capsule Dry Storage Alternative (\$2,174)

## Solid Waste Stabilization/ Disposition (RL-0013C)



# Hanford Site Support

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## *Safeguards and Security (RL-0020)*

- Maintain appropriate Hanford Site access controls, emergency response, and physical security at the Hanford Site. Maintain Material Control and Accountability, Information Security, Personnel Security, and Protective Force (\$74,066)

## *Community & Regulatory Support RL-0100*

- Support Washington and Oregon States emergency preparedness, environmental oversight and other activities related to Hanford cleanup (\$5,702)
- Support the Washington State Department of Ecology Resource Conservation and Recovery Act of 1976 Mixed Waste Fee; Washington State Department of Health's air emissions monitoring invoice; Payment in Lieu of Taxes for Grant, Benton, and Franklin Counties; and Hanford Advisory Board (\$14,636)
- Natural Resource Trustee Council and Natural Resource Injury Assessment (\$6,000)