



Richland Operations Office Cleanup Strategy, Scope

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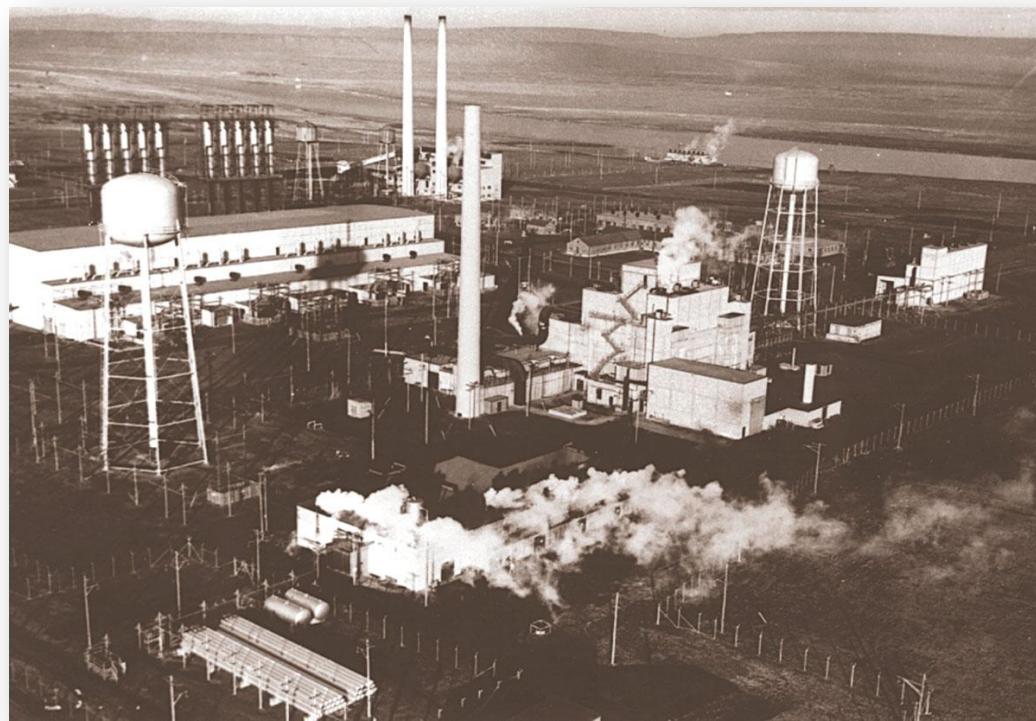
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President and General Manager
Mission Support Alliance

May 1, 2014

Hanford

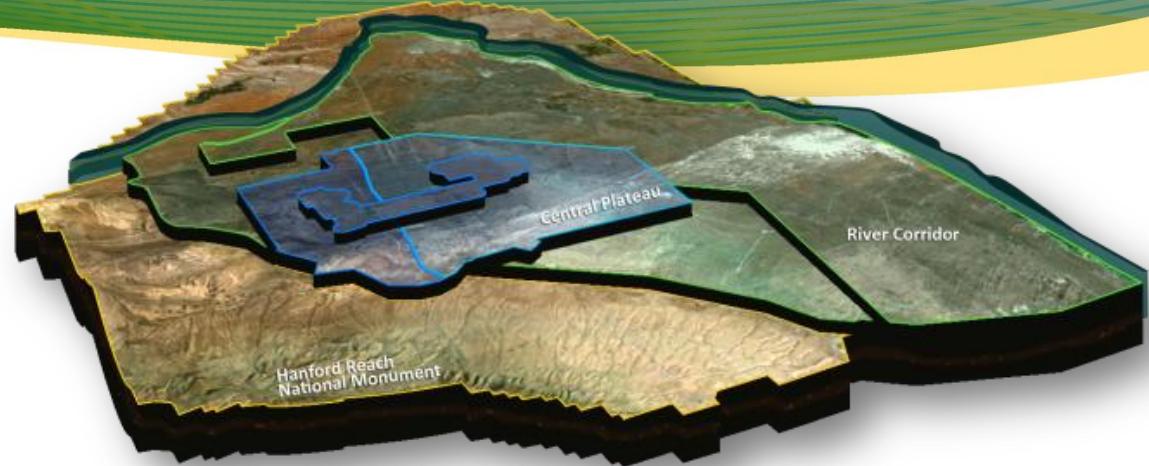
- Hanford began in 1943 as part of the Manhattan Project
- Production of plutonium increased during Cold War (peaking between 1959-1965)
- Hanford produced 2/3 of the nation's plutonium between 1945-1985
- Home to the first full-scale production reactor (B Reactor)
- Transitioned to cleanup in 1989



B Reactor Complex during operations (1940s-1960s)

Richland Operations Office

- River Corridor
- Central Plateau



Cleanup Work

- Deactivate and Demolish facilities
- Move buried waste, contaminated soil away from Columbia River
- Treat contaminated groundwater
- Isolate contamination from environment on Central Plateau

Workforce

- 4,341 federal and contractor employees

Cleanup Strategies, Vision, Agreements



Regulatory Cleanup Drivers

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
 - Three active National Priority List (NPL) sites at Hanford – 100, 200 and 300 Areas
 - Facility D&D, soil, and waste site cleanup
- Resource Conservation and Recovery Act (RCRA)
 - State of Washington authorized by Environmental Protection Agency (EPA) to administer RCRA program pursuant to State authority.
 - Safe storage, treatment and disposal of hazardous waste
- Tri-Party Agreement (Hanford Federal Facility Agreement and Consent Order, signed in 1989)
 - Agreement among DOE, State of Washington and EPA
 - Provides framework to implementing and complying to the above requirements

Richland Operations Office

Cleanout, Demolition of Facilities



407 of 522 facilities have been demolished



River Corridor 300 Area Progress



1977



2014

For nearly 60 years, the 300 Area was the center of Hanford's radiological research and fuel fabrication. Now the above ground field work and building demolition is nearly complete.

River Corridor Waste Site Cleanup



*864 of 1,012 waste sites
have been cleaned up*



Groundwater

Key Focus Areas

- Expand pump and treat systems
- Continue progress on decision documents
- Drill additional wells



Well drilling preparation



200 West Pump and Treat Facility – online and treating groundwater

Installing aquifer sampling tubes



Central Plateau Cleanup



Plutonium Finishing Plant

Workers are removing gloveboxes and pencil tanks at the high-hazard Plutonium Finishing Plant. Deactivation at the plant is almost 70 percent complete.



Cesium and Strontium Capsules

Nearly 2,000 capsules of highly-radioactive cesium and strontium need to be moved out of a storage pool into dry storage

Richland Operations Office

Prime Contracts



River Corridor Closure **RCC**

Cleanup of 220 sq. mi. along Columbia River: facility demolition, waste site remediation, operation of disposal facility

Awarded in 2005
Total Contract Value: \$2.6 billion
Cost-plus incentive-fee completion contract



Plateau Remediation Contract **PRC**

Facility and waste site cleanup, groundwater remediation, waste disposal

Awarded in 2008 for 5 years, with 5 option years (Sept. 2018)
Total Contract Value: \$5.7 billion
Cost-plus award-fee contract



Mission Support Contract **MSC**

Cost-effective infrastructure and site services to support the cleanup mission

Awarded in 2009 for 5 years, with 5 option years (May 2019)
Total Contract Value: \$3.3 billion
Cost-plus award-fee contract

Safety at Hanford



Richland Operations Office Budget Overview

PBS Title	FY 2013 Enacted	FY 2014 Omnibus	FY 2015 President's Budget
NM Stabilization and Disposition - PFP	\$160,056	\$142,670	\$168,228
SNF Stabilization and Disposition	\$89,506	\$98,369	\$103,067
Solid Waste Stabilization and Disposition - 200 Area	\$118,480	\$130,126	\$112,371
Soil and Water Remediation - Groundwater/Vadose Zone	\$134,879	\$141,500	\$116,916
Central Plateau Remediation	\$502,921	\$512,665	\$500,582
Nuclear Facility D&D - Remainder of Hanford	\$61,943	\$70,992	\$65,922
Nuclear Facility D&D - River Corridor Closure Project	\$294,264	\$337,642	\$266,866
River Corridor and Other Cleanup Operations	\$356,207	\$408,634	\$332,788
Safeguards and Security	\$63,668	\$69,078	\$63,668
Nuclear Facility D&D - Fast Flux Test Facility Project	\$2,562	\$2,545	\$2,562
Richland Community and Regulatory Support	\$17,969	\$19,701	\$14,701
Richland Field Office Funding Summary	\$943,327	\$1,012,623	\$914,301

Intro -- River Corridor Cleanup

Scope

- 9 production reactors
- 1 large research reactor
- 49 solid waste burial grounds
- More than 1,000 buildings to demolish
- More than 1,000 soil waste sites to remove

Regulatory driver

- 100 and 300 Areas both Superfund sites on the National Priority List (NPL)
- Cleanup being done under CERCLA Records of Decision (interim & final)

Cleanup Strategy

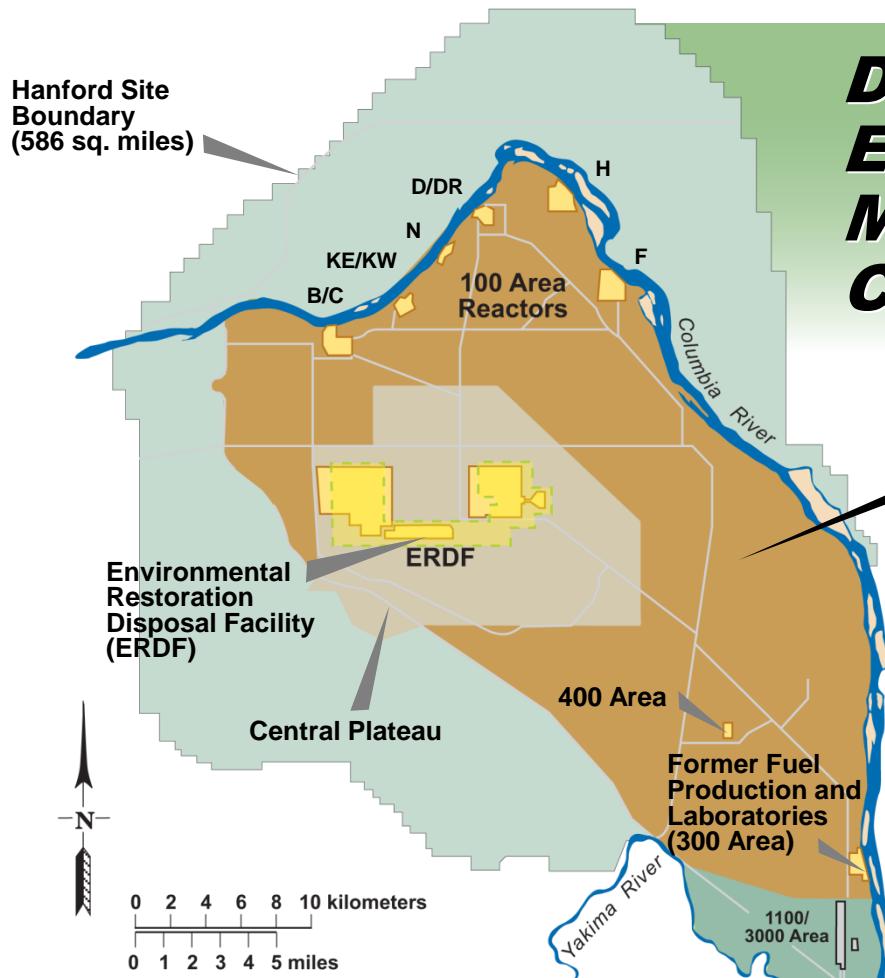
- Remove contamination that could be a threat to groundwater and the river and allow for unrestricted surface use as much as possible
- Deactivate and demolish excess facilities and research reactors
- Place 8 plutonium production reactors in the interim safe storage
- Stop key contaminants from entering the river

Cleanup Progress at Hanford's River Corridor

Scott Sax
President and Project Manager
Washington Closure Hanford

May 1, 2014

River Corridor Project Scope



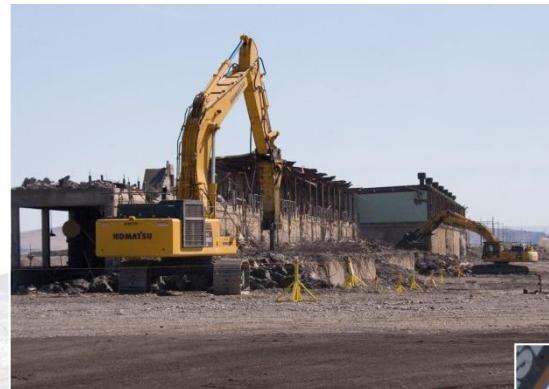
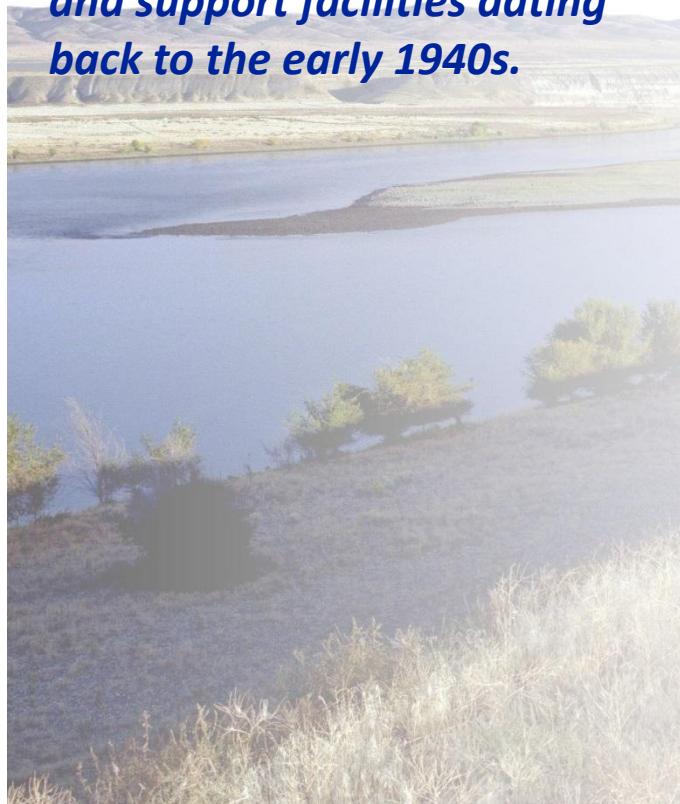
DOE's Largest Environmental Management Cleanup Closure Project

River Corridor
(220 square miles and 46 linear miles along the Hanford portion of the Columbia River)

- \$2.6B contract
- Cost-plus incentive fee contract
- Making great progress
- Project is 91% complete

Our Work Scope

Hanford's River Corridor is home to Cold War legacy wastes from nuclear reactors and support facilities dating back to the early 1940s.



*Deactivate,
decontaminate,
decommission and
demolish 320 facilities*



Treat, transport, and dispose 11.2 million tons of waste debris to Environmental Restoration Disposal Facility

Risks and Hazards Facing Our Workers

- High-risk working conditions
- Radiological, chemical and contamination hazards include chromium, asbestos, beryllium, mercury and tritium
- Industrial and construction hazards
- Un-inventoried waste sites
- High-dose fuel elements and other reactor parts



A 1,082-ton test reactor is loaded for transport to ERDF for disposal.



Trench excavation at the 618-10 Burial Ground.



N Reactor river structure demolition.

Success in Project Performance

- 91.5% complete
- 93% of facilities are decontaminated and demolished (298 out of 320)
- 81% of waste sites are remediated (480 out of 592)
- 136 of 220 square miles cleaned up
- \$276M of ARRA work completed
- \$230M saved through efficiencies and reinvested back into the project
- Over \$1B in small business subcontract awards



Field remediation at IU-2/6.



326 Material Science Laboratory demolition.

Progress at 100-B/C Area



Excavation at the 100-C-7 chrome waste site reached groundwater at 85 feet.

Excavation and backfill are complete at waste sites near B and C Reactors.



Field remediation near C Reactor.



Progress at 100-N Reactor Area



N Reactor before being cocooned.



Clean waste sites to be backfilled this summer.

Progress at 100-N Reactor Area



Concrete anchor blocks were removed from the site of a former pump house on the Columbia River near N Reactor.



Loadout at 100-N area of contamination.



Demolition of the 100-N Fuel Storage Basin.

Progress at 100-D Reactor Area



Chromium excavation near D Reactor reached groundwater – 85 feet deep.



Demolition of water filter building near D Reactor.



Progress at 100-D and 100-H



Field remediation near D Reactor.



Field remediation near H Reactor.



Waste site remediation at H Reactor Area.

100-F Area – First Reactor Area Completed



F Reactor Area during operations.



*F Area cleanup was
completed in 2012.*

618-10 Burial Ground Remediation Progress



The 618-10 Burial Ground operated from 1954 until 1963. It covers approximately 5.2 acres, and contains 12 trenches and 94 vertical pipe units. Remediation of trenches is scheduled for completion in 2015.



Methods testing for removal of the vertical pipe units at 618-10 Burial Ground is under way.

Progress at Hanford's 300 Area



Waste site remediation in the 300 Area.



A hot cell is removed from the Gamma Irradiation Facility in the 300 Area.



300 Area Cleanup Progress

309 Plutonium Recycle Test Reactor (PRTR)



Workers removed hundreds of contaminated process tubes and pipes to support the removal of the reactor.

340 Tank Vault



A complex lift system was constructed beneath the vault.



The 1,082-ton PRTR was lifted and transported to ERDF for disposal.



The 1,153-ton vault was transported to ERDF for disposal.

ERDF is the "Hub" of the Site's Waste Disposal

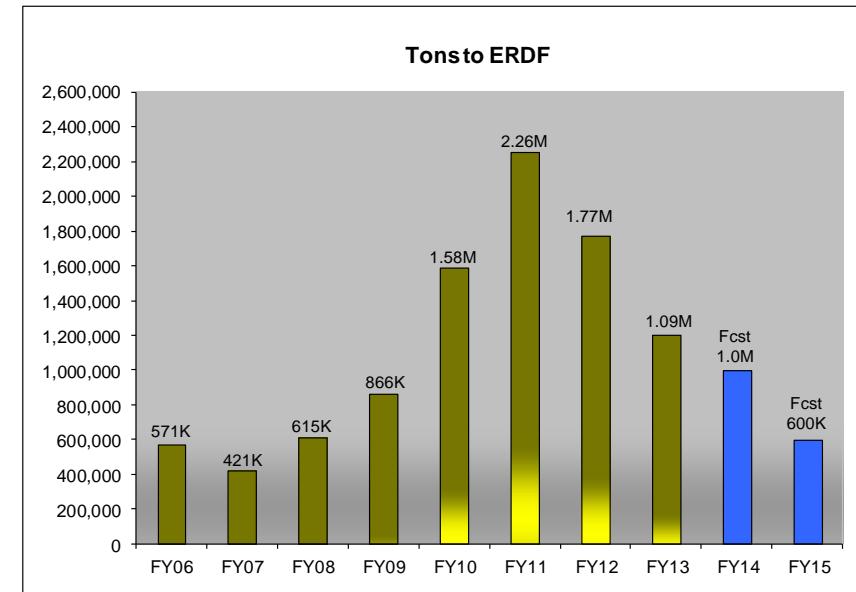
- 473,441 truck loads disposed since 2005
- 52,382 truck loads disposed in FY2013
- Over 9.8M tons disposed since 2005
 - 15.7M tons disposed since 1996
- Over 16 million miles driven by Waste Operations drivers since 2005
- \$100M ARRA expansion project completed without injury



Chromium waste from D Reactor area is disposed of at ERDF.

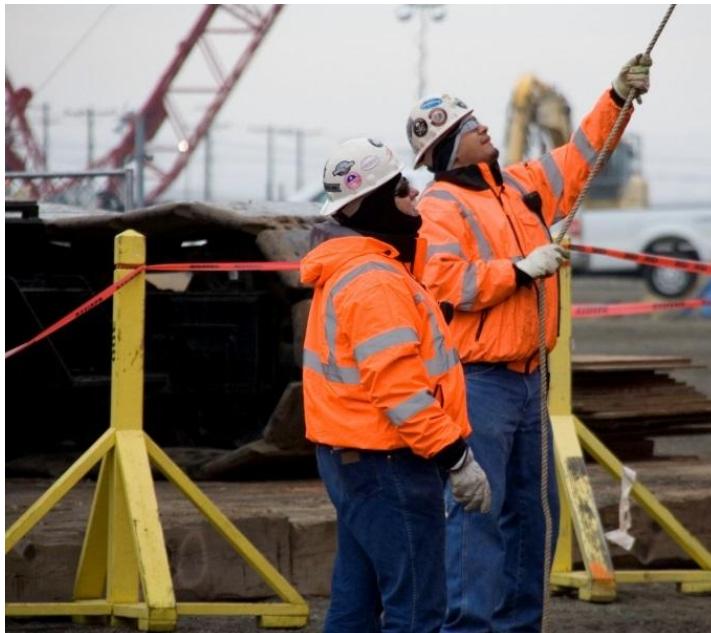


ERDF's disposal cells cover an area equivalent to 52 football fields.



Our Priorities

- Safe execution of work
- Customer satisfaction
- Financial performance
- Reward, recognize, and retain our employees

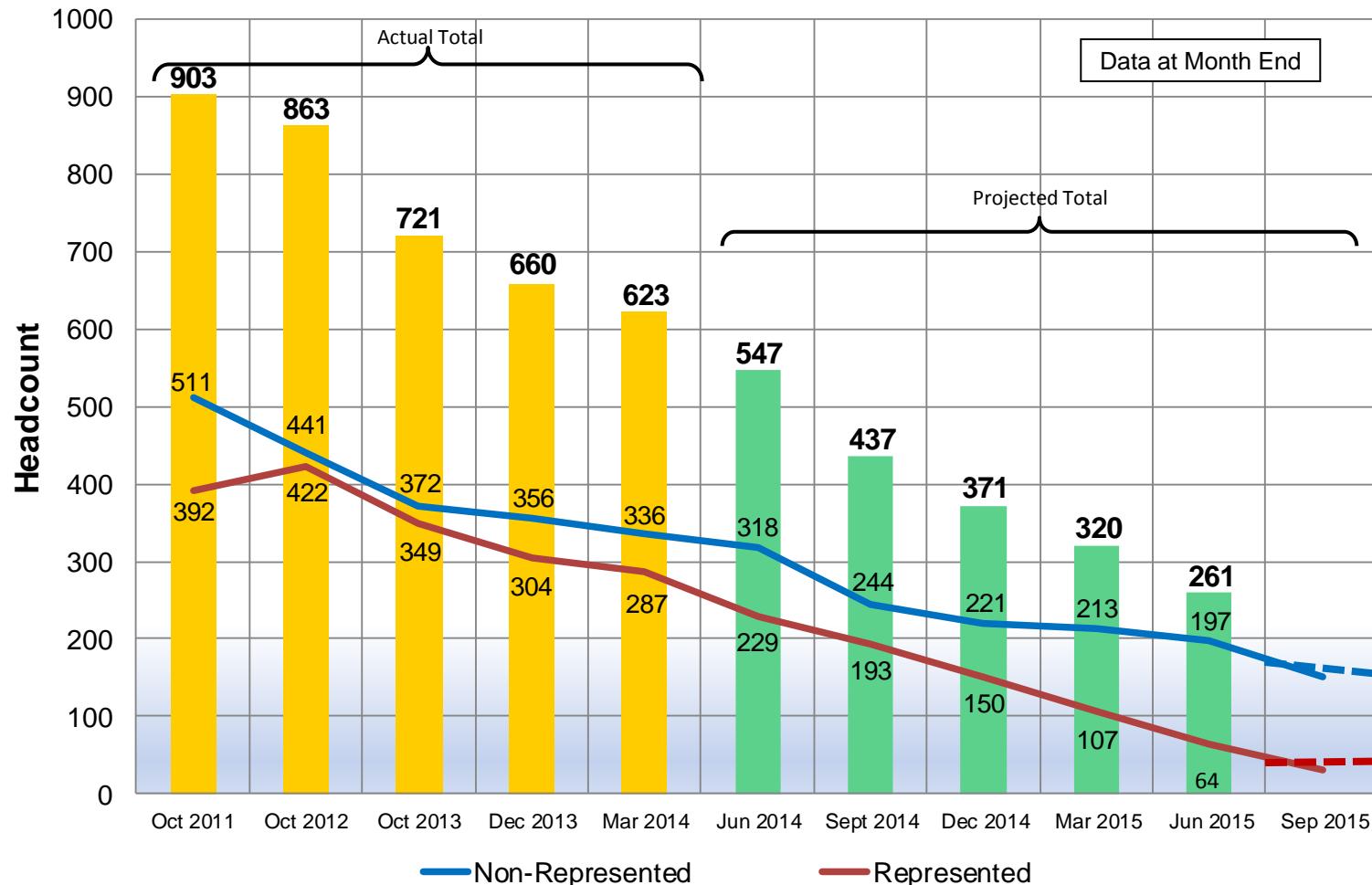


What's Going Well

- Extraordinary safety record
- Positive safety culture
- Dedicated and committed staff
- Clearly defined scope
- Work progressing on schedule
- People planning for closure



Staffing Profile: Through FY-2015



Work Remaining

- Finish chromium waste sites along the Columbia River
- Cleanup and transition of 84 square miles to Long-Term Stewardship
- Completion of 300 Area waste sites
- Complete scope at reactor sites B, C, N, D, and H
- Manage radioactive hazards at 618-10/11 Burial Grounds
- Clean up 324 Building and waste site below



Excavation of a waste site near H Reactor.



Trench excavation at the 618-10 Burial Ground.

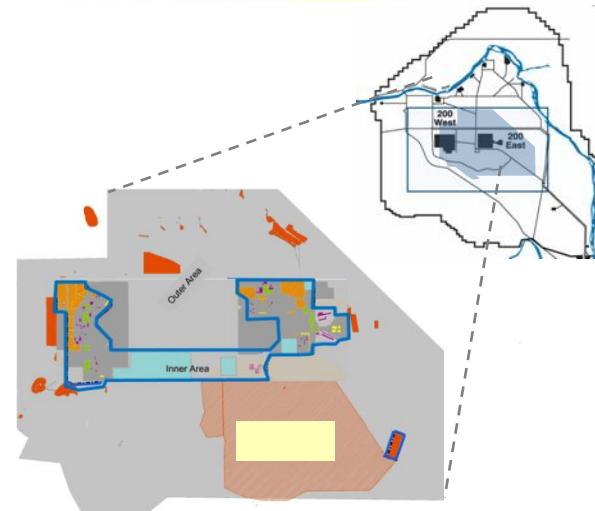
Intro -- Central Plateau Cleanup

The **Central Plateau** is a Superfund site on the National Priority List (NPL)

- Shrink Hanford Site cleanup down to Central Plateau footprint
- Protect human health, ecological resources, groundwater

Central Plateau cleanup is focused in three areas:

- **Inner Area** (~10 sq. miles)
 - Final footprint
 - Less than 2% of the original Site
- **Outer Area** (> 55 sq. miles)
 - Cleanup to be protective of future land uses
- **Groundwater**
 - Contain and remediate key groundwater contaminants



5 canyons



>1400 waste sites and pipelines



>900 structures



61 square miles contaminated groundwater



CH2MHILL

CH2M HILL Plateau Remediation Company Scope and Progress

John Ciucci
Chief Operating Officer

May 1, 2014



K Area

- ✓ K East Basin Demolished
- ✓ Interim Safe Storage of K East Reactor Complete
- ✓ K West Sludge Removed from the River Corridor
- ✓ Interim Safe Storage of K West Reactor Initiated
- ✓ K Area Final ROD Remedial Actions Complete and TSD Units Closed with the Exception of those Associated with K West
- ✓ K Area Groundwater Remedies Implemented
- ✓ 2,300 Tons of Scrap Nuclear Fuel Removed
- ✓ 109 Facilities Demolished
- ✓ 2 Waste Sites Remediated
- ✓ ~361,000 Tons of Soil Removed
- ✓ Initiate 100-K Transfer to Legacy Management

200 Areas

- ✓ Special Nuclear Material Shipped Off-site
- ✓ Slightly Irradiated Fuel Shipped to the Canister Storage Building for Safeguarding
- ✓ PFP Complex Reduced to Slab on Grade
- ✓ 18 Facilities Demolished
- ✓ U Plant Zone D&D Completed
- ✓ Initiate Purex, PFP & 200 West Ponds Zone Closure
- ✓ Initiate Cesium/Strontium Capsule Disposition



Central Plateau Cleanup

- ✓ 200 West Carbon Tetrachloride, Uranium and Technetium 99 Groundwater Remedies Implemented
- ✓ Conduct Additional Cleanup

400 Area

Fast Flux Test Facility in Surveillance and Maintenance

ROD = Record of Decision

TSD = Treatment, Storage, Disposal



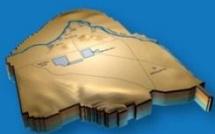


CH2MHILL

Progress 2008-2013

CH2MHILL Plateau Remediation Company

CH2M HILL Plateau Remediation Company is the prime contractor for the U.S. Department of Energy Richland Operations Office managing the 10-year, \$5.7-billion Plateau Remediation Contract to safely and efficiently reduce hazards to the inner most area of the Hanford Site.



OUR WORK is moving hazards away from the Columbia River and shrinking the active area of cleanup to just 75 square miles by:

- Maintaining safe and compliant operations
- Demolishing the Plutonium Finishing Plant to slab on grade in 2016
- Treating groundwater to shrink contamination plumes and protect the Columbia River
- Developing decision documents for long-term cleanup along the river
- Retrieving highly radioactive sludge stored 400 yards away from the river
- Managing some of DOE's highest hazard facilities and waste streams
- Partnering with small businesses and supporting the local community

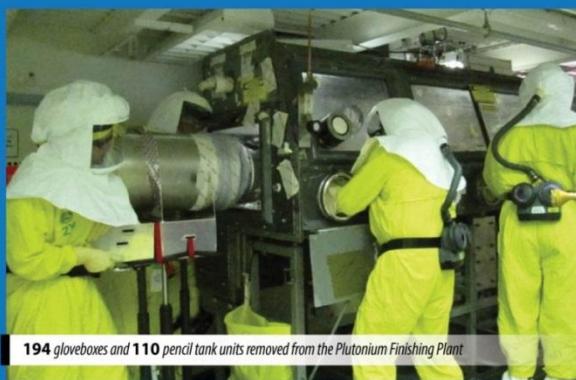
5 YEARS *of Progress on the Plateau*



331 mi² cleanup footprint reduction



157 buildings demolished



194 gloveboxes and 110 pencil tank units removed from the Plutonium Finishing Plant



1st phase of highly radioactive sludge retrieved



2,866 m³ of transuranic waste retrieved



5.4 billion gallons of contaminated groundwater treated, 50 tons of contaminants removed

January 2014 CHPRC1401-04

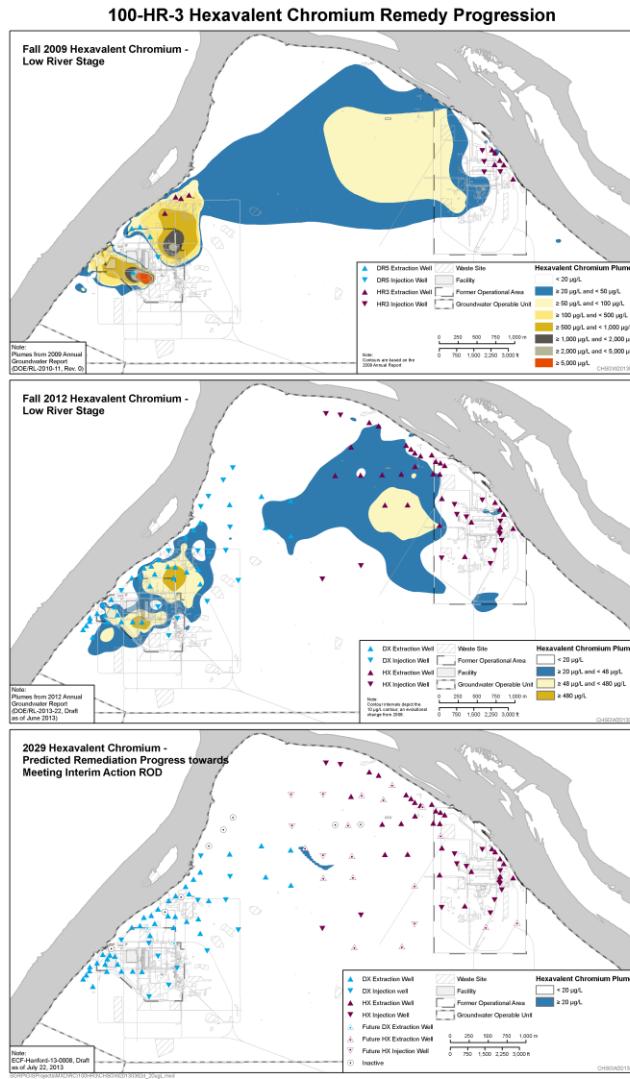


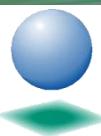


CH2MHILL

Progress in 2013

- Plutonium Finishing Plant deactivation reached 68% complete
- Treated 1.9 billion gallons of groundwater and removed a record 2 tons of contaminants
- Surpassed \$1 billion cumulative awarded to small businesses

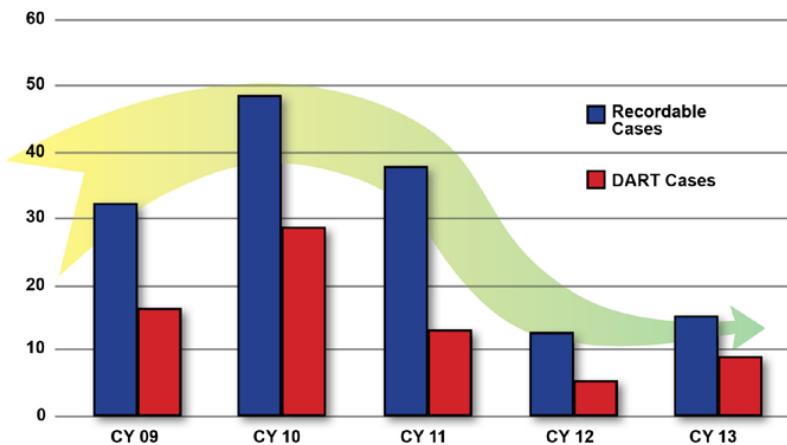




Safety

- Achieved DOE Voluntary Protection Program Star Status
- Surpassing DOE safety goals while performing high hazard work
- Excellent radiological and nuclear safety performance
- Continually improving
 - Strong safety culture during change
 - Encouraging workers to use questioning attitudes
 - Developing field work supervisors – leadership program

TRC-DART Cases



Met DOE FY2013 performance goals for total recordable and days away safety rates



- Implementing new subcontracting strategy (\$35-40 million savings) over 5 years
- Maximizing efficiencies and capabilities
 - Supplied-air breathing suits to maximize safety and productivity
 - Expanding 200 West Pump and Treat system to treat uranium
 - Installing wells to enhance and optimize treatment of groundwater plumes



Installation of a groundwater treatment well

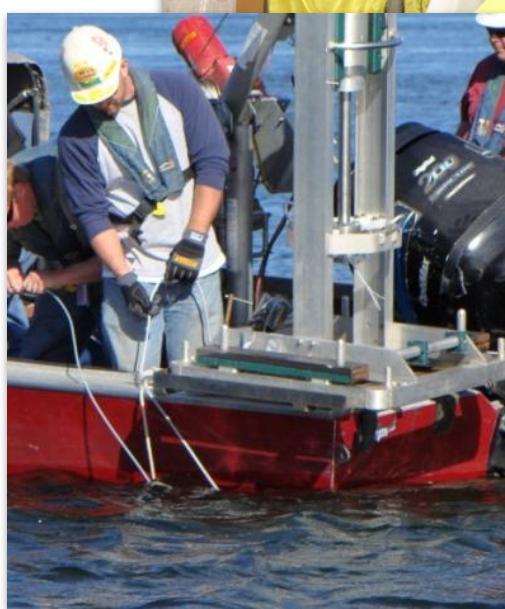


Issues/Challenges

- Mining efficiencies to accomplish more cleanup work
- Maintaining cleanout and waste processing capabilities
- Adapting to changing funding profiles and priorities



Preparing large pieces of contaminated equipment, called gloveboxes, for disposition at PFP



Installing aquifer tubes along the Columbia River



Work Planned for FY2014

- Plutonium Finishing Plant
 - Remove 13 gloveboxes
 - Disposition 25 pencil tanks units
 - Demolish 9 ancillary facilities
- Groundwater Treatment
 - Treat 1.8B gallons of contaminated groundwater
 - Remove more than 45,000kg of contaminants
- K Basin Sludge
 - Complete construction of K West Annex for radioactive sludge removal
 - Procure long-lead engineered equipment
- Waste Encapsulation and Storage Facility
 - Preliminary procurement/engineering for transferring highly radioactive cesium and strontium capsules to dry storage
 - Addressing the aging ventilation system



Removing a glovebox from PFP



Placing concrete for the KW Annex

Intro -- Hanford Site Services

- The Mission Support Contract offers a single contractor responsible for base operations and infrastructure at the Hanford Site, while other prime contractors focus on Hanford cleanup.
 - Site Infrastructure
 - Emergency Services
 - Security
- Saved over \$161 million since 2009





Mission Support Contract

Frank Armijo
President and General Manager
Mission Support Alliance

May 1, 2014



Scope of Work

- Providing critical infrastructure services to
 - Richland Operations Office
 - Office of River Protection
 - 5 other prime contractors
- Maintaining and consolidating site infrastructure and site-wide systems
- Ensuring 45 to 65 year old infrastructure has the capacity and reliability to support the cleanup mission
- Providing reliable services to ensure protection and safety of nuclear facilities
- Aligning services to support changing cleanup needs



There are over 6,000 electrical poles delivering power across the site



Water lines were installed in the 40s and 50s.

Complexity of Scope



Reliable infrastructure services are necessary for Hanford cleanup operations



Hanford has over 350 lane miles of roads

- Water Systems
 - Over 95 miles of buried pipe
 - 800M gallons of water used annually
- Electrical Utilities
 - 246 miles of power lines
 - 6,000 power poles
- Emergency Services & Systems
 - Radio Fire Alarm Reporting is essential to the safety and security of facilities and employee welfare
- Information Technology
 - Legacy applications to be updated
 - Cyber security improvements
- Roads
 - Over 5,700 passenger vehicles (daily average)
 - 350+ lane miles of paved roads
 - 500 trips by heavy haul trucks (daily average)



Safety

Maintaining safe and secure operations, and ensuring worker safety are MSA's key priorities

- Led and implemented site-wide safety programs
- ISO 14001 certification
- 3 VPP Star of Excellence Awards
- Confirmed security posture
- Graduated 22 new patrol officers

Supporting safety throughout the DOE complex

- Supported safety assessments at other DOE locations
- Provided mentoring on VPP campaigns
- Shared "Lessons Learned" database (OPEXShare)



MSA has experienced a 55% reduction in recordable injuries



Lock out/Tag out is a site wide safety program

Supporting Hanford Cleanup

Working closely with the Richland Operations Office to provide services for River Corridor and Central Plateau cleanup activities



MSA riggers provided support to glove box removal at PFP

- Upgraded Central Plateau water system to improve pressure control essential to nuclear facilities
- Provided highly-specialized services to support CHPRC's Plutonium Finishing Plant glove box removal
- Provided IT support to help improve electronic processes to increase efficiency with patient flow at site medical provider
- Implementing Waste Sampling and Characterization Facility shutdown plan



Supporting Hanford Cleanup

MSA identifies efficiencies and implements programs and services to accelerate cleanup

- 630 fuel efficient vehicles in the DOE fleet
- 500+ square miles of secure wireless transport
- 9,000 digital phone lines (VoIP)
- 2,000+ server-based workstations deployed (thin clients)
- 1,555 metric tons of recycled materials
- 2.5 million square feet of managed facilities
- \$161 million in cost savings to date
- Over \$430 million in small business subcontracting since 2009; 40% over goal



Hanford has over 500 square mile of secure wireless transport

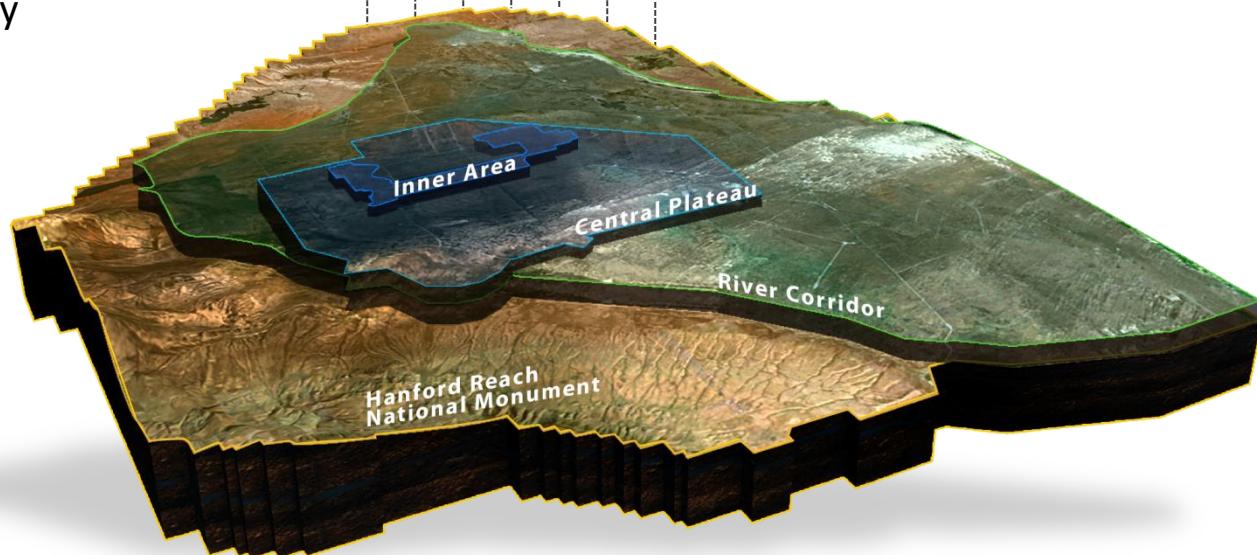


MSA is adding electric and alternative fuel vehicles



2014 and 2015

-  **Implement Commercial Service Delivery Model**
-  **Right-Size the Infrastructure**
-  **Lead Site-Wide Integration**
-  **Be a National Leader in Clean Energy**
-  **Drive Innovations and Cost Savings**
-  **Support Waste Complex Operations**
-  **Excel in the Safe and Secure Performance of Work**





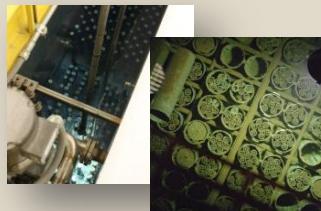
HANFORD SITE CLEANUP BY THE NUMBERS

RICHLAND OPERATIONS OFFICE

SIX of Hanford's nine reactors have been "cocooned"



100 percent of the site's spent fuel has been moved to dry storage



743 buildings have been demolished



859

waste sites have been remediated



12K

cubic meters of underground waste have been removed



10

billion gallons of contaminated groundwater have been treated



Conclusion

- Richland is making tangible and visible cleanup progress at Hanford and performing cleanup in a predictable and safe manner
- Richland has a strategy, vision and plan and we will continue to work together with EPA, Ecology and our stakeholders to ensure continued success

