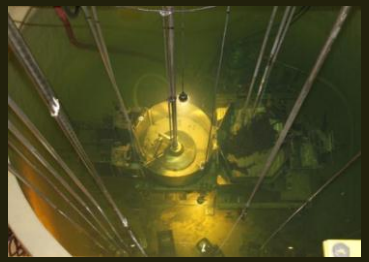
U.S. DEPARTMENT OF ENERGY | Richland Operations Office

Hanford Advisory Board
DOE-RL Update

Jonathan "JD" Dowell

Assistant Manager for River and Plateau

June 6, 2013



View favorites, feeds, and history (Alt+C)

The 2015 Vision

Hanford Site Cleanup

Safe and Effective Cleanup that Protects the Columbia River

- *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*

Richland Operations Office

N Area

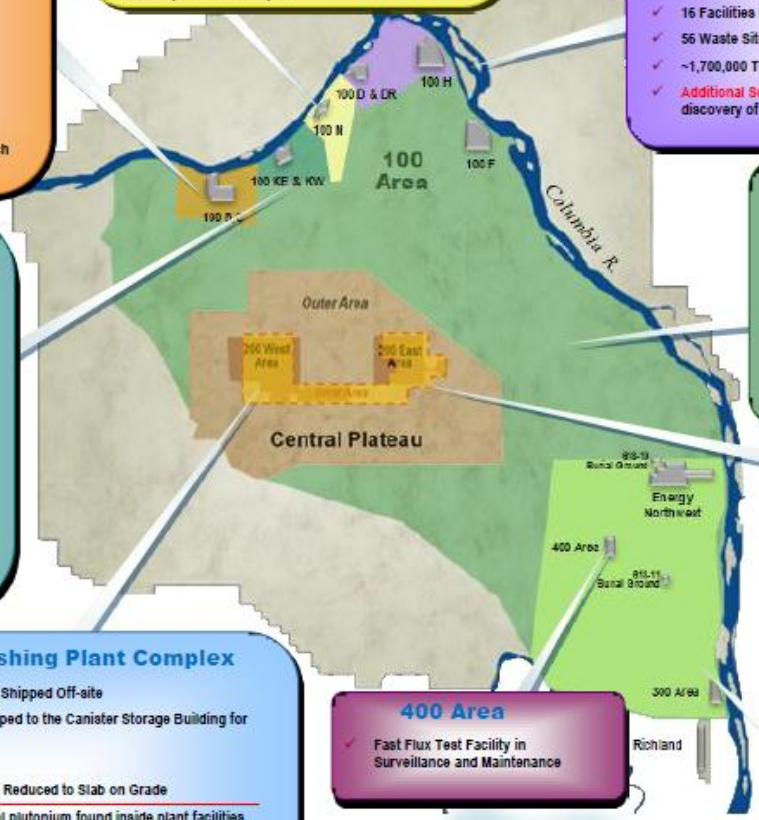
- ✓ Interim Safe Storage of N Reactor Complete
- ✓ All N Area Final ROD Remedial Actions Complete and TSD Units Closed
- ✓ All N Area Groundwater Remedies Implemented
- ✓ 108 Facilities Demolished
- ✓ 61 Waste Sites Remediated
- ✓ ~157,000 Tons of Soil Removed
- ✓ Additional Scope: Discovery of additional waste sites and additional contamination from past transportation fuel spills

B & C Area

- ✓ Interim Safe Storage of C Reactor Complete
- ✓ B Reactor Designated as a Museum or Interim Safe Storage Complete
- ✓ All B & C Area Final ROD Remedial Actions Complete
- ✓ All B & C Area Groundwater Remedies Implemented
- ✓ 6 Facilities Demolished
- ✓ 40 Waste Sites Remediated
- ✓ ~381,000 Tons of Soil Removed
- ✓ Additional Scope: Extensive Chromium Contamination at the B/C Area (C-7), dug trench to groundwater to removed source

D & H Area

- ✓ Interim Safe Storage of D, DR, and H Reactors Complete
- ✓ All D & H Area Final ROD Remedial Actions Complete
- ✓ All D & H Area Groundwater Remedies Implemented
- ✓ 16 Facilities Demolished
- ✓ 56 Waste Sites Remediated
- ✓ ~1,700,000 Tons of Soil Removed
- ✓ Additional Scope: More extensive chromium contamination and discovery of additional waste sites



IU2 & IU6 Area

- ✓ Interim Safe Storage of F Reactor Complete
- ✓ All IU2 & IU6 Area Final ROD Remedial Actions Complete
- ✓ All IU2 & IU6 Area Final ROD Groundwater Remedial Actions Complete
- ✓ 1 Facility Demolished
- ✓ 50 Waste Sites Remediated
- ✓ ~962,000 tons of Soil Removed

K Area

- ✓ K East Basin Demolished
- ✓ CHALLENGE: Interim Safe Storage of K East Reactor
- ✓ CHALLENGE: K West Sludge Removed from basin
- ✓ Interim Safe Storage of K West Reactor Initiated
- ✓ All K Area Final ROD Remedial Actions Complete and TSD Units Closed with the exception of those associated with K West
- ✓ All 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
- ✓ Additional Scope: Additional waste sites and contamination resulting from past operations.

Central Plateau Cleanup

- ✓ All 200 West Carbon Tetrachloride, Uranium and Technetium 99 Groundwater Remedies Implemented
- ✓ Conduct Additional Cleanup as Funds Become Available

Plutonium Finishing Plant Complex

- ✓ All Special Nuclear Material Shipped Off-site
- ✓ Slightly Irradiated Fuel Shipped to the Canister Storage Building for Safe Guarding
- ✓ 18 Facilities Demolished
- ✓ CHALLENGE: PFP Complex Reduced to Slab on Grade
- ✓ Additional Scope: Additional plutonium found inside plant facilities and found adhered to piping, process equipment, exhaust ducts, and filters. (~10kg) The details of challenges include:
  - ~10 Kilograms of plutonium holdup remaining in process equipment, exhaust ducts and filters, in the Plutonium Reclamation Facility, piping, drain lines, etc.
  - Residual acids and hazardous chemicals in pipes and tanks

400 Area

- ✓ Fast Flux Test Facility in Surveillance and Maintenance

300 Area

- ✓ All 300 Area Final ROD Remedial Actions Complete and TSD Units Closed
- ✓ All 300 Area Groundwater Remedies Implemented
- ✓ CHALLENGE: 186 Facilities Demolished
- ✓ 95 Waste Sites Remediated
- ✓ ~923,000 Tons of Soil Removed
- ✓ CHALLENGE: Final Remediation of 618-10 & 618-11 Burial Grounds
- ✓ Additional Scope: Discovery of high-level radioactive contamination below 324 Building

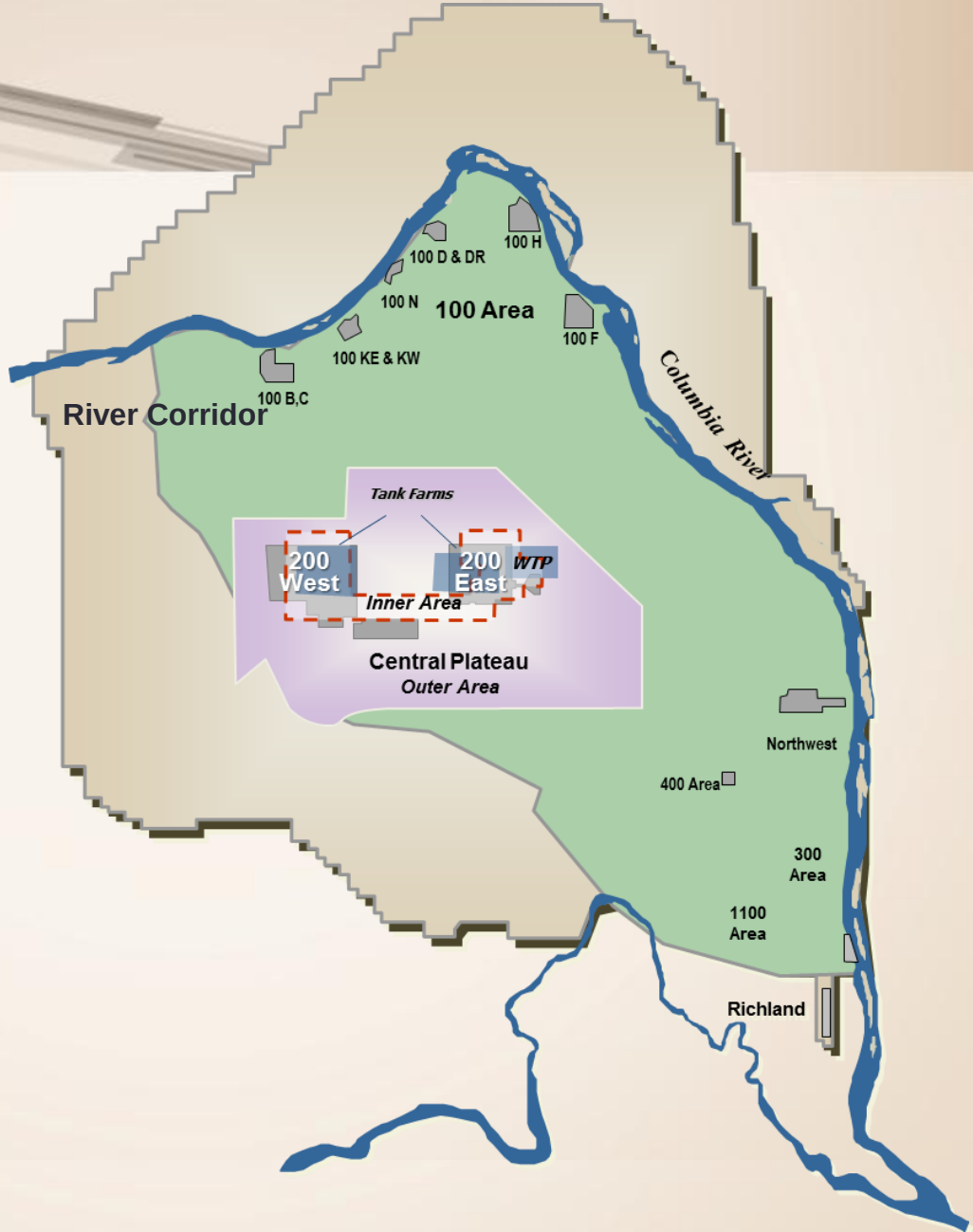
IU = Isolated Unit
ROD = Record of Decision
TSD = Treatment, Storage, Disposal

Significant Progress Achieved on Hanford 2015 Cleanup Vision

- Placed 78 percent (7 of 9) of nuclear reactors in Interim Safe Storage/preserved
- Demolished 74 percent (385 of 522) of contaminated/excess facilities
- Remediated 73 percent (731 of 1,012) of waste sites
- Disposed of 14.7 million tons of contaminated waste in Environmental Restoration Disposal Facility
- Removed all remaining spent nuclear fuel (~2,300 tons) from facilities along the Columbia River and placed in dry storage in central Hanford
- Treated 7.2 billion gallons of contaminated groundwater, removing approx. 35 tons of contaminants
- Stabilized, packaged 20 tons of plutonium material left in the Plutonium Finishing Plant after the Cold War. Shipped plutonium offsite in 2009. Demolition of Plutonium Finishing Plant 68 percent complete (55 of 81 facilities demolished).
- Reduced active cleanup footprint by 73 percent (425 of 586 square miles)

Updates

- **Project status and challenges**
- **News across site**
- **Sequestration effects**
- **Path Forward**



River Corridor Contract Completion Goals *(April 2013)*

Legend:
Complete/ / Total
Facility Complete = Loadout complete
Waste site complete = WSRF signed
sm - Square miles

100-D - 2014 - 2016 F/C (8 sm – inclds H)
Facilities – 12/13
Waste Sites – 70/98
Risk: Unknown extent of contamination in high priority chromium sites
Discovery Waste Sites – 8

100-H - 2014 - 2016 F/C (sm incld in 100-D)
Facilities – 2/2
Waste Sites – 40/58
Discovery Waste Sites - 9

100-N - 2013 - 2015 F/C (3 sm)
Facilities – 111/114
Waste Sites – 39/114
Risks: Cultural reviews
Discovery Waste Sites - 2

100-F - 2012 (2 sm)
Facilities – 2/2
Waste Sites – 55/55

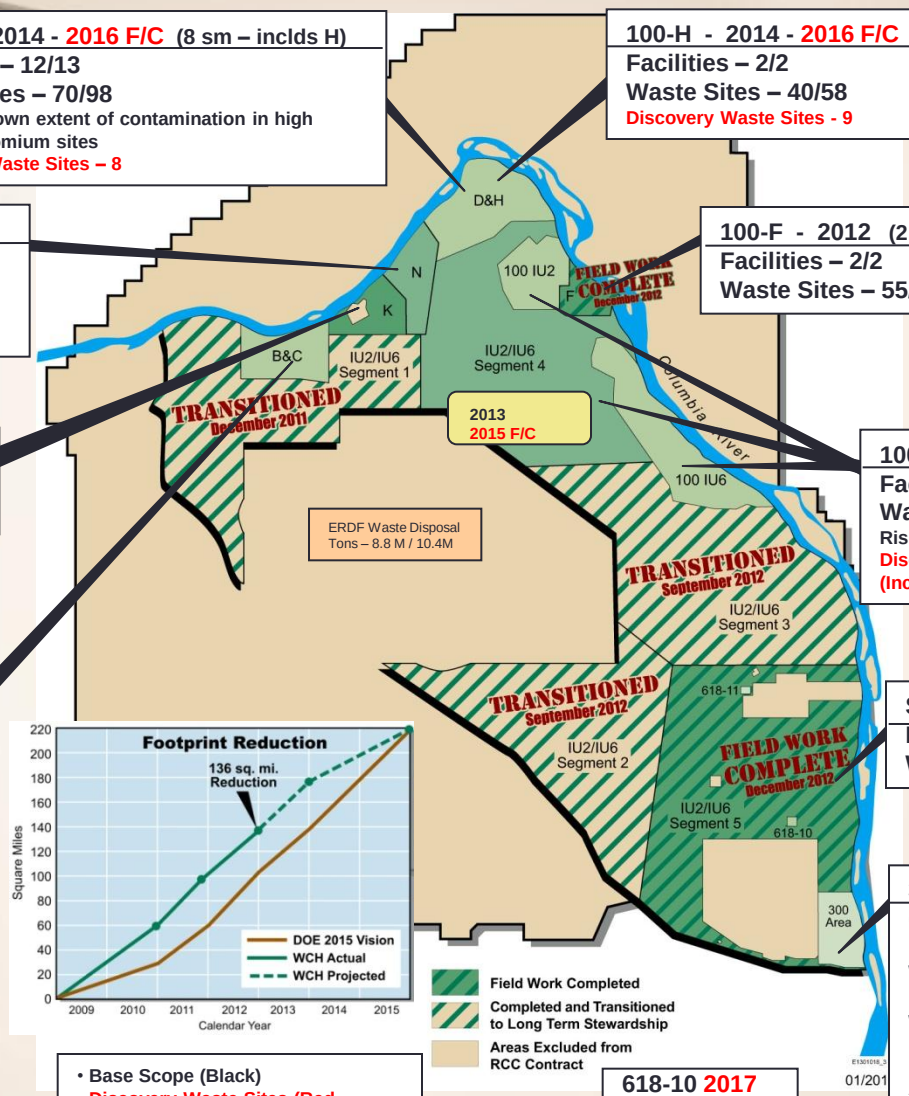
100-K - 2012 – 2014 F/C (3 sm)
Facilities – 1/1
Waste Sites – 12/18

100-IU - 2014 - 2015 F/C (13 sm)
Facilities - 0
Waste Sites – 54/93
Risk: Cultural review
Discovery Waste Sites – 8
(Includes Seg 4)

100-B/C - 2014 & F/C (4 sm)
Facilities – 0/3
Waste Sites – 34/36

Seg 5/400 Area – 2014 (55 sm)
Facilities – 14/14
Waste Sites – 1/1

300 Area - 2015 & Post 2015 (2 sm)
Facilities – 140/167
Waste Sites – 60/116
Risks:
Waste site 300-296 below 324 REC B-Cell
Funding restrictions
Impact of retained facilities south of Apple Street
Discovery Waste Sites - 11



Status as of April 2013
% complete: 87.4%
CPI/SPI/CSPI: 1.16 / 1.01 / 1.09
282 of 316 buildings completed
365 of 589 waste sites completed
Discovery waste sites - 38
136 of 220 sq miles completed

- Base Scope (Black)
- Discovery Waste Sites (Red - Forecasted)

618-10 2017
618-11 2018

U.S. DEPARTMENT OF ENERGY | Richland Operations Office

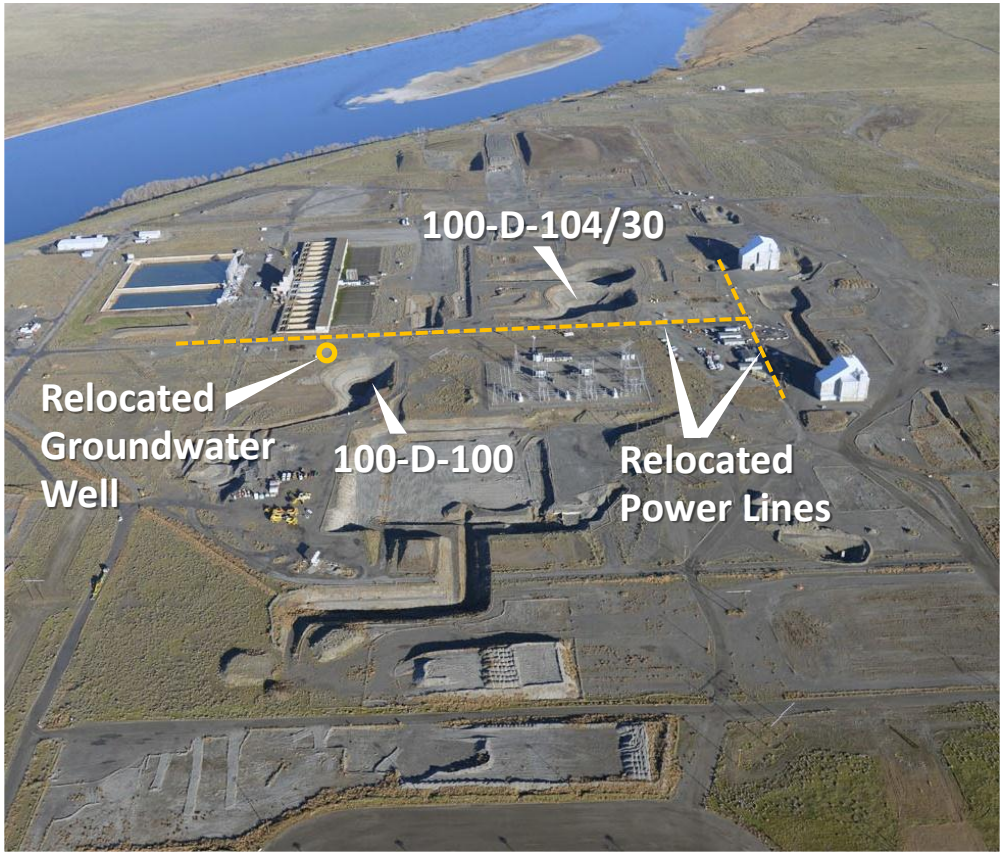
River Corridor: 300 Area Cleanup Progress

- Removing source term contaminants protects groundwater and the river
- As of March 2013:
  - Demolished 139 of 167 facilities
  - Cleaned up 60 of 116 waste sites

For nearly 60 years, the 300 Area was the center of Hanford's radiological research and fuel fabrication.

River Corridor: D/H Reactor Chasing Chromates to the Source

- Remediation of 100-D-100 deep chromium contamination site continues; scheduled to complete in 2013
- Remediation of other deep chromium contamination sites (100-D-30/104) have also started and should finish by Sept 2013



River Corridor: D&D and Field Remediation work remains focus for 2013 in N and D/H

- 24 waste sites to go in 100-N Area, including a deep vadose zone petroleum plume being treated with in-situ bioremediation
- D4 work is complete

River Corridor: 100-K Area/105KW Annex

Dismantlement of Annex wall forms (post-Sequester)

Central Plateau and River Corridor: Groundwater Treatment

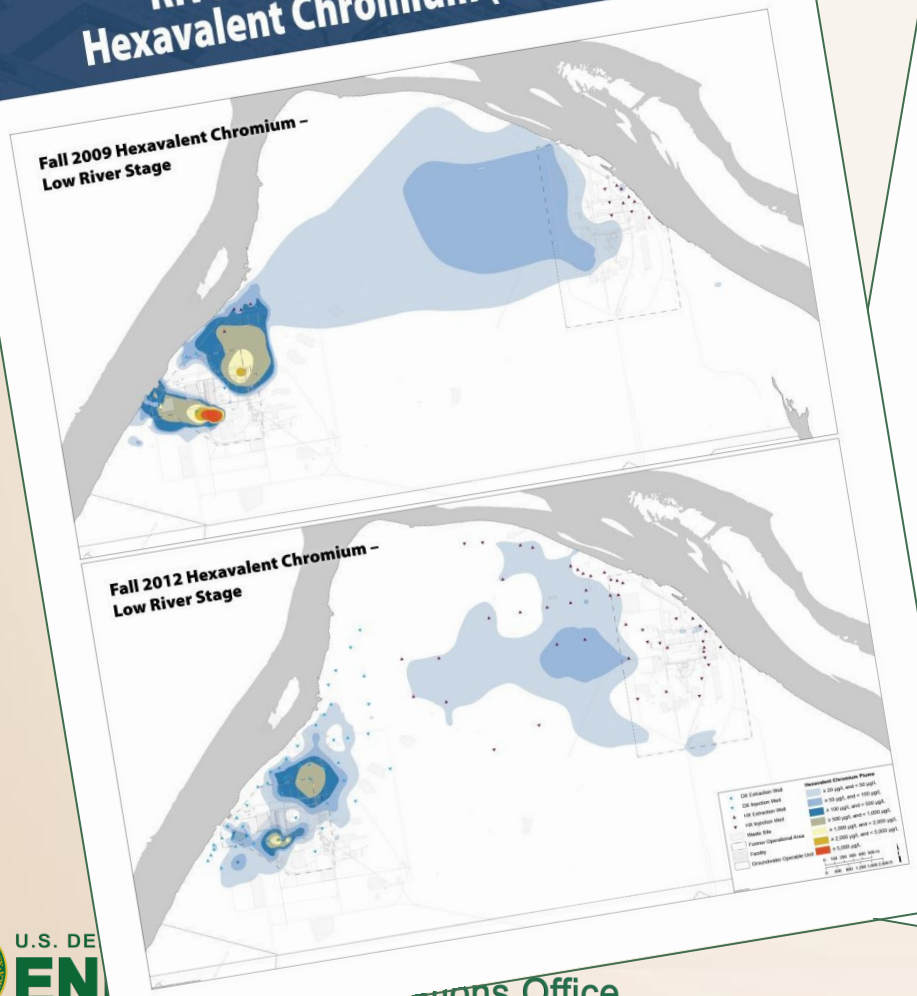
- **Central Plateau**:
  - Performing operational testing at 200 West Pump and Treat facility
  - Continued meeting all cleanup levels specified in Record of Decision
  - Treated 1.7 billion gallons of groundwater to date

Senator Patty Murray at 200 West Pump and Treat Facility

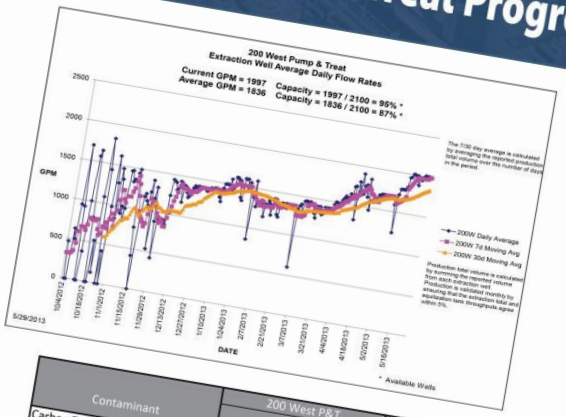
- **River Corridor**:
  - Reached treatment system capacity goal of 2,500 gallons per minute
  - Treated 5.2 billion gallons of groundwater to date

Groundwater Cleanup Progress

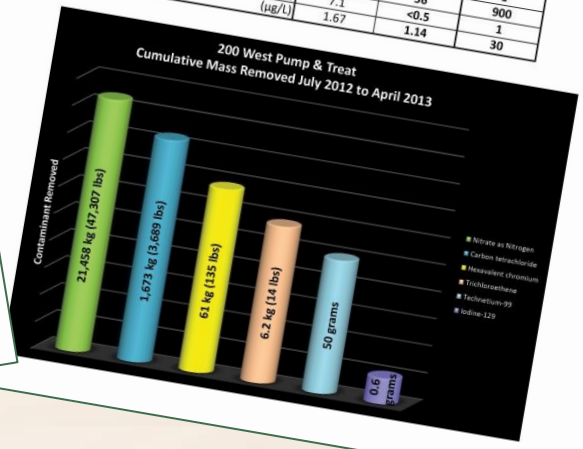
River Corridor Cleanup of Hexavalent Chromium (100-HR-3)



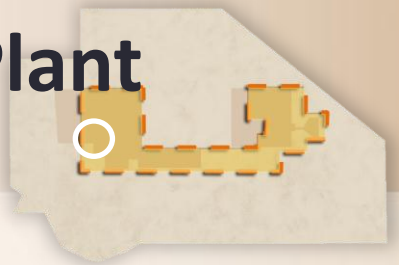
200 West Pump and Treat Progress



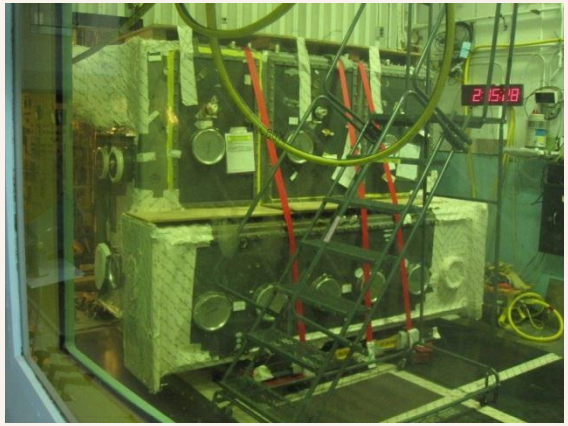
Contaminant		200 West P&T Influent	Effluent	ROD Cleanup Level
Carbon Tetrachloride	(µg/L)	1200	<1	3.4
Nitrate as Nitrogen	(mg/L)	31.3	10.5	10
Chromium	(µg/L)	41.9	8.26	100
Hexavalent Chromium	(µg/L)	45.9	<2	48
Iodine-129	(pCi/L)	0.22	<0.214	1
Technetium-99	(pCi/L)	1377	56	900
Trichloroethene	(µg/L)	7.1	<0.5	1
Uranium	(µg/L)	1.67	1.14	30



Central Plateau: Plutonium Finishing Plant



- 5 Glove boxes removed in the last Quarter
- Removed 191 of 238 glove boxes
- Removed 110 of 196 highly contaminated pencil tanks
- Demolished 55 of 81 facilities



Completed 3 glove boxes from room 228-B; HC-15 A, B & C

Below: Completed 2 glove boxes from room 235A-2; HA14CC & HA13C

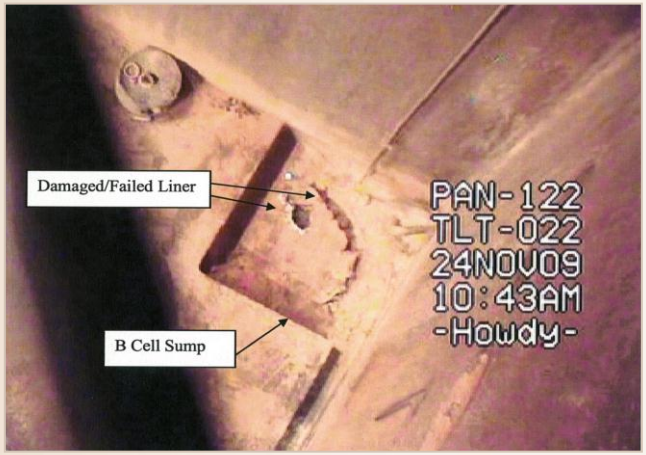
Challenge: Plutonium Finishing Plant Crane

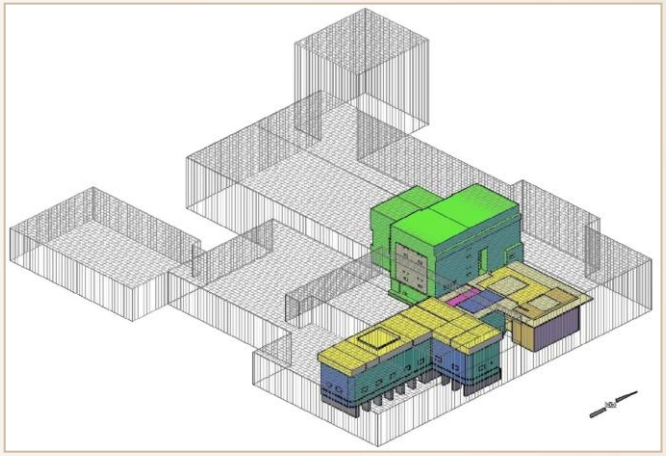
- Plutonium Reclamation Facility Crane
  - Low Availability; down more than 160 calendar days in FY13
  - Multiple problems
  - Evaluating alternatives to restore crane functionality
- Project Performance
  - Less than planned
  - Completed evaluation of ways to enhance acceleration of D&D activities; implementation of enhancements under way

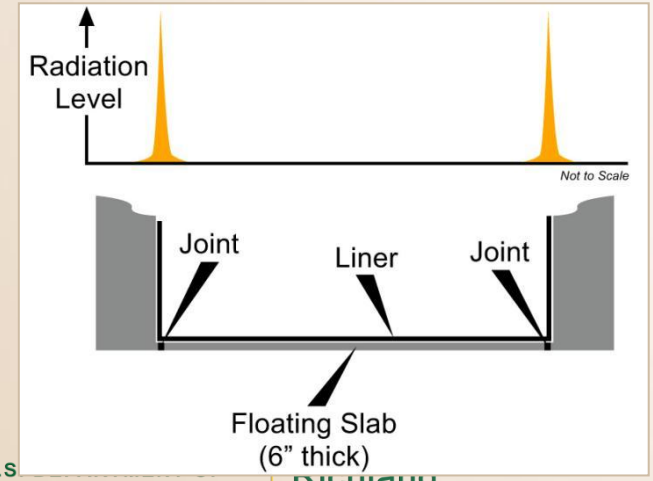
PRF drive belt

RL and PFP workers during evaluation to enhance D&D activities

Challenge : 324 Chemical Engineering Laboratory







Max dose 8,900 R/hr

Challenge: 618-10 Burial Ground Retrieval

- 618-10 waste trench remediation stopped in December due to NDA data issues for concreted drums.
- New safety analysis has been approved and remediation will restart in early July after completion of readiness review.
- Reanalysis of data for six concrete drums disposed of at ERDF are suspect TRU and are being excavated this week.
- Planning to complete trench excavation in 2014
- Remediation of Vertical Pipe Units scheduled to start in late 2014.

Workers excavating, removing contaminated soil and debris at 618-10

Workers sampling drums retrieved from one of the trenches

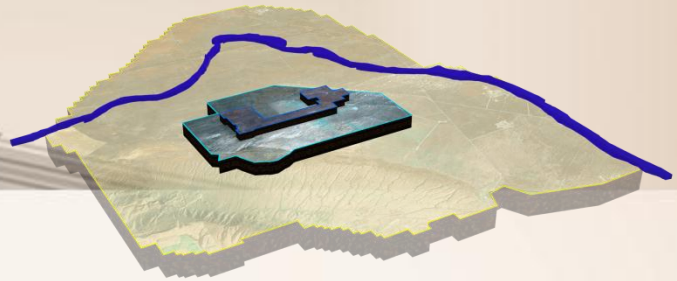
Challenge: 340 Vault

The 340 Vault is 40 feet long, 29 feet wide 25 feet high. It has a lift weight of approx. 1,100 tons and transport weight of 1,538 tons.

Challenge: Aging Infrastructure

- Water line break in 200 Area
- 24-inch pipe that burst dispersing ~400,000 gallons of water
- Third time a portion of this line has leaked
- No cribs or radiological areas were affected
- The break was isolated and repaired

News Across the Site



- Ernest Moniz confirmed as 13th Secretary on 21 May
- Tri-Party Agreement Change Package signed in April
- Sequestration of 7.8% executed in Feb
- President's Budget - $993M
- Reprogramming at ORP has "bump and roll" impact with work at RL

Sequestration

Overall Sequestration Reduction is $82M
- FY 2012 omnibus level of $1.025B to FY13 enacted level of $943M

Workforce Impacts (Total workforce pre-sequestration ~4,500)
~1,800 furloughed /~200 laid off /~200 subcontractor jobs affected

Major Project Impacts
- 15% reduction to disposals at ERDF (1.1 vs.1.3 million tons).
- Work stopped at 105 KW Annex; delays initiation of sludge off the river.
- 17% reduction in glove boxes being removed at PFP (15 vs.18).
- 60% reduction in pencil tanks removed at PFP (20 vs.50).
- 21% reduction in groundwater treatment at 200W Pump & Treat (1500 vs. 1900 GPM).

Fiscal Year 2014 Budget Request

PBS	PBS Title	FY 2012 Appropriation	FY 2013 Enacted	FY 2014 President's Budget
RL-0011	NM Stabilization and Disposition - PFP	$99,195	$160,056	$142,890
RL-0012	SNF Stabilization and Disposition	$111,952	$89,506	$98,518
RL-0013	Solid Waste Stabilization and Disposition – 200 Area	$143,482	$118,732	$130,322
RL-0030	Soil and Water Remediation - Groundwater/Vadose Zone	$190,705	$134,628	$141,720
Subtotal	**Central Plateau Remediation**	**$545,334**	**$502,922**	**$513,450**
RL-0041	Nuclear Facility D&D - River Corridor Closure Project	$329,048	$295,430	$327,642
RL-0040	Nuclear Facility D&D - Remainder of Hanford	$56,121	$60,292	$65,992
Subtotal	**River Corridor and Other Cleanup Operations**	**$385,169**	**$355,722**	**$393,634**
RL-0100	Richland Community and Regulatory Support	$19,540	$17,969	$14,701
RL-0020	Safeguards and Security	$69,078	$63,668	$69,078
RL-0042	Nuclear Facility D&D - Fast Flux Test Facility Project	$2,703	$2,562	$2,545
Total - RL	**Richland Field Office Funding Summary**	**$1,021,824**	**$942,843**	**$993,408**

Hanford Cleanup Priorities: 2016 – 2020

1. Complete any Remaining 2015 Vision Projects

2. Complete any Remaining River Corridor Cleanup

3. Continue Groundwater Cleanup and Address Groundwater Threats

4. Provide Essential Infrastructure for Cleanup

5. Serve as a Primary Source of Contact-Handled and Remote-Handled Waste for the Waste Isolation Pilot Plant (WIPP)

6. Eliminate EM's Largest Threat (Fukushima-like event) to the Public by Placing Cesium/Strontium Capsules in Dry Storage

7. Reduce Security Costs by More than $20 Million Per Year by Shipping Category 1 Spent Fuel Off Site

8. Clean up the Central Plateau Outer Area and Shrink the Cleanup Footprint of the Hanford Site to Less than 10 Square Miles (98 percent reduction)

9. Clean Up Central Plateau Inner Area Waste Sites

10. Complete First Remediation of a Large Processing Canyon in the EM Complex

Footprint Reduction

- River Corridor, Reach ~510 square miles
- Central Plateau Outer Area ~65 square miles
- Central Plateau Inner Area ~10 square miles

Find Out More

Go to

www.hanford.gov

to learn about

- The latest news on Hanford cleanup
- Hanford newsletters
- Hanford social media sites
- Public events

U.S. DEPARTMENT OF ENERGY | Richland Operations Office

Find Out More

Go to

www.hanford.gov/hanfordforward

For:

- DOE's new quarterly e-magazine: *Hanford Forward*
- Information about cleanup activities at the Hanford Site.
- Highlights Hanford news: milestones reached, efficiencies gained and technological innovations implemented on site in support of the cleanup mission.
- *Hanford Forward* is published and distributed electronically quarterly; a "print" feature creates a printable PDF version if desired.