



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

Idaho Cleanup Project Progress to Date Citizens Advisory Board

Jack Zimmerman
Deputy Manager
Idaho Cleanup Project

April 19, 2018

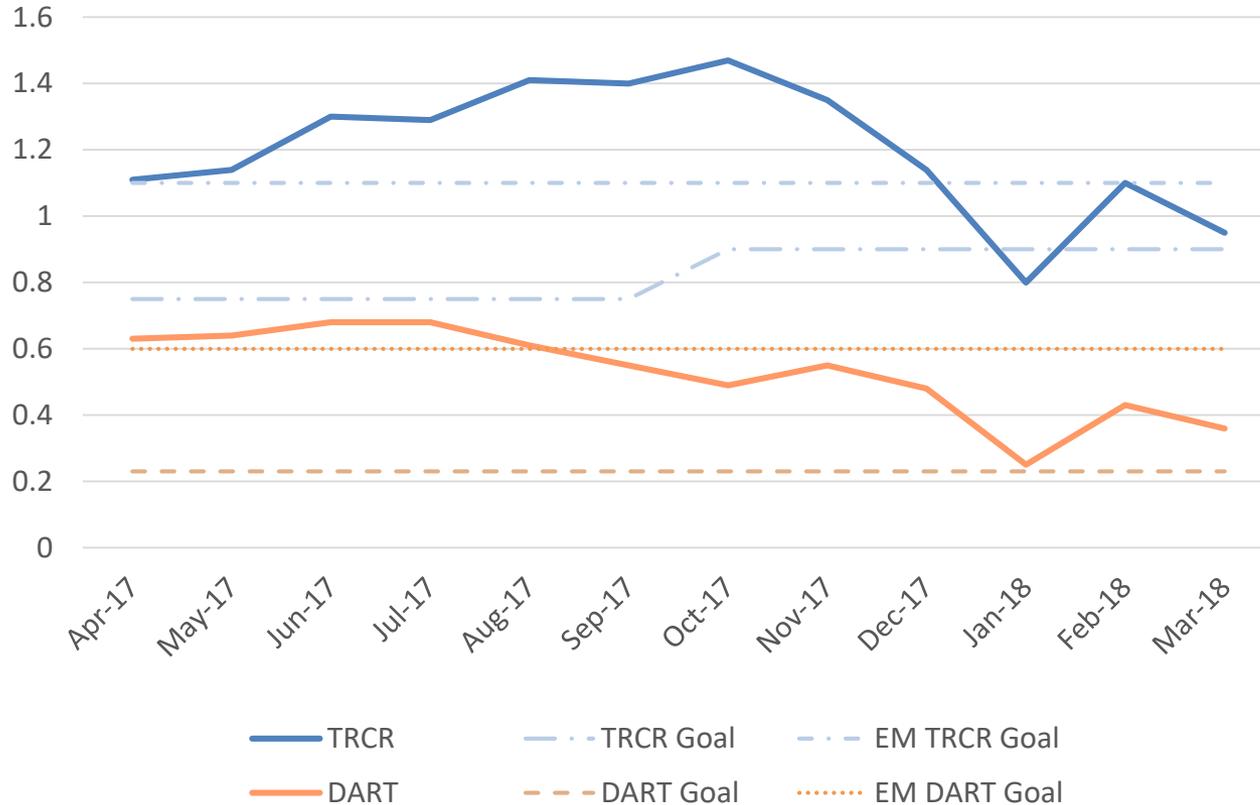
Idaho Cleanup Project Scope

- Transuranic Waste Disposition
- Advanced Mixed Waste Treatment Project (AMWTP)
- Comprehensive Environmental Response Compensation Liability Act (CERCLA) Remediation
 - Waste Area Group (WAG) 1 – Test Area North (TAN)
 - Waste Area Group (WAG) 2 – Test Reactor Area (TRA) - **Complete**
 - Waste Area Group (WAG) 3 – Idaho Nuclear Technology and Engineering Center (INTEC)
 - Waste Area Group (WAG) 4 – Central Facilities Area (CFA) - **Complete**
 - Waste Area Group (WAG) 5 – Power Burst Facility (PBF)/Auxiliary Reactor Area (ARA) - **Complete**
 - Waste Area Group (WAG) 6 – Experimental Breeder Reactor No. I (EBR-I) - **Complete**
 - Waste Area Group (WAG) 7 – Radioactive Waste Management Complex (RWMC)
 - Waste Area Group (WAG) 9 – Argonne National Laboratory – West (ANL-W) - **Complete**
 - Waste Area Group (WAG) 10 – Site-wide Miscellaneous Sites/Snake River Plain Aquifer
- Idaho CERCLA Disposal Facility

Idaho Cleanup Project Scope (cont.)

- Sodium Bearing Waste Treatment
- Calcine Disposition
- Spent Nuclear Fuel Management
- Decontamination and Decommissioning: Materials and Fuels Complex

ICP Core Injury Rates



February 2018

- Six First Aid Cases, Three Recordable Injuries, and 2 Restricted Cases
- Two ORPS Reportable Occurrences:
 - Missed H2 sampling/purge at CPP-749 Outdoor Fuel Storage Facility
 - Electrician injured finger when using pipe threading machine



Pipe Threading Machine

March 2018

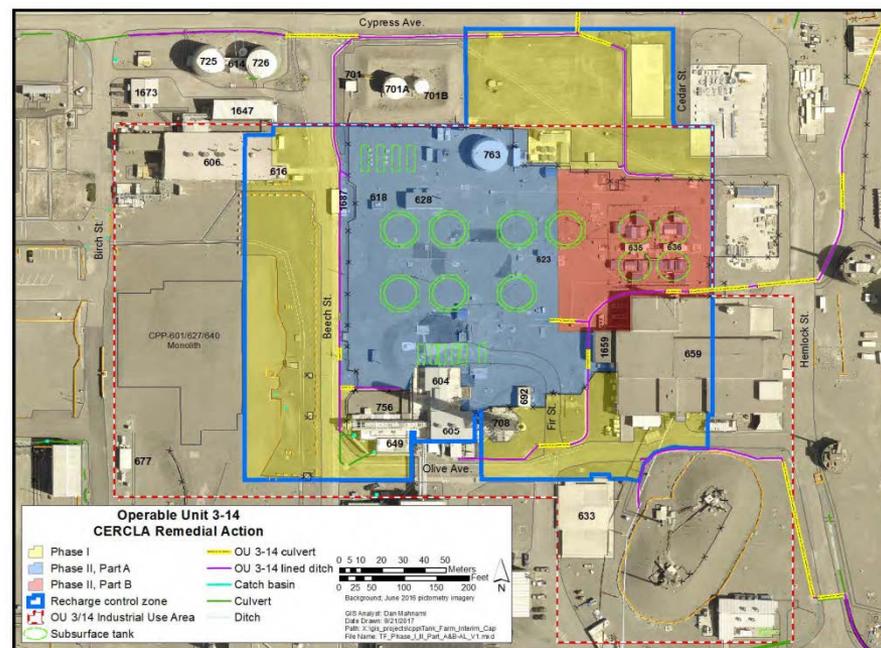
- 10 First Aid Cases and No Recordable Injuries
- Two ORPS Reportable Occurrences:
 - Forklift contacts employee—near miss
 - Sleeve failure during U-233 waste bag-out from CPP-659, New Waste Calcining Facility steam spray booth glovebox.

CERCLA Remediation Project Objectives

- WAG 1: Test Area North (TAN)
 - TAN Groundwater Remediation
- WAG 3: Idaho Nuclear Technology and Engineering Center (INTEC)
 - Complete the work associated with the OU 3-14 Record of Decision
 - Operate the Idaho CERCLA Disposal Facility (ICDF) to compliantly disposition CERCLA waste
- WAG 7: Radioactive Waste Management Complex (RWMC)
 - **Exhume 5.69 acres of buried waste (Completed 4.82 acres as of March 31, 2018)**
 - Complete the work associated with the OU 7-13/14 Record of Decision
- WAG 10: Site Wide
 - Maintain site wide institutional controls, and operations and maintenance program
 - Maintain groundwater monitoring program
 - Maintain the New Site Identification Process for future CERCLA sites

Key Activities/Actions:

- WAG 1
 - After two years of In Situ Bioremediation (ISB) injections into well TAN-2272, the treatment had little impact on the residual TCE source impacting TAN-28. An alternate strategy to reach this TCE source began with injections into well TAN-37 in April.
- WAG 3
 - Complete work associated with the three phases of the OU 3-14 remedy.
 - Phase I - Installation of lined ditches and culverts and low permeability pavement on the recharge control zone around the Tank Farm (completed in 2012).
 - Phase II
 - Part A - Installation of low permeability pavement over the western 2/3 of the Tank Farm (completed in October, 2017).
 - Phase II Part B - Installation of low permeability pavement over the eastern 1/3 of the Tank Farm (to be completed when the last four tanks are closed).
 - Phase III - Installation of an ET CAP over the entire Tank Farm at INTEC closure.

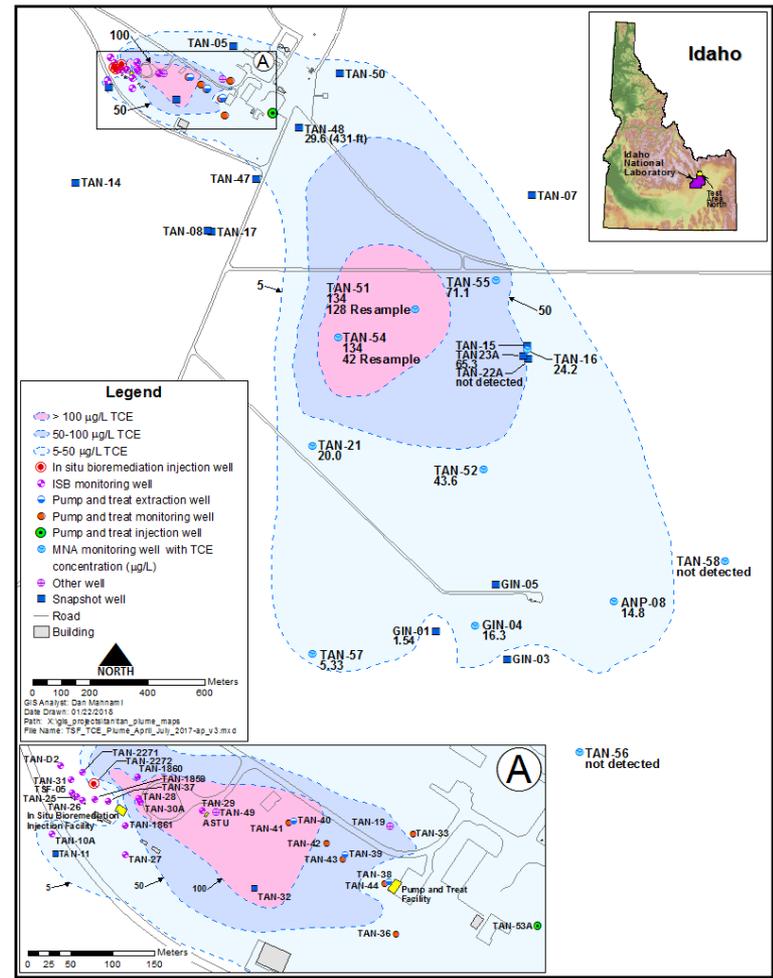


Tank Farm remedy components. Phase 1 (yellow), Phase II Part A (blue), and Phase II Part B (red).

CERCLA Remediation – WAGS 1, 3 and 10 (cont.).

- Ongoing Activities:

- WAG 1 - Continue ISB Rebound Test in source zone.
 - Conditions are slowly changing, however more time is needed for conditions to return to background to evaluate if TCE concentrations will rebound.
- Begin ISB injections into well TAN-37 to attempt to reach residual TCE source affecting TAN-28 - Next nutrient injection (WilClear Plus) April, 2018.
- WAG 3 - Continue perched water monitoring and recharge controls at INTEC.
- WAG 10 –
 - Continue monitoring and institutional controls.
 - Continue New Site evaluation/remediation.

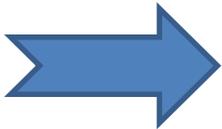


TAN TCE Plume

Dashboard Legend



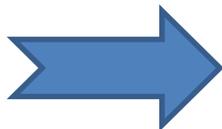
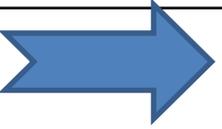
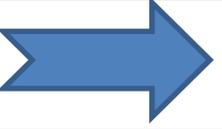
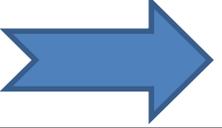
Ahead of schedule, under budget, better than expected.



On schedule, on budget, performance as expected.



Behind schedule, over budget, performance less than expected.

Key Questions	Dashboard Indicator	Comments
Schedule Performance		Activities slightly ahead of schedule.
Cost Performance		Cost performance just slightly under budget.
Impact on employment/economic development		Project will continue at a similar level of effort for several years.
Affect on agreements		Project continues to meet regulatory milestones.
Impact on safety and environment		No ongoing safety issues; Safety goals are being met.
Impact on cleanup DOE-wide		No impact on DOE-wide cleanup.

Context: Buried Waste Exhumation

- What is the Waste: TRU waste, principally from Rocky Flats, buried in pits and trenches at the Subsurface Disposal Area at RWMC prior to 1970.
- Potential Risks: Potential contamination of the Snake River Plain Aquifer to above drinking water standards (volatile organic compounds primary contaminants of concern).
- Settlement Agreement: Part of FFA/CO CERCLA remediation of the buried waste under OU 7-13/14 ROD.
- How treated/disposed: Packaged to meet acceptance criteria for disposal at WIPP.
- Current Budget: Current Fiscal Year Budget for buried waste exhumation is \$31.3M.

CERCLA Remediation - WAG 7 Objectives

- Complete remediation work in accordance with the Record of Decision (ROD) for OU 7-13/14
- Conduct Targeted Waste Retrieval at the Accelerated Retrieval Projects (ARP) and disposition waste:
 - ARP I, II, III, IV, V, VI and VII - **completed**
 - ARP VIII: 1.54 acres out of 1.72 acres have been exhumed as of 3/31/18.
 - ARP IX: Buried waste exhumation will begin in 2018 when ARP VIII exhumation is complete.
- ARP I & VI D&D - **completed**
- Complete in situ grouting of 21 locations - **completed**
- Subsurface solvent vapor extraction (OCVZ)
- Environmental monitoring and institutional controls

Key Activities/Actions:

- Continued ARP VIII waste exhumation. 1.54 of 1.72 acres have been exhumed as of March 31, 2018 (89% complete)
- Since 1996, 253,348 pounds of volatile organic compounds have been removed using vapor extraction as of March 31, 2018.

Ongoing Activities:

- Continue to exhume targeted buried waste in ARP VIII.
- Continue organic vapor extraction.
- Continue SDA cap design

Key Scope: FY 18 CERCLA Performance

- Waste Exhumation (Acres) (FYTD) as of March 31, 2018

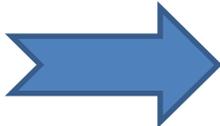
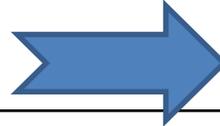
Target: 0.23

Actual: 0.107

Buried Waste Exhumation is slightly behind Fluor’s work plan, because exhumation crews have been supporting roaster oxide preparation work. Overall, exhumation is two years ahead of the regulatory schedule.



WAG 7 Dashboard

Key Questions	Dashboard Indicator	Comments
Schedule Performance		As of March 31, 2018, 4.82 acres (84.7%) of the required total of 5.69 acres have been exhumed. Project is about two years ahead of regulatory requirements.
Cost Performance		Cost performance under budget.
Impact on employment/economic development		Project is expected to continue with same level of employment for several years.
Affect on agreements		Project is ahead of pace to meet regulatory milestones.
Impact on safety and environment		No on-going safety-related issues; safety goals being met.
Impact on cleanup DOE-wide		Crews performing waste exhumation, sludge/debris/roaster oxide repackaging, in ARP V/VII/VIII/IX

CERCLA Progress

Waste Area Group (WAG)	Milestone Title	Milestone type	Milestone Date	FY2018
WAG 3 (INTEC)	Interim INTEC Tank Farm Cover Phase B (eastern 1/3)	FFA/CO Regulatory	Submit RA Report by Nov. 30 of first field season after tank farm closure (on track)	N/A
WAG 3 (INTEC)	Final Tank Farm Evapo-transporation cover	FFA/CO Regulatory	After INTEC Closure	N/A

CERCLA Progress (continued)

Waste Area Group (WAG)	Milestone Title	Milestone type	Milestone Date	FY2018
WAG 7 (RWMC)	Exhume .35 acres of targeted buried waste	DOE Fiscal Year Work Plan goal	9/30/18	
WAG 7 (RWMC)	Complete 90% Design for final Subsurface Disposal Area (SDA)	FFA/CO Regulatory	9/30/2020	N/A
WAG 7 (RWMC)	Complete Buried waste exhumation (5.69 acres)	FFA/CO Regulatory	12/31/2023	N/A
WAG 7 (RWMC)	Completed SDA final Cover construction	FFA/CO Regulatory	12/31/2028	N/A

Material: *Spent Nuclear Fuel (SNF)* is nuclear fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. (Nuclear Waste Policy Act, 1982). Within DOE, SNF is managed as a material of interest and value until it might be declared a waste prior to final disposition. Therefore, SNF is not considered waste.

Hazard to the Public or the Environment: Low. While SNF typically is highly radioactive, it is safely, securely, and appropriately stored, managed and protected. The high radiation levels require shielding (e.g., cask, water, concrete).

How Treated: SNF is managed through safe, secure, and compliant storage, which includes surveillance and maintenance of storage facilities. It will be repackaged prior to transfer to a final repository.

How Disposed: DOE intends to dispose of SNF in a geologic repository.

Budget: Combined DOE and NRC-licensed fuels: \$28.975 million.

Spent Nuclear Fuel Disposition Project

Key Defense Funded Activities/Actions:

- Completed six of six planned Experimental Breeder Reactor – II (EBR-II) spent nuclear fuel (SNF) transfers out of wet storage in CPP-666 to the Materials and Fuels Complex (MFC) for FY18.
- There are 20 planned Advanced Test Reactor (ATR) SNF transfers out of wet storage in CPP-666 into CPP-603 dry storage for FY18. This year's campaign has not yet begun.

Key Non-Defense Funded Activities/Actions:

- License renewal application for the Three Mile Island -2 (TMI-2) Independent Spent Fuel Storage Installation (ISFSI) is under technical review by the NRC. Technical queries have been received.
- Completed the Fort St. Vrain Facilities Upgrade Project in December within cost and schedule.

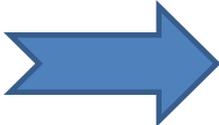
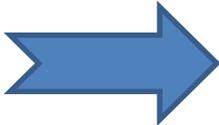
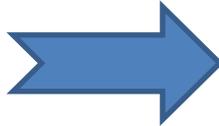
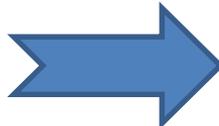
Upcoming Activities:

- EM will endeavor to continue EBR-II SNF transfers out of wet storage, depending on MFC processing schedule.
- Initiate ATR SNF transfers out of wet storage in CPP-666 to dry storage in CPP-603 (planned for 3rd Qtr. FY18).
- Starting in FY19, ATR SNF will be transferred from ATR directly into dry storage in CPP-603.



Shipping and unloading lightly irradiated fuel at the University of Texas. The fuel was in storage at INTEC, but will be reused in a research reactor at UT.

Dashboard Summary – Spent Nuclear Fuel Disposition Project

Key Questions	Dashboard Indicator	Comments
Percent of project completed		For the February reporting period, the SNF project is 21 months into a sixty month project. The project is on schedule.
Percent of budget expended		For the February reporting period, the SNF project has expended ~23% of its planned budget. The project is under cost.
Affect on agreements		The SNF project is meeting its planned scope commensurate with existing agreements.
Impact on safety and environment		INTEC projects routinely report among the lowest recordable incidents and contribute to the overall positive performance towards ICP safety goals.
Impact on cleanup DOE-wide		The SNF project is meeting its goals.

ICP Dashboard Summary

Key Questions	Dashboard Indicator	Comments
Amount of project completed		Reflects IWTU, TRU waste delays.
Amount of budget expended		IWTU, TRU waste issues causing life cycle costs to rise.
Impact on employment/economic development		Employment largely stable.
Affect on agreements		IWTU delay, WIPP closure impacting milestones.
Impact on safety and environment		Fluor safety performance needs continued improvement.
Impact on cleanup DOE-wide		No outstanding impacts.