



U.S. DEPARTMENT OF  
**ENERGY**

OFFICE OF  
**ENVIRONMENTAL  
MANAGEMENT**

# Idaho Cleanup Project Progress to Date Citizens Advisory Board

---

**Jim Malmo**

*Assistant Manager*  
Idaho Cleanup Project

**June 22, 2017**

# Idaho Cleanup Project Scope

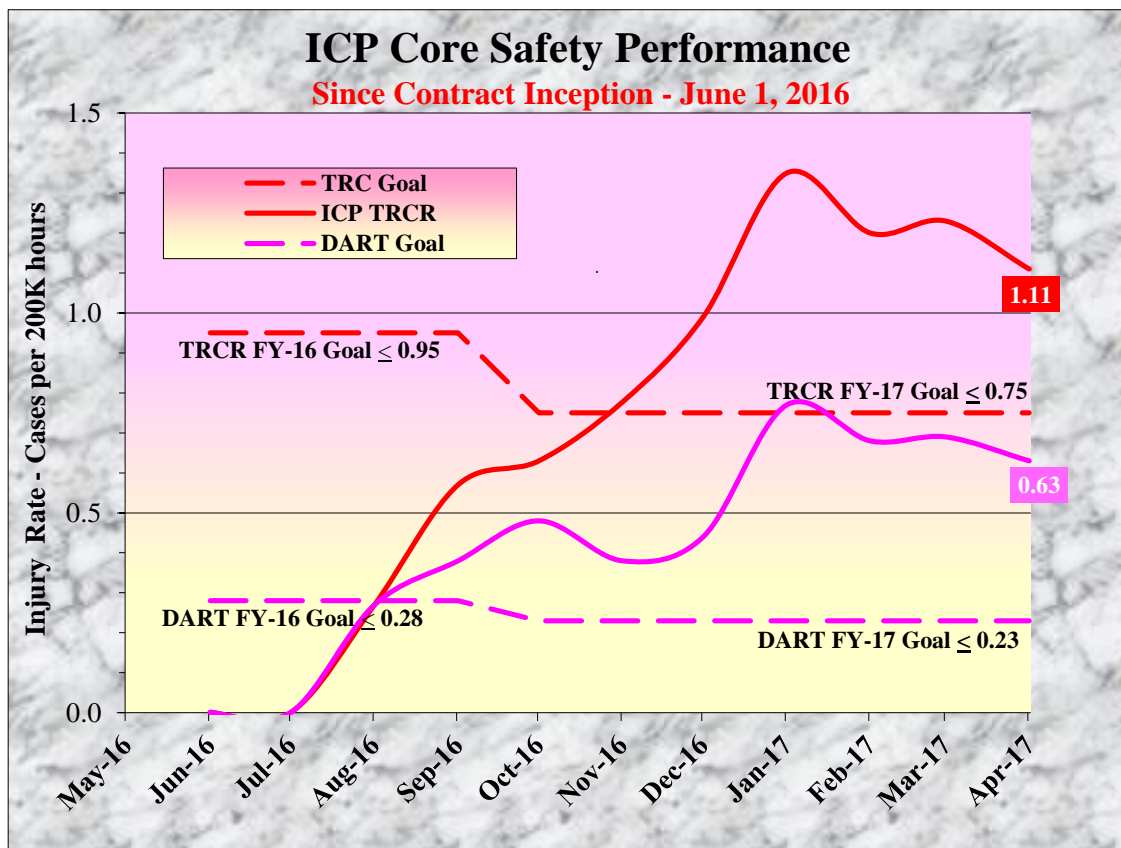
- Transuranic Waste Disposition
- Advanced Mixed Waste Treatment Project (AMWTP)
- Comprehensive Environmental Response Compensation Liability Act (CERCLA) Remediation
  - Waste Area Group (WAG) 1 – Test Area North (TAN)
  - Waste Area Group (WAG) 2 – Test Reactor Area (TRA) - **Complete**
  - Waste 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
- INTEC Liquid Waste Treatment Facility (Tank Farm Closure)
- Calcine Disposition
- Spent Nuclear Fuel Management
- Decontamination and Decommissioning: Materials and Fuels Complex

# Safety Performance – March-April 2017

(Information and Data through April 30, 2017)



## March 2017

### Five First Aid Cases and Two Recordable Injuries

- Worker lifting a movable platform which fell on his arm; prescription medication
- Worker pinched finger between two drums while moving drums; fracture
- January First Aid Reclassified (DART) - worker injured shoulder lifting industrial mixing bowl, requiring surgery.

### One ORPS Reportable Occurrence:

- IWTU – PISA (Shutdown Mode Change Checklist deficiency - Negative USQ)

## April 2017

### Four First Aid Cases and No Recordable Injuries

- January First Aid Reclassified (DART) - worker slipped and fell on icy road injuring shoulder, requiring surgery.

### One ORPS Reportable Occurrence:

- IWTU – PISA (Non-conservative analysis of Waste Feed Tank failure – USQ Determination Pending)



# ARP VIII Excavator Incident



## Context: Stored Waste Disposition

- What is the Waste: TRU and MLLW, principally from Rocky Flats, Argonne National Laboratory, Mound, and other smaller generators stored in retrievable configurations at the Transuranic Storage Area and at the Radioactive Scrap and Waste Facility.
- Potential Risks: Waste contains long lived transuranic isotopes which pose a risk to the workers and the environment. Retrieval of the waste and shipment for disposal in a deep geologic repository (i.e. WIPP) ensures that humans and the environment are protected from the waste for the thousands of years that it remains harmful.
- Settlement Agreement: Requires removal of estimated 65,000 cubic meters of stored transuranic waste from the State of Idaho by December 31, 2018.
- How treated/disposed: Repackaged, treated to remove prohibited conditions, characterized and certified to meet waste acceptance criteria for WIPP or MLLW disposal facilities as appropriate.

## Context (continued)

- Current Budget: (Annually)
  - AMWTP (Contact-handled TRU waste retrieval, characterization, treatment, certification)
  - ARP Support to AMWTP (Processing sludge waste, large items)
  - RH-TRU (Processing remote-handled transuranic waste)
  - ICP MLLW (Processing low-level waste for offsite disposal)
  - RWMC Infrastructure
  - Total ~ \$185.5M



# CERCLA Remediation Project Objectives

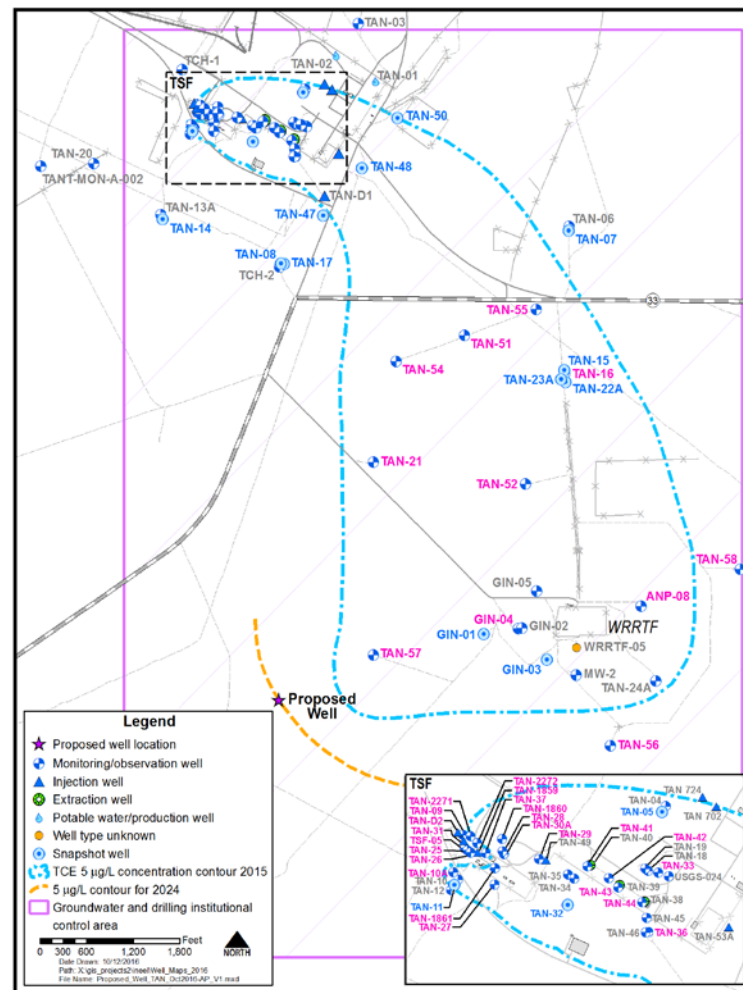
- WAG 1: Test Area North (TAN)
  - TAN Groundwater Remediation
- WAG 3: Idaho Nuclear Technology and Engineering Center (INTEC)
  - Complete the work associated with the OU 3-14 Record of Decision
  - Operate the Idaho CERCLA Disposal Facility (ICDF) to compliantly disposition CERCLA waste
- WAG 7: Radioactive Waste Management Complex (RWMC)
  - **Exhume 5.69 acres of buried waste (Completed 4.61 acres as of June 1, 2017)**
  - 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



# CERCLA Remediation – WAGs 1, 3, and 10

## Key Activities/Actions:

- WAG 1
  - Continued In Situ Bioremediation (ISB) injections into new injection/monitoring well at Test Area North (completed sixth injection on April 3, 2017).
  - USGS is preparing to drill a new monitoring well in the distal zone at TAN beginning in July. The purpose of the new well is to allow better tracking of the southwest boundary of the plume. This well was agreed to as part of the CERCLA 5-Year Review.
- WAG 3
  - Field work began May 8<sup>th</sup> to prepare the western two thirds of the Tank Farm for the installation of a low-permeability pavement cover. The purpose of the pavement is to prevent infiltration of precipitation that could drive contaminants into the aquifer. The work is scheduled to be completed this field season and will complete Phase II, Part A of the Operable Unit 3-14 remedy.



Location of new well at TAN

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

- WAG 10

- Continue implementation of the New Site Identification (NSI) Field Sampling Plan (FSP) to evaluate perchloroethylene (PCE) contamination of well MIDDLE-2051.
  - Activities this quarter include developing a comprehensive chronology of Westbay sampling events and equipment used; video-logging and collecting tubing fluid samples from remaining Westbay wells; and collecting equipment, sediment, and groundwater samples to aid the investigation in identifying how PCE contaminated MD-2051 tubing fluid.

- Ongoing Activities:

- WAG 1 - Continue ISB injections into new wells - Up to four injections in FY 17.
- WAG 3 - Continue perched water monitoring and recharge controls at INTEC.
- WAG 10 –
  - Continue monitoring and institutional controls.
  - Continue New Site evaluation/remediation.

# Idaho CERCLA Disposal Facility (ICDF)

## Key Activities/Actions:

- FY 2017 (Oct. 2016 thru May 2017)
  - Received 22,581 gallons of liquid for disposal to evaporation ponds.
  - Received a total of 1,685 cubic meters of solid waste for landfill disposal
    - AMWTP Cargo Containers (completed)
    - AMWTP MIII Bins
    - AMWTP Soil Sacks
    - WAG 3 Tank Farm Debris
    - MFC-767 debris
    - NRF D&D Debris

## Ongoing Activities:

- Continue receipt and disposal of aqueous wastes in Evaporation Ponds.
- Dispose CERCLA solid waste
  - AMWTP M-III bins and soil
  - NRF D&D debris
  - WAG 3 Tank Farm Debris
- Continue operation and maintenance of ICDF complex processes and facilities.



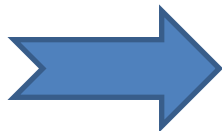
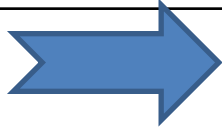
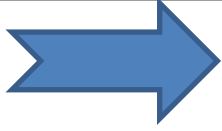



ICDF receipt of last AMWTP cargo containers – March 2017



ICDF pond freeboard surveying- March 2017

# Balance of CERCLA (WAGs 1, 3, & 10) Dashboard

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 \$21.6M.

# 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: 1.33 acres out of 1.72 acres have been exhumed as of 6/1/17.
  - ARP IX:
    - Design and foundation construction – **completed**
    - Retrieval Enclosure construction – **in progress**
- 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. 1.33 acres have been exhumed as of June 1, 2017.
- ARP IX design and foundation construction are complete. North Wind, Inc. began construction of the enclosure, July 2016, and has now essentially completed that effort.
- Since 1996, 249,453 pounds of TVOC removed using vapor extraction as of June 1, 2017.

## Non-CERCLA Activities:

- Continued ARP V repackaging of AMWTP sludge waste. 2,769 drums and 60 boxes have been repackaged as of 6/1/17.
- Started up AMWTP debris repackaging process in ARP VII on March 9, 2016. 42 boxes have been processed and repackaged as of 6/1/2017.

## Ongoing Activities:

- Continue to exhume targeted buried waste in ARP VIII.
- Continue AMWTP sludge repackaging in ARP V.
- Continue AMWTP debris repackaging in ARP VII
- Complete ARP IX facility construction.
- Continue organic vapor extraction.

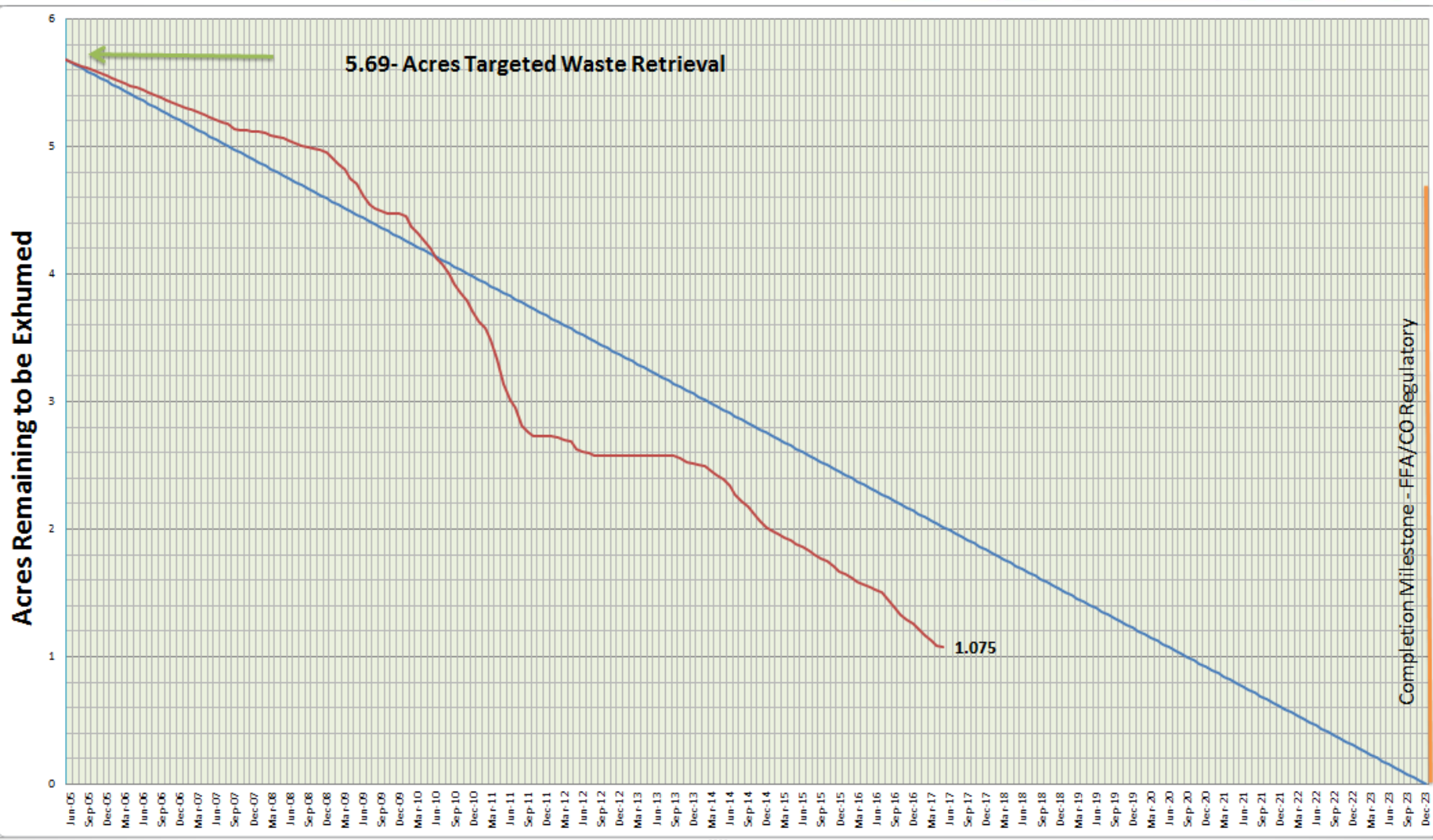


ARP IX Retrieval Enclosure – interior near completion

ARP IX Retrieval Enclosure – exterior near completion



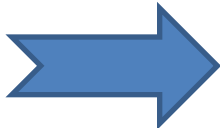

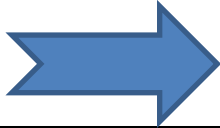



# Buried Waste Exhumation Work-off Chart





# WAG 7 Dashboard

Key Questions	Dashboard Indicator	Comments
Schedule Performance		As of June 1, 2017, 4.61 acres (81%) 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 ongoing safety-related issues; safety goals being met.
Impact on cleanup DOE-wide		Crew performing buried waste exhumation and sludge/debris repackaging in ARP V/VII

# CERCLA Progress

Waste Area Group (WAG)	Milestone Title	Milestone type	Milestone Date	FY2017
WAG 3 (INTEC)	Interim INTEC Tank Farm Cover Phase <ul style="list-style-type: none"> <li>Phase A (western 2/3)</li> <li>Phase B (eastern 1/3)</li> </ul>	<ul style="list-style-type: none"> <li>FFA/CO Regulatory</li> <li>FFA/CO Regulatory</li> </ul>	<ul style="list-style-type: none"> <li>Submit RA Report by November 30, 2017 (on track)</li> <li>Submit RA Report by Nov. 30 of first field season after tank farm closure (on track)</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> <li>N/A</li> </ul>
WAG 3 (INTEC)	Final Tank Farm Evapo-transpiration cover	FFA/CO Regulatory	After INTEC Closure	N/A

# CERCLA Progress (continued)

Waste Area Group (WAG)	Milestone Title	Milestone type	Milestone Date	FY2017
WAG 7 (RWMC)	Exhume .35 acres of targeted buried waste	DOE Fiscal Year Work Plan goal	9/30/17	FY 2017 goal
WAG 7 (RWMC)	Complete ARP IX construction	Contract commitment	2017	N/A – Pursuing acceleration
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

# Context: Spent Nuclear Fuel

**Type of Waste:** The term “spent nuclear fuel” means 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, spent nuclear fuel (SNF) is managed as a material of interest and value until it might be declared a waste prior to final disposition.

**Hazard to Public, Environment:** Low. While SNF typically is highly radioactive, it is appropriately stored, managed and protected. The high radiation levels require some sort of shielding: cask, water, concrete, etc.

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



## Context: Spent Nuclear Fuel (cont.)

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

Current Year Budget: FY17 PBS 12:

- Defense-funded SNF program: \$18.0 million
- Non-defense funded SNF program: \$8.0 million

Total program: \$26.0 million

# Spent Nuclear Fuel Disposition Project

## Key Activities/Actions:

- Completed 2 of six planned EBR-II spent fuel transfers out of wet storage in CPP-666 to the Materials and Fuels Complex for FY 17.
- Completed 18 of 24 planned Advanced Test Reactor (ATR) transfers out of wet storage in CPP-666 into CPP-603 dry storage for FY 17.
- License renewal application for the Three Mile Island Independent Spent Fuel Storage Installation was accepted for technical review by the NRC on May 5, 2017.

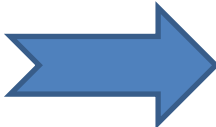
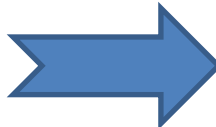

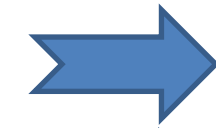
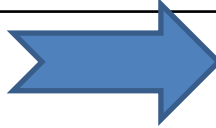
## Upcoming Activities:

- Continue EBR-II spent fuel transfers out of wet storage.
- Continue ATR spent fuel transfers out of wet storage.
- Paused ATR spent fuel receipts into wet storage.



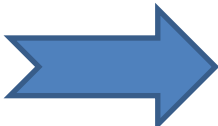

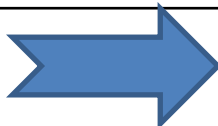



Spent Resin Cask Shipment

# Dashboard Summary – Spent Nuclear Fuel Disposition Project

Key Questions	Dashboard Indicator	Comments
Percent of project completed		As of 05/22/17, the Fluor project is 11 months into a sixty month project (~18%). Progress is satisfactory.
Percent of budget expended		As of 05/22/17, the Fluor project is 11 months into a sixty month project (~18%). Progress is satisfactory.
Affect on agreements		The project has met 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 project has met its goals.

# ICP Dashboard Summary

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