



U.S. DEPARTMENT OF  
**ENERGY**

OFFICE OF  
**ENVIRONMENTAL  
MANAGEMENT**

# Idaho Cleanup Project Progress to Date Citizens Advisory Board

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Idaho Cleanup Project

**October 26, 2017**

# Idaho Cleanup Project Scope

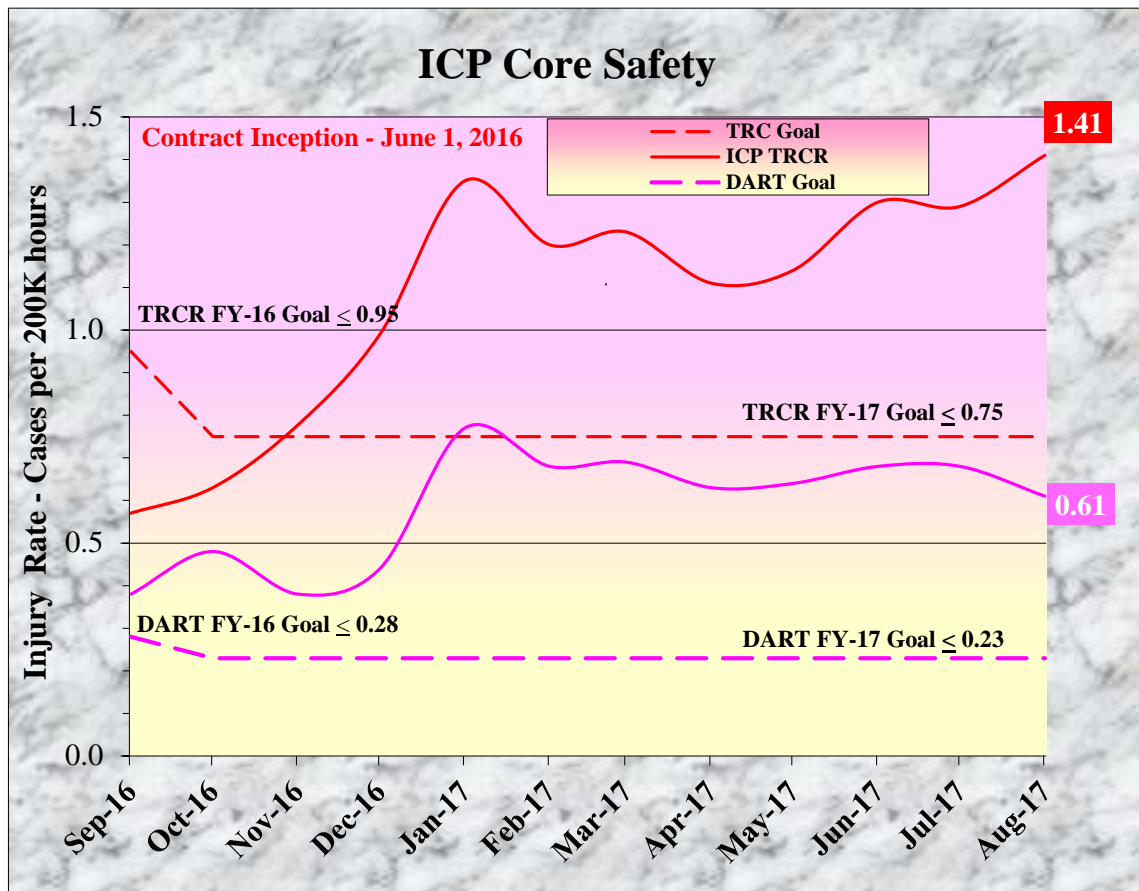
- Transuranic Waste Disposition
- Advanced Mixed Waste Treatment Project (AMWTP)
- Comprehensive Environmental Response Compensation Liability Act (CERCLA) Remediation
  - Waste Area Group (WAG) 1 – Test Area North (TAN)
  - Waste Area Group (WAG) 2 – Test Reactor Area (TRA) - **Complete**
  - Waste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

# Safety Performance – July-August 2016

(Information and Data through August 27, 2017)



## July 2017

**Eight First Aid Cases and No Recordable Injuries**

### One ORPS Reportable Occurrence:

- RWMC – Work performed on Air Conditioning unit without established Work Controls

## August 2017

**Two First Aid Cases and Three Recordable Injuries**

- Worker donning PPE received an insect bite to his left arm.
- Worker lacerated thumb tightening conduit locknut at J-box, requiring stitches
- AMWTP – Worker in-cell wearing PPE became dehydrated, requiring IV fluids

### Five ORPS Reportable Occurrences:

- INTEC – PISA (CPP-603 Tandem Crane Trolley installed on wrong bridge
- RWMC – Troubleshooting ARP 480VAC control panel without proper PPE
- INTEC – Work Control deficiencies for minor maintenance on Delta Barrier
- Suspect/Counterfeit Items discovered in ratchet tie-downs after bulletin
- Recurring – Multiple discoveries of incomplete LO/TO requalifications

# 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 4.71 acres as of September 30, 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 seventh injection in July, 2017).
  - USGS completed drilling a new monitoring well in the distal zone at TAN. 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 to install low permeability pavement over the western two thirds of the Tank Farm was recently completed. The purpose of the pavement is to prevent infiltration of precipitation that could drive contaminants into the aquifer. The draft Remedial Action Completion Report will be submitted to the Agencies by November 30, 2017. This will complete Phase II, Part A of the Operable Unit 3-14 remedy.



Placing crushed base material on north end of Tank Farm in preparation for asphalt



Placing asphalt on berm, south west side of Tank Farm

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

- WAG 10
  - Completed implementation of the New Site Identification (NSI) Field Sampling Plan (FSP) to evaluate perchloroethylene (PCE) contamination of well MIDDLE-2051.
    - Determination has been made that there is no release to the environment. Alternatives are being considered as to how best to rehabilitate the wells.
- Ongoing Activities:
  - WAG 1 - Continue ISB injections into new wells - Next injection November, 2017.
  - 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 through Sept., 2017)
  - Received 25,365 gallons of liquid for disposal to evaporation ponds.
  - Received a total of 3,098 cubic meters of solid waste for landfill disposal as of September 30
    - AMWTP MIII Bins and Soil Sacks
    - WAG 3 Tank Farm Debris/Soils
    - CPP-603 Crane D&D Debris
    - NRF D&D Debris

## Ongoing Activities:

- Continue receipt and disposal of aqueous wastes in Evaporation Ponds.
- Dispose CERCLA solid waste
- Continue operation and maintenance of ICDF complex processes and facilities
- Evaluate sample data and sampling frequency



CPP-603 Crane Debris – August 2017

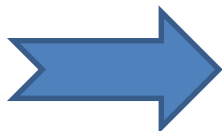


ICDF Annual Pond Sediment Sampling –  
September 2017

# Dashboard Legend



Ahead of schedule, under budget, better than expected.



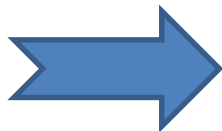
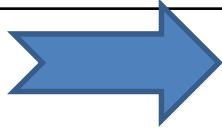
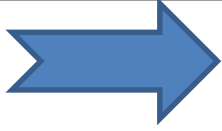
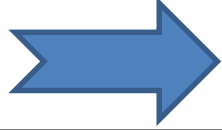


On schedule, on budget, performance as expected.



Behind schedule, over budget, performance less than expected.

# 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 \$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: 1.43 acres out of 1.72 acres have been exhumed as of 9/30/17.
  - ARP IX:
    - Design and foundation construction -- **completed**
    - Retrieval Enclosure construction -- **completed**
- 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. 1.43 acres have been exhumed as of Sept. 30, 2017 (83% complete)
- ARP IX construction is complete. Fluor completed a successful Readiness Assessment on September 21, 2017, in preparation for operations.
- Since 1996, 251,000 pounds of volatile organic compounds removed using vapor extraction as of Sept. 30, 2017.

## Non-CERCLA Activities:

- Continued ARP V repackaging of AMWTP sludge waste. Since March 2015, 3,500 drums and 60 boxes have been repackaged as of Sept. 30, 2017.
- Continued repackaging of AMWTP debris in ARP VII. 74 boxes have been processed and repackaged as of Sept. 30, 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.
- Begin waste operations in ARP IX.
- Continue organic vapor extraction.



Drum exhumation in ARP VIII

Installation of crane in ARP VII maintenance bay

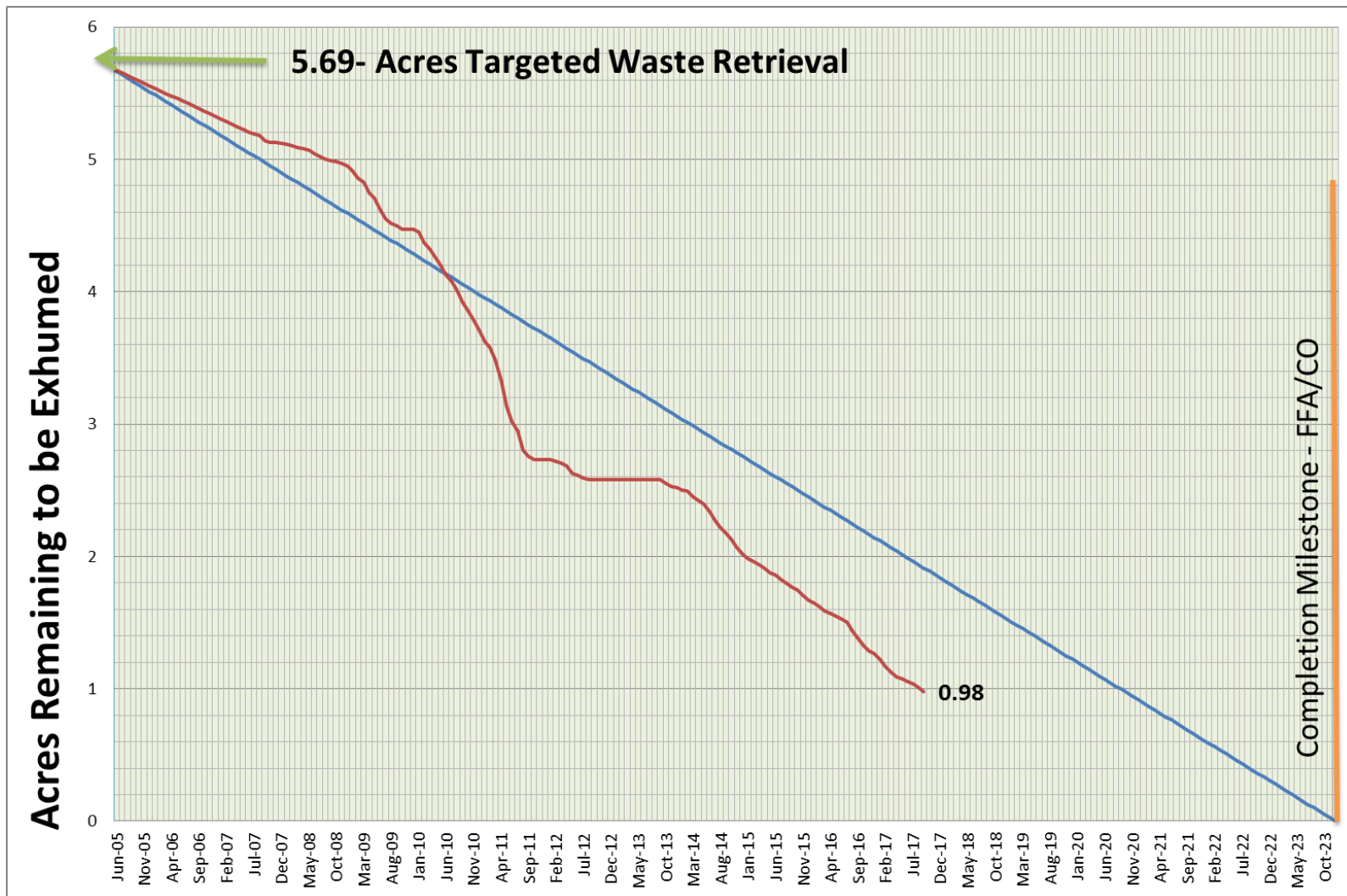


# ARP VIII Footprint Exhumation Status



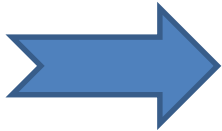

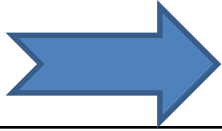

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Remaining - SQ FT  
Exhumed - SQ FT

# Buried Waste Exhumation Work-off Chart



# WAG 7 Dashboard

Key Questions	Dashboard Indicator	Comments
Schedule Performance		As of October 1, 2017, <b>4.71</b> acres ( <b>83%</b> ) 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	FFA/CO Regulatory	Submit RA Report by November 30, 2017 (on track)	N/A
	Phase A (western 2/3) 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	FY2017
WAG 7 (RWMC)	Exhume .35 acres of targeted buried waste	DOE Fiscal Year Work Plan goal	9/30/17	Complete
WAG 7 (RWMC)	Complete ARP IX construction	Contract commitment	2017	Complete
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

**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.

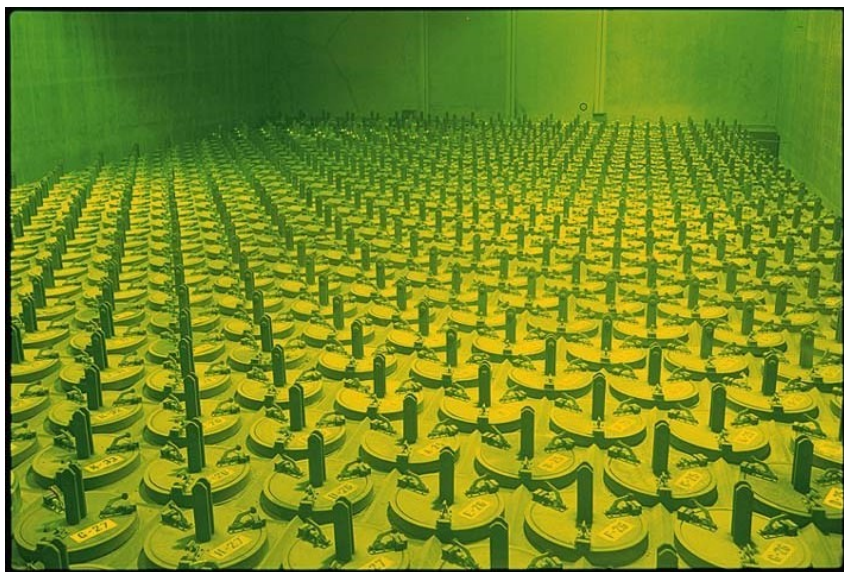
**Hazard to the Public or the Environment:** Low. While SNF typically is highly radioactive, it is safely, securely, and appropriately stored, managed and protected. The high radiation levels require shielding (e.g., cask, water, concrete).

**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.

## Current Year Budget Request: FY18 PBS 12

- Defense-funded SNF program: \$19.975 million
- Non-defense funded SNF program: \$9.000 million
- Total program: \$28.975 million



To the left is the fuel array in dry storage in CPP-603, the Irradiated Fuel Storage Facility.

# Spent Nuclear Fuel Disposition Project

## Key Activities/Actions:

- Planned six EBR-II spent fuel transfers out of wet storage in CPP-666 to the Materials and Fuels Complex for FY 17. Actually completed 10 fuel transfers.
- Completed 24 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 is under technical review by the NRC.

## Upcoming Activities:

- Continue EBR-II spent fuel transfers out of wet storage.
- Continue ATR spent fuel transfers out of wet storage in CPP-666 to dry storage in CPP-603.
- Starting in FY 19, ATR spent fuel will be transferred from ATR directly into dry storage in CPP-603/

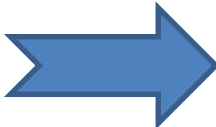
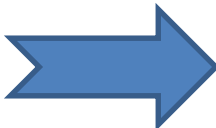

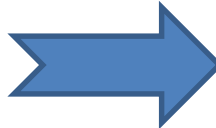



Looking down from the overhead cranes into the pools of CPP-666









High-Load Charger used to transfer ATR SNF

# Dashboard Summary – Spent Nuclear Fuel Disposition Project

Key Questions	Dashboard Indicator	Comments
Percent of project completed		As of 9/30/17, the SNF project is 15 months into a sixty month project (25%). Progress (schedule) is satisfactory.
Percent of budget expended		As of 9/30/17, the SNF project is 15 months into a sixty month project (~24%). Progress (cost) is satisfactory.
Affect on agreements		The SNF 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 SNF project has met 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		Concern over on-going safety incidents.
Impact on cleanup DOE-wide		No outstanding impacts.