

# Idaho Department of Environmental Quality



## State Oversight of the Buried Targeted Waste CERCLA Exhumation Project

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# Authorizing Documents Governing Exhumation

- **July 2008 - Agreement to Implement** (State of Idaho – DOE)
  - Requires retrieval of six visually identifiable “targeted waste” forms, historically generated through nuclear weapons production activities, most likely to contain transuranic elements, hazardous solvents, and/or uranium waste.
  - Requires retrieval of at least 5.69 acres determined to contain the highest density of targeted waste.
  - Requires shipment of at least 7,485 cubic meters of retrieved and packaged targeted waste out of the state of Idaho.
- **October 2008 - Record of Decision for Radioactive Waste Management Complex Operable Unit 7-13/14** (EPA-DOE-State of Idaho)
  - Defines and describes the Selected Remedy for implementation through the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.



# What is “Targeted Waste”?

- **741 Sludge:** Fairly homogenous solid of salt precipitate containing plutonium and americium oxides, and organic constituents
- **742 Sludge:** Fairly homogenous solid of salt precipitate containing plutonium and americium oxides, metal oxides, and organic constituents
- **743 Sludge:** Paste or grease-like solidified organic liquid containing hazardous solvents and calcium silicate
- **Graphite Waste:** Broken graphite mold chunks and poly bottles of fine particles (e.g., graphite scarfings) containing residual plutonium

# What is “Targeted Waste”?

- **Filters / pre-filters:** Discarded high-efficiency particulate air (HEPA) filters contaminated with transuranic and uranium radionuclides
- **Uranium Roaster Oxide:** Depleted uranium historically roasted at high temperatures, primarily in the form of uranium oxide, with some uranium metal possible
- Other waste streams mutually agreed by the Parties, as the result of operational experience or process knowledge, to routinely be recognizable as Transuranic Waste

# Targeted Waste Photos

- 741 and 742 Sludge are generally the same in appearance and packaging



# Targeted Waste Photos

- 743 Sludge



# Targeted Waste Photos

- HEPA Filters / Pre-filters



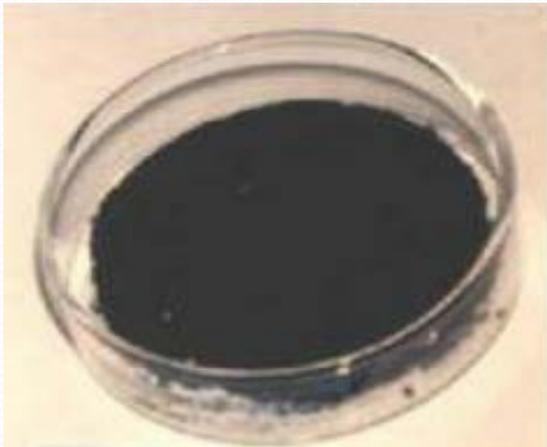
# Targeted Waste Photos

- Graphite – fines & molds



# Targeted Waste Photos

- Uranium – metal & oxide



# Selection of Retrieval Areas

- Transuranic elements, hazardous solvents, and uranium roaster oxides are concentrated in certain visually identifiable waste types from Rocky Flats – targeted waste
- These waste types are more likely to be found in certain disposal locations based on historical records
- Visually identifiable uranium metal & oxide waste that is co-located with transuranic wastes can be removed to enhance clean-up objectives

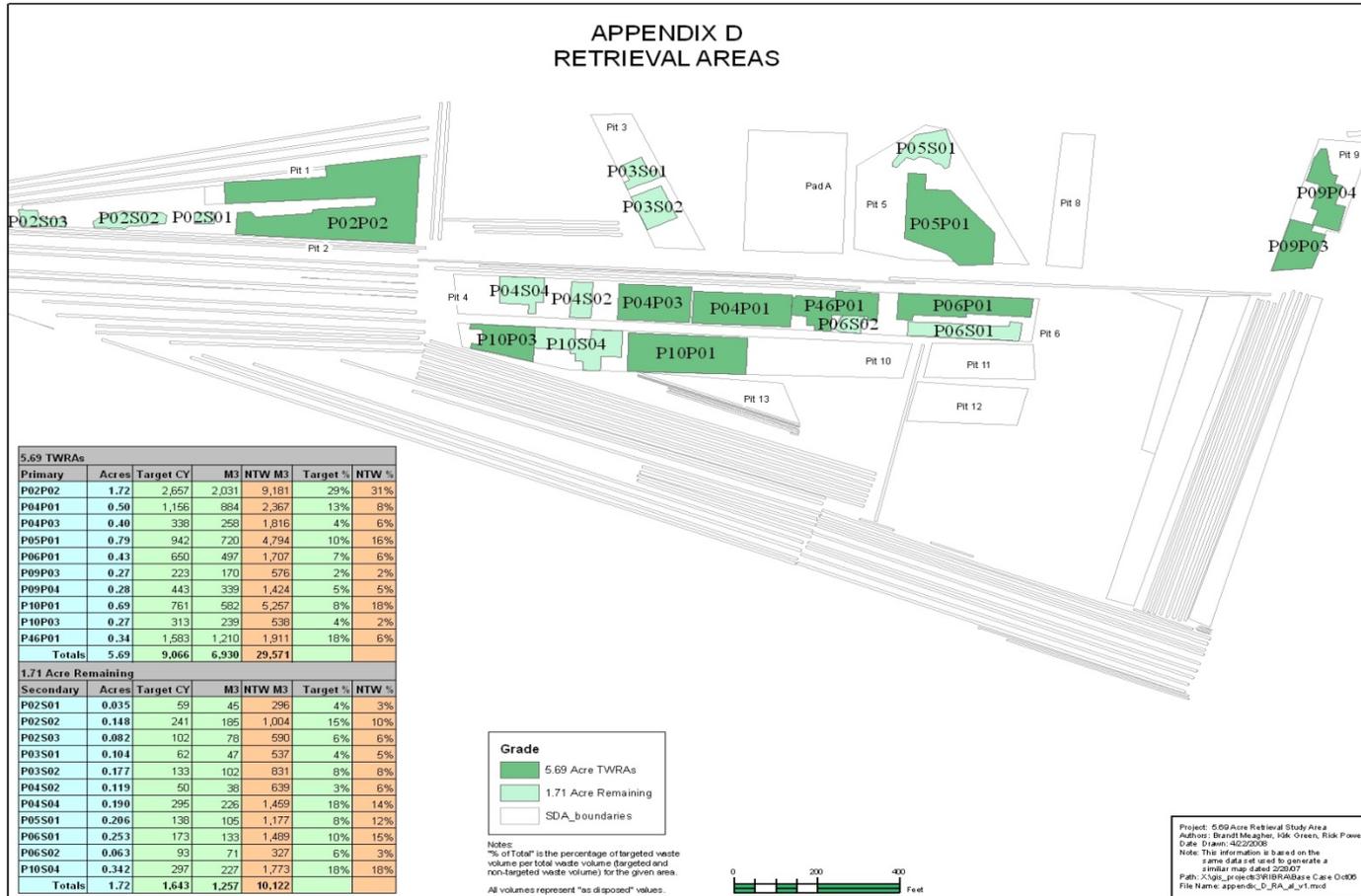


# Selection of Retrieval Areas

- Through research of historical disposal records and the use of targeted waste location density maps, old photographs, and subsurface investigation techniques, the excavation areas were selected.
- Excavation acreage based on a balance between environmental risk and current worker risk
- Consideration also given to avoid:
  - Large unwieldy objects, high gamma radiation objects, biological hazards, and classified materials



# Identified Retrieval Areas



# DEQ Project Monitoring

- Extensive historical information reviews – as necessary
- Comparison of expected versus retrieved volumes and waste types (accountability maps) - updated monthly
- Excavation video review - periodic
- Marker shipment tracking – updated monthly
- Sampling data review – updated monthly
- Packaged out waste assay data review – updated monthly
- Direct observation of excavation operations - periodic

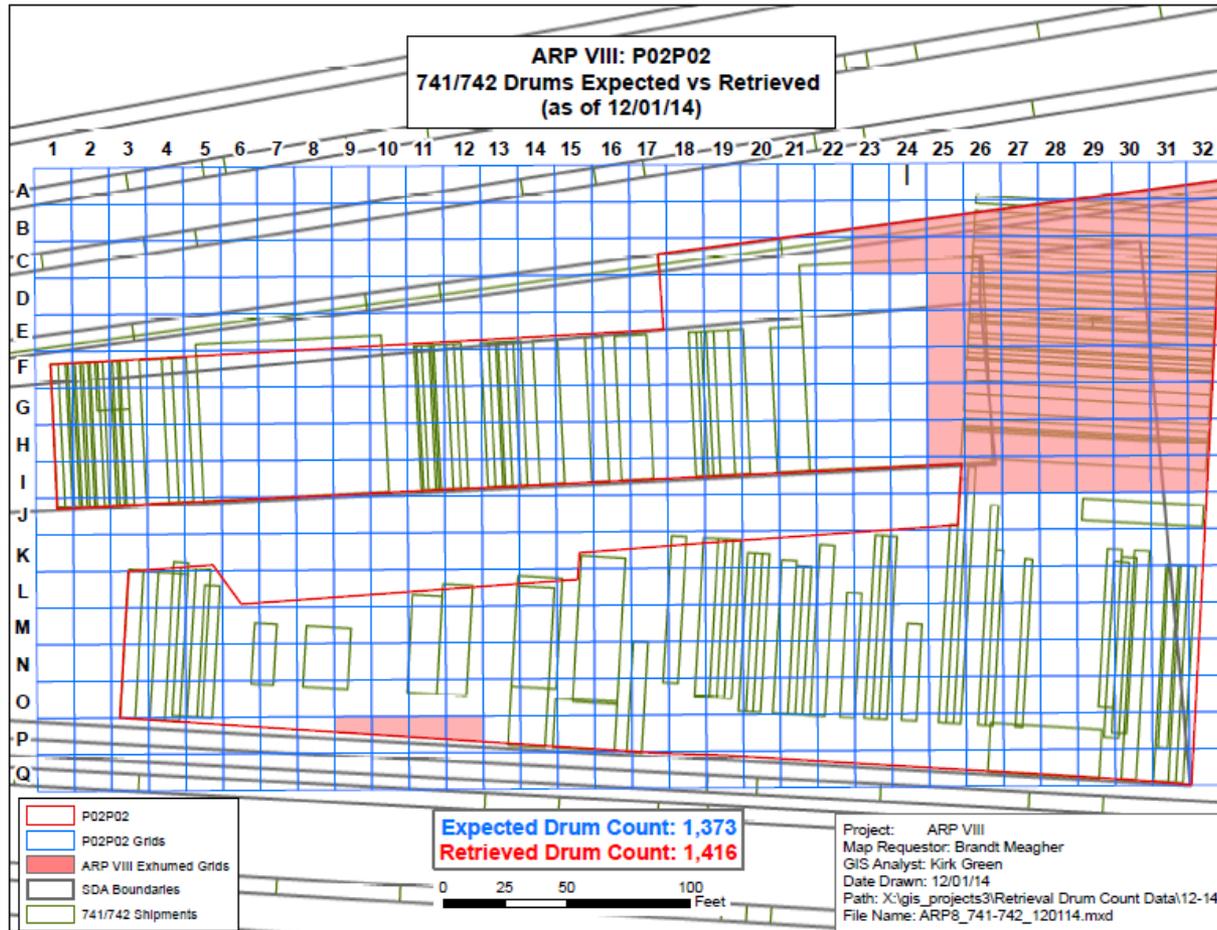


# Direct observations

- DEQ staff fully trained and qualified for unescorted access
- Scheduled and unannounced site inspections
- Facility construction observations
- Excavator “digging” observations
- Waste sorting and segregation observations
- Drum packaging station observations
- WMF-698 drum storage inspections



# Accountability Maps



# Marker Shipments

## Expected unique identifiable objects

- Random drum labels
- Large industrial equipment – lathes, etc.
- Random box or crate identification
- Newspaper, magazine, etc., – date check

## Why important?

- Historical disposal records verification
- Identify possible lateral shifts



# Sampling Information

- Non-Targeted Waste sampling
- TW to NTW activity - orders of magnitude difference
- Confirmation of visual identification process
- Underburden sampling – presence of expected constituents and potentially useful remediation information
- Trend analysis – expected vs actual



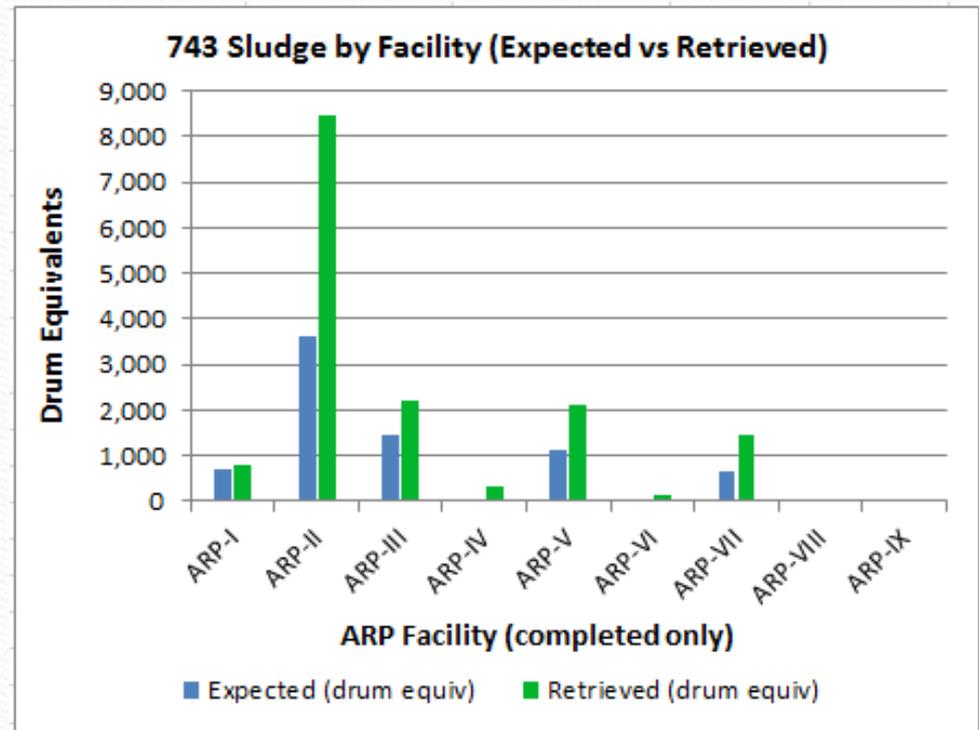
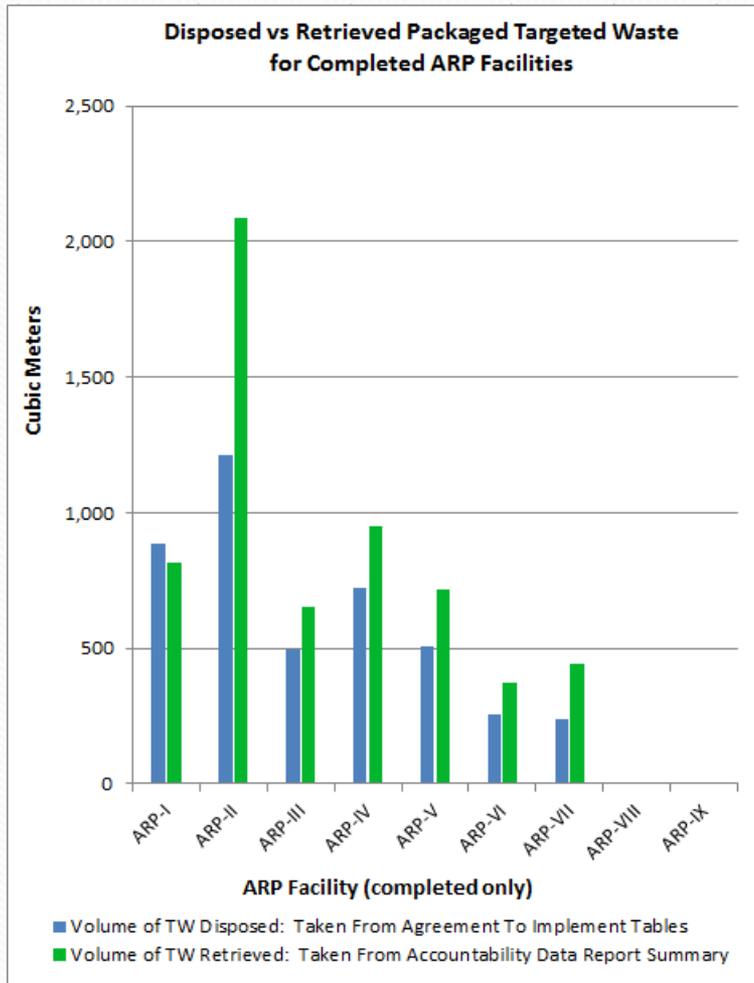
# Packaged Out Waste Assay

- Transuranic (TRU) content of packaged waste
- Ensures WIPP compliance
- Expected vs actual range of transuranic content
- Trend analysis – activity, volume, type of waste material



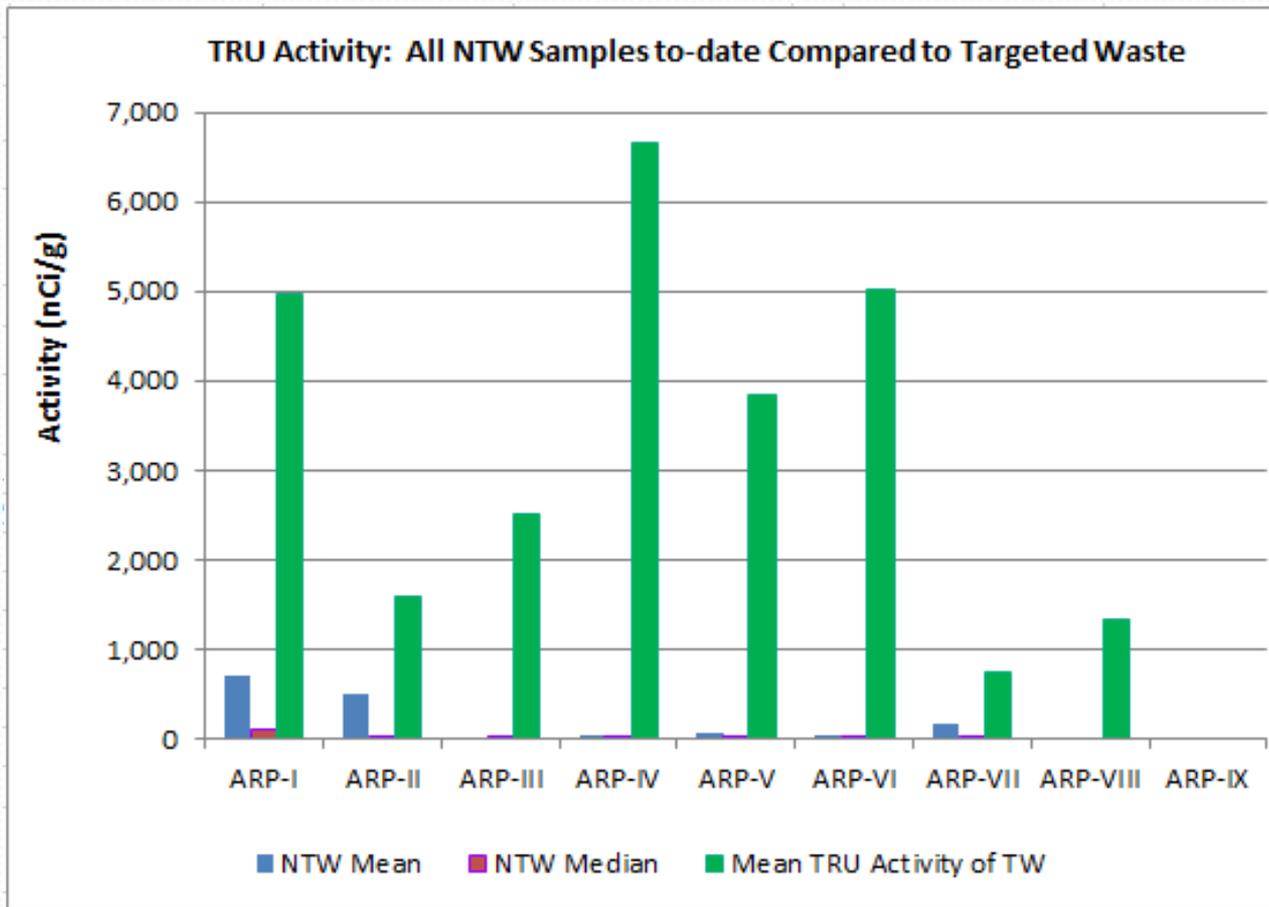
# Examples of DEQ Data Oversight

- Comparison of disposed vs retrieved targeted waste volumes



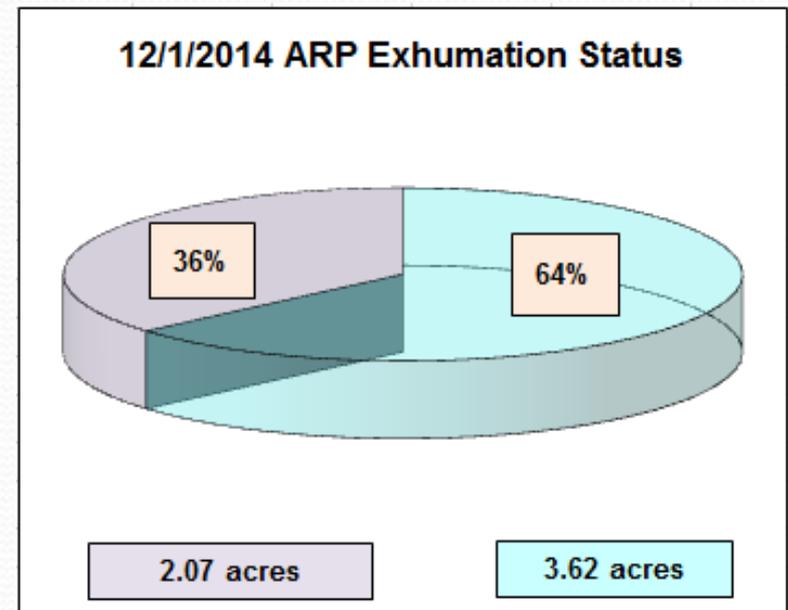
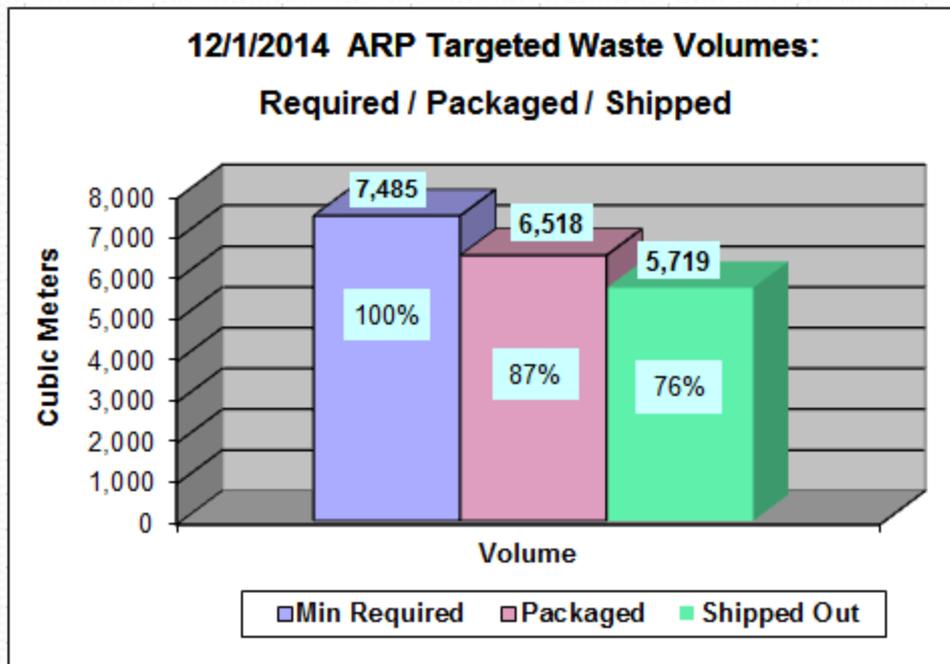
# Examples of DEQ Data Oversight

- Activity of retrieved waste vs. non-targeted waste samples



# Examples of DEQ Data Oversight

- Tracking Agreement to Implement Requirements



# Summary - Questions?

- The Agreement to Implement and the ROD Work-plan are actively being followed to provide oversight of progress
- ARP-I through ARP-VII excavations are complete, ARP-VIII is in progress, and ARP-IX will be constructed in the 2015-2020 timeframe
- All Parties are committed to success, with completion of exhumation expected well ahead of the enforceable milestone of December 31, 2023
- DEQ and EPA will continue to provide oversight until completion of exhumation and into the future post-closure ET cover installation phase

