



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

Looking to the Future as EM Marks 30 Year Record of Results

Todd Shrader

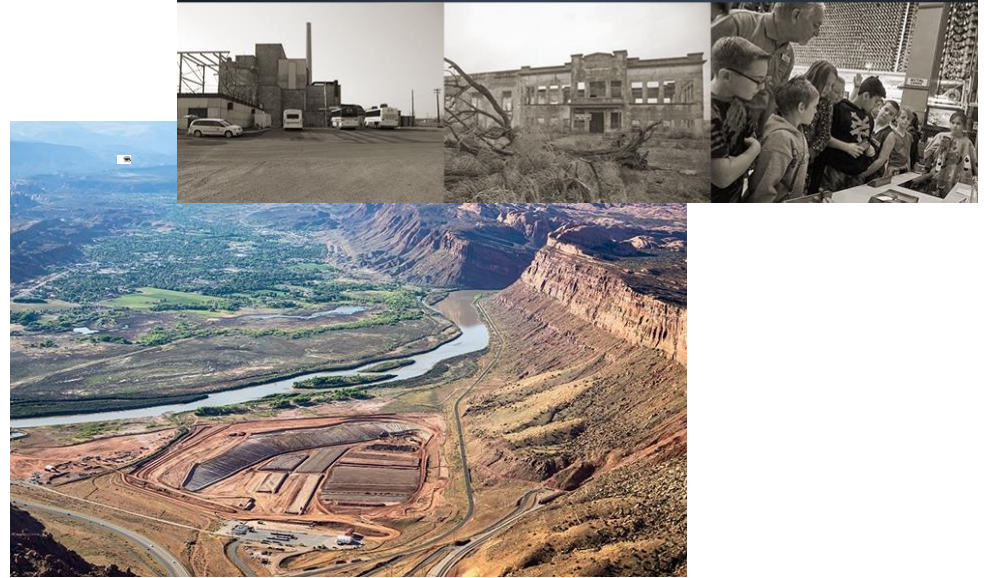
*Principal Deputy Assistant Secretary
U.S. Department of Energy
Office of Environmental Management*

**National Cleanup Workshop
September 11, 2019**

Completing Cleanup, Paving the Way for the Future

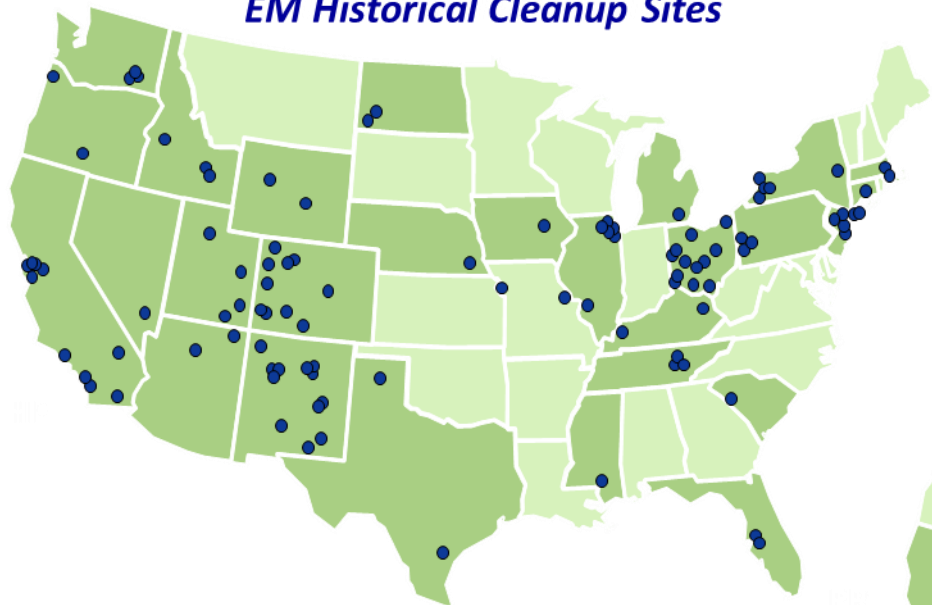


MANHATTAN PROJECT NATIONAL HISTORICAL PARK TOURS



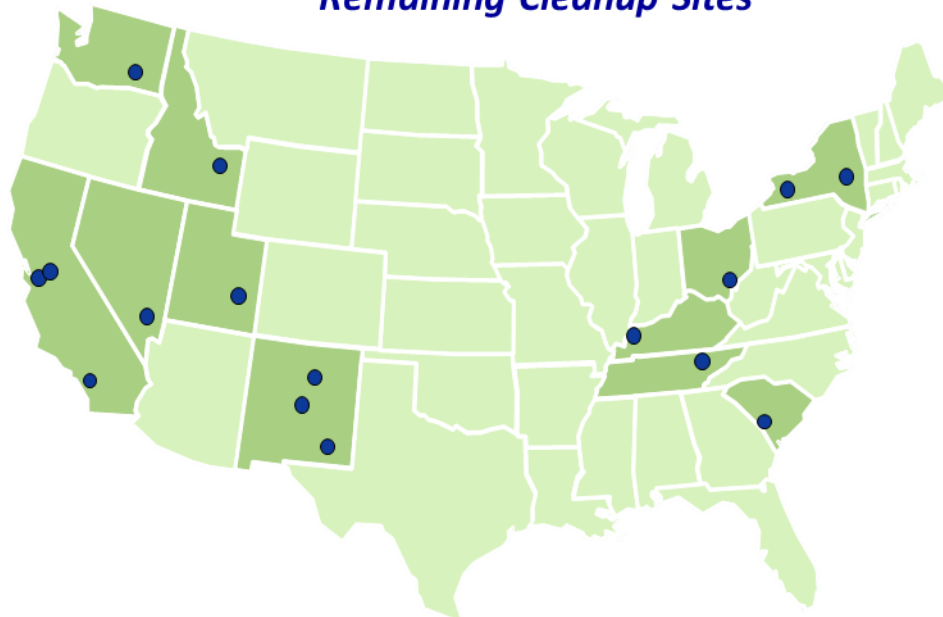
The EM Complex Today

EM Historical Cleanup Sites



DOE has completed its cleanup mission at 91 of the 107 major nuclear weapons and nuclear research sites.

Remaining Cleanup Sites



Fernald - From Nuclear Waste Site to Wetlands Preserve



Starting Point:

- 1,065 acre site
- 14,000 cubic yards LLW
- 790,000 tons LLW
- 2.2 million cubic yards contaminated soil
- 31 million net pounds uranium product

Outcome:

- Completed 2006 at \$4.4 billion – under budget, ahead of schedule
- Dismantled 323 buildings including major uranium complexes
- Excavated and shipped 1 million tons of waste
- Treated 225-acre plume of uranium contamination in aquifer



Impact:

- Eliminated world's largest source of radon gas
- Wetlands preserve open to public
- Home to diverse wildlife

Rocky Flats – From Nuclear Waste Site to Wildlife Refuge



Starting Point:

- Legal cleanup agreement
- 6,500 acre site
- 800 buildings
- 21 tons of weapons grade materials
- 100 metric tons plutonium



Outcome:

- Ahead of schedule, under budget, no major injuries
- Stabilized, consolidated waste offsite
- D&D of facilities
- Soil and groundwater remediation



Impact:

- National Wildlife Refuge
- Closure contract lessons
- Technological innovations

Mound – From Weapons Production to Business Park

Starting Point

- One of the first atomic energy related facilities constructed after World War II
- 20,000 cubic meters of soil and debris

Outcome

- Cleanup completed in 2010
- More than 800,000 square feet of floor space demolished
- More than 6,000 trainloads and truckloads of waste
- 24 million cubic feet of soil waste removed

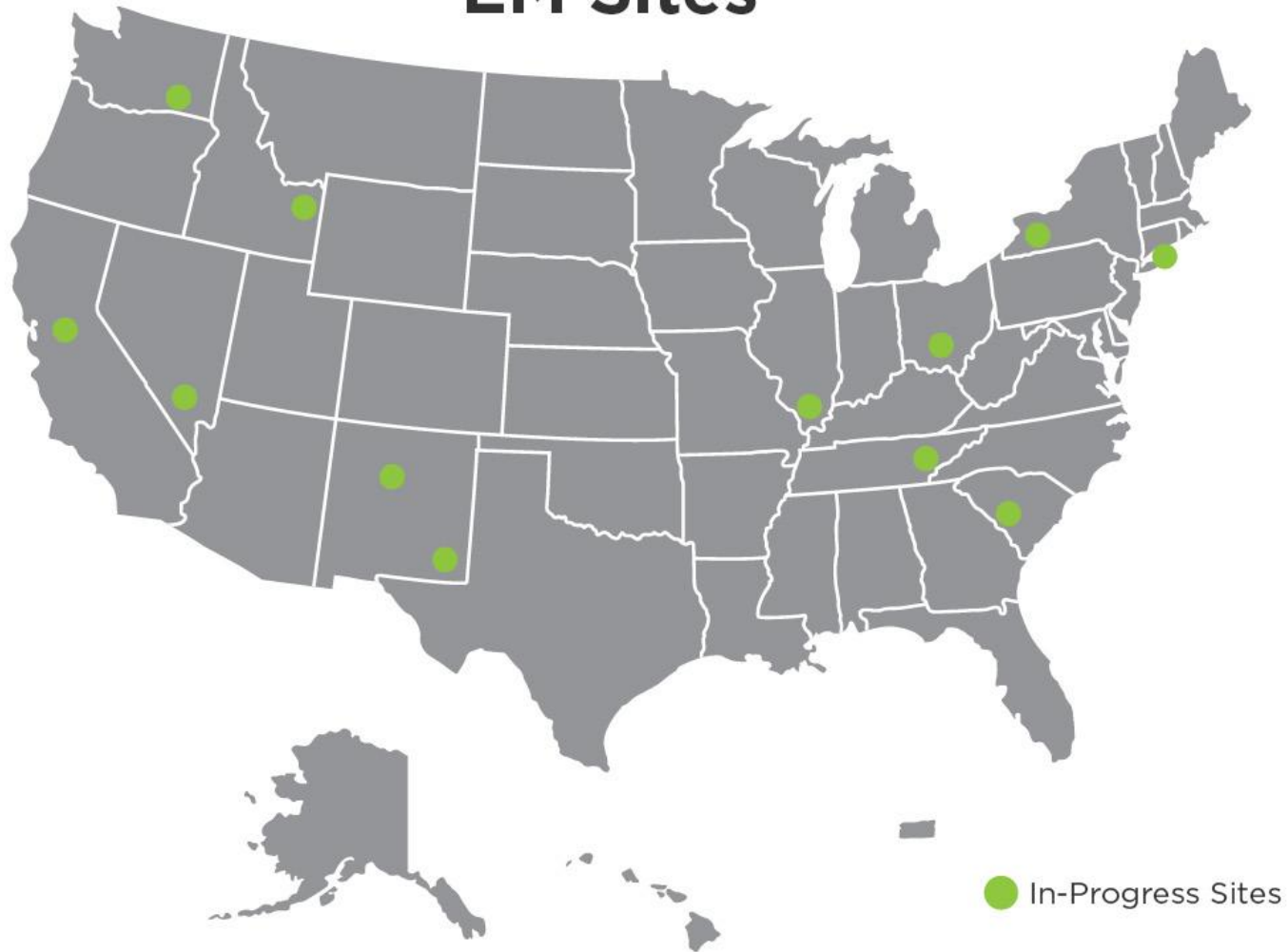
Impact

- Transitioned for reuse as Mound Business Park
- Providing for private sector job growth
- Boosting economic development in the area.



What the EM Complex Could Look Like in 2029

EM Sites



Countdown to Vision 2020 at Oak Ridge



ETTP: Past, Present, Future



Outfall 200 Mercury Treatment Facility



West Valley: 30 Years of Firsts



HLW Canisters in Dry Storage Casks



HLW Canister stored on site in Dry Cask Storage (5 canisters/cask)

Historic Aspect:

First use of Dry Cask Storage of High-Level Waste in the country



Before

Vitrification Facility Demolition



After



Weather protective cover installed

Historic Aspect:

First Demolition of Full-Scale Vitrification Facility in the country

Spent Nuclear Fuel Shipment West Valley Demonstration Project



Spent Nuclear Fuel in Storage Pool



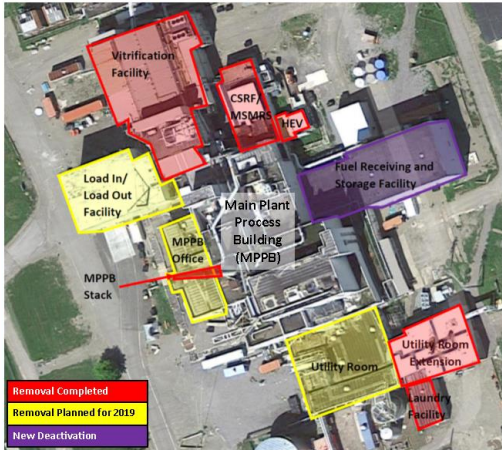
Train Shipment of West Valley Spent Nuclear Fuel

Historic Aspect:

Largest Shipment of Spent Nuclear Fuel in the country, and demonstration of dual purpose casks

Recent Progress at West Valley

Demolition of Ancillary Support Buildings at the West Valley Demonstration Project



Vitrification Facility Demolition

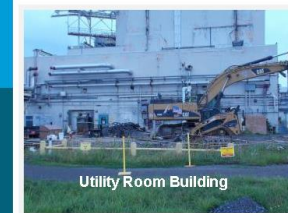


Weather protective cover installed

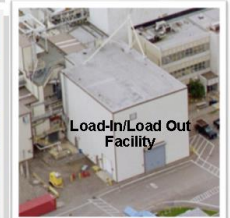
What's Next at the WVDP?



Main Plant Office Building



Utility Room Building



Load-In/Load Out Facility



Main Plant Process Building

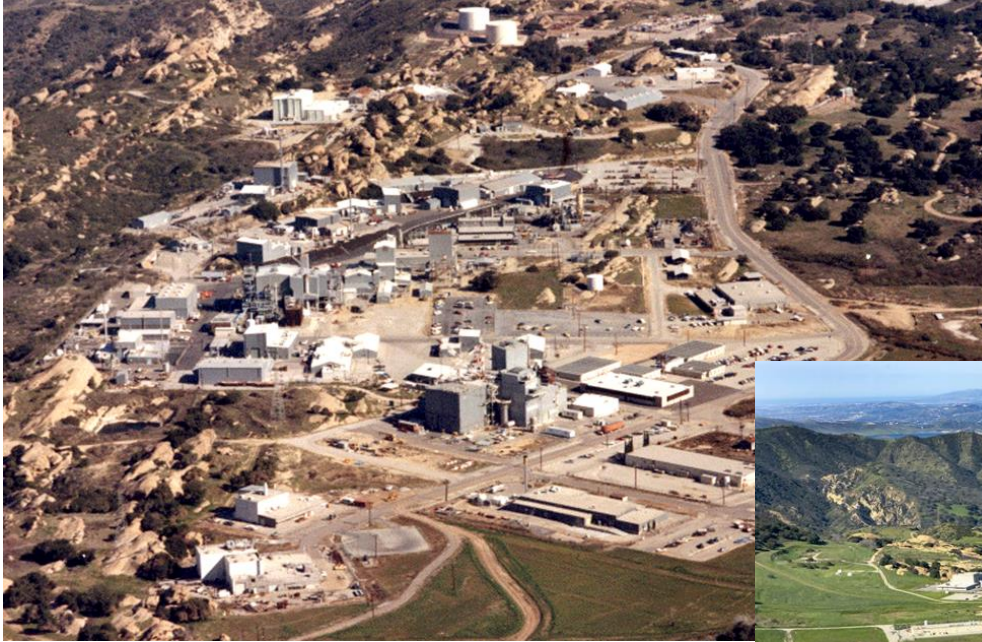
West Valley: A Look Toward 2029



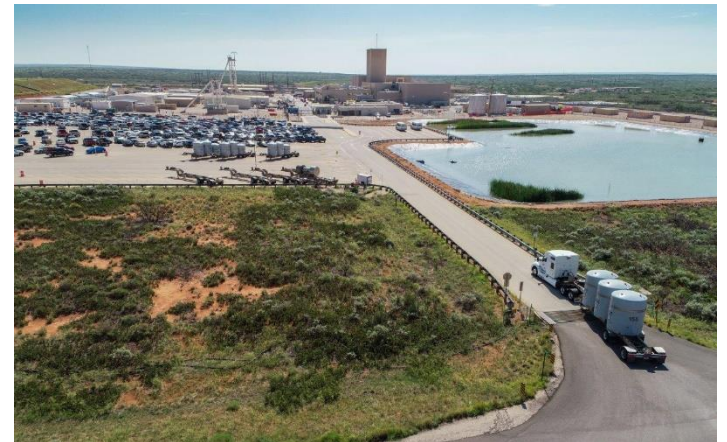
**WVDP Before and
After Phase 1
Decommissioning**



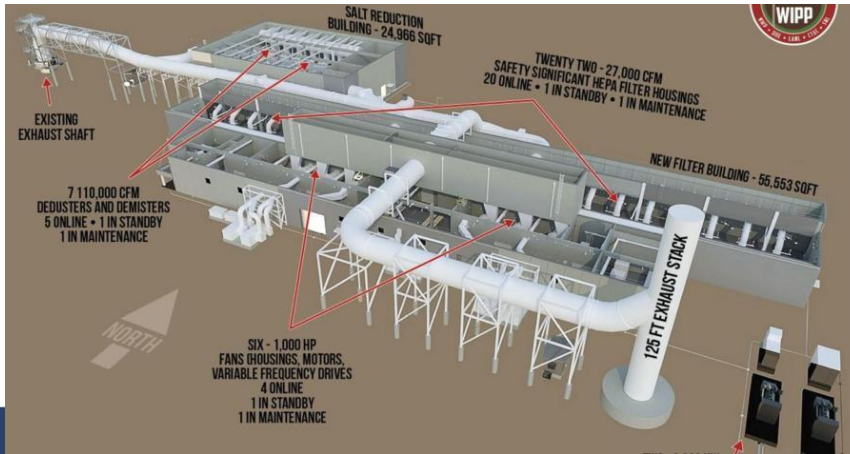
ETEC: Before and After



WIPP: Lynchpin of TRU Waste Mission



Preparing WIPP For the Future



BY THE NUMBERS WIPP SITE CLEANUP

1,100 PEOPLE EMPLOYED AT WIPP

24 HOURS/DAY SHIPMENTS ARE TRACKED AND MONITORED AROUND THE CLOCK BY SATELLITE

12,397 SHIPMENTS SAFELY TRANSPORTED MORE THAN 14 MILLION LOADED MILES

95,557 M³ OF WASTE DISPOSED IN THE UNDERGROUND MINE

176,482 CONTAINERS EMPLOYED IN THE WIPP UNDERGROUND

SEVEN WASTE DISPOSAL ROOMS IN EACH DISPOSAL PANEL MEASURING 300 FEET LONG, 33 FEET WIDE AND 13 FEET HIGH

28,457 METRIC TONS OF SALT MINED IN PANEL EIGHT

2,150 FEET DEPTH TO DISPOSAL ROOMS FROM THE SURFACE BY COMPARISON IF WIPP WERE A BUILDING IT WOULD BE THE SECOND TALLEST IN THE WORLD

1,454 FEET SHIPING CLIFFE BUREAU BUILDING

The Waste Isolation Pilot Plant (WIPP) is a Department of Energy facility designed to safely isolate defense-related transuranic (TRU) waste from people and the environment. WIPP, which began waste disposal operations in 1999, is located 26 miles outside of Carlsbad, New Mexico. Waste temporarily stored at sites around the country is shipped to WIPP and permanently disposed in rooms mined out of an ancient salt formation below the surface. TRU waste destined for WIPP consists of clothing, tools, rags, debris, residue and other disposal items contaminated with radioactive elements — mostly plutonium.

WIPP PR UD

INTEGRITY • SAFETY • OWNERSHIP • TEAMWORK • RESPECT • CONTINUOUS IMPROVEMENT

12,500 SHIPMENTS OF TRU WASTE RECEIVED

15,000,000 SAFE LOADED MILES

DID YOU KNOW?
15 million miles is equivalent to:
 • 602 trips around the world.
 • 33 trips to the moon and back.
 • 4,371 trips across the United States.
 • Running the Boston marathon 576,923 times.
 • 47,668 back-to-school shopping trips to El Paso.
 • 9,615 days in a car, travelling at 65 mph... Are we there yet?

On the heels of receiving its 12,500th shipment, EM's Waste Isolation Pilot Plant (WIPP) is celebrating another transportation milestone after WIPP drivers eclipsed 15 million safe loaded miles, equivalent to about 33 roundtrips to the moon, without serious accident or injury.

"This is a testament to the caliber of driving professional that supports the WIPP transportation program. We are fortunate to have the best of the best driving for us, which is extremely important to safely carrying out our mission."
 — KIM LACHMAN, Acting Manager, Carlsbad Field Office

This Team Exemplifies Our Core Values & Expectations:
 INTEGRITY - MODEL HIGH STANDARDS
 OWNERSHIP - GIVE YOUR BEST EVERY DAY
 TEAMWORK - HELP EACH OTHER ACHIEVE WIPP GOALS

20 WIPP 1999-2019



U.S. Department of Energy
Office of Environmental Management
Nevada Program

Recognizing the Successful Completion of NNS Soil Site

Less than **1%** of Nevada National Security Site (NNS) surface soils contaminated by historic nuclear testing activities

1996 established a framework for investigating, remediating and closing contaminated sites

138 Contaminated Soil sites on the NNS investigated, remediated and completed in accordance with the FFACO

More than **200** Professionals played a technical or administrative role in the closure of the NNS Soil sites

928 Facility (FF) conducted at the NNS from 1951-1992

100 Alternative Remedial Sites

828 Subsequent Contaminations

Coordinated extensively with stakeholders, including the State of Nevada, U.S. Air Force, Tribes, and Nevada Site Specific Advisory Board (NNSAB), to identify and select an approach for completing corrective actions and closure

Radiological Control Technicians covered more than **4,600** miles performing radiological surveys, of which more than 1,600 miles were walkover surveys

More than **2,837** samples were collected to characterize the extent of contamination



Pivotal Time for SRS Tank Waste Mission



Salt Waste Processing Facility (SWPF)

- Undergoing Commissioning and Testing
- Start up currently scheduled for December 2019
- Salt waste processing capacity of 6-9 million gallons per year will accelerate treatment of tank waste



Tank Closure Cesium Removal System (TCCR)

- Successful demonstration of ion exchange technology to treat tank waste
- 150,000 gallons of tank waste treated in January 2019.
- Processing of Batch 2 to begin in early June



Advanced Manufacturing Collaborative (AMC)

- Will provide SRNL with a state-of-the-art facility for developing innovative manufacturing techniques and capabilities



Progress on Hanford Tank Waste Mission



River Corridor Achievements



- 502 Facilities Demolished
- 1,201 Waste Sites Remediated
- 6 Reactors Coooned, 1 Preserved
- 16M Tons Waste Removed



Hanford 618-10 Burial Ground



K Basin Sludge Transfers Nearing Completion





Disposing of debris at Environmental Restoration Disposal Facility



Mentoring new workers



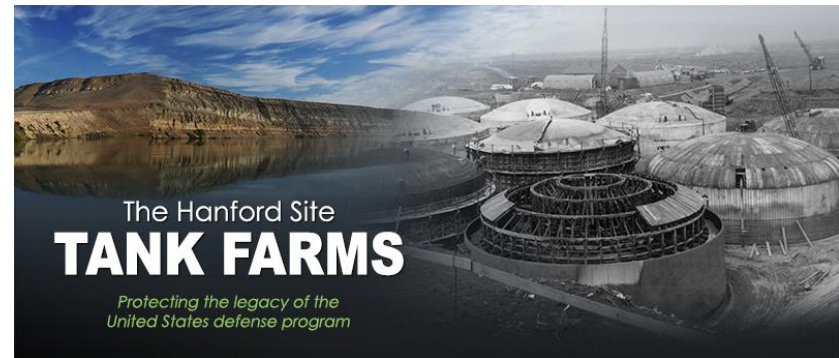
Completed Vault demolition and debris removal.
Began demolition of main processing facility (234-5Z)

Evaluating Opportunities to Drive Tank Waste Mission



By taking advantage of lessons learned from successful DOE cleanups and closures, end state contracting is an approach to driving progress through defined end states, even at sites with completion dates far into the future.

- ✓ Tank Closure Contract at Hanford DOE (\$13 billion over 10-years)
- ✓ Central Plateau Cleanup Contract at Hanford (\$10 billion over 10-years)



Progress Through Collaborations, Effective Decision-making



Commitment to Cleanup Communities



Questions?