



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**

EM HQ Updates Waste Disposition Overview

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Office of Environmental Management

**EM SSAB Chairs Meeting
5 November 2013**

Discussion Outline

- Waste Management Accomplishments and Priorities
- National TRU Program Update
- LLW/MLLW Disposal Update
- Other Programmatic Updates

- Disposition Maps – Current Tools

- **WIPP:** Emplaced 5,065 cubic meters of TRU with 89 percent of shipments departed from TRU waste sites as planned
- **Los Alamos:** Met Framework Agreement goal for FY 13 ahead of schedule, disposing of over 1,800 cubic meters of legacy managed TRU waste
- **Oak Ridge:** Partnered with regulators to develop strategy for mercury cleanup efforts; continued TRU processing
- **SRS:** Completed remediation of all legacy TRU wastes; continued shipments to WIPP
- **Idaho:** Improved operations at the Advanced Mixed Waste Project; repurposed an existing facility for processing of sludge wastes; continued repackaging and shipment of remote handled TRU waste. Shipped 4,454 cubic meters of legacy managed TRU waste, including 2,139 cubic meters of TRU waste to WIPP

- **Portsmouth:** Reached full production rate of the DUF6 Conversion facility
- **Paducah:** 50,000 cubic feet of PCB debris from C-340 disposed offsite
- **Moab:** Shipped 695,071 tons of uranium residual radioactive material for disposal
- **WVDP:** Demolished Building 01-14 removing 34,000 cubic feet of LLW; initiated interim storage pad for HLW relocation
- **SPRU:** Completed construction of enclosures and ventilation systems; began sludge waste processing
- **Nevada:** Disposed 1.099 million cubic feet of LLW/MLLW (82 percent of FY 13 goal)
- **River Protection:** Developed and issued a Hanford Tank Waste Retrieval, Treatment and Disposition Framework
- **Richland:** Continued onsite disposal at ERDF to support site cleanup activities

- **Idaho:** Start treatment of sodium bearing waste; continue CH and RH TRU projects; continue excavation of buried TRU waste;
- **Los Alamos:** Complete 3706 Campaign; work toward other Framework Agreement milestones
- **Carlsbad:** Continue optimized TRU program: LANL, INL, OR and SRS
- **Oak Ridge:** Resumption of TRU waste certification and shipments to WIPP
- **Office of River Protection:** Continue to work with State and regulators on Framework implementation
- **Portsmouth/Paducah:** Continue operation of DUF6 Conversion Plants; Issue Records of Decision regarding on-site disposal facilities
- **Savannah River:** Complete certification of legacy TRU waste and continue shipments; process and disposition non-MOXable plutonium
- **West Valley:** Disposition 3 large components (vitrification melter and two large associated vessels); continue prep for HLW relocation

Los Alamos Accomplishments

- Met goals to remove TRU waste, in accord with Framework Agreement, and in advance of compliance goal
 - 920 cubic meters in FY2012 (FY 12 Goal: 800 cubic meters)
 - 1825 cubic meters in FY2013 (FY 13 Goal: 1800 cubic meters)
 - Remaining to disposition: 961 cubic meters
- Opened largest Perma-Con ever built to size reduce and repackage waste for shipment
- Submitted plan for disposition of below-grade TRU requiring retrieval at Area G



Los Alamos FY14 Priorities/Goals

- LANL Framework Agreement remains a priority
 - Complete disposition of the remaining 3,706 cubic meters of combustible, above-ground TRU waste by June 30, 2014
 - Complete removal of all newly generated TRU received in Area G in FY12 and FY13 by no later than December 31, 2014
 - Continue to protect groundwater and drinking water
 - Groundwater chromium investigation and pilot remediation projects
 - Address flood damage in Canon de Valle
 - Remove PCB-contaminated soils in Los Alamos Canyon, and associated town site remediation



Oak Ridge Accomplishments

- K-25 final phase demolition progressing, with final east wing units being completed
- “F Tank” demolished and waste dispositioned, tallest water tower in U.S.
- Increased focus on mercury cleanup at Y-12; completed conceptual design for new treatment facility



Idaho Accomplishments

- Achieved FY 13 goal to disposition 4,454 cubic meters of historically-managed TRU waste
- Reduced AMWTP MLLW treatment costs by ~50 percent through innovative treatment methods
- To date, about 52,000 cubic meters of the estimated 65,000 cubic meters of TRU waste have been dispositioned offsite



- Continuing activities to begin treatment of 900,000 gallons of sodium bearing waste in Spring 2014



SRS Accomplishments

- Completed disposition of 1,465 cubic meters of legacy CH-TRU in FY 13
- First site to use the TRUPACT-III (132 shipments to date)
- Began in August 2013 grouting of Tanks 5 and 6, which are the 5th and 6th tanks to be closed
- Continuing production of HLW canisters at the Defense Waste Processing Facility (over 3, 700 since 1996)
- Continuing construction of the Salt Waste Processing Facility



Portsmouth/Paducah Accomplishments



- Improved production rates at the DUF6 conversion plants
- Portsmouth/Paducah: continuing CERCLA process toward decisions on waste disposal
- Portsmouth: Demolished X-600 Coal-fired Steam Plant



- Paducah: 28 rail cars filled with debris from C-340 Metals Plant demolition project delivered to an offsite disposal facility

Hanford Accomplishments

- Completed north portion of 300 Area
- Completed the F Reactor Area, the first reactor area at the Hanford Site to be fully remediated
- Reached 15 million tons of contaminated material disposed of at the Environmental Restoration Disposal Facility
- Continued glove boxes removal from the Plutonium Finishing Plant (201 of the 238 total removed)



Office of River Protection: Construction Continues at the Waste Treatment Plant



Will treat the bulk of 56 million gallons of radioactive waste

- FY 14 Planned work includes substantial completion of the Low Activity Waste Facility, Balance of Plant Facilities and Laboratory
- Resolution of technical issues continues

Hanford Tank Waste Framework

- DOE recently shared a Framework for discussion with Washington to work together to resolve issues regarding completion of the waste treatment mission in light of the technical issues that have emerged with parts of the Waste Treatment and Immobilization Plant
- *The Hanford Tank Waste Retrieval, Treatment and Disposition Framework* describes the strategic approach for addressing the risks and challenges to completing the Office of River Protection mission as soon as practicable by implementing a multipronged, phased approach that is designed to accomplish:
 - Beginning immobilization of tank was as soon as practicable through direct feed low activity waste
 - **Processing TRU tank waste for disposal at WPP, should those waste be properly classified as TRU and permitted for disposal at WIPP**
 - Resolving technical issues for the Pretreatment and High Level Waste treatment facilities

West Valley Accomplishments

- Safely demolished the four-story facility, known as the 01-14 Building
- Significantly reducing Sr-90 concentration in groundwater concentration plume via permeable treatment wall
- Completed waste incidental to reprocessing (WIR) determination on two additional vessels that supported the HLW vitrification campaign. Previously, the first WIR addressed the vitrification melter
- Issued policy exemption for commercial disposal of all three WIR components
- Initiated installation of HLW storage facility, permitting relocation of the HLW canisters
- Continued deactivation of Main Plant
- Accelerated disposal of LLW/MLLW



SPRU Accomplishments

- Fulfilled regulatory milestone at the Separations Process Research Unit (SPRU) by completing construction of Building H2 and Building G2 enclosures and ventilation systems, allowing resumption of decontamination and decommissioning cleanup
- Initiated processing of tank sludge, which will ultimately generate ~ 20 liners of stabilized LLW for disposal at the Waste Control Specialists' Federal Waste Facility

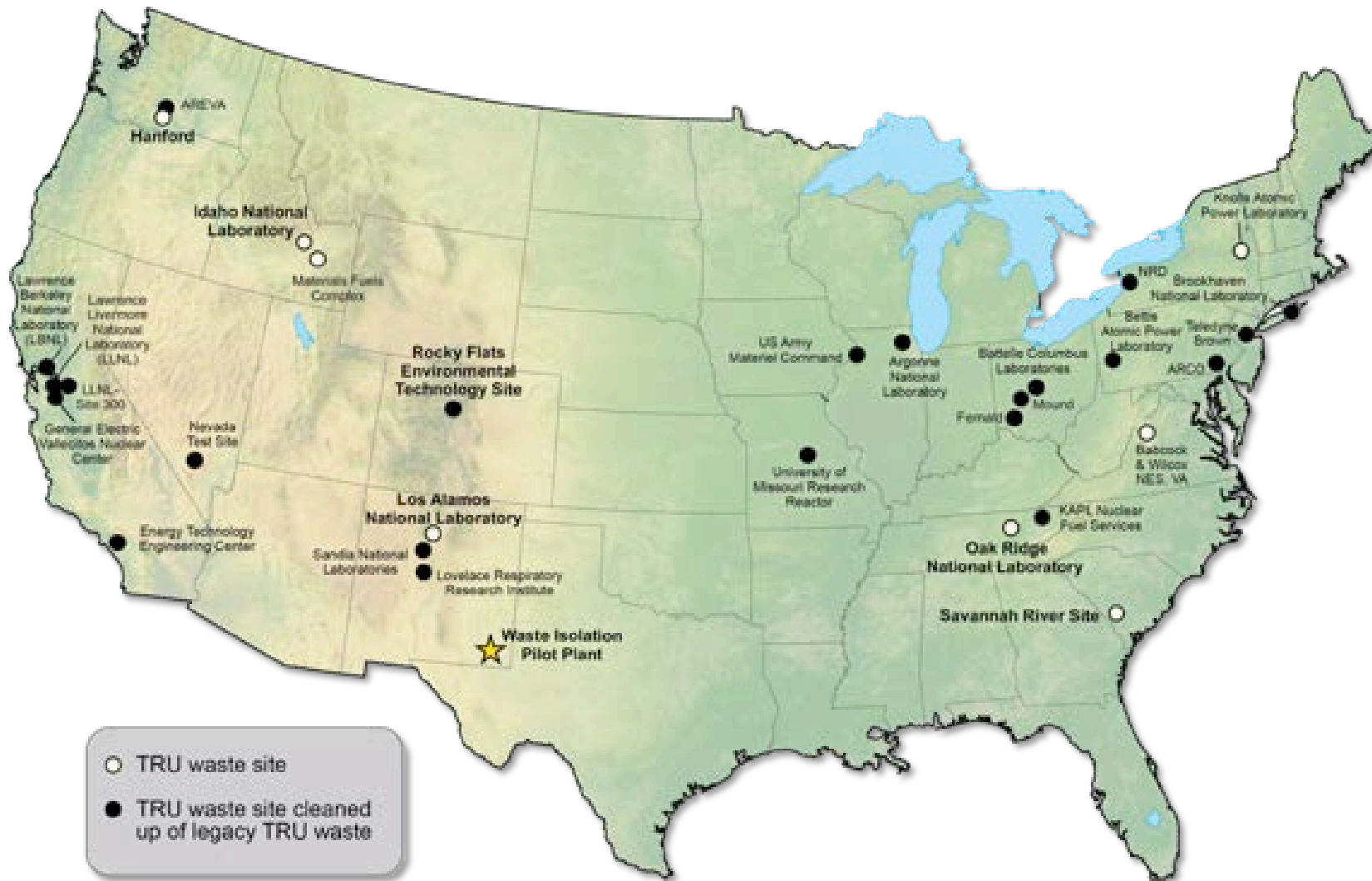


Moab Accomplishments

- In FY 2013, shipped over 695,000 tons of uranium residual radioactive material (cumulative 6.275 million tons) from Moab to our engineered disposal cell near Crescent Junction, UT
- In FY 2013, extracted 200 million gallons of contaminated ground water



Legacy TRU Waste Removed from 22 of 30 Sites

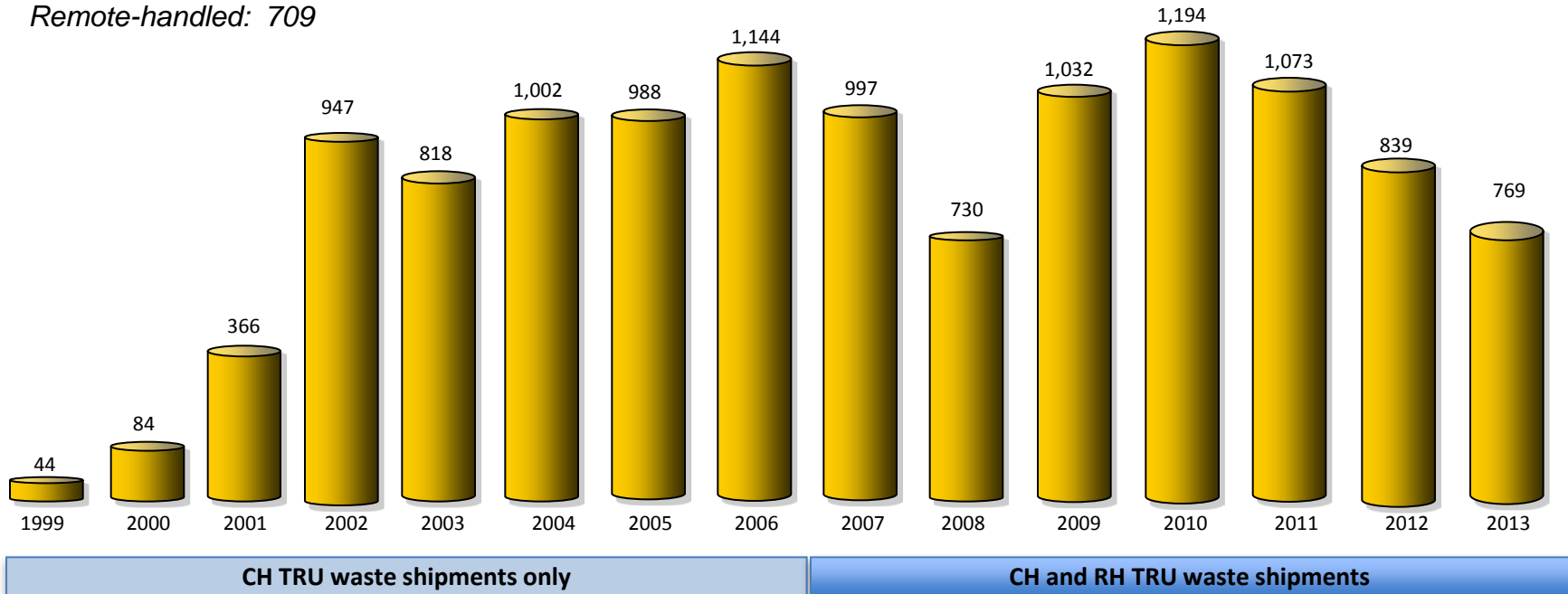


History of Shipments to WIPP

**Shipments received
at WIPP as of September 29, 2013: 11,664**

**89,104 cubic meters during
14 years of safe operations**

Contact-handled: 10,955
Remote-handled: 709



Total Shipments Received by Calendar Year
(Including intersite shipments)

WIPP Safety and Regulatory Compliance are Paramount

- Stellar safety record

- Excellent worker safety
- Star of Excellence for Voluntary Protection Program
- Decades of national recognition for mine rescue teams
- Highest level of recognition for environmental excellence from State of New Mexico



- Key Regulators

- **DOE** - self regulation for nuclear safety and radioactive waste management
- **U.S. Environmental Protection Agency** – Certification to Radioactive Waste Disposal Standards
- **New Mexico Environmental Department** – Hazardous Waste Facility Permit
- **U.S. Nuclear Regulatory Commission** – waste package certification

NNSS Accomplishments

- Continued soil and groundwater remediation activities -- including characterization and monitoring of underground nuclear test contamination, cleanup of above-ground industrial sites and surface soil contamination
- Continued to serve an important cleanup mission as regional disposal facility for DOE LLW/MLLW:
 - DOE sites forecasted disposal in FY 13 Forecast of 1,338,000 cubic feet, but actual disposal was 1,099,000 cubic feet (82%)
 - DOE sites are initially forecasting over 1.4 million cubic feet in FY 14



Status of Disposal at Nevada National Security Site in FY 2013 & 2014 (cubic feet disposed)

Generator Site	FY 2013 Forecast	FY 2013 Actual	FY 2014 Forecast
Portsmouth GDP (OH)	490,000	228,000	440,000
Oak Ridge Reservation (TN)	214,000	150,000	247,000
Oak Ridge NNSA/Y-12 (TN)	144,000	186,000	142,000
Los Alamos National Lab (NM)	103,000	99,000	251,000
Idaho Site (ID)	103,000	99,000	93,000
Livermore Nat'l Lab (CA)	78,000	80,000	23,000
Paducah GDP (KY)	21,000	11,000	56,000
NNSA/Nuclear Fuel Services (TN)	74,000	88,000	70,000
Onsite NNS (NV)	35,000	10,000	23,000
Savannah River (SC)	25,000	17,000	9,000
West Valley (NY)	6,000	43,000	4,000
All other sites	<u>45,000</u>	<u>88,000</u>	<u>65,000</u>
Total	1,338,000	1,099,000	1,423,000

DOE Use of Commercial Disposal Options

- DOE policy supports consideration of commercial disposition options in addition to DOE options, when compliant, cost effective, and in the best interest of the U.S. government
- **EnergySolutions (Clive, Utah)**
 - Accept Class A LLW and MLLW; 11e(2); NORM
 - Offers rail access, onsite treatment, and favorable bulk waste handling and disposal
- **Waste Control Specialists LLC (Andrews County, Texas)**
 - Multiple disposal facilities/licenses
 - Hazardous/exempt; 11e(2); NORM
 - Texas Compact Class A, B and C LLW – non-DOE waste
 - Federal Waste Facility Class A, B, and C LLW/MLLW – DOE waste
 - Offers onsite rail access, onsite treatment and storage capabilities

- EnergySolutions' Clive facility continues to provide a key role in disposition of DOE generated LLW and MLLW
- Most DOE sites are certified waste generators
- Direct railcar access to Clive site allows DOE sites to ship direct or transload from truck at a nearby site
- WVDP disposed building 01-14 debris -- 34,000 cubic ft LLW
- Idaho/AMWTP disposed over 20,000 cubic ft MLLW
- Paducah disposed 50,000 cubic ft PCB debris

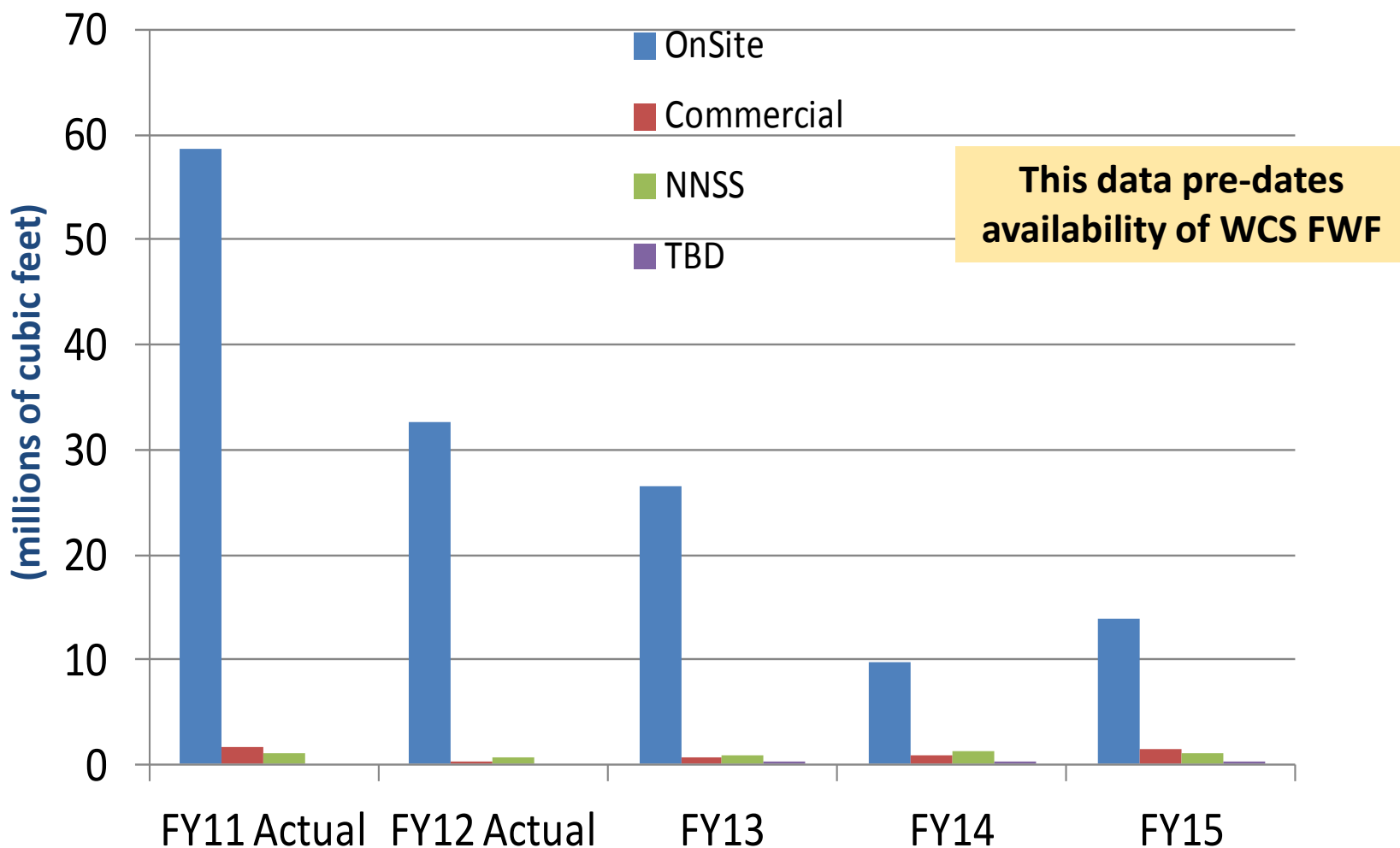


- WCS's Federal Waste Facility (FWF) provides an important, additional disposal alternative for DOE LLW and MLLW
- LANL sent first shipment to the new WCS FWF – shipped over 1,100 cubic yards
 - WCS option has contributed to our successful 3706 campaign for the wastes that were determined to not be TRU
- SPRU processed tank sludge liners are being shipped
- Nine DOE sites have approved programs to ship to WCS, and two more are in process



- DOE updates its life-cycle LLW/MLLW forecasts annually. EM coordinates collection of DOE-wide data with other Program Offices – NNSA, SC, NE, and Naval Reactors
- This information publically available in the Waste Information Management System (WIMS) maintained by the Florida International University (FIU)
- FY 2013 forecasts are currently available at <http://www.emvims.org/>
- This data set reflects approved program baselines as late CY 12.
- FY 2014 data must be considered as preliminary, because the development of the FY 2014 Budget Request was delayed until early CY 13
- At the time this data set was updated, WCS Federal Facility had not yet begun operations

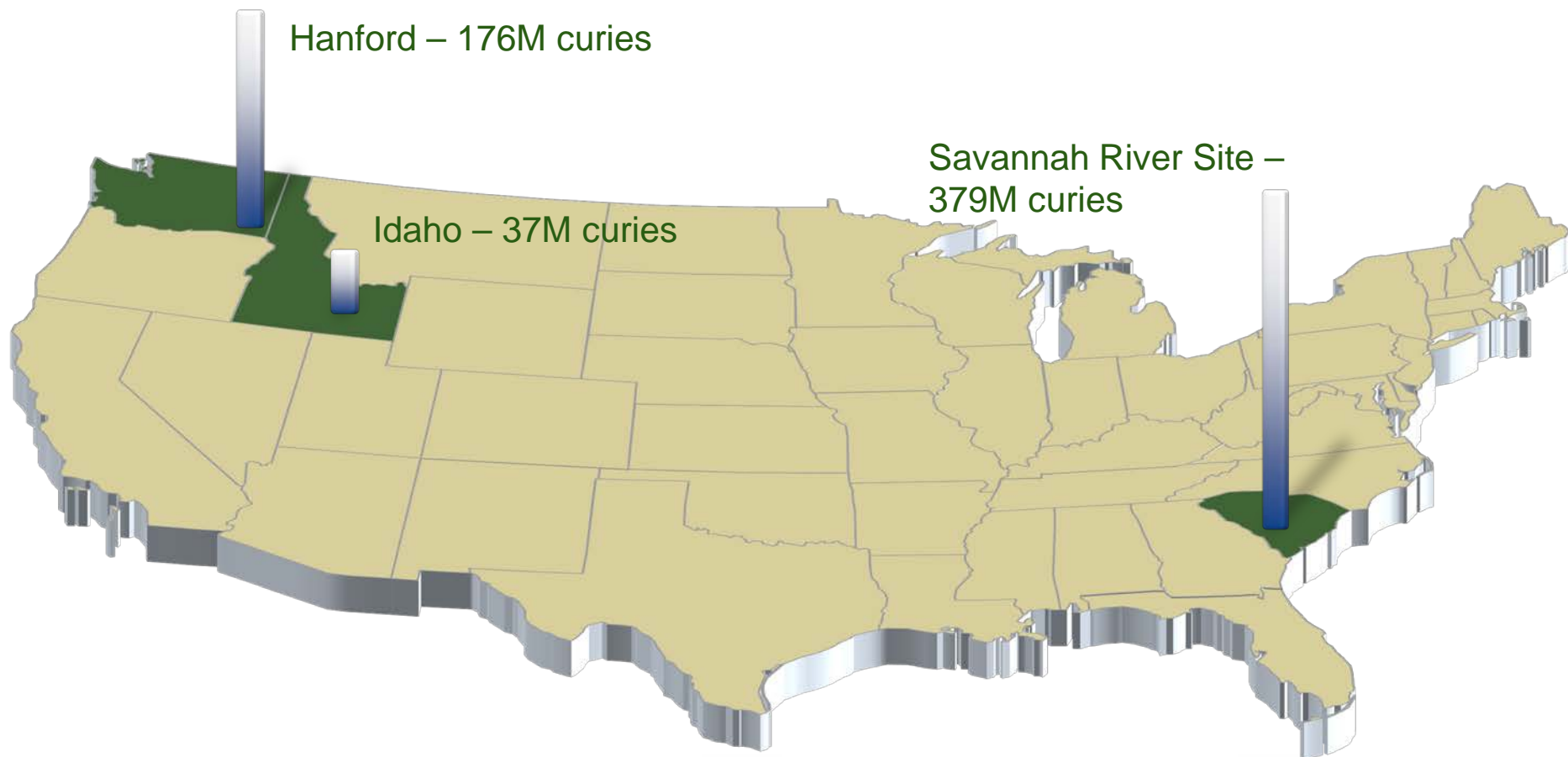
Complex-wide LLW/MLLW Disposal Forecasts Continue Downward Trend



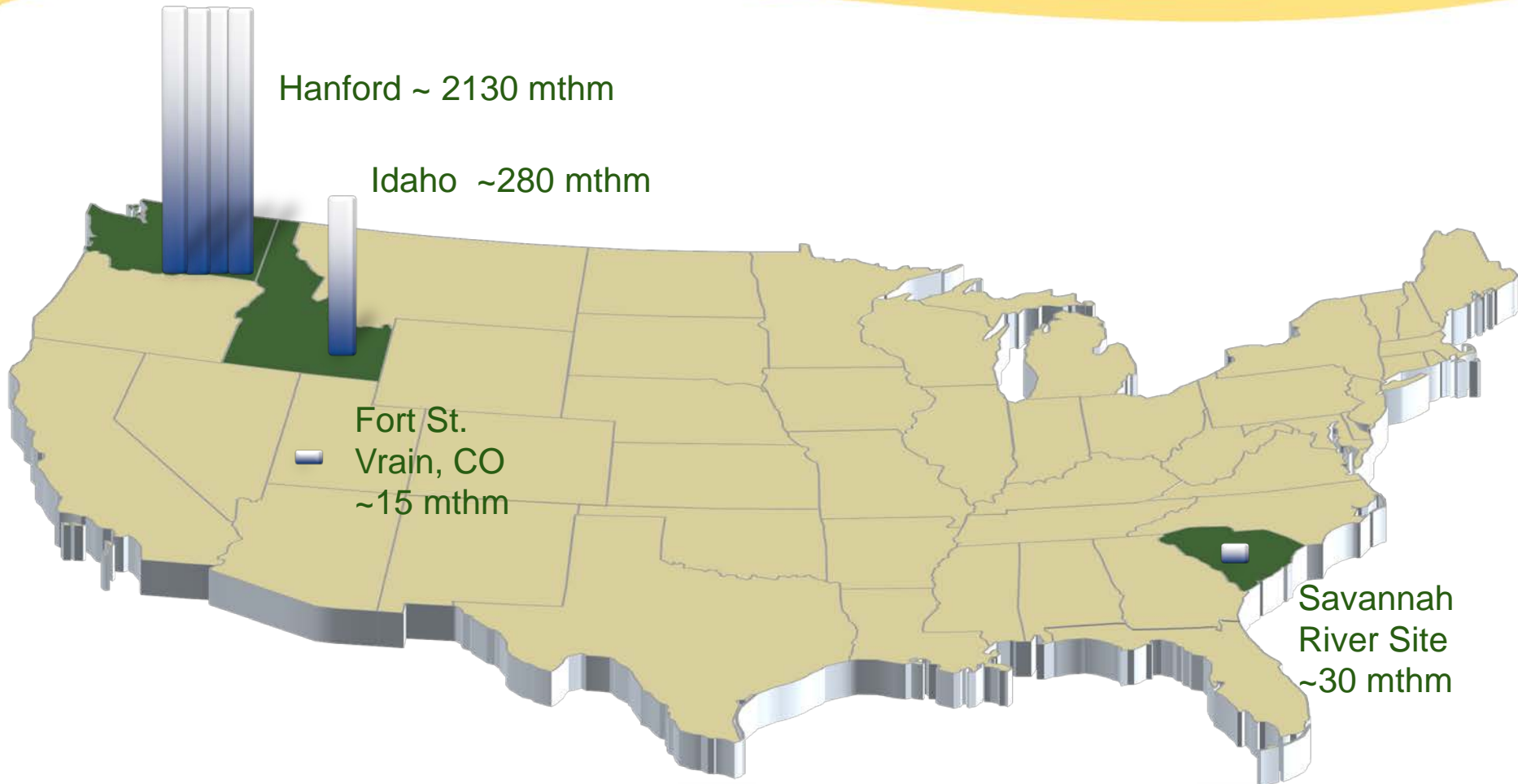
Other Programmatic Updates

- Uranium management
- Metals management – *discussion this afternoon*
- Greater Than Class C (GTCC) LLW EIS
- Mercury Storage EIS
- DOE 435.1 Update
- Pending NRC regulatory changes
- Blue Ribbon Commission-related Actions

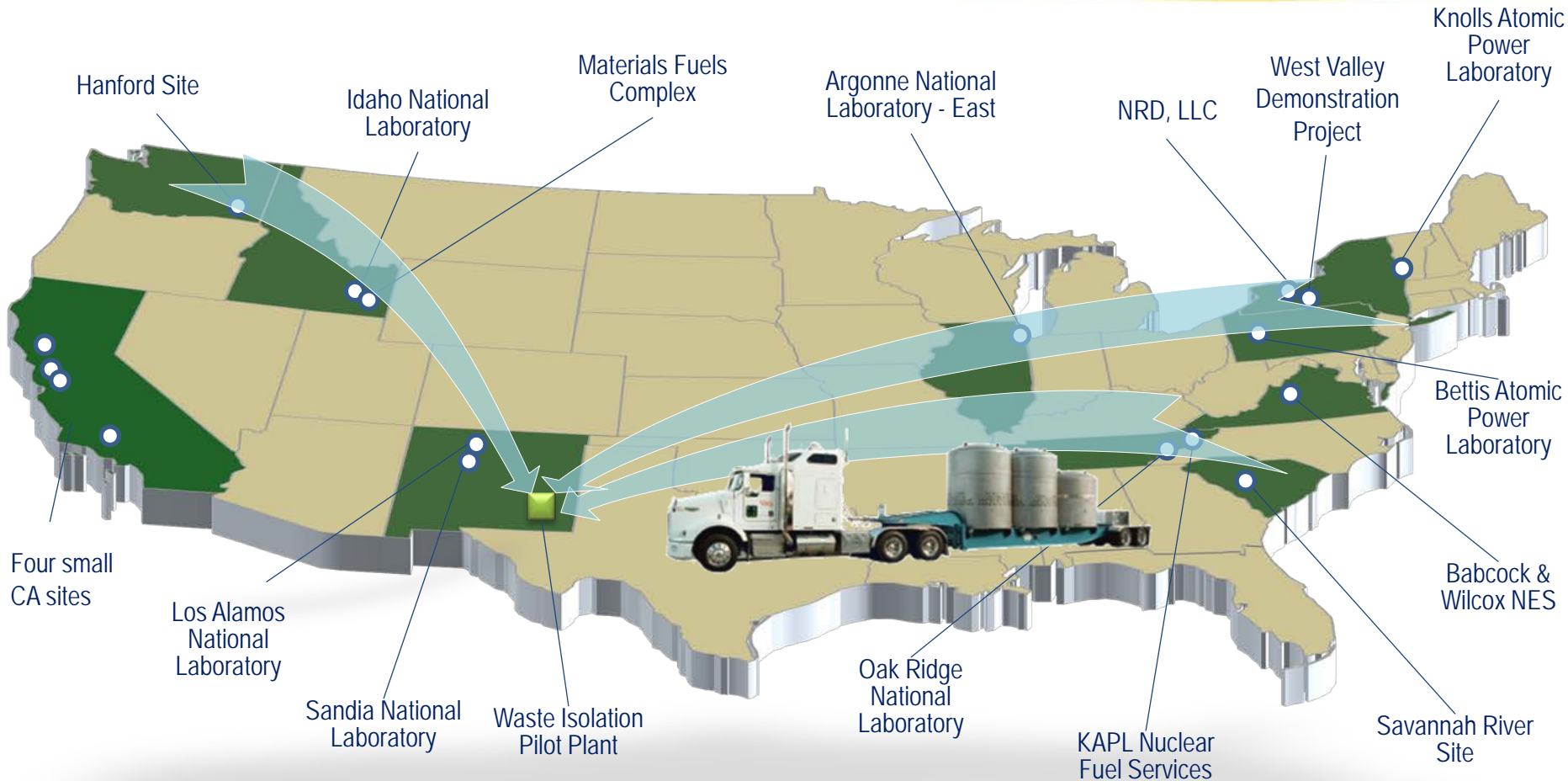
Discussion of Disposition Mapping



DOE SNF Sites



DOE TRU Waste Sites



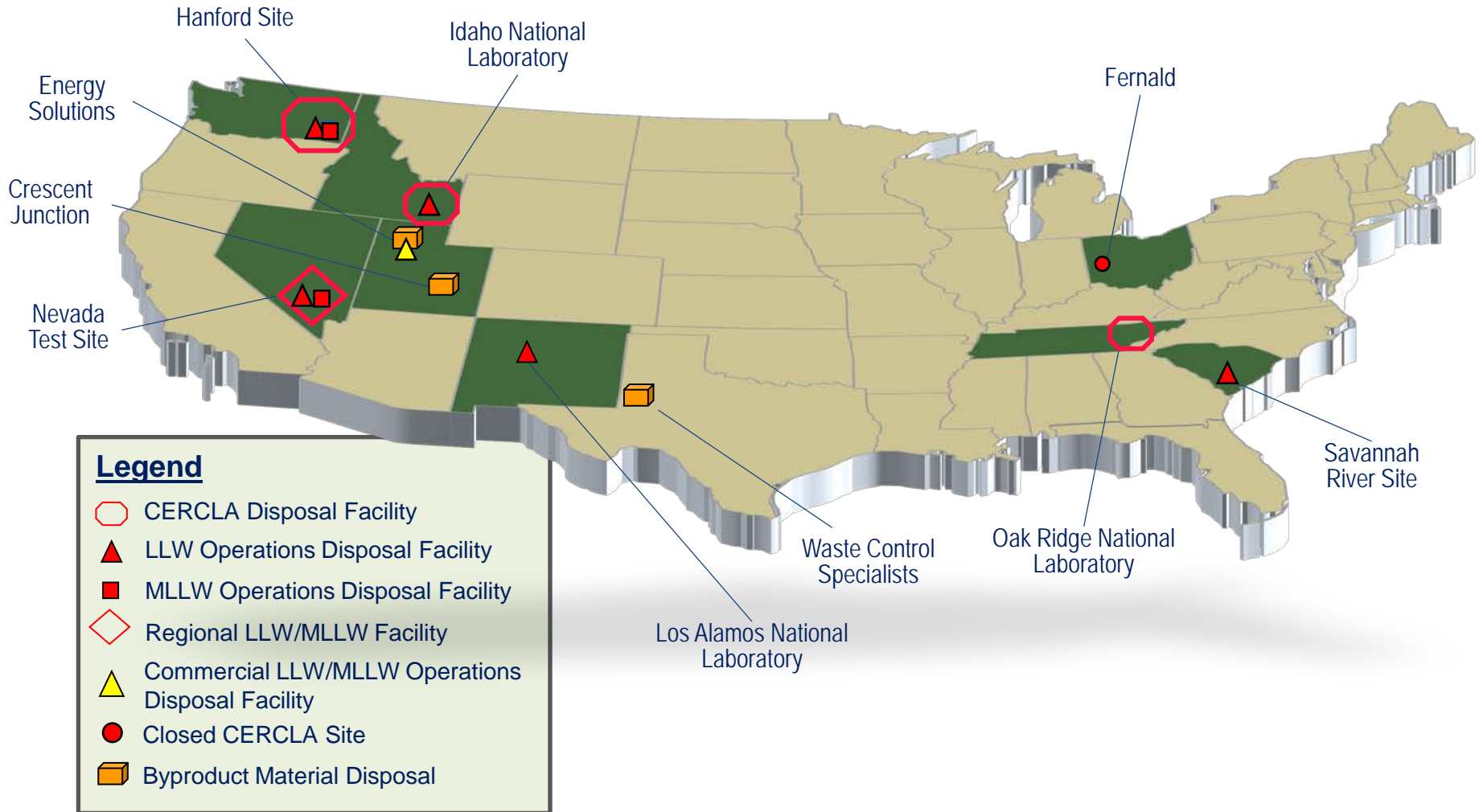
Shipments
11,689

Safe Loaded Miles
13,968,591

Total disposed to date
89,360 m³

As of October 27, 2013

LLW/MLLW Disposition Complex



EM Disposition Summaries

Hanford: ERDF, Mixed waste trenches; LLW burial ground; IDF (future)

- **LLW:** On site, including remediation wastes
- **MLLW:** On site (most); commercial (small volume sent offsite for treatment)
- **TRU:** WIPP
- **HLW & SNF:** TBD
- **SNM:** Plutonium shipped to other sites (complete)
- ★ Hanford selected as regional disposal for LLW/MLLW, put use as such suspended per legal settlement until WTP operations

SRS: E-Area facilities; saltstone vaults

- **LLW:** On site (most); some NNS and commercial
- **MLLW:** NNS and commercial
- **TRU:** WIPP
- **HLW & SNF:** TBD
- **SNM:** downblended Pu to WIPP; other Pu planned for MOX

EM Disposition Summaries

Idaho: ICDF; RH vaults

- **LLW:** Remediation wastes on site ICDF; on site CH vaults (past); RH on site RH vaults; NNSS and commercial
- **MLLW:** NNSS and commercial; remediation wastes may remain onsite
- **TRU:** WIPP
- **HLW & SNF:** TBD
- **SNM:** EM owned shipped to other sites (complete)
- ★ AMWTP receives offsite TRU from select sites for processing and/or certification prior to shipment to WIPP (1 yr schedule limit)

EM Disposition Summaries

LANL: Area G disposal facility

- **LLW:** NNS and commercial; some NNSA LLW on site
- **MLLW:** NNS and commercial
- **TRU:** WIPP

NNS: Area 5 (active); Area 3 (standby)

- **LLW:** onsite
- **MLLW:** onsite
- **TRU:** WIPP (some via AMWTP) – complete
- ★ **NNS** selected and operates as regional disposal for LLW/MLLW

EM Disposition Summaries

Oak Ridge: EMWF ; new CERCLA cell (future)

- **LLW:** Onsite - remediation only; NNSS and commercial
- **MLLW:** Onsite - remediation only; NNSS and commercial
- **TRU:** WIPP
- **DUF6 cylinders:** Portsmouth (complete)
- ★ Historically, OR had DOE disposal facility cell (IMWF), but terminated after detailed technical review

Portsmouth: On site CERCLA cell under evaluation

- **LLW:** NNSS and commercial
- **MLLW:** NNSS and commercial
- **DUF6 conversion product:** TBD – NNSS and commercial options anticipated

Paducah: On site CERCLA cell under evaluation

- **LLW:** NNS and commercial
- **MLLW:** NNS and commercial
- **DUF6 conversion product:** TBD – NNS and commercial options anticipated

West Valley:

- **LLW:** NNS and commercial
 - **LLW WIR components:** WCS
- **MLLW:** NNS and commercial
- **TRU:** TBD, pending GTCC LLW EIS and Congressional decision
- **HLW:** NY owned; on site storage pending repository
- **SNF:** Idaho (complete)
- ★ **NDA and SDA** are historical, closed facilities on site – not DOE facilities

MOAB

- **Uranium tailings:** Crescent Junction disposal cell

Small Sites:

- If **CH TRU:** AMWTP and WIPP
- If **RH TRU:** WIPP
- **LLW:** commercial and NNSS
- **MLLW:** commercial and NNSS

Introduction to WIMS – LLW/MLLW Disposition Data

WIMS - Waste Information Management System

Waste Information Management System

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Welcome to WIMS Waste Information Management System

Receives, organizes, and displays DOE waste forecast data
Automatically generates DOE waste disposition maps
Automatically generates DOE waste pathway GIS maps

WIMS new web address: <http://www.emwims.org>

WIMS is developed to provide DOE Headquarters and site waste managers with the tools necessary to easily visualize, understand, and manage the vast volumes, categories, and problems of forecasted waste streams.

WIMS meets this need by providing a user-friendly online system to gather, organize, and present waste forecast data from DOE sites. This system provides a method for identification of waste forecast volumes, material classes, disposition pathways, and potential choke points and barriers to final disposition.

Disclaimer: Disposition facility information presented is for planning purposes only and does not represent DOE's decisions or commitments. Any selection of disposition facility will be made after technical, economic, and policy considerations. In most cases, data set reflects sites' planning data as of 2Q FY 2012

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WIMS – Custom Report Choices

Display

The screenshot displays the WIMS interface with the following elements:

- Header:** "Waste Information Management System" with navigation buttons: Home, Contact Us, Help, Profile, Logout.
- Welcome Message:** "Welcome Jonathan Kang to WIMS".
- Navigation Menu:** Forecast Data, Disposition Map, GIS Map, Transportation, Reports.
- Filters:**
 - Waste from: All Sites
 - Waste to: All Facilities
 - Fiscal Year: From 2013 To 2043 To 2050
 - Waste Type: All Materials
- Report Selection:** Total Quantities, Base Quantities, ARRA Quantities.
- Action:** A green button labeled "Display Forecast Data".

Disclaimer: Disposition facility information presented is for planning purposes only and does not represent DOE's decisions or commitments. Any selection of disposition facility will be made after technical, economic, and policy considerations.

Forecasts Data Table Details by Waste Stream

Display

Waste Information Management System

Home | Contact Us | Help | Profile | Logout

Welcome Jonathan Kang to WIMS

Forecast Data | Disposition Map | GIS Map | Transportation | Reports

Waste from: Paducah Gaseous Diffusion Plant

Waste to: All Facilities

Fiscal Year: From 2013 To 2017

Waste Type: Low Level Waste

Total Quantities Base Quantities ARRA Quantities

Display Forecast Data

Waste forecast to be disposed from Paducah Gaseous Diffusion Plant to All Facilities for Low Level Waste Material(s) in m³ (Fiscal Year: 2013 --2017)

Row No	Reporting Site	Disposition Facility Name	Waste Stream Name	Field Stream ID	Managing Program	Classifi
1	Paducah	Area 5 LLW Disposal Unit (NTS)	SWMU 4 Soil/Debris	SWHU4LLW	Environmental Management	Yes
2	Paducah	Area 5 LLW Disposal Unit (NTS)	Classified New Generated Debris/Metals	SoilLLW3	Environmental Management	Yes
3	Paducah	Energy Solutions-Clave (formerly Envirocare)	Yard Waste (concrete and wooden checks)	Yard wst	Environmental Management	No
4	Paducah	Energy Solutions-Clave (formerly Envirocare)	Paint Pines	Paint Fine	Environmental Management	No
5	Paducah	Area 5 LLW Disposal Cell (NTS)	Rad Sealed Sources	Sealed Sources	Environmental Management	No
6	Paducah	Commercial TBD	Nickel Ingots	Metal Ingots	Environmental Management	Yes
7	Paducah	Energy Solutions-Clave (formerly Envirocare)	Floor Sweepings	Fir Sweep	Environmental Management	No
8	Paducah	Energy Solutions-Clave (formerly Envirocare)	D&D LLW Liquid	LiqLLW1	Environmental Management	No
9	Paducah	Energy Solutions-Clave (formerly Envirocare)	HEPA Filters	HEPA	Environmental Management	No
10	Paducah	Energy Solutions-Clave (formerly Envirocare)	Paducah LLW Debris	SoilLLW2	Environmental	No

GIS Map Displays Selected Data

PHOTO

Waste Information Management System

Home | Contact Us | Help | Profile | Logout

Welcome Jonathan Kang to WIMS

Forecast Data | Disposition Map | **GIS Map** | Transportation | Reports

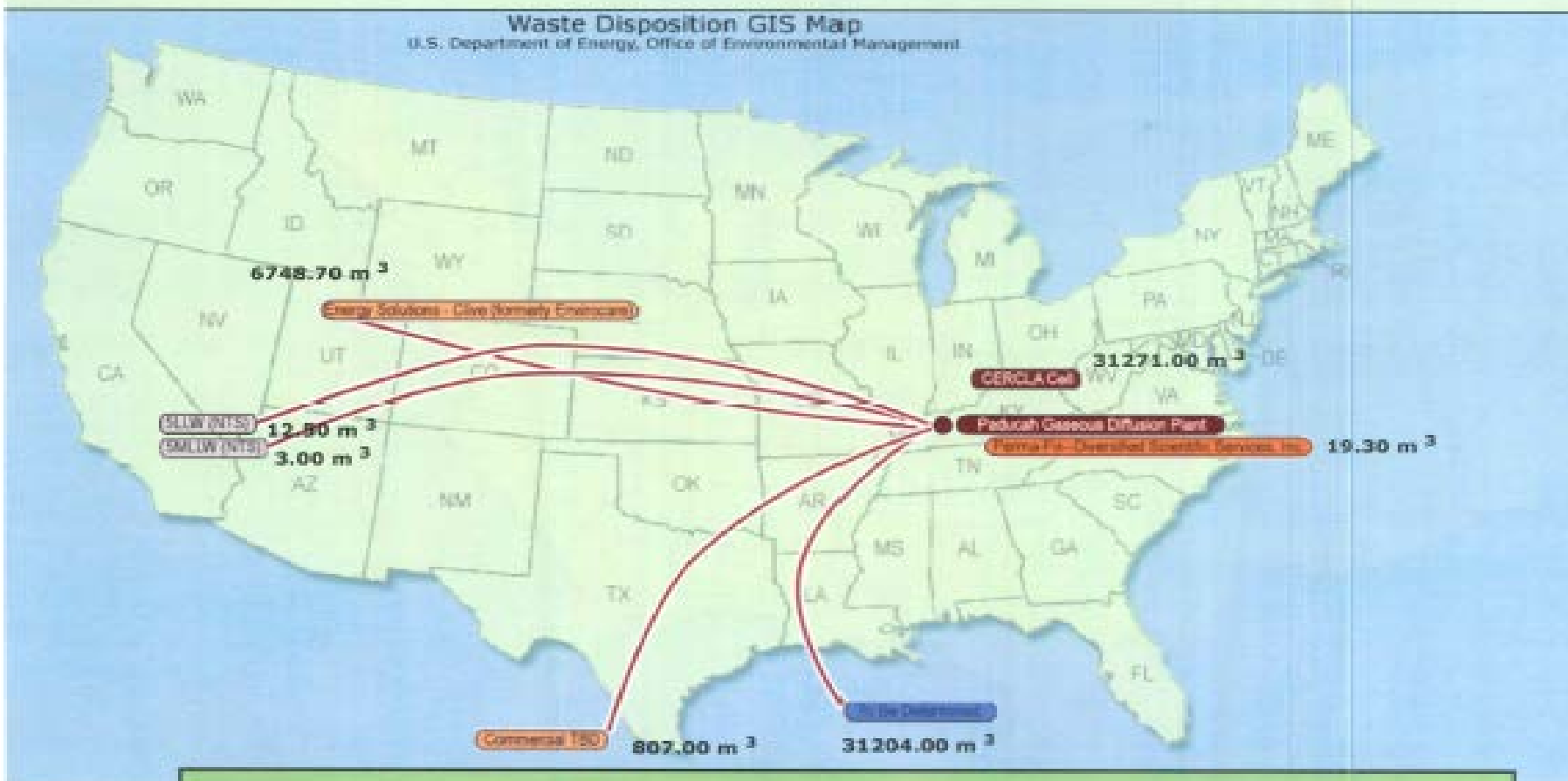
Waste disposed from: Paducah Gaseous Diffusion Plant

Waste disposed to: All Facilities

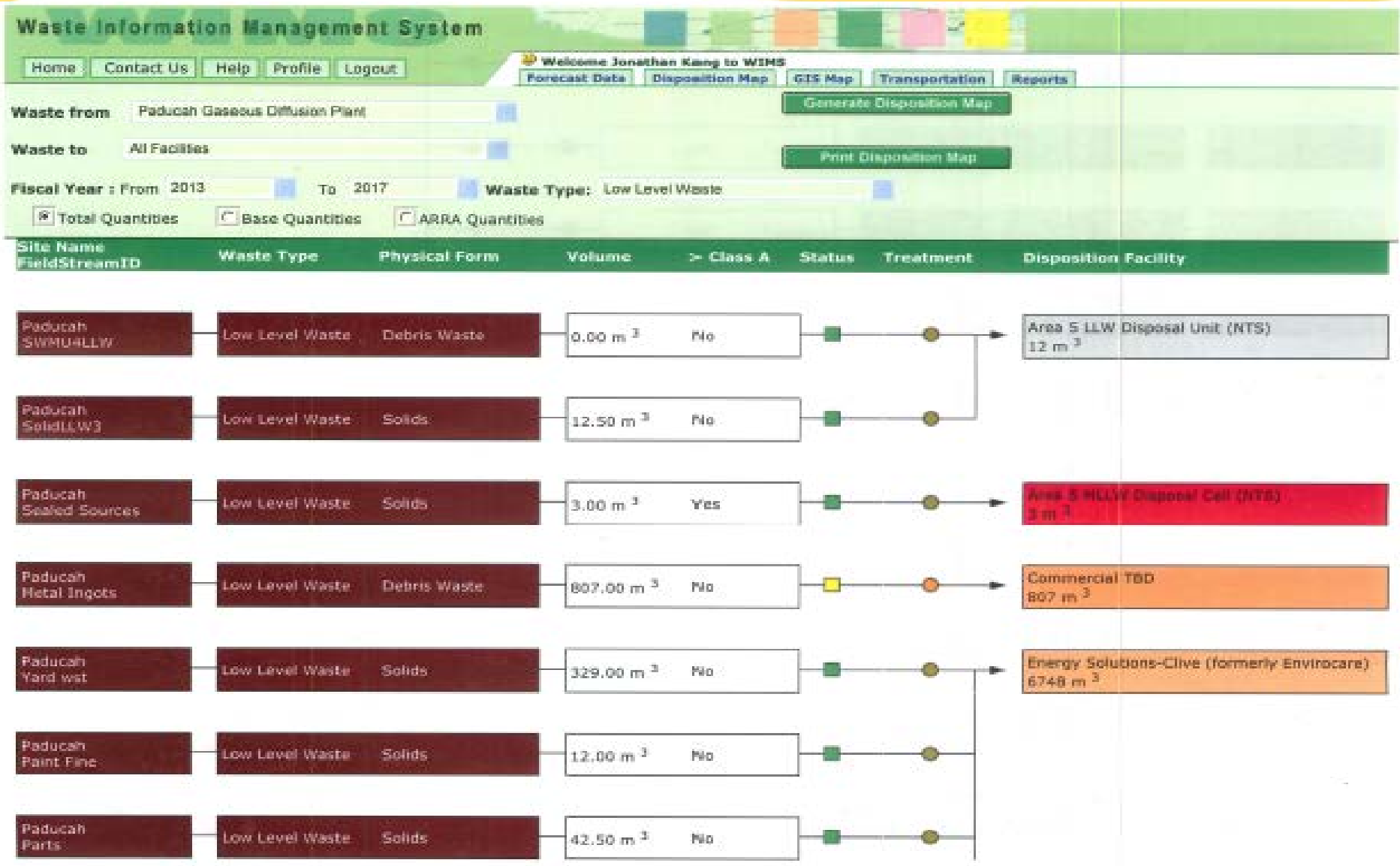
Fiscal Year: From 2013 To 2017 Waste Type: Low Level Waste

Total Quantities Base Quantities ARRA Quantities

Generate GIS Map | Print GIS Map



Disposition Map Provides Waste Stream Details



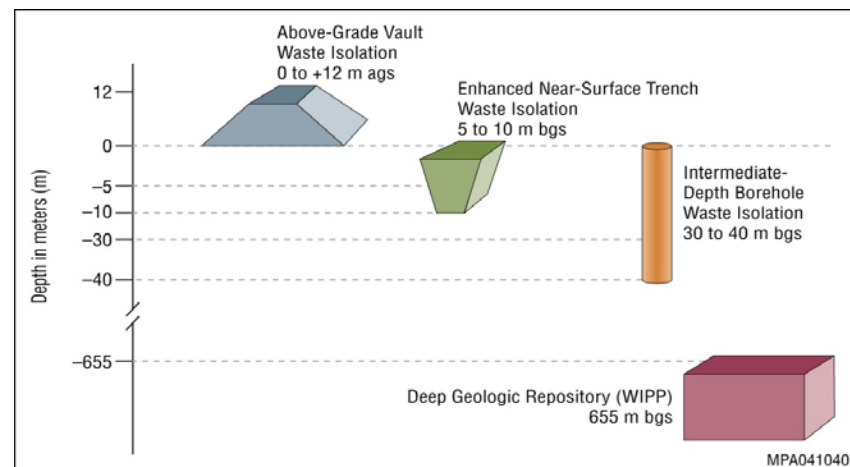
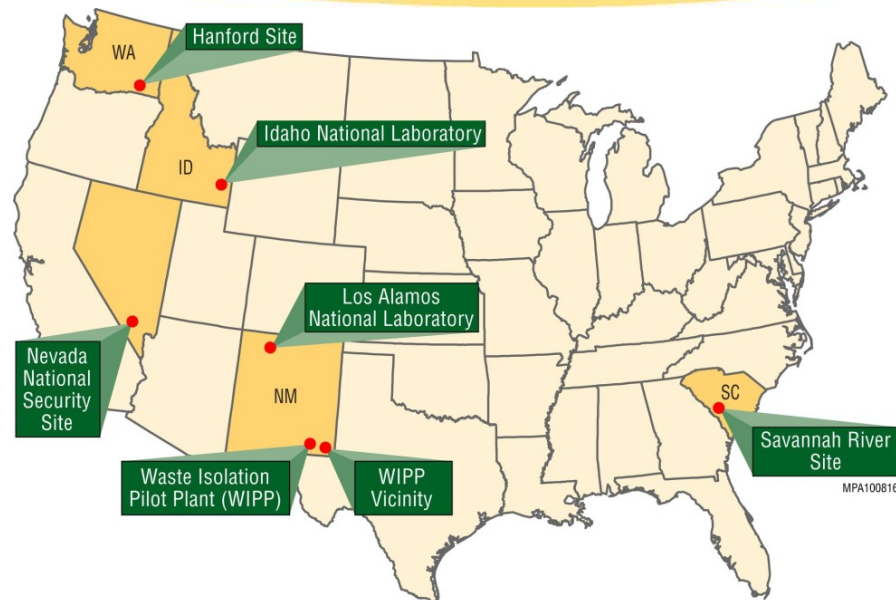
In Closing...

- In these budget constrained times, it is more important than ever that DOE – and more broadly, the US -- optimize its waste management system to ensure environmental cleanup can continue
 - Continued integration and flexibility are critical
 - Political and social influences are increasing
 - Financial and economic factors present real constraints
 - Pending and contemplated regulatory changes will also have impact
- The Path Forward....
 - Continue close consultation with and among stakeholders
 - Ensure plans are risk informed
 - Continue to encourage innovation and identification of new disposition options

Backup Slides

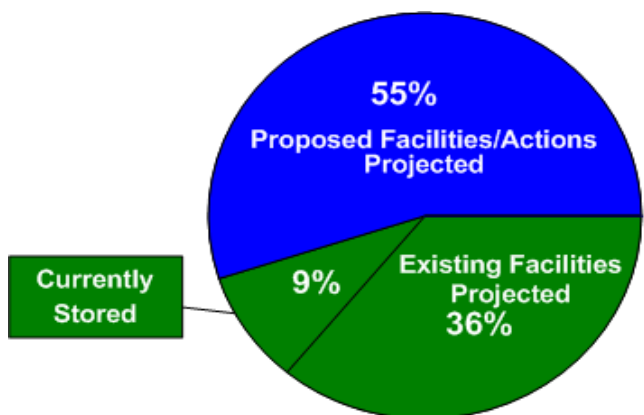
GTCC—Disposal Alternatives Evaluated

- No Action: Continue current storage/management practices
- Geologic Repository at Waste Isolation Pilot Plant (WIPP)
- Boreholes at Hanford, Idaho National Laboratory (INL), Los Alamos National Laboratory (LANL), Nevada National Security Site (NNSS), WIPP Vicinity, and generic commercial location in Region IV (west)
- Trenches at Hanford, INL, LANL, NNSS, Savannah River Site (SRS), WIPP Vicinity and generic commercial location in Regions II and IV (southeast and west)
- Vaults at Hanford, INL, LANL, NNSS, SRS, WIPP Vicinity, and generic commercial location in Regions I-IV (northeast, southeast, midwest, and west)

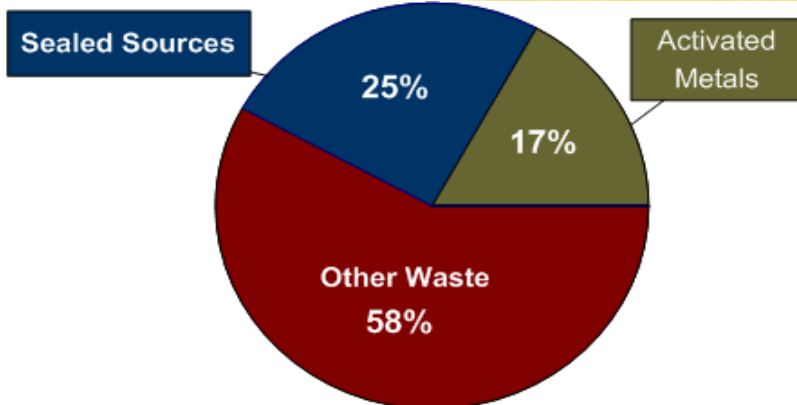


Draft GTCC EIS did not contain a preferred alternative (preferred alternative to be included in Final GTCC EIS).

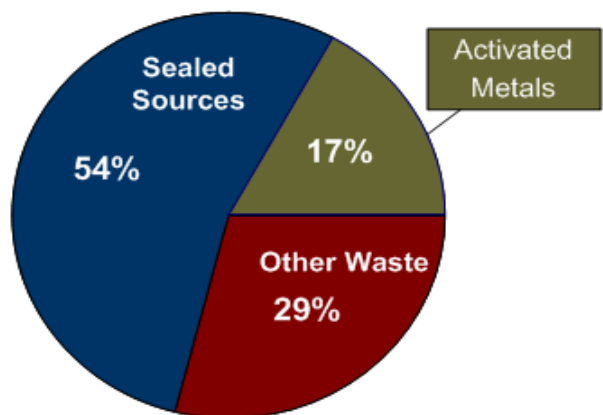
GTCC—Waste Inventory



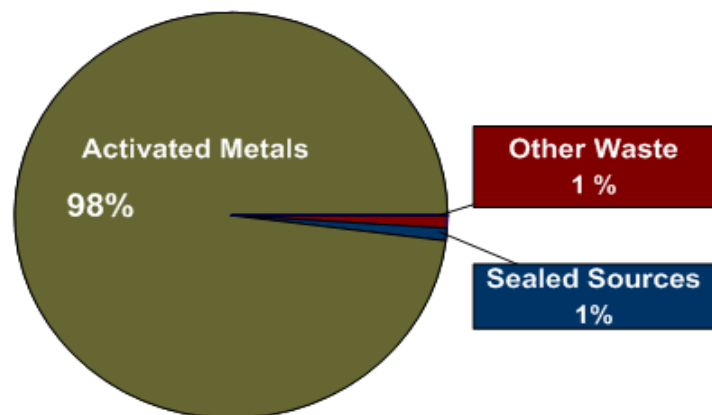
Total Volume of Waste = 11,600 m³
 Stored & Projected (existing facilities) = 5,200 m³
 Projected (proposed facilities/actions) = 6,400 m³



Total Volume by Waste Type
 Activated Metals: 2,000 m³
 Sealed Sources: 2,900 m³
 Other Waste: 6,700 m³



Total Volume of Stored & Projected Waste (existing facilities)
 Activated Metals: 890 m³
 Sealed Sources: 2,800 m³
 Other Waste: 1,550 m³



Waste Type Curies for Total Waste Volume
 Activated Metals: 160 MCi
 Sealed Sources: 2 MCi
 Other Waste: 1MCi

GTCC EIS Update

Prepare Final EIS (2012/2013)



Issue Final EIS (CY 2014)



Await Congressional Action (2014)



Issue Record of Decision (2014/2015)

Submit Report to Congress (2014)



In accordance with Section 631 of the Energy Policy Act of 2005 & Section (3)(b)(1)(D) of Low-Level Radioactive Waste Policy Amendments Act, the Report to Congress will:

- Propose actions to ensure safe disposal of such identified radioactive wastes
- Describe alternatives under consideration
- Identify the Federal and non-Federal options for disposal
- Describe projected costs
- Identify options for ensuring that the beneficiaries of the activities resulting from the generation of GTCC waste bear all reasonable costs of disposing of such wastes
- Identify statutory authority required for disposal of GTCC waste