

Update on Waste Disposition

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Site-Specific Advisory Board Chairs Meeting

Santa Fe, NM

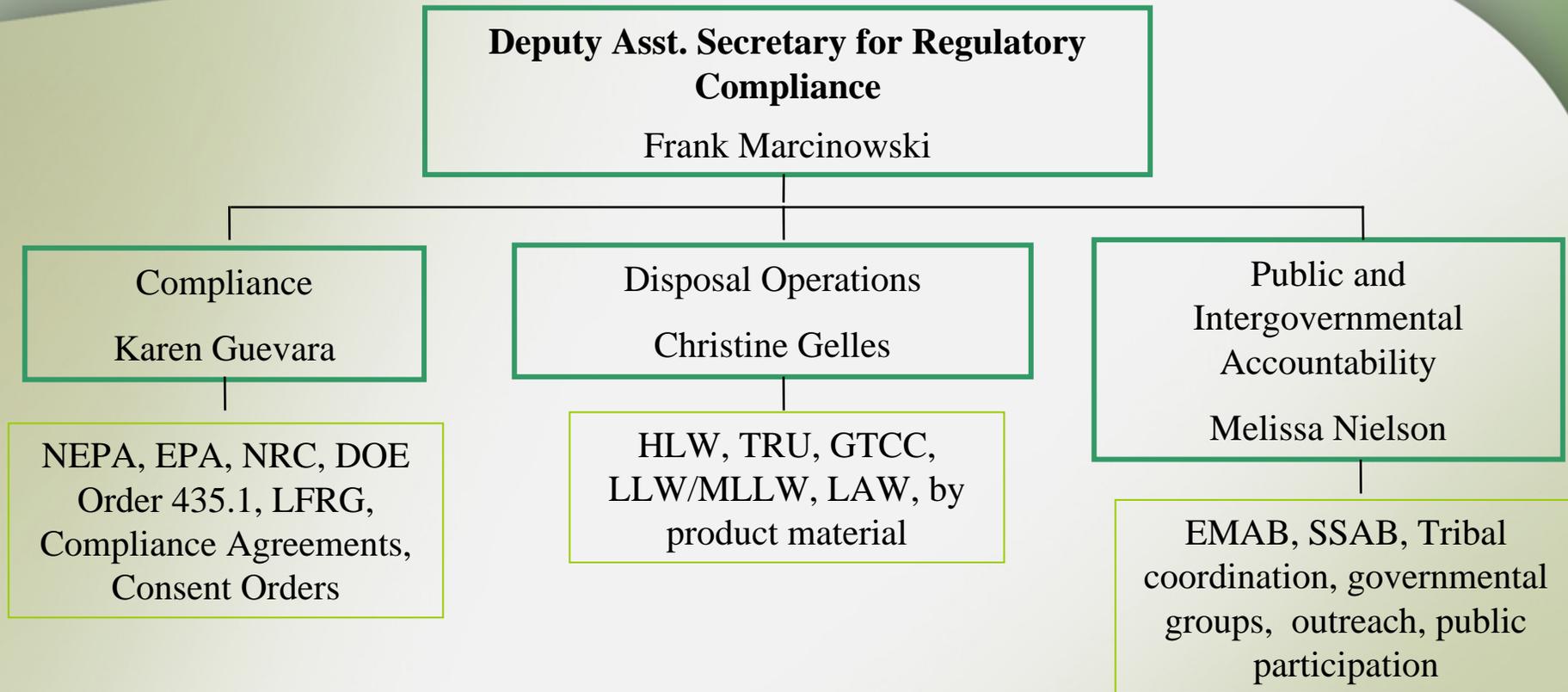
September 2006

Outline of Presentation

- New organization and mission
- What's new in EM's waste disposition efforts
 - LLW/MLLW
 - TRU
 - GTCC
 - HLW and other materials
- Status of disposition plans and documents
 - Status of Waste Information Management System
- Summary of FedRAD II+
- Other programmatic and external developments
- Questions, answers and discussion



New organization centralizes regulatory, technical and strategic activities related to disposition

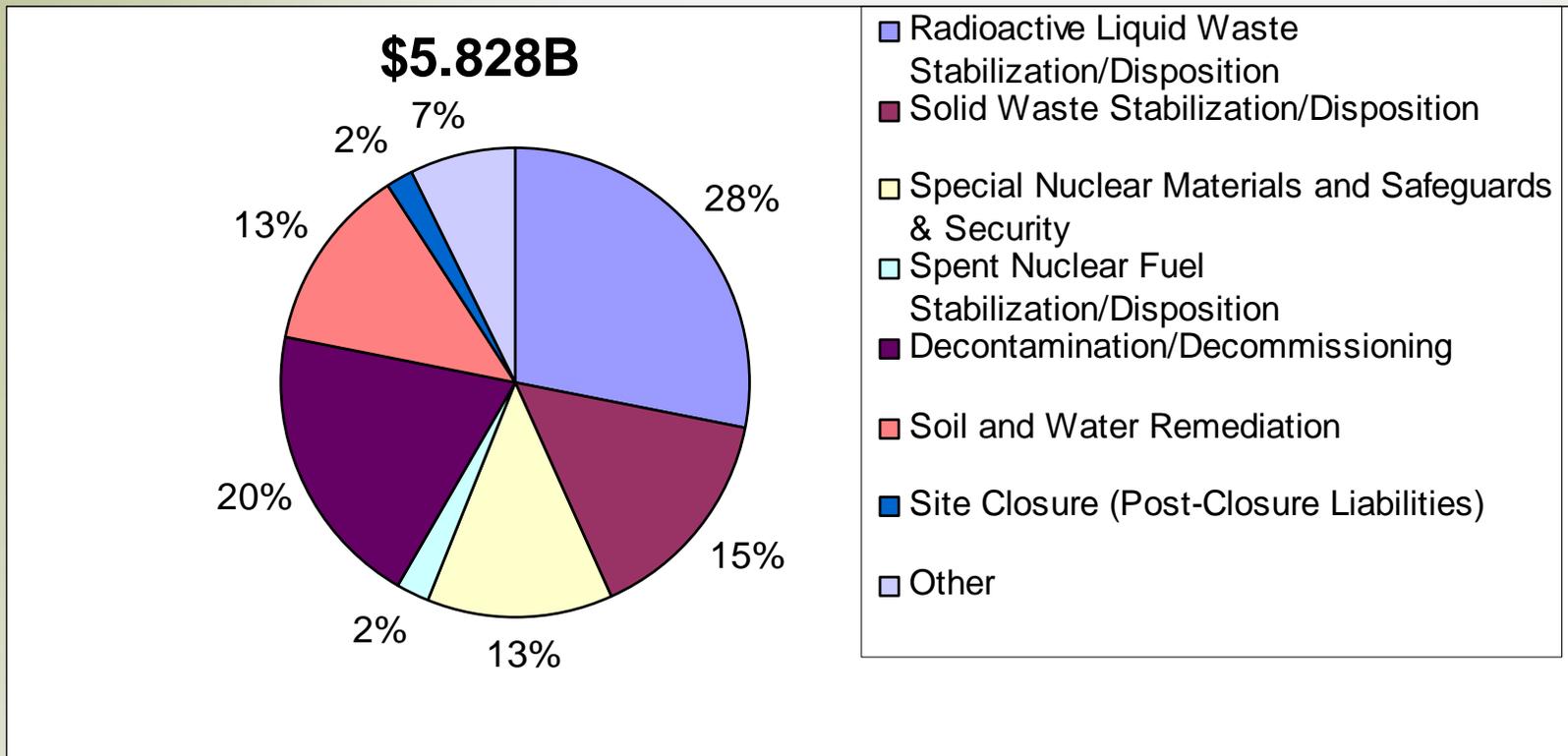


- Leads on matters related to EM's legal and regulatory responsibilities
- Supports implementation of waste disposition plans
- Serves as primary interface with stakeholders within and outside DOE
- Office of Program Integration leads on nuclear material issues



Majority of EM resources support disposition projects

- 45% of the FY 2007 budget directly supports disposition projects
- Another 33% supports remediation and D&D projects which generate waste



Other is comprised of:
Program Direction, Technology Development, Contribution to the D&D Fund, Uranium/Thorium Reimbursements, Headquarters, and Community and Regulatory Support



What's new in...LLW and MLLW Disposition

DISPOSAL PROJECT HIGHLIGHTS

- Reduced volumes forecast to the Nevada Test Site (NTS)
 - Led to changes in funding mechanisms
 - Effort to more fully utilize MLLW cell capacity

- Idaho LLW Disposal Needs Study Status
 - Cleanup contract assumes subsurface disposal area (SDA) closes
 - Contact-handled LLW ends in 2008, remote-handled LLW in 2009
 - Lab contractor (BEA) to address future LLW on-site disposal alternatives
 - Briefing by INL in July 2006 on BEA LLW disposal alternatives analysis
 - BEA to provide detailed plan describing how disposal capacity for LLW will be available after closure of the SDA
 - HQS Office of Nuclear Energy plans to initiate project in 2007
 - CD-0 January 2007 and CD-1 October 2007, tentatively



What's new in...LLW and MLLW Disposition

➤ Columbus Closure Project

- Small business closure contract
- Waste volumes significantly greater than anticipated
- Physical completion (on site) declared June 2006
- Final LLW waste just disposed at NTS (repackaged at Bear Creek Facility)
- CD-4 in September/October 2006

➤ Ashtabula Closure Project

- First ID/IQ contract for site closure
- Physical completion expected in November 2006 (delayed due to rain)
- Shipping via rail to Clive continues
- Less waste from waste management unit (WMU) than expected
- CD-4 in January 2007



What's new in...LLW and MLLW Disposition (cont)

➤ Fernald Closure Project

- Physical completion expected October 2006
 - Final disposal of Silos 1 & 2 wastes is outside of contract scope
- On site CERCLA disposal cell expanded to accommodate increased waste volumes; now being capped
 - Final wastes to be disposed in OSDF this week
 - Over 3 million cubic yards disposed in 8 cells
- Five more rail shipments (50 car unit trains) to Clive remain
- CD-4 projected in December 2006/January 2007
- Silos 1 and 2 disposal
 - Managed as 11e(2) by-product material
 - Stored at Waste Control Specialists (WCS) Facility in Texas
 - WCS's application for by-product disposal license is pending



What's new in...LLW and MLLW Disposition (cont)

- **Miamisburg (Mound) Closure Project**
 - Physical completion of Closure Contract scope in July 2006
 - Contract does not include exhumation of OU-1
 - Issues remain regarding storm water and sewer system, impeding final transfer of parcels, as anticipated in site sales agreement
- **Mound OU-1 Project**
 - Request for Task Proposal issued July 2006 under ID/IQ
 - Bids due yesterday; contract award expected in early October 2006
 - A fixed-price/fixed-fee contract for \$30M, per Congress
 - Excavate/dispose as much as possible for rail shipment
 - Scope includes remediation of rail line and soil storage yard
- **West Valley Demonstration Project**
 - Acquisition underway for new contract for Interim End-State
 - Proposals submitted May 2006, under evaluation
 - Award decision expected soon
 - Pending transition, new contract efforts could begin in January 2007
 - Disposal of Drum Cell waste at NTS began in July 2006



What's new in...LLW and MLLW Disposition (cont)

TREATMENT & DISPOSITION PROJECT HIGHLIGHTS

- TSCA Incinerator
 - Oak Ridge and EM HQs collaborated on recommendation for continued operations
 - Work continues to implement improvements to TSCA system
- Final treatment/disposal of Rocky Flats wastes
 - MLLW continues to be processed at WCS and disposed at Clive. Completion expected late in CY 2006.
- Treatment of Portsmouth High SNM Waste Streams
 - Waste streams in process of down-blending for offsite transport, storage and treatment
- “DUF6” Conversion Projects
 - Construction continues at both Portsmouth and Paducah
 - Draft Supplemental Analysis for selection of disposal sites will soon be available for public comment.
 - 30 day comment period
 - Records of Decision to follow 45 days after publication of Final SA (and comment resolution document)
- ²³³U/Building 3019 Disposition Project
 - FY 2006 Congressional actions transferred project from NE to EM
 - Required Report to Congress provided March 2006
 - Technical alternatives analysis underway
 - CD 2/3A anticipated by the end of the calendar year



What's new in...LLW and MLLW Disposition (cont)

PROGRAMMATIC UPDATES

- Hanford Litigation
 - U.S. District Court ruled in DOE's favor in June 2006, declaring the Cleanup Priority Act invalid
 - State of Washington filed a Notice of Intent to Appeal in July
 - Per negotiated Settlement Agreement in NEPA case, off-site waste shipments to Hanford remain suspended (with few stipulated exceptions)
 - New Tank Closure and Waste Management Environmental Impact Statement is under development
 - Projected completion in mid-2008
 - Analyzes potential life-cycle volumes of off-site wastes
 - EM's Office of Disposal Operations provided estimate and methodology for potential future offsite waste volume
- DOE continues to monitor the WCS license process for the planned compact and Federal disposal cells



DOE Continues to Optimize TRU Disposition

- Current efforts are focused on optimization and maintaining shipment momentum:
 - In FY 1999, averaged 1.5 shipments/week
 - In FY 2005, averaged 20 shipments/week
 - In FY 2006, averaging 22 shipments/week (33/wk record in February 2006!)
 - Filling pipeline (creating characterized backlog)
 - Fully utilizing capacity
- Over 41,000 m³ of contact-handled TRU waste disposed since March 1999.
- Over 4,900 truck shipments from eight sites completed.
- All shippable legacy TRU removed from 17 sites.
- Shipped over 11,000 m³ (cumulatively) from INL!
- Savannah River met 1,000m³ commitment
- Celebrating 5000th shipment in September



Information as of 8/28/06



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What's new in... TRU Waste Disposition

- Section 311/RH permit modification pending
 - Awaiting Hearing Officer recommendation to Secretary of New Mexico Environment Department (NMED) expected September 18.
 - NMED Secretary recommendation expected November 3.
- RH TRU preparations continue
 - Preparations continue at generator sites and WIPP
 - CTAC reviews; EPA/NMED inspections; readiness preparation
 - Expect first RH shipment 4 to 6 months after issuance of 311/RH permit
 - Gradual ramp up to 6 shipments per week
- TRUPACT-III
 - Certification testing to occur this Fall
 - NRC approval expected in late 2007
 - Fabrication and incorporation into fleet
 - Regulatory approvals, as needed



TRU Waste Shipping Assumptions

Shipping Goals:

- Attain/maintain 30 CH shipments per week
 - At 20 shipments per week, INL would complete in FY 2012
 - At 4 shipments per week, LANL would complete in FY 2012
 - At 4 shipments per week, SRS would complete in FY 2012 with the possible exception of the large box inventory
 - At 2 shipments per week, Hanford's shipping schedule would extend beyond FY 2012

- Pending permit approvals, initiate RH shipments in FY 2007
 - Initially 1 RH shipment per week, ramping to 3 RH shipments per week, then to full 6 RH shipment per week capacity



What's new in... TRU Waste Disposition

➤ Savannah River Site highlight

- Received TRU waste from Battelle Columbus Lab to support site closure
- Negotiated agreement with SC required DOE to disposition 1,000m³ of TRU-managed waste by end of FY 2006
- Milestone met one month early!

➤ Nevada Test Site highlight

- ID/IQ RTP issued for characterization and repackaging of large box TRU
- Bids due this week
- Selection/award planned by end of FY 2006

➤ TRU waste carrier acquisition underway

- Bids currently under review
- Award planned by end of CY 2006
- Existing contracts extended (month by month) to support award and transition (if necessary)



What's new in... GTCC LLW Disposition

- Report to Congress required by the Energy Policy Act delivered to Congress August 1, 2006
 - Estimated cost to complete Environmental Impact Statement (EIS) and Record of Decision (ROD) is \$5.2M.
- EIS Schedule:
 - Issue Notice of Intent (NOI) – December 2006
 - Issue Draft EIS – January 2008
 - Issue Final EIS – October 2008
 - Issue Report to Congress Describing GTCC Disposal Alternatives – October 2008
 - Issue ROD – Following Congressional Action
- Continued visibility with Congress due to national security concerns over radioactive sealed sources
 - EM helped prepare the Radiation Source Protection and Security Task Force Report to the President and the U.S. Congress under the Energy Policy Act of 2005
 - Report highlights the need for GTCC disposal capability



What's new in... GTCC LLW Disposition (cont)

- Revised acquisition strategy to strengthen technical support team
 - Argonne National Laboratory (ANL) will assist in the preparation of the EIS with unique technical support from Sandia National Laboratories (SNL)
 - SNL has specialized expertise in GTCC inventories and engineering design and performance assessment of potential GTCC disposal alternatives
 - ANL will leverage experience from their work on the Waste Management Programmatic Environmental Impact Statement

- Key Ongoing Activities
 - Refining GTCC inventory analysis
 - Estimated volume (stored and projected) of GTCC LLW is relatively small (~2,200 m³).
 - About half of this waste will not be generated until 2035, based on license extensions and decommissioning schedules for the nuclear utilities
 - DOE “Orphan GTCC-like” waste inventories (~2,400 m³) may also be included in the EIS to achieve economies of scale and identify a disposition path for this waste (e.g., potential non-defense transuranic waste)



What's new in... GTCC LLW Disposition (cont)

- Conducting screening analysis of potential disposal methods and sites for introduction in the NOI
 - Potential disposal methods include existing geologic repository, intermediate depth borehole, and enhanced near surface
 - Potential disposal sites include existing DOE facilities and existing/new commercial facilities
 - Final set of alternatives to be determined with public input through the EIS scoping process
- Preparing draft NOI for initial, internal DOE review in September 2006
- Planning public scoping meetings to immediately follow publication of the NOI



What's new in... HLW and other materials disposition

- EM-10 supports development of the “disposition machine” for tank wastes and excess nuclear materials
 - Identifying treatment and disposal solutions
 - Supporting technical studies and project planning
 - Providing needed regulatory support, including waste determinations
 - Liaison with Office of Civilian Radioactive Waste Management
- Idaho Calcine Disposition Project
 - CD-0 by December 2006
 - CD-1 by December 2007
 - Analysis continues to support direct disposal at repository, versus conversion to alternate waste form
- Sodium Bearing Waste (SBW) Disposition Project
 - Project is critical path for retrieval of liquid SBW from tanks by December 2012 per Idaho Settlement Agreement
 - CD-2 (approve baseline) this Fall
 - CD-3 scheduled for May 2007 (construction authorization)
 - Construction start June 2007; complete by December 2008.



What's new in... HLW and other materials disposition (cont)

- Cesium/strontium capsules disposition is being projectized
 - Alternatives analysis underway
 - Recent IG report reviewed disposition plans
- Plutonium disposition project recently initiated
- Enriched uranium disposition project recently initiated
- HLW vitrification efforts continue
- EM Sites beginning to evaluate projected repository schedule relative to approved baseline plans



Status of Disposition Plans and Documents

- Waste and Materials Disposition Report prepared which summarizes EM's disposition efforts
 - Revised LLW/MLLW and TRU data
 - Revised disposition maps for all major waste streams
 - **Data and maps now available on-line**
- LLW/MLLW National Disposition System Strategy prepared
 - Describes the strategy and tools planned to integrate and optimize LLW/MLLW efforts
 - Final approvals received
 - Will be shared with interested stakeholders
- Complex-wide integration tool development continues
 - EM Integrated Baseline under development
 - Integrated disposition scope, cost and schedules being developed
 - Will document current TRU waste strategy
 - Will align EM site baselines with Yucca Mountain project plan



Status of Disposition Plans and Documents (cont)

- New disposition maps produced by Florida International University's Waste Information Management System (WIMS) Internet tool <http://wims.arc.fiu.edu/wims>
 - EM-10 working with Florida International University to continue process development
 - Geographic mapping module (two-way capability) complete
 - Reporting module and printing capability recently
 - **Go to website and register for account!**

- Updated waste stream data will be collected
 - Update LLW, MLLW, and TRU waste and material data.
 - FY 2006 Data call expected in November/December 2006.
 - Data available in WIMS after quality checks and validation in February 2007



FEDRAD-II+

- Brought together Federal and commercial radwaste generators and service providers, including utilities, and several stakeholders and regulators
- Held June 12-15 in Chicago, Illinois
- Key findings:
 - Significant interdependencies exist between the Federal and commercial sectors
 - Shared stakeholders
 - Market interdependencies
 - Shared issues - availability of disposal sites for Class B&C wastes, disposal of GTCC, future availability of Yucca Mountain
 - Regulatory interfaces, regulatory differences
 - Continued forums recommended to continue dialogue



We monitor other regulatory and stakeholder activities

- Nuclear Regulatory Commission (NRC)/Advisory Committee on Nuclear Waste (ACNW) White Paper (NUREG-1853)
 - Addresses potential improvements in NRC LLW regulations
 - NRC about to publish white paper
- Proposals to send commercial wastes to DOE sites
 - Southeast Compact and upcoming LLW Forum
 - Southeast compact hosting additional discussions in conjunction with the LLW Forum meeting
 - Will bring together waste producers with vendors to address issues and discuss the closing of Barnwell
- NRC evaluation of Depleted Uranium waste class
 - Staff looking at waste class regulations for disposal (10 CFR 161)
 - Currently, uranium is not included on the tables of waste classes



Life-Cycle Cost Analysis for Disposal Decisions

- Issues raised by GAO Report: *Department of Energy: Improved Guidance, Oversight, and Planning are Needed to Better Identify Cost-Savings Alternatives for Managing Low-Level Radioactive Waste*
 - Concerns raised over adequacy of guidance and implementation of life-cycle cost analysis in disposal decisions
- DOE agreed with conclusions, but disagreed with many of the GAO's specific issues and comments
- Congress responded to GAO finding in the FY 2006 Energy and Water Development Appropriations Conference Report
 - Requested report on corrective actions
 - Programmatic improvements are underway



Programmatic Improvements Planned (Life-Cycle Cost)

- Updating data on LLW/MLLW inventories and forecast generation (complete)
- Reviewing existing policies, guidance, procedures and exemptions to determine what – if any – changes are needed (underway)
- Updating policies, guidance, and procedure, and revising exemptions – as needed – to ensure results are monitored (future)
- Ensuring qualified Federal personnel are overseeing LLW/MLLW projects and programs, and formalizing feedback processes (ongoing)

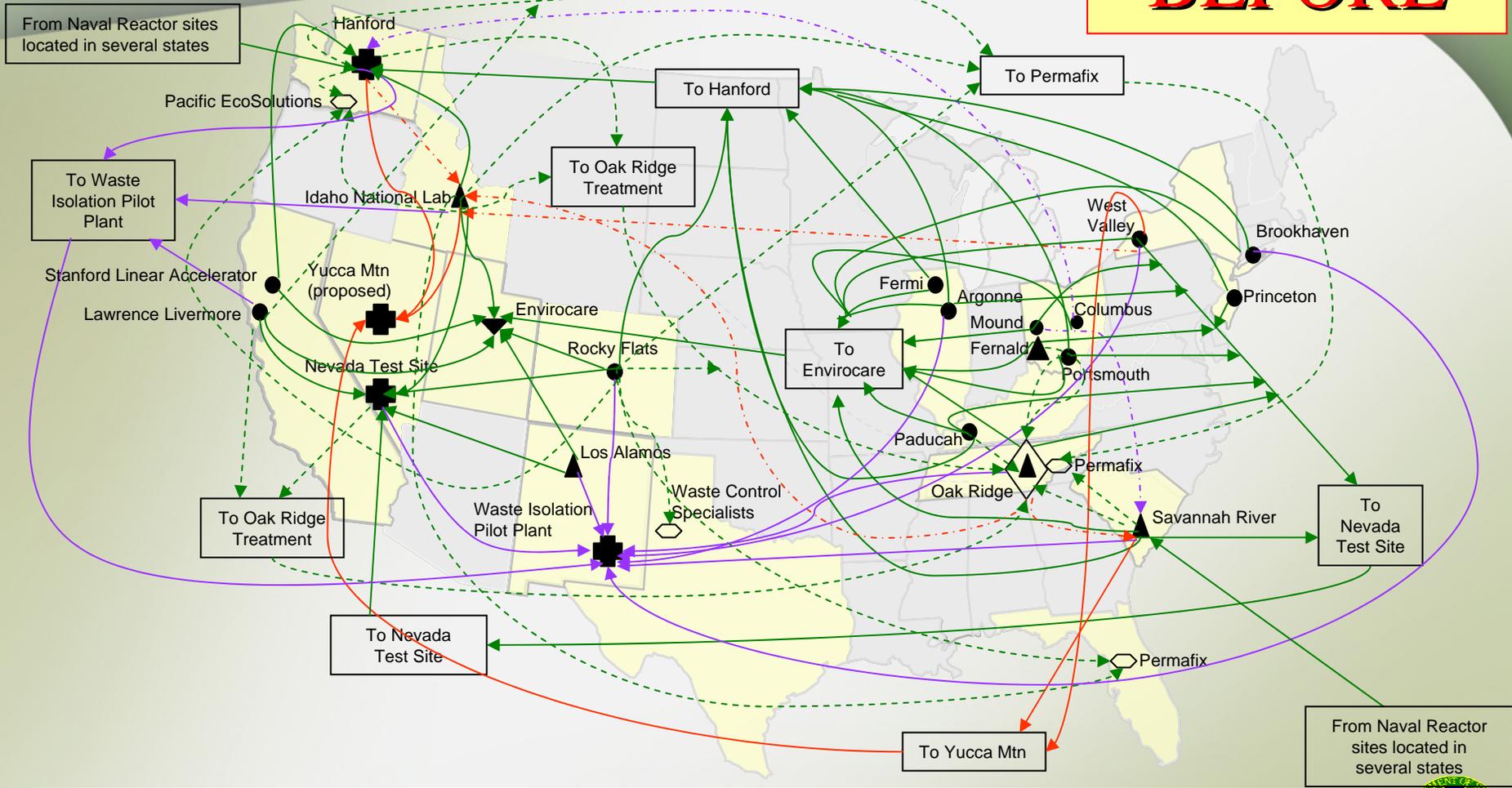


Background Information

Major DOE Radioactive Waste Transfers (includes commercial facilities)

Shipment lines do not portray actual transportation routes. This map is not inclusive of all past or planned shipments.

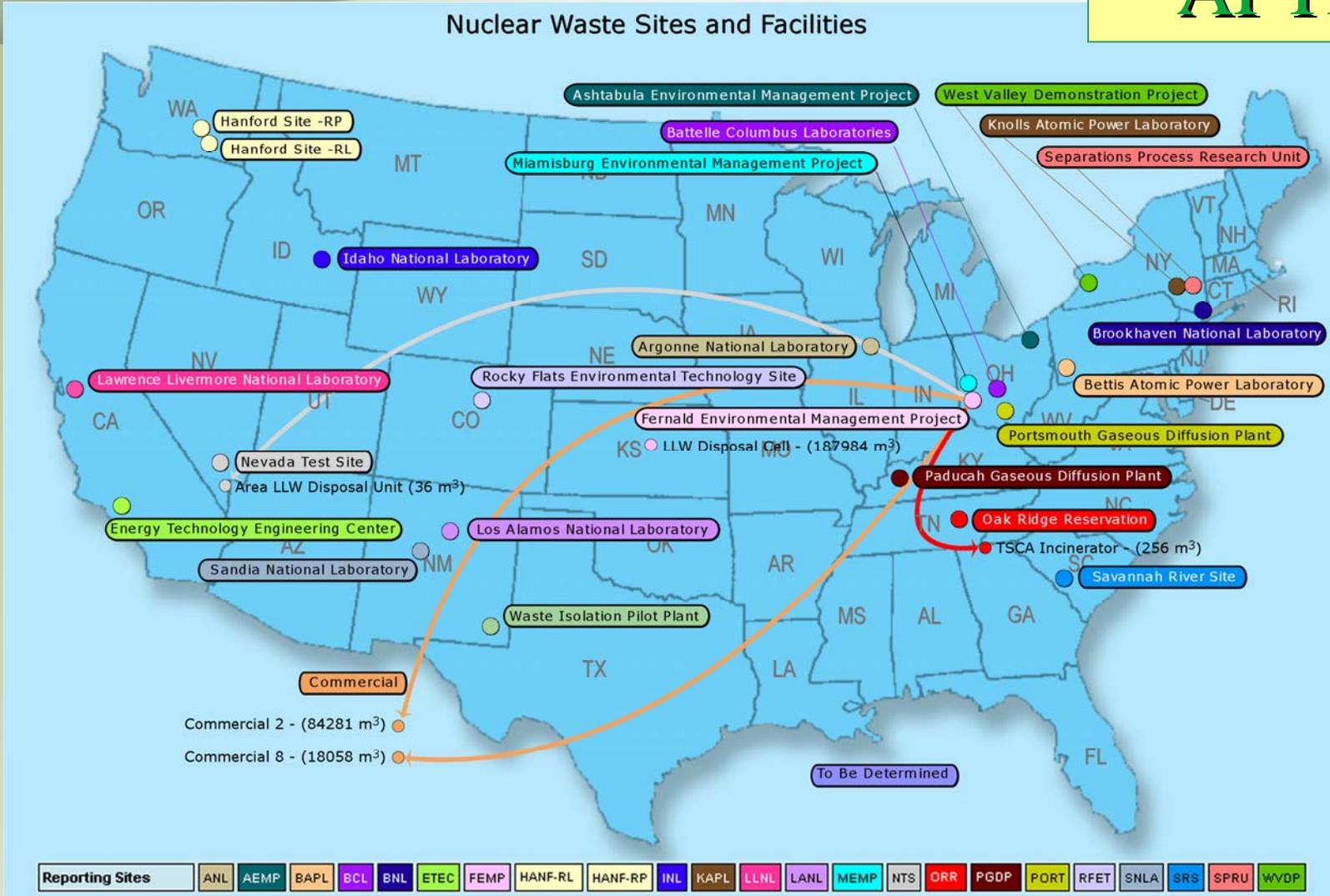
BEFORE



<p>● DOE Generator Site (no on-site disposal facility)</p> <p>▲ DOE Onsite Radioactive Waste Disposal Facility</p>	<p>■ DOE Offsite Radioactive Waste Disposal Facility (NTS and Hanford are also generator sites and dispose of some waste onsite)</p> <p>◇ DOE Offsite Radioactive Waste Treatment Facility</p>	<p>→ Spent Nuclear Fuel/High-Level Waste Disposal Shipment</p> <p>→ Spent Nuclear Fuel Storage, Treatment, or Repackaging Shipment</p>	<p>→ Low-Level Waste/Mixed Low-Level Waste Disposal Shipment</p> <p>→ Low-Level Waste/Mixed Low-Level Waste Treatment Shipment</p>	<p>Office of Environmental Management Building on Closure Success</p>
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Disposition Map Can Also Be Drawn in Geographic Format

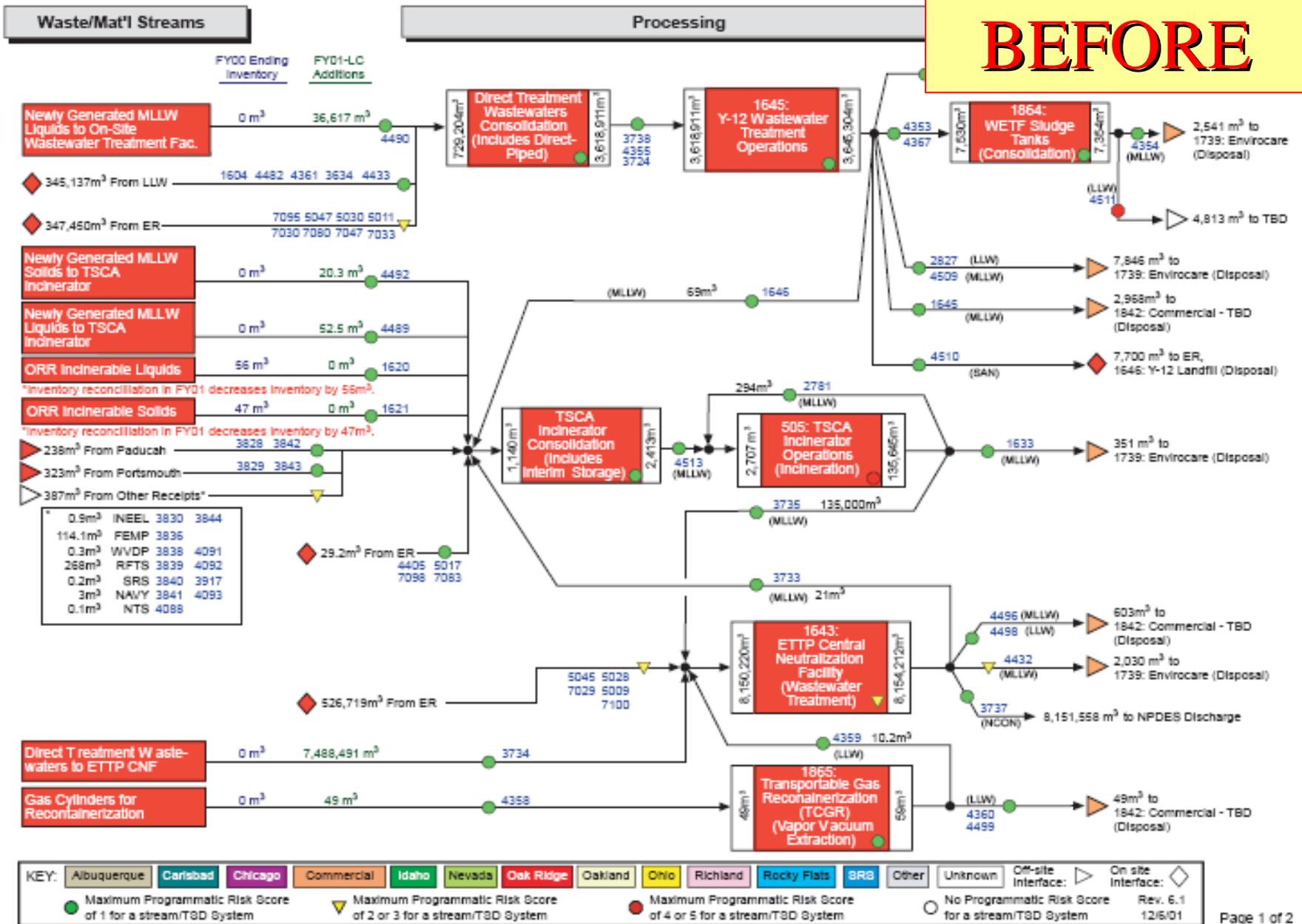
AFTER



This map is conceptual and in many cases does not represent cleanup or transfer decisions; this map does not preclude the on-going regulatory and stakeholder decision-making processes.

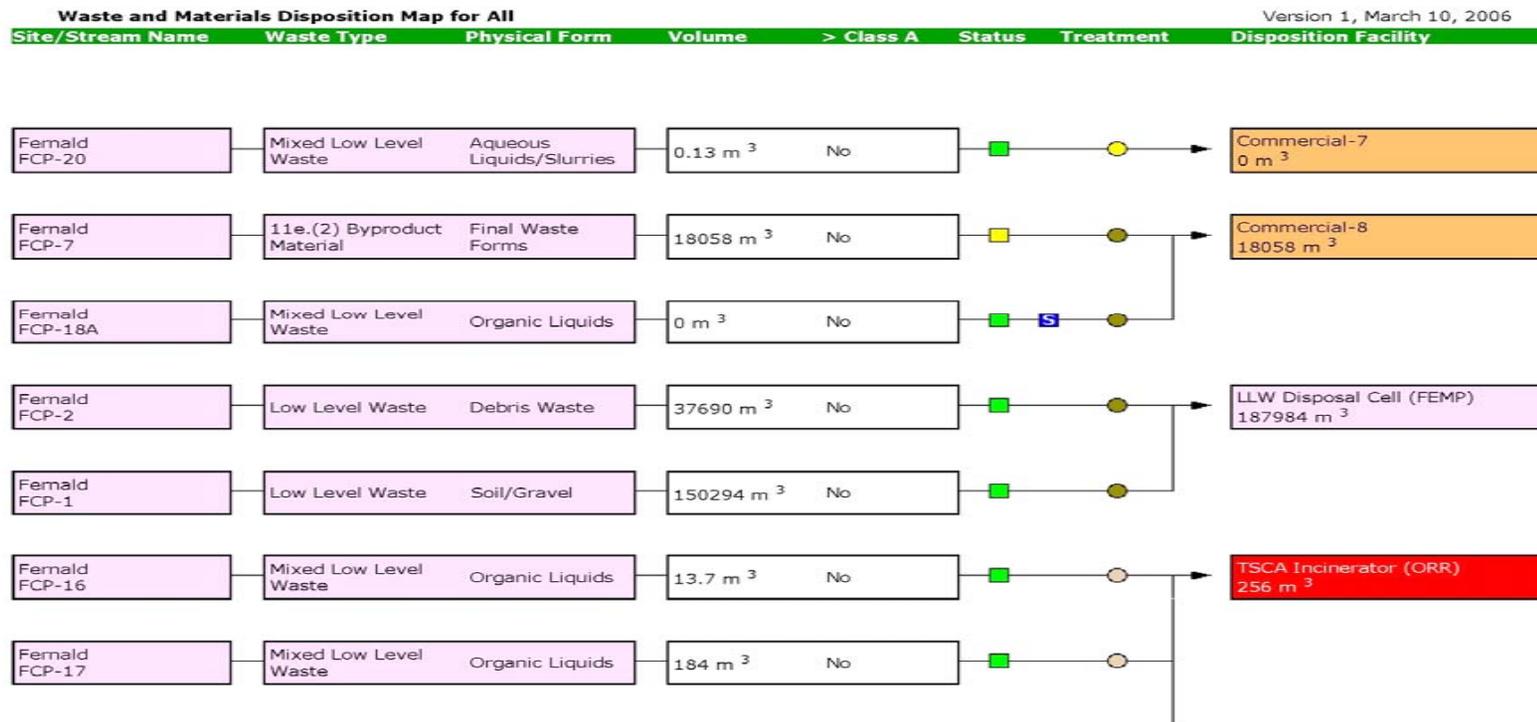
Oak Ridge MLLW Disposition Map

BEFORE



Disposition Map of Fernald Provides Example of New Tool

AFTER



EM LLW Inventory Summary

**Table LLW-1: LLW Inventories Managed by EM
as of September 30, 2005^[1]**

Site	Volume (m ³)
Argonne National Laboratory	714
Battelle Columbus Decommissioning Project	10,300
Brookhaven National Laboratory	1
Energy Technology Engineering Center	18
Fernald Environmental Management Project ^[2]	37
Hanford Site	348
Idaho National Laboratory	2,460
Lawrence Livermore National Laboratory	502
Mound	42,000
Oak Ridge Reservation	8,350
Paducah Gaseous Diffusion Plant	81,700
Savannah River Site	165
West Valley Demonstration Project	13,300
Total	160,000

- Most EM waste is generated from cleanup projects vs. ongoing operations
- Large inventories of “legacy” LLW at EM sites have nearly all been disposed – remaining large inventories to be reduced in 2006 or soon after
- Most existing LLW inventories result from decommissioning and site cleanup activities

^[1] Individual numbers and totals are rounded to a maximum of 3 significant digits.

^[2] Does not include 11e.(2) byproduct material at Fernald.



Projected Volume of EM LLW/Material for Disposal ^{1/}

<u>Disposal Site</u>	Volume (m³)	
	<u>FY2006-2010</u>	<u>FY2006-2035</u>
DOE Non-CERCLA Facilities		
➤ INL	27,900	27,900
➤ LANL (EM planned activities only ^{2/})	1,380	1,660
➤ Hanford Site	4,220	26,000
➤ NTS	157,000	269,000
➤ SRS	<u>93,500</u>	<u>425,000</u>
Subtotal	284,000	750,000
DOE CERCLA Facilities:		
➤ Fernald	188,000	188,000
➤ Hanford Site	1,060,000	1,800,000
➤ INL	48,300	59,700
➤ ORR	<u>619,000</u>	<u>837,000</u>
Subtotal	1,920,000	2,880,000
DOE Facilities Subtotal	2,200,000	3,630,000
Commercial Facilities	361,000	550,000
Facility to be determined	35,700	47,400
TOTAL LLW	2,600,000	4,230,000

1/ Individual numbers and totals are rounded to a maximum of 3 significant digits.

Does not include LLW shipped to commercial facilities for treatment to avoid double counting with disposal numbers.

2/ LANL disposal volumes are based on current EM activities only and may not represent actual disposal volumes since remedy decisions for most complex sites have not been made.



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EM MLLW Inventory Summary

MLLW Inventories Managed by EM Program (as of September 30, 2005) ^{1/}

<u>Site</u>	<u>Volume (m³)</u>
ANL	34
Battelle	2
ETEC	2
FEMP	3,050
Hanford	7,440
INL	23,900
LLNL	250
ORR	3,320
Paducah	1,740
Rocky Flats (at WCS)	4,500
SRS	301
WVDP	122
<u>TOTAL</u>	<u>44,700</u>

1/ Individual numbers and totals are rounded to a maximum of 3 significant digits.

➤ Over past several years, large inventories of “legacy” MLLW at most EM sites have nearly all been disposed

➤ The majority of inventory is at INL with 10-100 nCi/g of transuranic radionuclides, which was historically managed as TRU waste



Projected Volume of MLLW to go Offsite for Treatment ^{1/}

<u>Treatment Facility</u>	Volume (m³)	
	<u>FY2006-2010</u>	<u>FY2006-2035</u>
TSCAI (ORR)	1,300	1,890
Commercial Facilities	2,050	18,600
Facility to be Determined	10,300	11,200
TOTAL	14,300	31,700

Projected Volume of MLLW/Material for Disposal ^{2/}

<u>Disposal Site</u>	<u>FY2006-2010</u>	<u>FY2006-2035</u>
DOE Non-CERCLA Facilities		
➤ Hanford	10,800	331,000
➤ NTS ^{3/}	3,900	4,300
Subtotal	14,700	335,300
DOE CERCLA Facilities		
➤ Hanford	4,070	4,070
➤ Idaho	86,300	181,000
➤ Oak Ridge	156,000	197,000
Subtotal	246,370	382,070
DOE Subtotal	261,070	717,370
Commercial Facilities	47,000	88,200
TOTAL	308,070	805,570

1/ Individual numbers and totals are rounded to a maximum of 3 significant digits. All waste with a to-be-determined disposition path is shown since it requires treatment prior to disposition.

2/ Individual numbers and totals are rounded to a maximum of 3 significant digits.

3/ NTS facility operates through the end of the first quarter of FY 2011. 06-12 # based on site generation forecasts to NTS; NTS closes in 2010 but generators have projections through 2012 of 4,300m³)



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Estimated Volume of TRU Waste for Disposal^{1/}

Site Name	Contact- Handled (m ³)	Remote Handled (m ³)	Total ^{2/} (m ³)
ANL	79	119	199
Former ANL-W (now inINL)	44	93	137
Bettis Atomic Power Lab	19	2	21
Hanford Site	16,400	1,470	17,900
INL	69,100	219	69,300
Knolls-NFS (TN)	170	0	170
Knolls-NFS (NY)	0	135	135
LLNL	2,290	0	2,290
LANL	14,100	125	14,200
NTS	676	0	676
ORR	449	660	1,100
Paducah	11	0	11
SNL (NM)	23	5	28
SRS	7,980	69	8,050
Subtotal	111,000	2,900	114,000
Disposed at WIPP as of 2/27/06			35,947
Total Anticipated for Disposal			150,000

1/ Individual numbers and totals are rounded to a maximum of 3 significant digits.

2/ Total column reflects amount stored at sites as of 1/23/06 plus anticipated amounts.



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DOE Order 435.1, “Radioactive Waste Management,” Establishes Policy & Framework

➤ LLW/MLLW

- If practical, disposal on the site at which it is generated
- If on site disposal not available, at another DOE disposal facility
- At commercial disposal facilities if compliant, cost effective, and in best interest of DOE

➤ TRU Waste

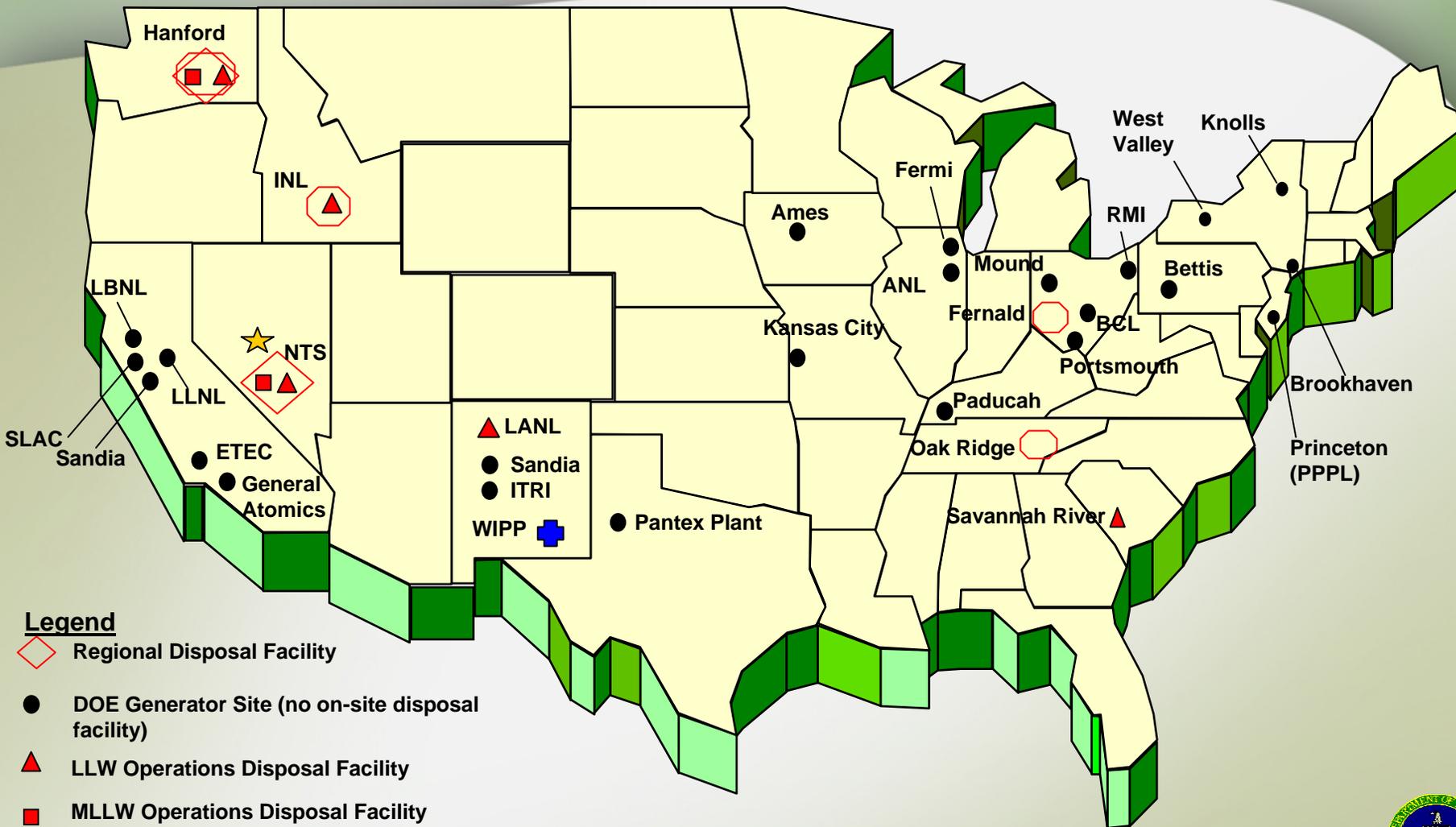
- If defense, disposed at Waste Isolation Pilot Plant (WIPP), New Mexico
- If defense determination pending, safe storage awaiting future disposition

➤ HLW and SNF

- Stabilization, immobilization/ treatment if necessary, and safe interim site storage until geologic disposal is available



DOE's Waste Disposal Facility Configuration



Legend

-  Regional Disposal Facility
-  DOE Generator Site (no on-site disposal facility)
-  LLW Operations Disposal Facility
-  MLLW Operations Disposal Facility
-  CERCLA Disposal Facility
-  Waste Isolation Pilot Plant (WIPP)
-  Planned geologic repository



EM's Waste Management Assets

- Two regional LLW disposal facilities – Hanford and NTS
- Two regional MLLW disposal facilities
 - Hanford currently limited to onsite MLLW
- Multiple onsite disposal cells (mostly CERCLA) for site-specific remediation wastes
- Geologic repository for defense TRU waste – WIPP (Carlsbad, NM)
- TSCA Incinerator (Oak Ridge, TN)
- However, EM also disposes of large volumes of LLW and MLLW at commercial facilities



DOE Relies on Commercial Treatment and Disposal Capabilities for LLW

- Three commercial LLW disposal facilities can accept certain DOE LLW:
 - EnergySolutions Clive Facility (formerly Envirocare of Utah)
 - Richland, WA, operated by U.S. Ecology on the Hanford Site (Northwest Compact)
 - Barnwell, SC, operated by Chem-Nuclear/Duratek (to become part of EnergySolutions) (Atlantic Compact)

- Some commercial processors include:
 - Perma-Fix
 - EnergySolutions
 - Waste Control Specialists LLC (WCS)
 - Duratek
 - PEcoS
 - RACE

