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Title:	Multi-Year Work Plan to De-Inventory TRU Waste Stored at LANL
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Form 836 (7/06)

Multi-Year Work Plan to De-Inventory TRU Waste Stored at LANL - 12121

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ABSTRACT

The Los Alamos National Laboratory (LANL) continues to accelerate disposition of transuranic (TRU) waste stored at its Technical Area 54 (TA-54) Area G waste management facility. The current focus is on complete removal of all non-cemented above-grade Legacy and newly-generated TRU waste that was in storage on October 1, 2011, by no later than June 30, 2014. This inventory of above-grade TRU is defined as 3,706 m^3 of material. Legacy TRU waste containers were placed into storage up to 40 years ago, and most of the older containers must be remediated to address compliance issues before the waste can be characterized, certified as meeting the Waste Isolation Pilot Plant (WIPP) Waste Acceptance Criteria (WAC), and shipped for disposition. More than half of the remaining TRU waste volume stored above grade is contained within oversize boxes that contain waste items that must be repackaged or size reduced. Facilities and major types of equipment needed to remediate and characterize the TRU waste inventory are largely in place, but two additional oversize box processing lines are being implemented in 2012. Multiple work shifts are planned for most remediation lines in 2013. An integrated risk-based project management schedule for all disposition activities has been developed that is based on a "Solution Package" approach. Inventories of containers that have issues in common were compiled into about 15 waste categories and about 70 "Solution Packages" that identify all of the activities needed to disposition the inventory of TRU waste in storage. Scheduled activities include all precursor activities to begin remediation, remediation processing, characterization and certification to the WIPP WAC, and shipping of containers to WIPP. Processing of the 3,706 m^3 is projected to result in about 4,500 55-gallon (208L) drums and 1,000 standard waste boxes that will be shipped to WIPP. About 385 shipments from LANL to WIPP are projected before June 30, 2014, to ship these containers, at a rate of 5 to 6 shipments a week.

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Multi-Year Work Plan to De-Inventory TRU Waste Stored at LANL

Presented to
WM2012 Conference
February 29, 2012
Phoenix, Arizona

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U.S. Department of Energy

Background

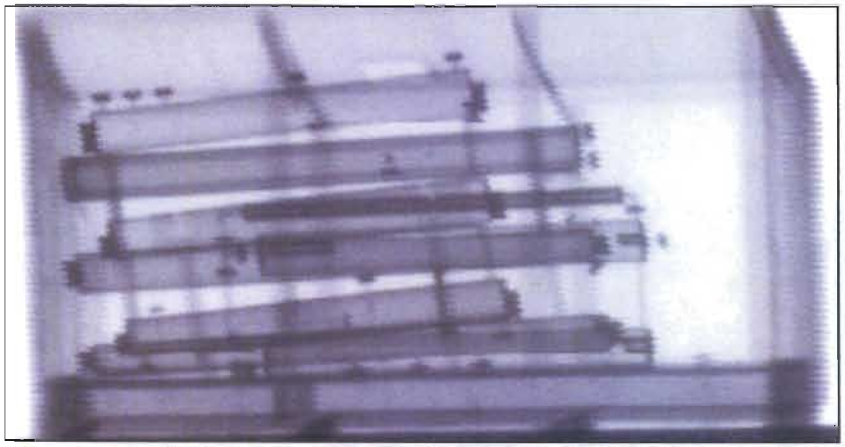
- TRU waste stored since early 1970's
- First stored in shallow trenches, pits, & shafts ("below-grade storage" — 35% of current volume)
- Most now stored in large fabric-covered storage domes ("above-grade storage" — 65% of current volume)
- Most stored containers do not meet WIPP WAC — must be remediated or repackaged
- Newly-generated waste received today is packaged to meet WIPP WAC

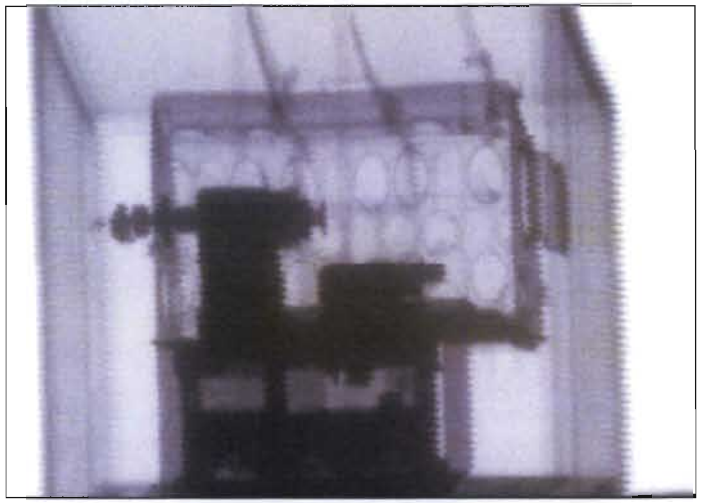
TRU Waste Storage and Characterization Facilities
LANL Technical Area 54, Area G

LANL TRU Waste Inventory (Oct. 1, 2011)			
	# Containers	Volume (m^3)	Activity (PE-Ci)
Above Grade	6,601	4,303	76,862
Below Grade	5,000	2,399	110,751
TOTALS	11,601	6,702	187,613

TRU Waste Containers

LANL's Oversize Box Inventory





TRU Waste Facilities

Technical Area 54, Area G

- 63 acres, includes TRU waste storage, characterization, and remediation of drums containing solids and oversize waste containers
- 1.3 miles from nearest residential community of White Rock

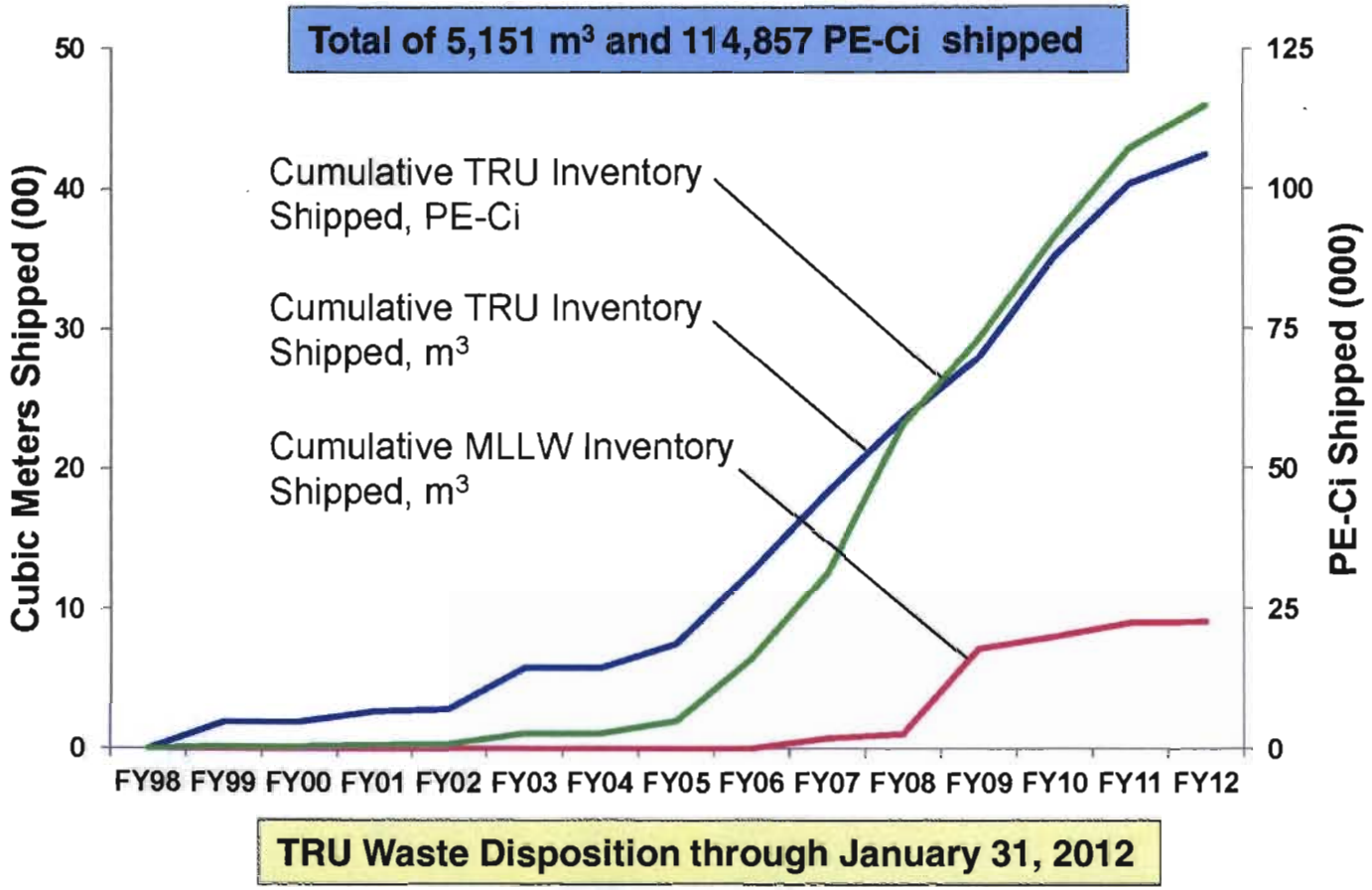
WCCRF

- Constructed in late 1980's
- Drum Repacking and Prohibited Item Disposition

RANT

- Constructed in late 1980's
- WIPP Shipping facility

TRU Waste Disposition



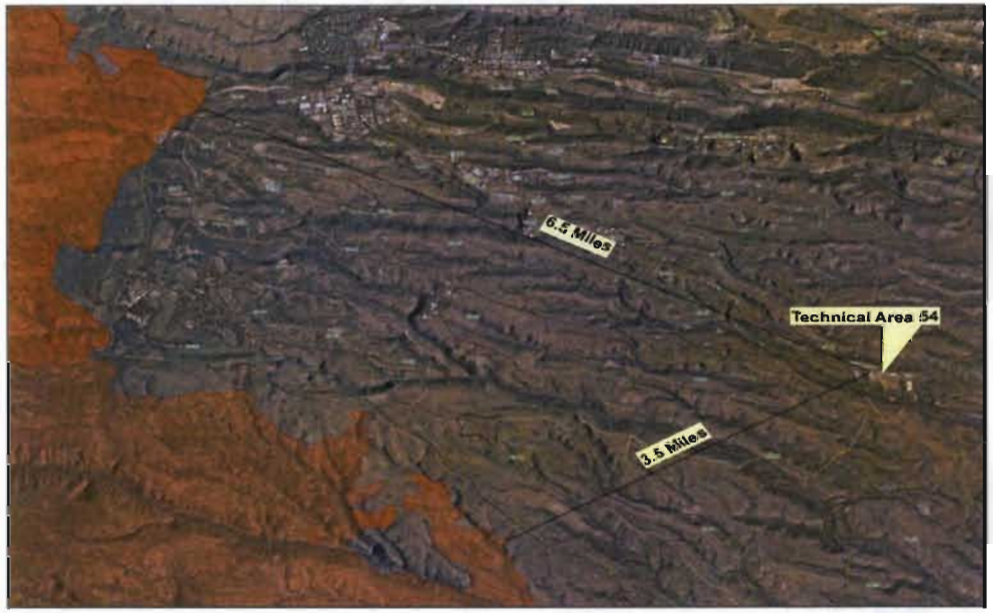
TRU Waste Disposition through January 31, 2012

Las Conchas Fire

- Very large wildfire near LANL during June-July 2011
- Fire heightened public concern for TRU waste stored above grade at Technical Area 54, Area G — especially waste that may be combustible

Las Conchas Fire, Continued

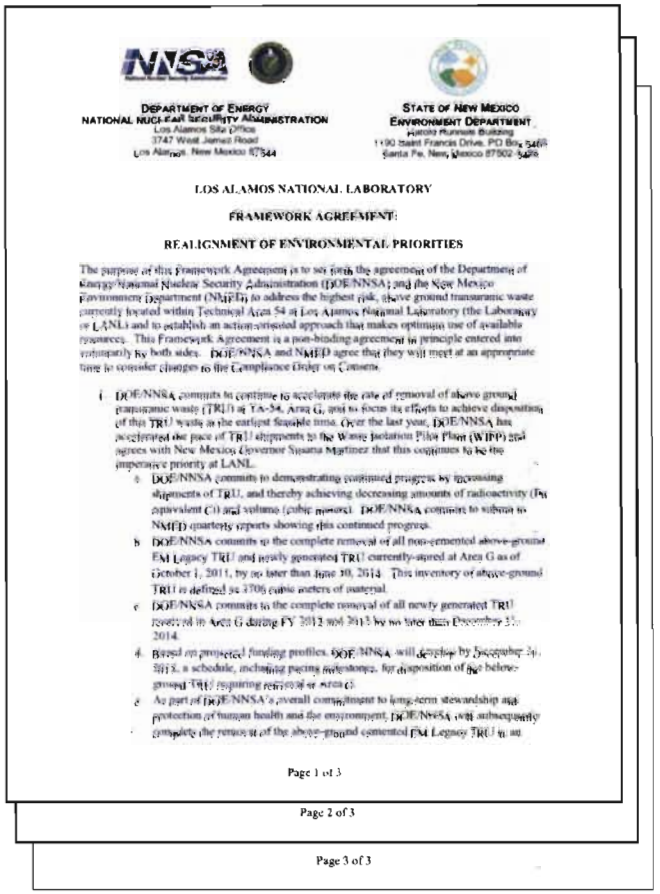
- Fire came within about 3.5 miles of TRU waste storage at Area G
- New Mexico Governor Martinez requested accelerated removal of above-grade TRU waste
- DOE/NNSA and State agree higher risk above grade TRU waste removal is LANL's highest environmental priority



Framework Agreement with NMED

Under Agreement announced January 5, 2012, DOE/NNSA will continue to accelerate removal of TRU waste and submit quarterly reports of progress

- **LANL will complete removal of all non-cemented above-grade TRU waste in storage on October 1, 2011, by no later than June 30, 2014 (defined as 3,706 m^3 of material)**
- **Complete removal of all newly-generated TRU waste received at Area G during FY 2012 and FY 2013 by no later than December 31, 2014**
- **Develop by December 31, 2012, a schedule that includes pacing milestones for disposition of the below-grade TRU requiring retrieval at Area G**
- **Complete removal of above-grade cemented Legacy TRU waste in an efficient and effective manner**



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LOS ALAMOS NATIONAL LABORATORY

FRAMEWORK AGREEMENT:

REALIGNMENT OF ENVIRONMENTAL PRIORITIES

The purpose of this Framework Agreement is to set forth the agreement of the Department of Energy/National Nuclear Security Administration (DOE/NNSA) and the New Mexico Environment Department (NMED) to address the highest risk, above ground transuranic waste currently located within Technical Area 54 at Los Alamos National Laboratory (the Laboratory or LANL) and to establish an action-oriented approach that makes optimum use of available resources. This Framework Agreement is a non-binding agreement in principle entered into voluntarily by both sides. DOE/NNSA and NMED agree that they will meet at an appropriate time to consider changes to the Compliance Order on Consent.

1. DOE/NNSA commits to continue to accelerate the rate of removal of above ground transuranic waste (TRU) at TA-54, Area G, and to focus its efforts to achieve disposition of this TRU waste in the earliest feasible time. Over the last year, DOE/NNSA has accelerated the pace of TRU shipments to the Waste Isolation Pilot Plant (WIPP) and agrees with New Mexico Governor Susana Martinez that this continues to be the imperative priority at LANL.
   a. DOE/NNSA commits to demonstrating continued progress by increasing shipments of TRU, and thereby achieving decreasing amounts of radioactivity (Pu equivalent Ci) and volume (cubic meters). DOE/NNSA commits to submit to NMED quarterly reports showing this continued progress.
   b. DOE/NNSA commits to the complete removal of all non-cemented above-ground EM Legacy TRU and newly generated TRU currently stored at Area G as of October 1, 2011, by no later than June 30, 2014. This inventory of above-ground TRU is defined as 3706 cubic meters of material.
   c. DOE/NNSA commits to the complete removal of all newly generated TRU received at Area G during FY 2012 and 2013 by no later than December 31, 2014.
   d. Based on projected funding profiles, DOE/NNSA will develop by December 31, 2013, a schedule, including pacing milestones, for disposition of the below-ground TRU requiring retrieval at Area G.
   e. As part of DOE/NNSA's overall commitment to long-term stewardship and protection of human health and the environment, DOE/NNSA will subsequently complete the removal of the above-ground cemented EM Legacy TRU in an

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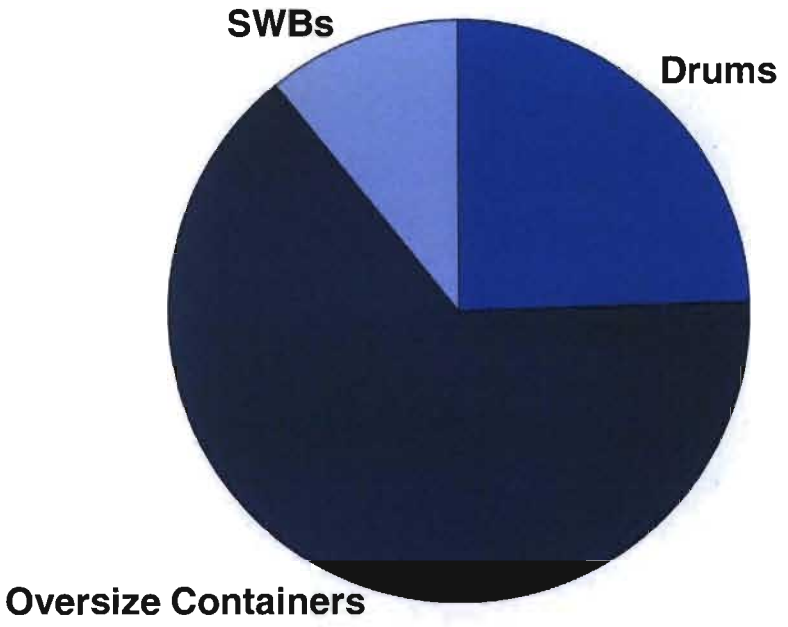
3,706 TRU Waste Campaign

- **Current focus on disposition of higher risk 3,706 m^3 of non-cemented waste stored above-grade by June 30, 2014**

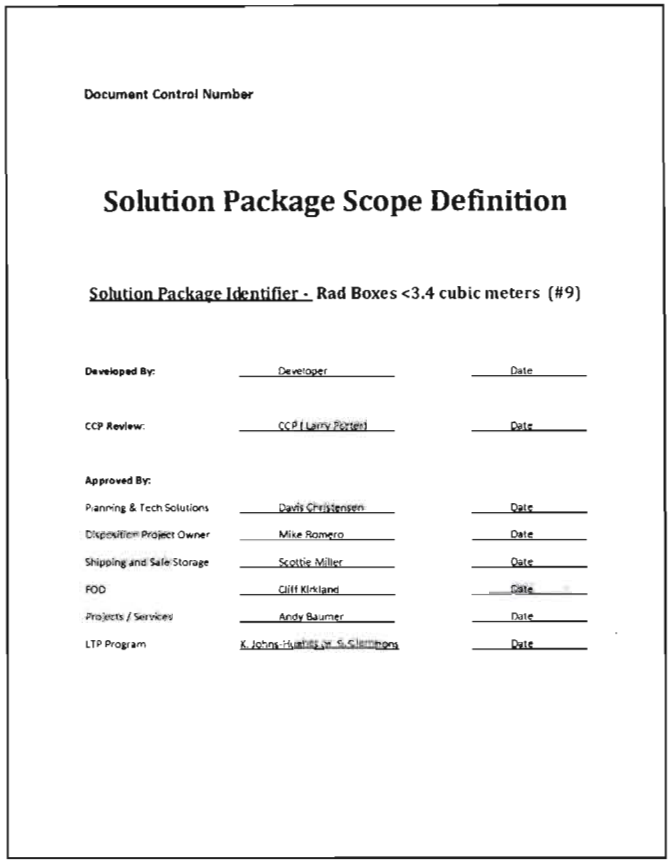
3,706 Campaign Inventory (Oct. 1, 2011)			
	# Containers	Volume (m^3)	Activity (PE-Ci)
Drums	4,035	909	35,421
Oversize Containers	249	2,397	3,092
SWBs	211	400	2,572
TOTALS	4,495	3,706	41,085



Volumes of Container Types in 3,706 m^3 Campaign

Key Elements of Disposition Campaign

- Detailed knowledge of TRU waste inventory and issues
- Inventory organized into "Solution Packages" that include all activities necessary to disposition categories of waste with common issues
- Detailed Project Management Schedule based on solution packages for remediation, characterization, and shipping
- Upgrades to remediation and characterization capabilities to process entire inventory
- Multiple shifts for most remediation lines in FY 2013 and FY 2014
- Organized TRU Program to focus on specific types of remediation and container movement



Document Control Number

Solution Package Scope Definition

Solution Package Identifier - Rad Boxes <3.4 cubic meters (#9)

Developed By:	Developer	Date
CCP Review:	CCP (Larry Porter)	Date
Approved By:		
Planning & Tech Solutions	Davis Christensen	Date
Disposition Project Owner	Mike Romero	Date
Shipping and Safe Storage	Scottie Miller	Date
FOD	Cliff Kirkland	Date
Projects / Services	Andy Baumer	Date
LTP Program	K. Johns-Huntley w. S. Clemmons	Date

Container Remediation Facilities

- WCRRF – Repackaging of drums containing debris waste — upgraded for high MAR drums (<800 PE-Ci)
- Dome 231 Permacon – Remediation of drums containing solids; conversion to box repackaging in February 2012 with startup planned May 2012
- Building 412 – Small box repackaging (start-up and radiological operation began July 2011); Upgraded to HC3 operations in December 2011
- Dome 375 – Large box remediation scheduled September 2012
- Seven oversize containers are planned for in-place processing

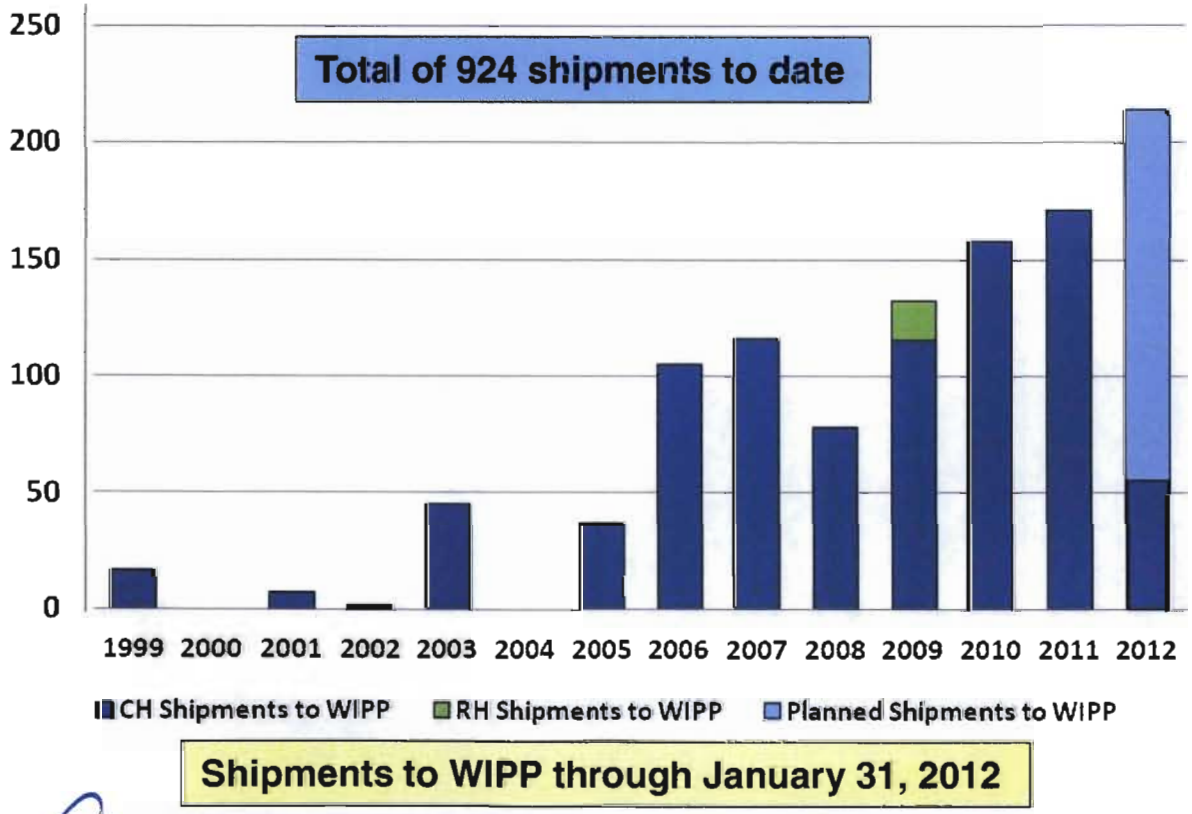
Characterization Capabilities

- **WIPP certified characterization performed by Central Characterization Project (Washington TRU Solutions, LLC, under contract to**
- **CCP Performs non-destructive examination, non-destructive assay, and headspace gas sampling and analysis**

Non-Destructive Examination	Non-Destructive Assay
RTR (drums)	HENC1 (drums)
HE-RTR (SWBs)	HENC2 (drums)
	SuperHENC (SWBs)

Shipping to WIPP

- **RANT is facility for loading and shipping TRU waste to WIPP**



Shipments to WIPP through January 31, 2012

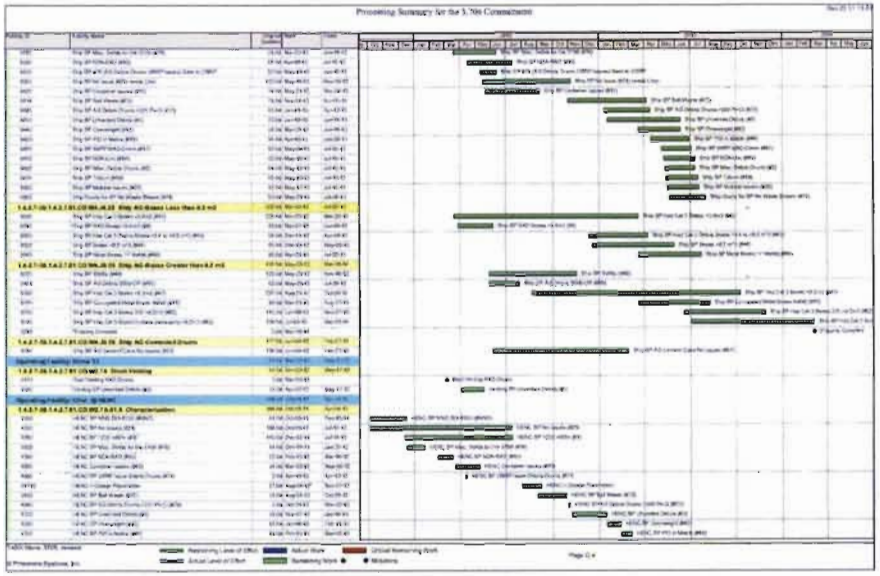
"Solution Package" Approach

- Waste inventory divided into groups with common disposition path
- Work scope defined to disposition each group
  - Pre-characterization
  - Remediation
  - Certified characterization
  - Shipping
- Key factors in disposition planning
  - Container type
  - Physical waste matrix
  - Fissile content
  - Radionuclide activity level
  - Parent-to-daughter volume relationship
  - WIPP Waste Acceptance Criteria

Waste Category	Solution Packages
AG Any Solid Group	3,706 Goal Misc. Solids
AG Any Waste Group	FY11 NNG AG Any Waste Group No Issues
AG Cement Cans	AG Cement Cans No Issues
AG Debris Boxes	Corrugated Metal Boxes 4x4x6
	Boxes < 8.2 m3
	AG Boxes 412 <8.2 m3
	Haz Cat 3 Boxes 412 > 3.4 to < 8.2 m3
	Haz Cat 3 Boxes 412 < 3.4 m3
	Haz Cat 3 Boxes 375 > 8.2 m3
	Inplace Processing Large Boxes
	Metal Boxes > 4x4x6
	Rad Boxes < 3.4 m3
AG Debris Drums	>200 mR/Hr
	Misc. Debris Drums
	Container Issues
	Misc Issues
	Multiple Issues
	NDA-Rad
	NDA-Uncertain
	No Issue
	Overweight
	PID In Matrix
	Tritium
	Unvented
	WIPP WAC – Chem
	Debris Drums > 300 PE-Ci
	OSRP Issue Drums
	Salt Waste
AG Debris SWB DL	SWB-DL
AG Debris SWB OP	SWB-OP Debris
AG No Waste Stream	AG No Waste Stream No Issues
	AG No Waste Stream Suspect TRU
	AG No Waste Stream Unvented

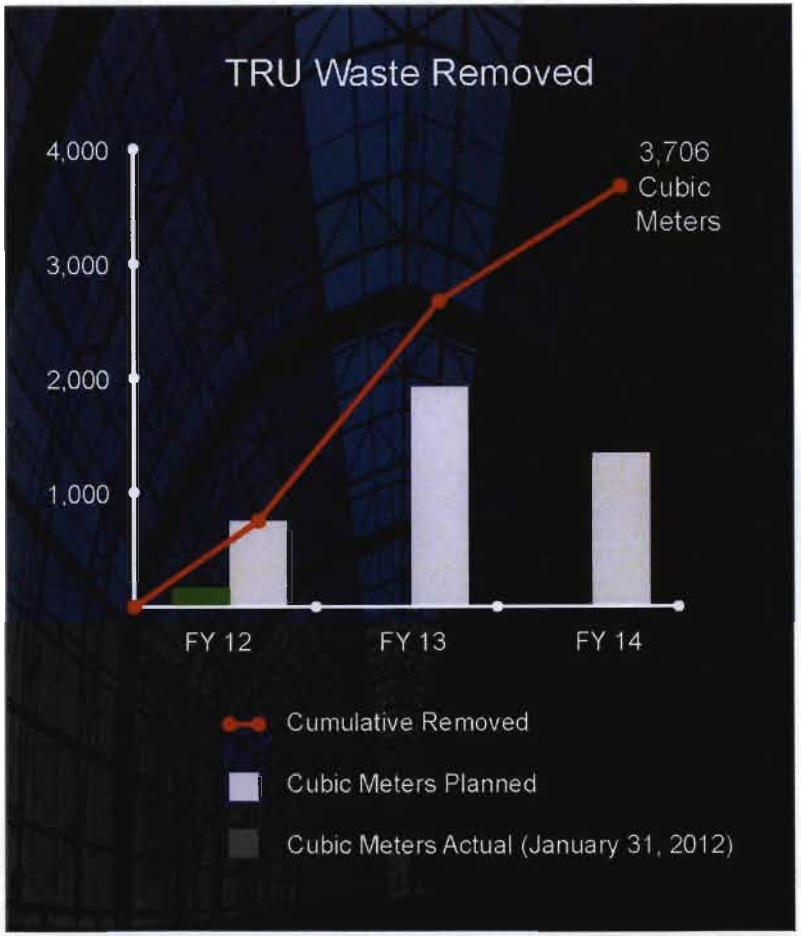
Integrated Project Management Schedule

- Significant planning effort between LANL and WIPP
- Solution packages logically sequenced through all processing units
- Balances LANL TRU repackaging/ processing capabilities with WIPP characterization and shipping



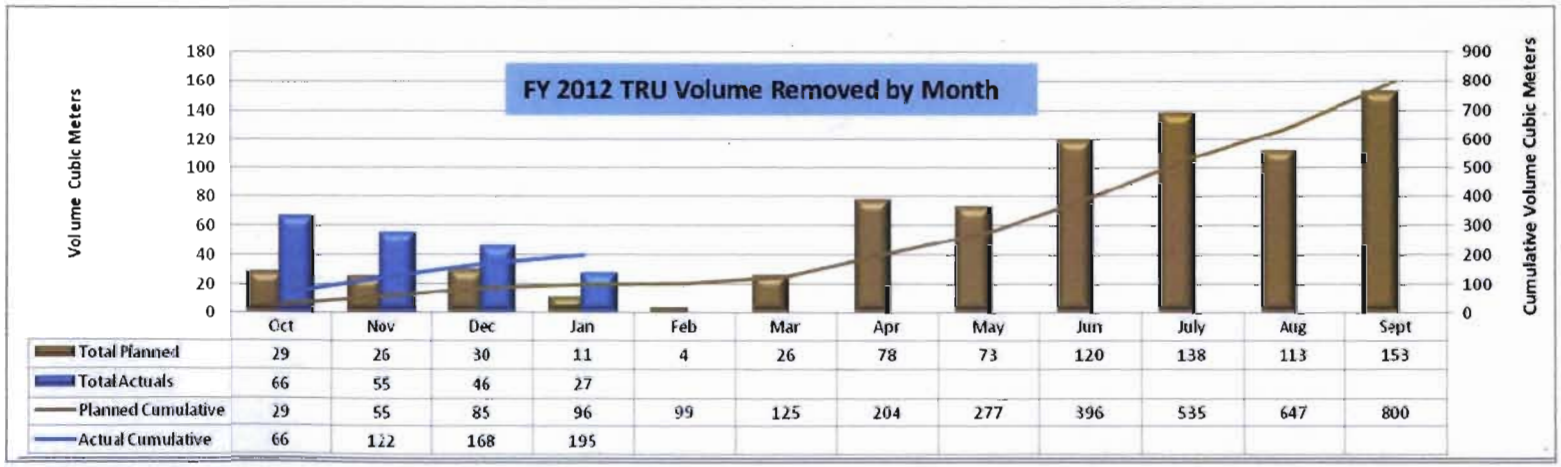
3,706 Campaign Disposition Schedule

- **Scheduled disposition totals**
  - **800 m^3 in FY 2012**
  - **1,800 m^3 in FY 2013**
  - **1,106 m^3 in FY 2014**
- **Processing of 3,706 m^3 is projected to result in about 4,500 55-gallon drums and 1,000 SWBs**
- **About 385 shipments to WIPP are projected for the 3,706 m^3**
- **Newly-generated TRU received in FY 2012 and FY 2013 will be shipped as it is received**
- **Shipments projected at 5 to 6 per week throughout campaign**



Summary

- Current focus on disposition of 3,706 m^3 of higher risk above-grade TRU waste before June 30, 2014
- Ship newly-generated TRU waste received in FYs 2012 and 2013 before December 31, 2014
- Develop a schedule integrated with WIPP to disposition remainder of TRU waste stored above grade and all TRU waste stored below grade before December 31, 2012



	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept
Total Planned	29	26	30	11	4	26	78	73	120	138	113	153
Total Actuals	66	55	46	27								
Planned Cumulative	29	55	85	96	99	125	204	277	396	535	647	800
Actual Cumulative	66	122	168	195								