



Sandia National Laboratories' Environmental Restoration Operations, Mixed Waste Landfill & Groundwater Protection Programs

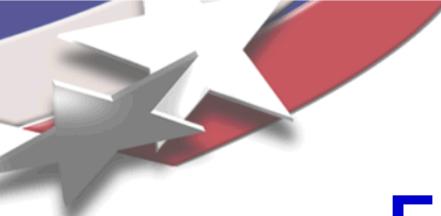
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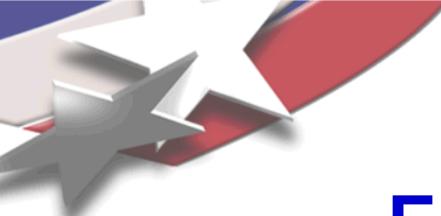
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January 26, 2016



Overview of Sandia's Environmental Restoration Operations

- Mission – Identify, characterize & remediate sites where hazardous &/or radioactive materials have been released
- Scope: 315 sites
 - Solid Waste Management Units or Areas of Concern
 - For presentation - Environmental Restoration sites or “ER sites”
- All corrective action activities regulated by New Mexico Environment Department (NMED) under the 2004 Compliance Order on Consent (COoC)



Overview of Sandia's Environmental Restoration Operations

- Very successful, completely closed 302 of 315 ER sites through the NMED regulatory process
 - *Since May 2013 briefing, an additional 23 sites closed*
- 13 sites remain in corrective action process
- DOE and Sandia Corporation are in compliance with the SNL Compliance Order on Consent as well as all applicable Federal and State requirements



Remaining 13 Sites

- 3 “Active mission” sites with deferred corrective action
- 1 Mixed Waste Landfill
- 6 “Soil sites”
- 3 Groundwater Areas of Concern
 - Burn Site
 - Tijeras Arroyo
 - Technical Area V



Remaining 13 Sites

~~3 Active mission test facilities where corrective action is planned after the facilities are no longer operational~~

→ 1 Mixed Waste Landfill

6 Soil sites, including a “new” 2012 release site

3 Groundwater Areas of Concern (AOCs)

- Burn Site
- Tijeras Arroyo
- Technical Area V



May 2013 MWL Briefing Summary

- Background and operational history (1959-1988)
- Summary of investigations and monitoring (1989 to present)
- Regulatory history
 - December 2004 NMED Public Hearing for selection of Final Remedy and May 2005 Final Order documenting remedy selection (evapotranspirative [ET] cover) with additional conditions to address public concerns
 - Legal challenge to NMED May 2005 Final Order upheld in 2008
 - Final remedy (ET Cover) constructed in 2009
 - NMED approved the ET Cover in October 2011 and clarified the time-frame of the first 5-year reevaluation report
 - MWL Long-Term Monitoring and Maintenance Plan (LTMMP) submitted in March 2012 and was pending NMED approval



May 2013 MWL Briefing Summary (continued)

- Groundwater monitoring summary (1990-present) and “Points of Contention”
 - 25 years of groundwater monitoring data
 - Allegations of flawed monitoring wells and data addressed numerous times – wells and data confirmed by NMED
- Current status of LTMMMP and public involvement process
 - NMED Public Meeting on October 16, 2012
 - Public comment period completed February 11, 2013
- Summary of LTMMMP multi-media monitoring, trigger levels, inspection-maintenance-repair, and reporting



May 2013 MWL Briefing Summary (continued)

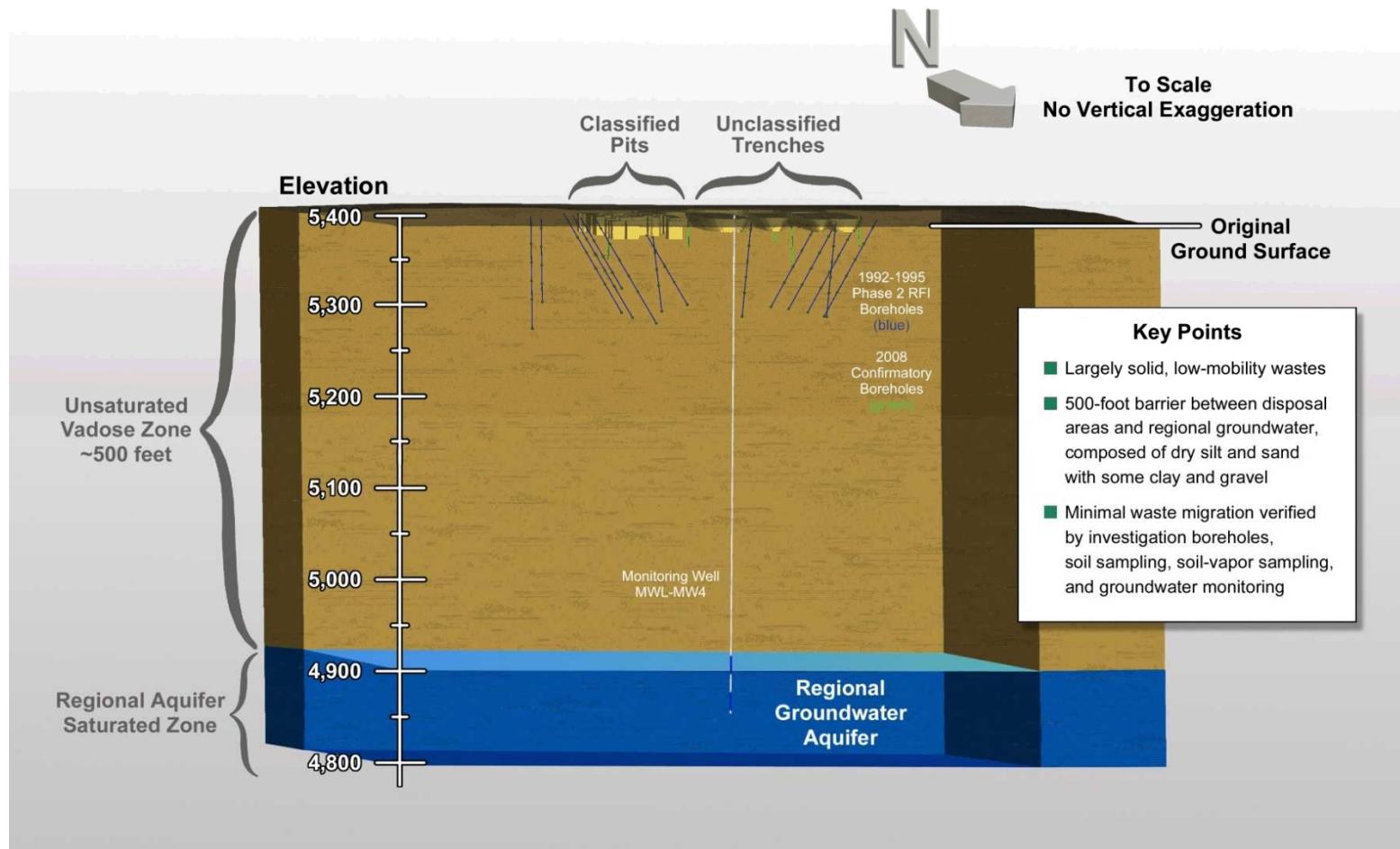
Senate Memorials 34 (2013) and 30 (2014)

- Were not passed by the NM Legislature
- Allegations included:
 - Wastes not properly disposed and leaking into aquifer
 - Groundwater monitoring not reliable and does not support the final remedy
 - Sandia has not performed the 5-year “feasibility study” required by the NMED May 2005 Final Order
- These allegations previously addressed during the December 2004 Public Hearing & NMED October 2011 approval letter

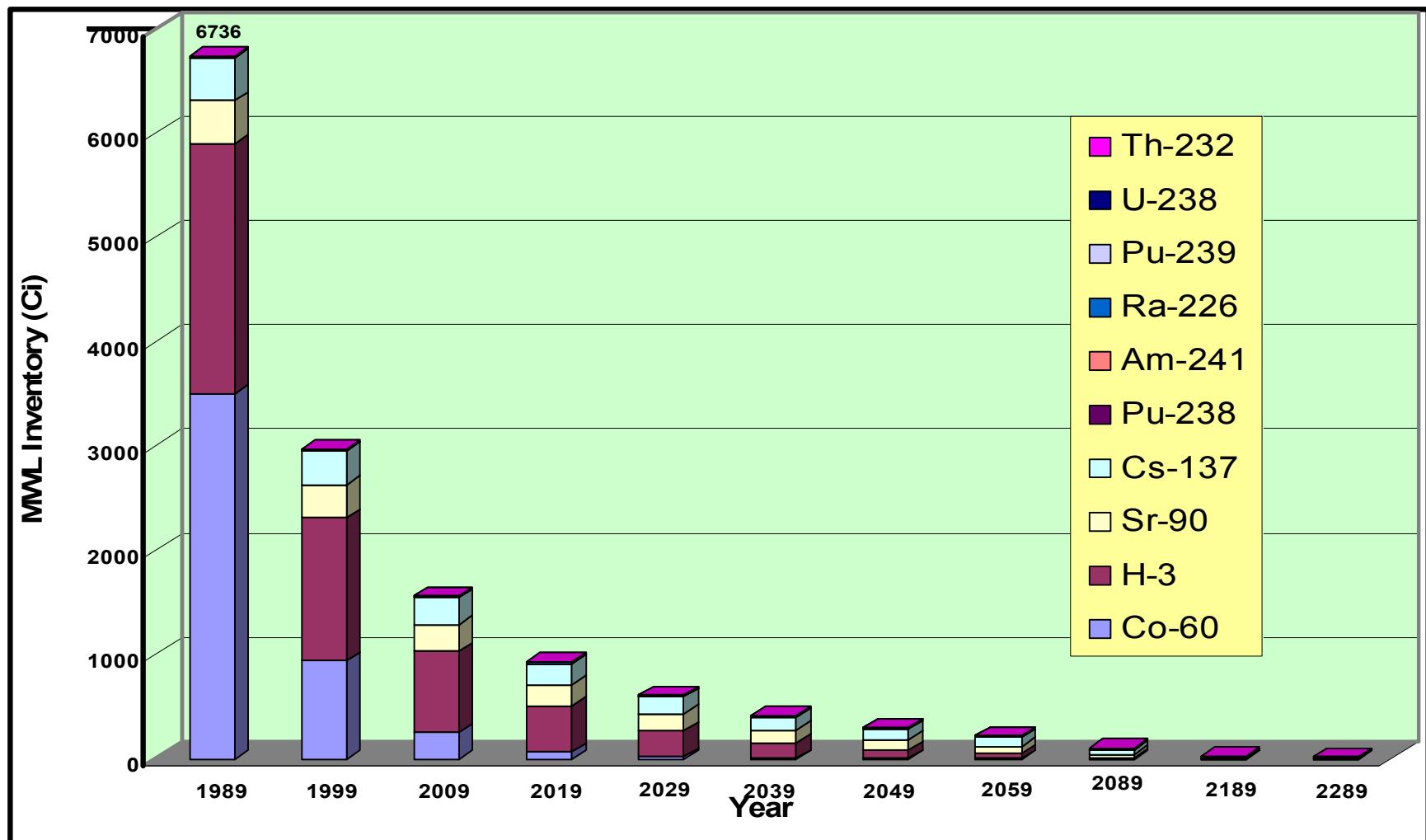


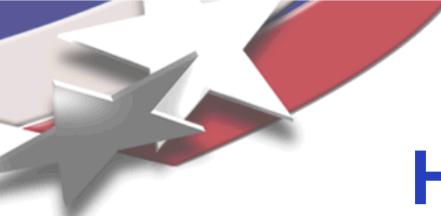
Key Points Summary

Disposal Areas – Vadose Zone – Regional Aquifer

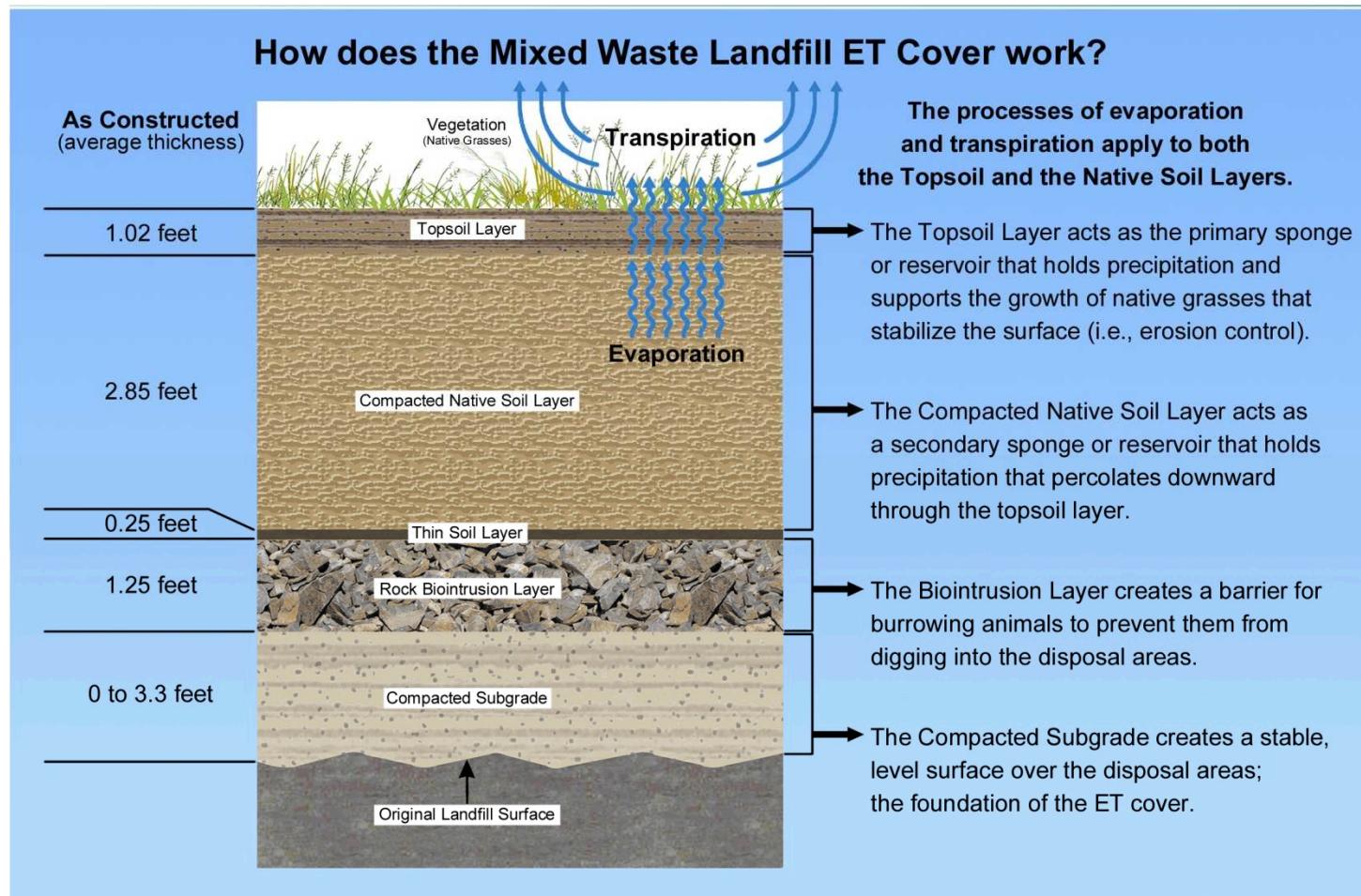


Radionuclide Inventory Decay at the MWL





How is the ET Cover Protective?

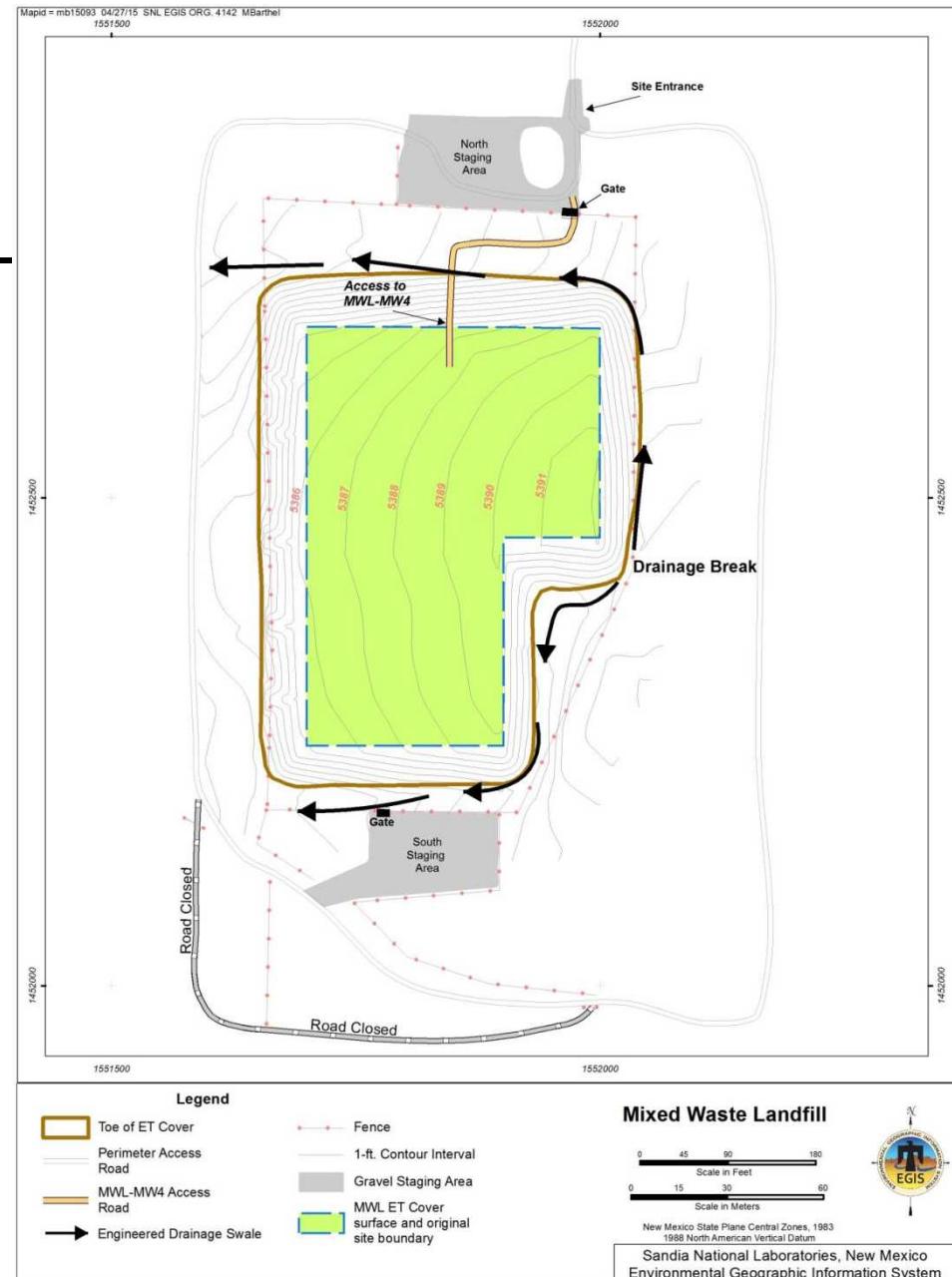


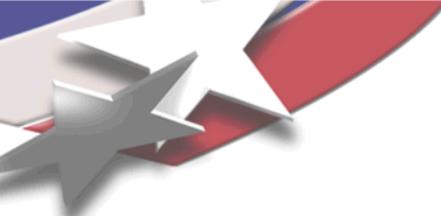
Current Site Map of MWL

ET Cover: 4.1 acre footprint
Completely overlaps the original 2.6 acre disposal Area (green area)

Site Features

- Protective ET Cover
- Site Drainage
- Security Fence
- Perimeter Road
- Staging Areas





Mixed Waste Landfill Cover



June 2015



MWL January 2016 Update

- LTMMP approved by NMED on January 8, 2014
 - Fully implemented by September 2014
- DOE/Sandia initiated a Class 3 Permit Modification in October 2014 for an NMED determination of “Corrective Action Complete with Controls”
 - 2 public comment periods per regulatory process,
 - DOE/Sandia October 2014 through January 2015 (~60 days)
 - NMED January through April 2015 (~90 days)
 - Sandia public meeting in November 2014
 - NMED Public Hearing (4 days) July 8-11, 2015
- LTMMP Approval & 5-Year report timeframe legally challenged
 - Upheld in NM Court of Appeals in February 2015
 - NM Supreme Court denied review in May 2015



Mixed Waste Landfill Long-Term Monitoring & Maintenance Plan

The objective of the long-term monitoring program documented LTMMMP is to ensure that the final remedy and site conditions remain protective of human health and the environment.

Components

1. Multi-Media Monitoring (with Trigger Levels)
2. Inspection, Maintenance, and Repair
3. Reporting

Component 1 – Multi-Media Monitoring

Summary of Long-Term Monitoring Parameters, Frequencies, and Methods Mixed Waste Landfill, Sandia National Laboratories, New Mexico

Sampling Media	Monitoring Parameters	Monitoring Frequency	Number of Samples Per Event	Purpose	Monitoring Method
Air	Radon	Year 1 – Quarterly Year 2 – Quarterly Year 3 – Semiannual Year 4 – Semiannual Year 5 and subsequent years – Annual	17	Determine if sealed radium -226 sources remain intact in the disposal area. Two previous studies show radon-222 emissions from the MWL are consistent with background values.	17 Track-etch detectors placed around the perimeter and on the MWL. Samples are time-weighted average for a 3-month period.
Surface Soil	Tritium	Annual	4	Determine if a significant release of tritium occurs from the disposal area. Monitoring has been conducted since 1985 and tritium values have been steadily decreasing over time.	One soil sample collected from each corner (4) of the MWL ET Cover. Moisture is extracted and analyzed for tritium.
Vadose Zone	VOCs in soil vapor	Year 1 – Semiannual Year 2 – Semiannual Year 3 – Semiannual Year 4 and subsequent years – Annual	17	Determine VOC soil-vapor concentrations in the subsurface above the water table and monitor over time. Two previous studies show VOC soil-vapor concentrations are very low to a depth of 50 feet below ground surface.	Sampling and analysis for 50 VOCs at 17 locations to provide a complete profile of VOC soil-vapor concentrations in the subsurface above the water table.
Vadose Zone	Moisture content underneath the ET Cover	Year 1 – Semiannual Year 2 – Semiannual Year 3 and subsequent years – Annual	171	Determine soil-moisture content underneath the ET Cover over time to evaluate moisture infiltration through the ET Cover. Baseline data collected prior to ET Cover installation.	Soil-moisture monitoring using a neutron probe. Measurements obtained at 1-ft increments from 4 ft. to 25 ft. bgs, then 5-ft increments to total depth in the 3 soil-moisture monitoring access tubes (~200 linear ft.).

Component 1 – Multi-Media Monitoring

Summary of Long-Term Monitoring Parameters, Frequencies, and Methods Mixed Waste Landfill, Sandia National Laboratories, New Mexico

Sampling Media	Monitoring Parameters/ Constituents of Concern	Monitoring Frequency	Number of Samples Per Event	Purpose	Monitoring Method
Ground water	VOCs, metals (uranium, cadmium, and nickel), tritium, radon, gamma-emitting radionuclides (short list), and gross alpha/beta activity	Semiannual	4	Determine groundwater concentrations over time to evaluate potential impacts from the MWL and other sources. Groundwater monitoring has been performed at MWL since 1990 and provides over 20 years of data indicating the MWL has not impacted groundwater.	Sampling and analysis of the MWL compliance groundwater monitoring well network: MWL-BW2, MWL-MW7, MWL-MW8, and MWL-MW9.
Biota – Surface Soil	RCRA Metals plus Cu, Ni, V, Zn, Co, and Be; and gamma-emitting radionuclides (short list)	Annual	Up to 4 (2 each, if they exist)	Determine surface soil concentrations in the vicinity of features indicative of animal activity (burrows and/or ant hills) to evaluate contaminant transport through biological activity.	Sampling and analysis of surface soil at animal burrow and/or ant hill features identified during routine cover inspections.
Biota – Cover Vegetation	Gamma-emitting radionuclides (short list) in vegetation	Annual	Up to 2 if they exist	Determine radionuclide activity of vegetation that have root systems that could potentially reach the disposal area to evaluate contaminant transport through vegetation.	Sampling and analysis of potentially deep-rooted vegetation, including the plant and root system.

Component 1 – Multi-Media Monitoring

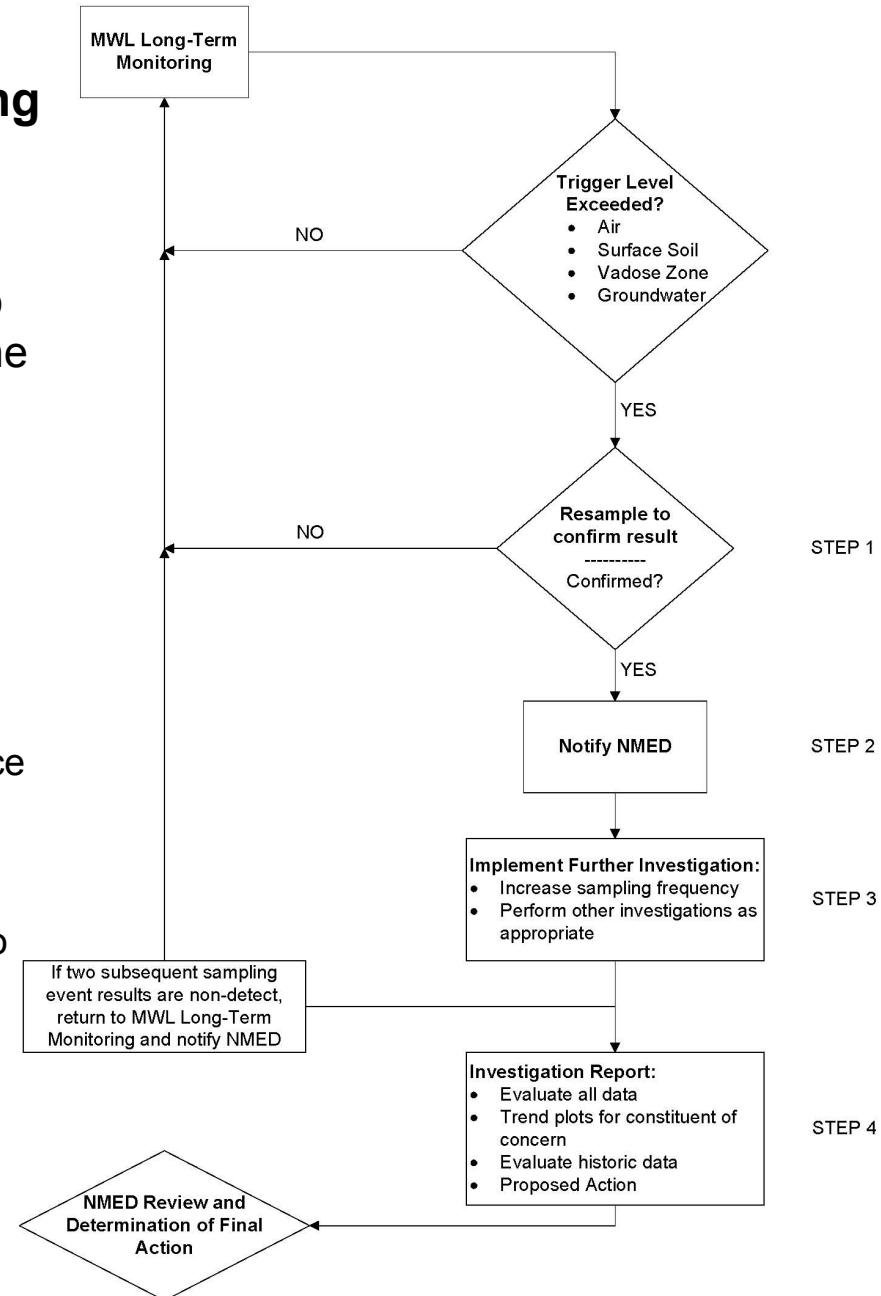
Trigger Evaluation Process for the Mixed Waste Landfill

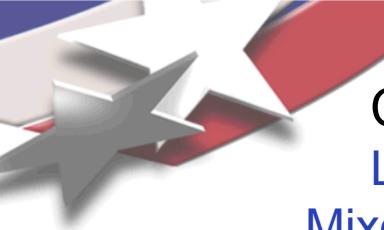
The trigger evaluation process is designed to ensure the protection of human health and the environment, while allowing adequate data collection to eliminate field sampling and/or laboratory error and identify short-term exceedances that do not reflect long-term trends.

Steps 1 & 2 require resampling to confirm exceedance, and notification to NMED if exceedance confirmed

Steps 3 & 4 require further investigation and reporting. Investigation Report must be submitted to NMED within 1 year of exceedance notification

NMED will review the investigation report and determine final actions to be implemented.





Component 2 – Inspection, Maintenance, and Repair

Long-Term Inspection, Maintenance, and Repair Schedule

Mixed Waste Landfill, Sandia National Laboratories, New Mexico

MWL System to be Inspected	Inspection Parameters	Inspection Frequency	Maintenance Implementation	Maintenance/ Repair Frequency
ET Cover Surface	Vegetation Inventory	Quarterly until vegetation is established, annually thereafter by a staff biologist	Soil augmentations and/or reseeding	Within 60 days of discovery of needed repairs. Reseeding repairs may be delayed to await appropriate growing season.
	Contiguous areas of no vegetation >200 square feet		Revegetate barren areas that exceed prescribed limits	
	Animal intrusion burrows in excess of 4 inches in diameter		Repair cover system damage that exceeds prescribed limits	
ET Cover Surface	Settlement of cover surface in excess of 6 inches	Quarterly by a field technician	Repair cover system damage that exceeds prescribed limits	Within 60 days of discovery of needed repairs. Reseeding repairs may be delayed to await appropriate growing season.
	Erosion of cover soil in excess of 6 inches deep			
	Ponding of water on the ET Cover surface in excess of 100 square feet			
	Animal intrusion burrows in excess of 4 inches in diameter			
	Contiguous areas of no vegetation >200 square feet		Revegetate barren areas that exceed prescribed limits	
Surface-Water Drainage Features	Channel or sidewall erosion in excess of 6 inches deep	Quarterly by a field technician	Repair erosion that exceeds prescribed limits	Within 60 days of discovery of needed repairs.
	Accumulations of sediment in excess of 6 inches deep or debris that blocks more than 1/3 of the channel width		Remove sediment and debris that exceed prescribed limits	



Component 2 – Inspection, Maintenance, and Repair

Long-Term Inspection, Maintenance, and Repair Schedule

Mixed Waste Landfill, Sandia National Laboratories, New Mexico

MWL System to be Inspected	Inspection Parameters	Inspection Frequency	Maintenance Implementation	Maintenance/ Repair Frequency
Soil-Vapor Monitoring Wells, Soil-Moisture Monitoring Access Tubes, and Groundwater Monitoring Wells	Concrete pads, stanchions, and protective casings	Groundwater and Vadose Zone Network Components: Field technician to inspect at same frequency/time that monitoring occurs	Maintain, clean, repair, replace, re-label, as appropriate	Within 60 days of discovery of needed repairs.
	Well cover caps and Swagelok® (or equivalent) dust caps			
	Monitoring wells and soil-vapor sampling port labels			
	Locks			
	Sampling pumps and tubing Neutron probe and cable system			
Fence	Presence of wind-blown plants and debris	Quarterly by a field technician	Remove wind-blown plants and debris	Within 60 days of discovery of needed repairs.
	Condition of fence wires, posts, gates, gate locks, warning signs, and survey monuments in the local area		Repair broken wire sections and posts, repair/oil gates, clean/replace locks, repair/replace warning signs, clear dirt/debris from monuments	



Component 3

Long-Term Reporting Requirements

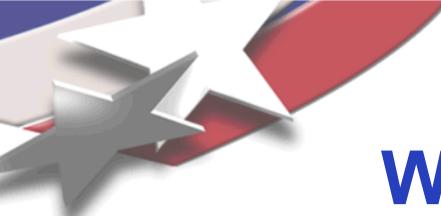
- Annual Reports will be submitted to NMED to document all monitoring and inspection activities/results conducted during the previous year
 - Monitoring results will be reported, evaluated, and compared to trigger levels
 - Reports will evaluate site conditions and the effectiveness of the final remedy
- 5 Year Re-Evaluation Reports will be submitted to NMED re-evaluating the feasibility of excavation and the effectiveness of the final remedy based upon the previous 5 years of monitoring and inspection results.
- All LTMMMP Reports will be made available for public review and comment in accordance with the Final Order



Why a Permit Modification?

Corrective action under 40 CFR 264.101 consists of several steps that include Permit Modifications. Ensures public involvement.

1. Initial identification and assessment of potential SWMUs
2. Investigation to characterize each SWMU, determine the nature and extent of any releases of contaminants, perform risk assessment, and evaluate whether remediation is needed
3. Evaluation of corrective measures alternatives or remedies
4. NMED selection of final remedy
 - **Permit Modification Granted – May 2005 NMED Final Order**
5. Implementation and completion of corrective measures or remedies
 - **Permit Modification Requested – NMED Final Order pending**
6. Maintenance of controls after completion of corrective measures



Why a Permit Modification Now?

DOE and Sandia Completed all Final Order Conditions

- All **documents** have been approved by NMED after conducting a public process and responding to public comments
- Final remedy has been constructed in accordance with the **CMI Plan** and documented in the **CMI Report**
- All monitoring systems defined in the **LTMMP** have been installed in accordance with NMED-approved work plans and are operational
- All monitoring, inspection, maintenance/repair, and reporting were implemented upon NMED approval of the **LTMMP** on January 8, 2014

✓ **CMI Plan** approved on December 22, 2008

- ✓ Fate & Transport Modeling Report
- ✓ Soil-Vapor Investigation to confirm 1994-1997 Investigation Results
- ✓ All conditions of approval have been met and documented

✓ **CMI Report** approved on October 14, 2011

✓ **LTMMP** approved on January 8, 2014



Timeline for Completion of Final Order Conditions

— • **Corrective Measures Implementation Plan**



• **Corrective Measures Implementation**



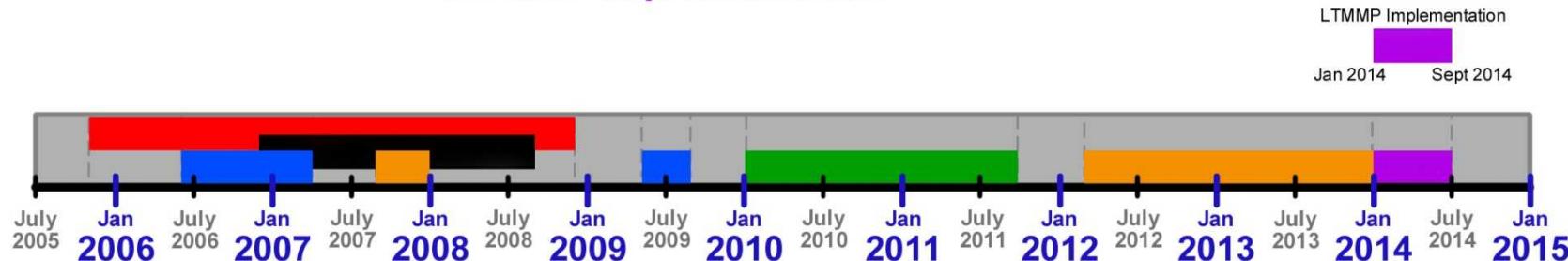
• **Corrective Measures Implementation Report**



• Long-Term Monitoring and Maintenance Plan



- **LTMMP Implementation**





Class 3 Permit Modification Request For Corrective Action Complete with Controls

DOE and Sandia requested the NMED take two actions affecting the SNL RCRA Permit:

- 1. Determine that corrective action is complete at the MWL.**
 - Remove the MWL from Table K-1 in Permit listing “SWMUs requiring corrective action under the Consent Order ” and add the MWL to Table K-3 in Permit listing “SWMUs for which corrective action is complete with controls.”
- 2. Establish the long-term monitoring, maintenance, and controls needed to provide ongoing protection of human health and the environment.**
 - Modify Attachment M of the Permit to indicate the controls established in the MWL LTMMMP are required for the MWL.

Upon NMED granting Corrective Action Complete, MWL is then regulated under the SNL RCRA Permit



CANM Allegations - 2014 to Present

- Allegations are not new and addressed in the December 2004 Public Hearing
 - NMED Final Order legally challenged in October 2006
 - Upheld in NM Court of Appeals in December 2007
 - NM Supreme Court denied review in February 2008
- Allegations similar to those presented in Senate Memorials 34 and 30 (2013 and 2014, respectively), and include:
 - Wastes are dangerous and the inventory is incomplete
 - Disposal method is not safe
 - Wastes have leaked into the Albuquerque groundwater aquifer
 - Groundwater monitoring wells and data are inadequate
 - Final remedy selected by NMED (ET Cover) is not protective



CANM Allegations - 2014 to Present (continued)

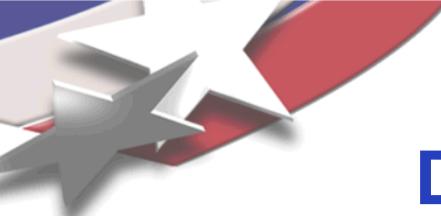
- New focus associated with old allegations of metallic sodium and nuclear fuel material
 - Allegations date to the December 2004 Public Hearing
 - More recent allegations assert the MWL contains high-level radioactive waste (HLW) that requires different disposal method
 - This waste (metallic sodium and fuel), which is not in the MWL, is the basis for the “explosion risk” allegation
- CANM now cites the October 2015 explosion and fire at Beatty, NV as an example of why the MWL is not safe



CANM Allegations - 2014 to Present (concluded)

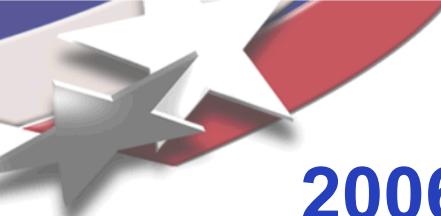
Allegations addressed by both DOE/Sandia and NMED

- December 2004 Public Hearing for MWL Final Remedy Selection and NMED May 2005 Final Order
- Responses to public comments for all MWL documents submitted since the May 2005 Final Order
- Responses to public comments and July 2015 Public Hearing associated with the Class 3 Permit Modification for Corrective Action Complete with Controls
 - Public comment periods from October 2014 through April 2015
 - Public Hearing July 8-11, 2015
- DOE Office of Inspector General (OIG) Special Investigation initiated in December 2014 in response to allegations submitted to the OIG Hotline from late 2014 into 2015
- Presentations to the County Water Utility Authority (WUA) and Water Protection Advisory Board (WPAB) in August and September 2015 addressing 10 CANM allegations included as WPAB resolution R-15-7 that was passed in May 2015
- Sandia provided responses to Albuquerque Free Press inquiries prior their publishing the 2 articles in December 2015



December 2004 Public Hearing

- All allegations previously addressed at the 4-day December 2004 Public Hearing, as documented in the May 2005 Final Order
 - NMED determined the inventory is reasonably complete and accurate, and is adequate for selection of a final remedy
 - Metallic sodium and nuclear fuel test packages not disposed in MWL
 - Groundwater monitoring wells and data are adequate/representative
 - Releases from the MWL have not impacted the groundwater aquifer
 - MWL conditions are protective of human health and the environment
- NMED added conditions to address uncertainty in the inventory:
 - Fate and Transport modeling to evaluate contaminant migration in the future
 - Comprehensive long-term monitoring with trigger levels that, if exceeded, require additional testing or the implementation of an additional or different remedy
 - 5-year reports evaluating the performance of the ET Cover, the likelihood of contaminants reaching groundwater, and the feasibility of excavation



2006 – 2014 Public Comment Periods

- Allegations addressed by NMED from 2006 – 2014 during public comment periods for all MWL documents required by the May 2005 Final Order
- NMED provided responses to all public comments for each document, including comments from CANM
 - Corrective Measures Implementation Plan – November 2006
 - Fate and Transport Modeling Report (included in CMIP as an appendix)
 - Soil-Vapor Investigation Sampling & Analysis Plan – February 2008
 - Corrective Measures Implementation Report – May 2011
 - LTMMMP – January 2014



2014 – 2015 Class 3 Permit Modification

- Allegations addressed by NMED in their responses to public comments associated with the October 2014 Class 3 Permit Modification for Corrective Action Complete with Controls (NMED June 2015)
 - 2 public comment periods – October 2014 through April 2015
- Allegations were addressed in detail by Sandia and NMED as part of the 4-day July 2015 Public Hearing
 - Dr. Eric Nuttall and CANM participated in the public hearing
 - Testimony provided by Sandia technical experts addressed all allegations
 - DRAFT Hearing Officer Report (October 2015) recommended NMED approval of the Permit Modification
 - A final decision by the NMED Secretary is pending



Water Utility Authority & Protection Advisory Board

- Resolution R-15-7 passed in May 2015 and included 10 CANM allegations
- Allegations included the improper disposal of HLW, explosion hazard associated with metallic sodium and HLW wastes, inadequate groundwater monitoring, incomplete inventory, and contamination in the regional groundwater aquifer from the MWL
- DOE/Sandia responded to the allegations with a formal presentation followed by Q&A in August (to the WUA) and September (to the WPAB)
 - DOE/Sandia informed the WUA and WPBA about the regulatory process and July 2015 Public Hearing where allegations were addressed formally, in detail
- DOE/Sandia clarified there is no potential explosion hazard because:
 1. Metallic sodium combined with HLW was not disposed in the MWL
 2. Low moisture content of subsurface soils
 3. Presence of the protective ET Cover designed to limit infiltration



DOE OIG Special Investigation

- During the October 2014 – April 2015 public comment periods, allegations & supporting evidence was submitted to the DOE OIG Hotline
- OIG initiated a Special Investigation that began in December 2014
- OIG consolidated CANM and public input into 6 allegation categories:
 1. Inventory; 2. Aquifer; 3. 5-Year Review; 4. Monitoring Well System Design & Location; 5. HLW in the Form of Nuclear Fuels; and 6. ET Cover
- OIG Investigators interviewed NMED, Sandia, and DOE personnel
- DOE/Sandia provided extensive documentation from the Administrative Record
- DRAFT Report issued in November 2015 (Final Report pending)
 - Only substantiated allegation was that the inventory is not complete
 - This was previously documented and addressed in the December 2004 Public Hearing, and is addressed by conditions in the May 2005 Final Order
 - All other allegations could not be substantiated, including disposal of HLW



Completeness of MWL Inventory

- MWL Inventory is based on an extensive set of Disposal Records that were reviewed, evaluated, and summarized in a pit-by-pit, trench-by-trench “summary inventory” submitted to the NMED in 1998
 - Over 5,000 disposal records that document disposal from 1958 through 1988
 - Records document classified and unclassified items, classified records were redacted for public release in 2001 and 2002
 - Disposal records supported by information obtained through interviews with current and retired employees, solid waste information sheets, nuclear material management records, historic data base records, and operational period reports/plans that documented disposal information specific to the MWL
 - All of this information released to CANM in 2001-2002 and made available to the public
 - NMED performed 2 separate 2003 investigations to confirm inventory information
- All of this information was considered during the December 2004 Public Hearing
- While acknowledging some uncertainty due to the age of the records and the operational period, the Hearing Officer and NMED concluded the inventory is reasonably complete and accurate, and adequate for selection of the final remedy (April 2005 Hearing Officer Report & NMED May 2005 Final Order)



Local Coverage

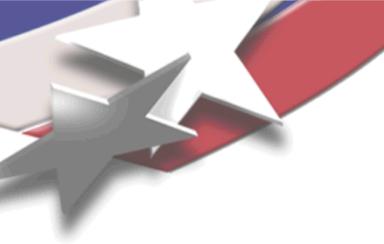
- 4 articles have been published locally since the Corrective Action Complete with Controls Permit Modification was initiated in October 2014
 - Alibi article (November 27 – December 3, 2014 issue)
 - 3 Albuquerque Free Press articles (December 2015 and January 2016 issues)
- Similar themes, same sources
- Focus on inventory records, HLW, and explosion hazard
- Sandia was contacted by the Albuquerque Free Press and provided responses to their questions for the 2 December articles before they were published



Explosion and HLW Allegations

- ACRR experiment packages that contained metallic sodium are accounted for and not in the MWL
 - Addressed at both the December 2004 and July 2015 public hearings
- Beatty, NV incident is not indicative or representative of the MWL
 - Water penetrating the landfill cover interacting with metallic sodium packaged in drums with oil caused the incident in NV
 - MWL ET Cover constructed of native soil with low clay content (verified by testing)
 - ET Cover slope and storm water diversion features ensure surface water moves around, off, and away from the disposal area
 - Inspection, maintenance, and repair of the ET Cover is performed quarterly as required by the NMED and stipulated in the LTMMMP
- The definition of HLW per DOE Radioactive Waste Management Manual, DOE 435.1-1 Administrative Change 2, is as follows:

“High-level waste is the highly radioactive waste material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that is determined, consistent with existing law, to require permanent isolation.”
- SNL/NM has never reprocessed spent nuclear fuel, and no “other highly radioactive waste material” has been determined



Sandia National Laboratories' Groundwater Protection Programs

Presented by:
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SAND2012-7507C. Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000



Remaining 13 Sites

~~3 Active mission test facilities where corrective action is planned after the facilities are no longer operational~~

~~1 Mixed Waste Landfill~~

→ 6 Soil sites (Five plus One)

3 Groundwater Areas of Concern (AOCs)

Burn Site

Tijeras Arroyo

Technical Area V



Five Soil Sites

- “Soil sites” to separate them from the landfill and the groundwater areas of concern
- A 2010 letter from NMED requested additional groundwater characterization of these ER sites (ER sites 8/58, 68, 149 & 154)
- All required groundwater characterization work has been completed and the results documented
- In letter dated February 24, 2015, NMED stated that corrective action activities have been completed, and that Certificates of Completion may be requested for these sites
- In letter dated September 4, 2015, Certificates of Completion were requested for the five soil sites



One “New” Soil Site

- “New” release site, discovered in 2012
- Voluntary corrective actions completed at this site (ER site 502)
- Remaining concentrations in soil below cleanup criteria
- Reported the results to NMED in November 2013 and are awaiting NMED review



Remaining 13 Sites

~~3 Active mission test facilities where corrective action is planned after the facilities are no longer operational~~

~~1 Mixed Waste Landfill~~

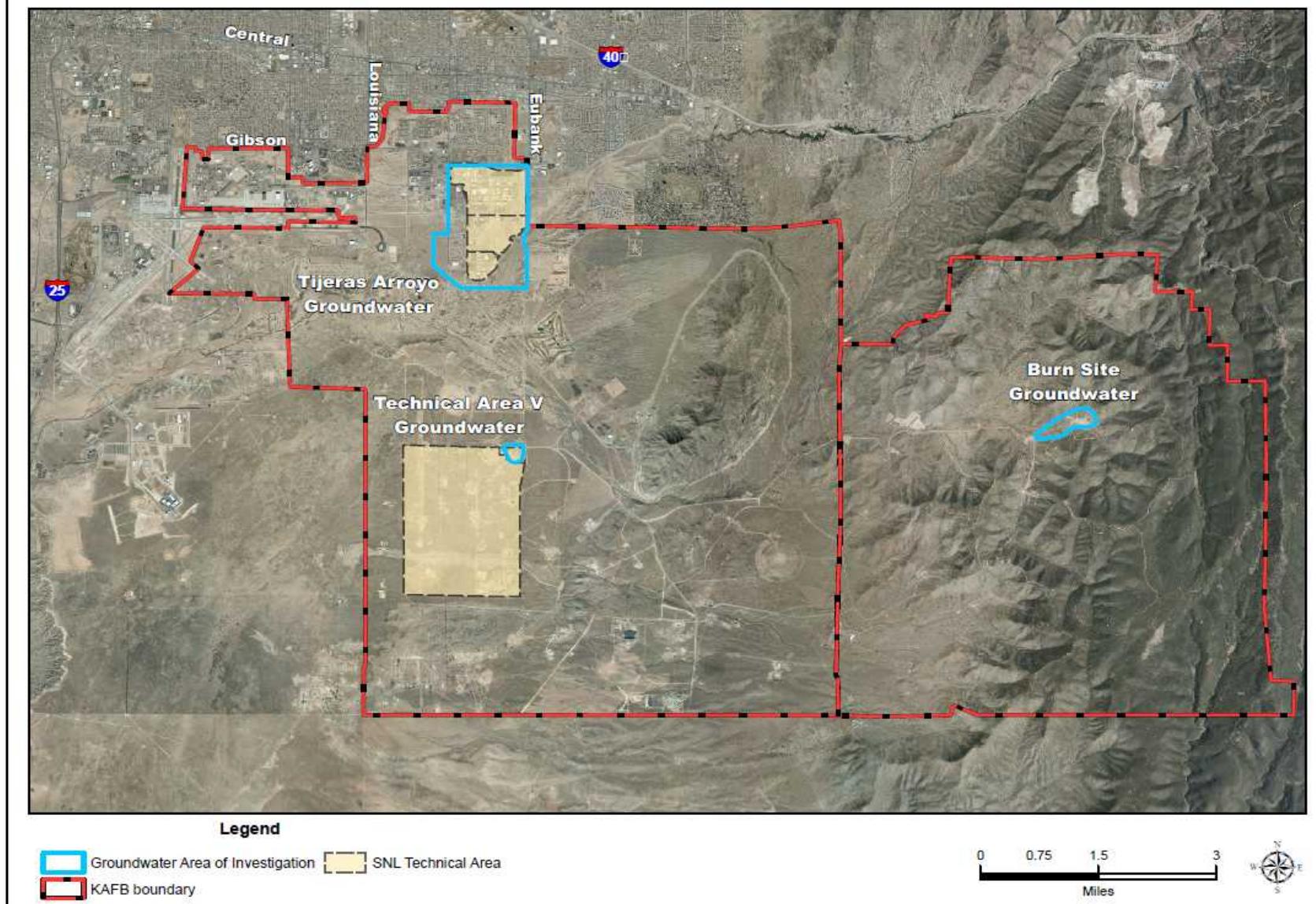
~~6 Soil sites (Five plus One)~~

→ 3 Groundwater Areas of Concern (AOCs)

Burn Site

Tijeras Arroyo

Technical Area V



Location of 3 Groundwater AOCs on KAFB



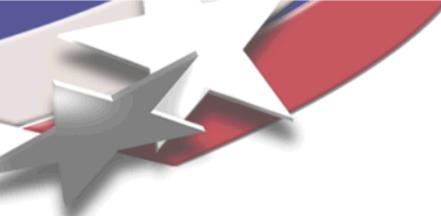
Remaining Nine ER Sites

- 6 Soil sites (five plus one)
- 3 Groundwater Areas of Concern

→ Burn Site

Tijeras Arroyo

Technical Area V



Burn Site GW AOC

- Groundwater occurs ~100 to 200 ft deep in fractured bedrock
- GW contains nitrate, up to 42 ppm (regulatory limit is 10 ppm)
- On June 18, 2014, NMED approved extension of Corrective Measure Evaluation (CME) Report to March 31, 2016 to allow weight-of-evidence process to determine origin of nitrates in GW
- Currently conducting weight-of-evidence process
- Continuing to monitor the GW



Remaining 13 Sites

~~3 Active mission test facilities where corrective action is planned after the facilities are no longer operational~~

~~1 Mixed Waste Landfill~~

~~6 Soil sites (**Five plus One**)~~

3 Groundwater Areas of Concern (AOCs)

~~Burn Site~~

→ Tijeras Arroyo

Technical Area V



Tijeras Arroyo GW AOC

- Perched GW occurs:
 - ~250 ft. below surface, and
 - ~ 250 ft above regional aquifer
- Perched GW contaminated with nitrate and TCE
 - Nitrate: up to 39 ppm (regulatory standard is 10 ppm)
 - TCE: up to 9 ppb (regulatory standard is 5 ppb)
- Updating the 2005 Corrective Measures Evaluation (CME) Report submitted to NMED, with new data from SNL and KAFB (by December 2, 2016)
- Continuing to monitor the GW



Remaining 13 Sites

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3 Groundwater Areas of Concern (AOCs)

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~~Tijeras Arroyo~~

→ Technical Area V



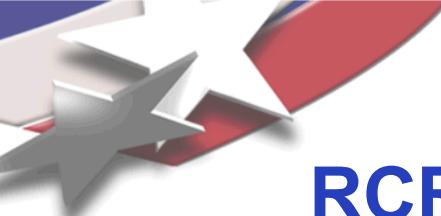
Technical Area V GW AOC

- Regional GW occurs 500 ft. below surface
- Contaminated with nitrate and TCE
 - Nitrate: up to 14 ppm (regulatory standard is 10 ppm)
 - TCE: up to 19 ppb (regulatory standard is 5 ppb)
- NMED agreed to consider possible bioremediation, and extended due date for CME Report to November 30, 2016
- Treatability Study Work Plan for in-situ bio remediation submitted to NMED on October 20, 2015
- Continuing to monitor the GW



Summary of Status of Sandia's ER Operations

- Requested Certificates of Completion for 5 soil sites
- Voluntary Corrective Action completed at 1 soil site
- MWL: (1) LTMMP being implemented, (2) NMED held public comment period and Public Hearing (July 8-11) on their intent to grant corrective action complete with controls status to MWL
- Conducting Weight of Evidence Process at Burn Site GW AOC
- Updating CME Report on Tijeras Arroyo GW AOC
- Submitted Treatability Study Work Plan to NMED for treating the TA-V GW AOC



RCRA Permit Information Resources

- **Information Repository**
- **Community Relations Plan**
- **Keeping the Public Informed**



Information Repository

- **Online index of information repository on SNL web page**
 - <http://www.sandia.gov/RCRA/>
 - Browse the index, select and add documents to your reading list, print your list, and make an appointment to review the documents
 - Subscribe to receive email notification about new documents added to the repository
- **Repository is located at Zimmerman Library on University of New Mexico (UNM) main campus in Albuquerque**
 - Contact Monica Dorame at 505-277-7180 or mdorame@unm.edu to make an appointment to review the documents
- **Repository contains Permit-related documents**
 - Permit application and requests for permit modification
 - Notifications and reports listed in Permit Part 1, Section 1.17



Community Relations Plan

- Submitted Plan to NMED on August 20th
- Plan describes:
 - Documents and information available online and as hard copy
 - Semi-annual meetings and meetings for permit modifications
 - Mailing lists for Permit-related activities
 - Questions and requests for information about Permit-related activities
 - Ways to keep informed about Permit actions
 - Providing feedback
- NMED will solicit public comments
- Plan will be posted on SNL web page after NMED approval



Keeping the Public Informed

- **Resources for information:**

- The New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) website at <https://www.env.nm.gov/HWB/snlperm.html>
- The index to the SNL Information Repository at <http://www.sandia.gov/RCRA/>
- An online collection of SNL and DOE documents available through UNM's LoboVault at <http://repository.unm.edu/handle/1928/10963>
- Annual Groundwater Monitoring Report for Sandia Labs - http://www.sandia.gov/news/publications/environmental_reports/index.html

- **Mailing lists:**

- Updates to the SNL RCRA Information Repository - subscribe at <http://www.sandia.gov/RCRA/>
- Public notices about permit modifications and activities – subscribe by contacting NMED

Program Manager, Permits Program
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505



Feedback and Plan Updates

- **Provide feedback or ask questions about Permit-related activities:**
 - Submit feedback or question at semi-annual public meetings
 - Submit feedback or question to DOE and Sandia at envinfo@sandia.gov
 - Call Sandia National Laboratories Community Involvement - 284-5200
- **Updating the Community Relations Plan:**
 - DOE and Sandia will review the Plan on an annual basis
 - DOE and Sandia will solicit comments about the Plan at the April 2016 semi-annual meeting and include them within the DOE and Sandia review to be conducted in June 2016