NMED
New Mexico Environment Department

RADIOACTIVE AND HAZARDOUS MATERIALS INTERIM COMMITTEE

June 26, 2017

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Secretary
New Mexico Environment Department

NMED Organization

- Office of the Secretary – OGC; ASD; IT
- Water Protection Division – Groundwater; Surface Water; Drinking Water; Construction Programs
- Resource Protection Division – Hazardous Waste; Solid Waste; Petroleum Storage Tanks; DOE Oversight
- Environmental Protection Division – Air Quality; Occupational Safety and Health; Environmental Health; Radiation Control

High Priority Issues

1. Corrective Action Fund (CAF)
2. Gold King Mine (GKM)
3. Kirtland Air Force Base (KAFB)
4. Waste Isolation Pilot Plant (WIPP)
5. Los Alamos National Lab (LANL)
6. Groundwater Regulations
7. Superfund sites

1. Corrective Action Fund

- The Corrective Action Fund (CAF), managed primarily by the Petroleum Storage Tanks Bureau, has three primary purposes:
  - provides financial assurance coverage for tank owners and operators in the state;
  - pays the state's share of federal leaking underground storage tank trust fund cleanup costs as required by the federal Resource Conservation and Recovery Act; and
  - makes payments to, or on behalf of, owners and operators for corrective action at release sites from a regulated petroleum storage tank as required.

https://www.env.nm.gov/ust/ustbtop.html

CAF - Financial Assurance Mechanism

- Tank Owners include:
  - Private entities, e.g., retail facilities
  - State, local government, and other political subdivisions of the state (including state agencies, counties, cities, municipal airports, and school districts)
  - Public services, e.g., hospitals and churches

- Having a State Fund
  - Expedites clean up by avoiding insurance disputes, if insurance is even available
  - Encourages re-development of contaminated sites
  - Ensures coverage for small owners that are essential for rural communities

Corrective Action Fund (CAF)

- Since the inception of the registration of underground storage tanks more than 19,000 regulated tanks have been registered
- There are 21 “Priority 1” sites where an actual or potential imminent threat to human health has been identified
- 64 communities have petroleum storage tank release sites near known municipal or private wells
- Primarily due to the inherent difficulty in removing petroleum contaminants from soil and groundwater, remediation projects generally take many years

FY16 Trends – Tank Population

	FY16	% AST vs. UST
Facilities	1769	
Total Tanks	4511	
USTs	3227	72%
ASTs	1284	28%

USTs more than 20 Years Old	Small Owners 4 or Fewer Facilities	Large Owners > 4 Facilities
80%	46%	54%

CAF Supports NMED's Mission

- "The legislature may appropriate up to 30% of the annual CAF distribution, consisting of portions of net receipts attributable to the petroleum products loading fee, to the department to match federal funds, for underground contamination cleanup, and to address water needs." NMSA § 74-6B-7(A)

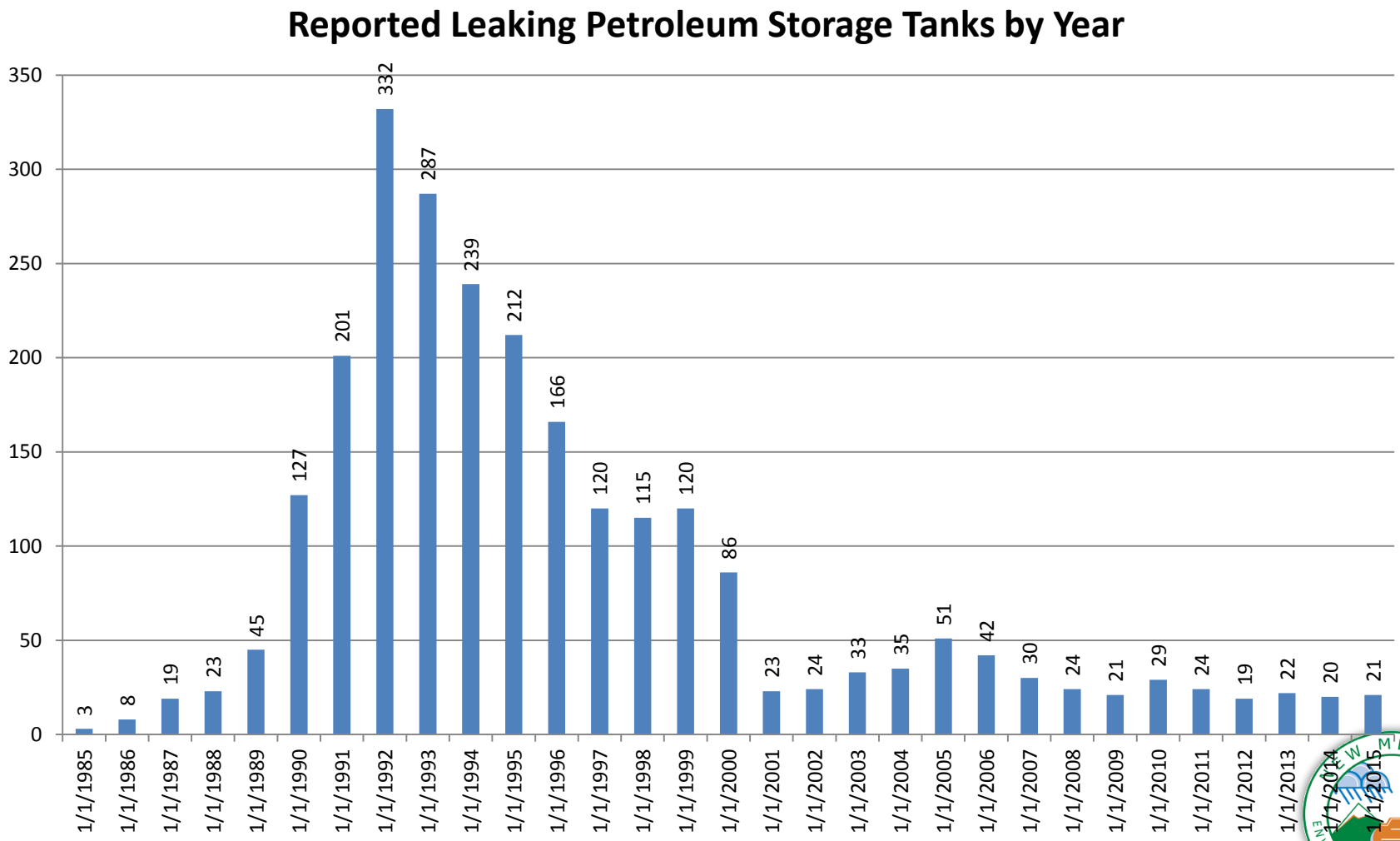
Corrective Action Fund (CAF)

- Up to $12M is expended on corrective action annually and an additional $10M is obligated to ongoing investigations and cleanups
- The CAF funds 159 FTE's at NMED and countless contractor jobs throughout the state
- During FY17, the Corrective Action Fund was used as the state match for $4.7M in federal funds that:
  - Support groundwater and surface water protection
  - Ensure delivery of safe drinking water to citizens in New Mexico
  - Implement the state's Occupational Health and Safety Program

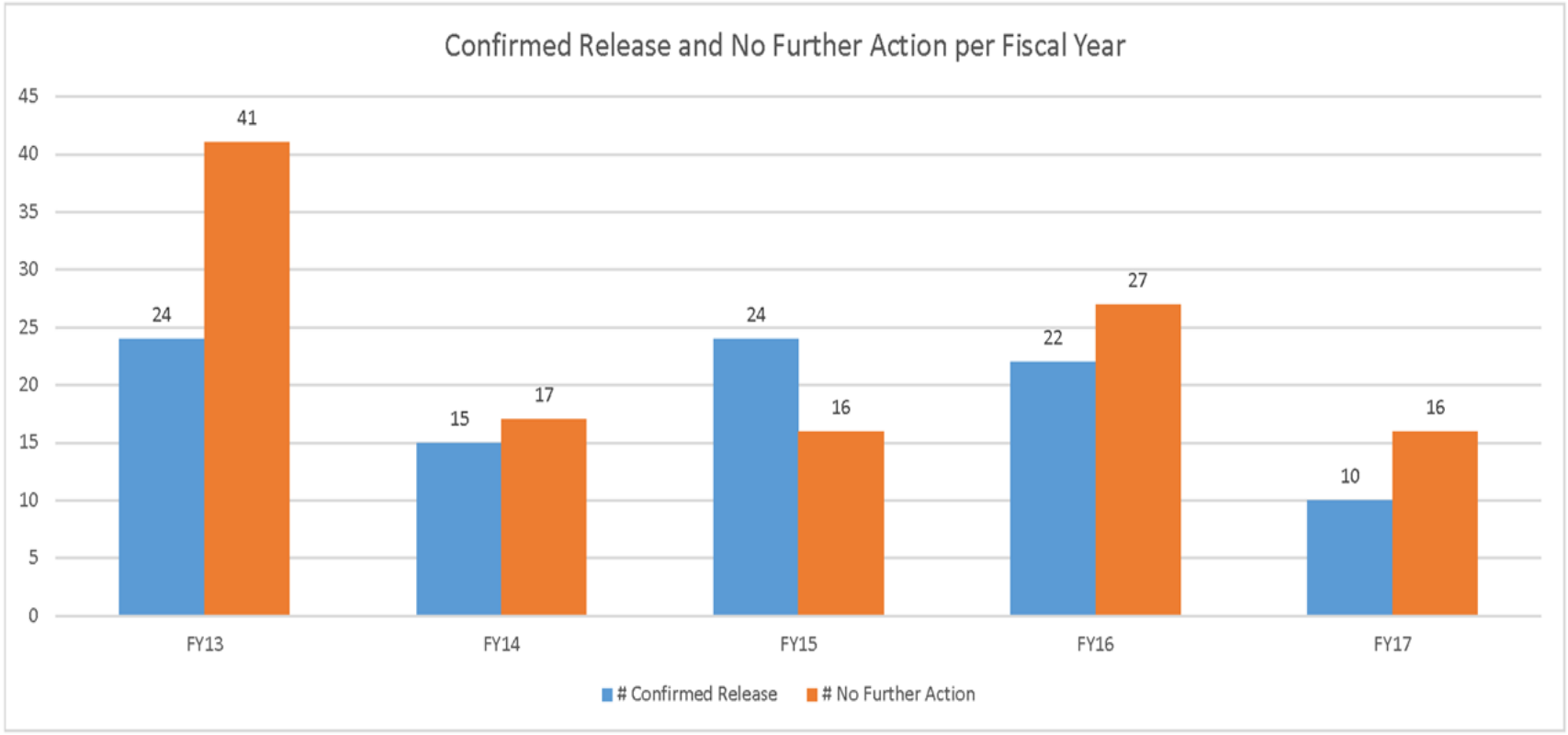
Corrective Action Fund (CAF)

- Without the CAF
  - Remediation stops
  - Water wells become vulnerable to contamination
  - Human health is threatened
  - Public and private sector jobs will be lost
  - Tank owners will have to seek financial assurance on their own to continue to operate their facilities
    - Tank owners will be obligated to obtain costly private insurance that would likely result in increased gas prices in smaller communities across the state
    - Many tank owners in rural communities may be forced to close their businesses, resulting in the elimination of gas stations in large areas of the state

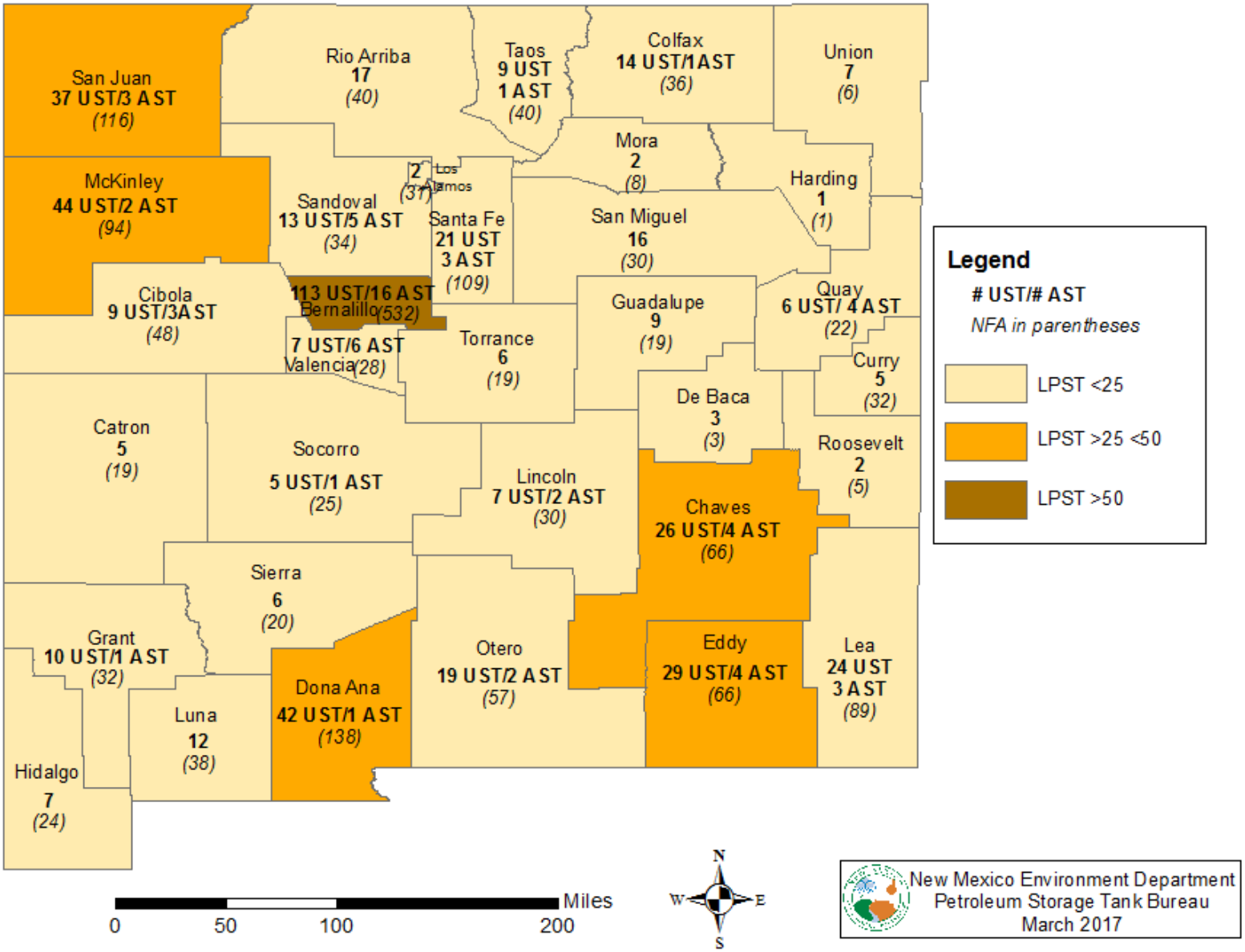
Prevention Works!



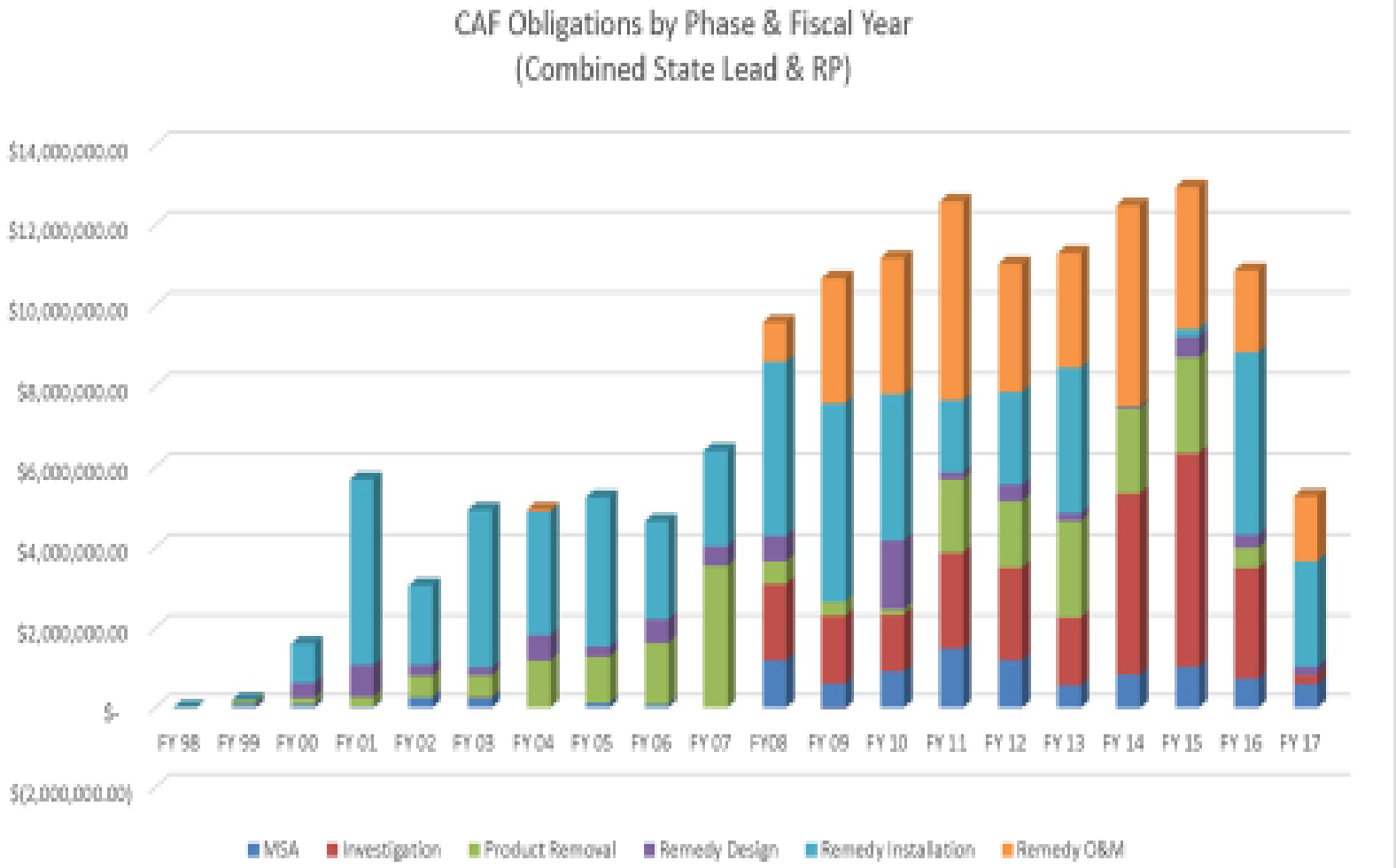
New Release vs. Remediated Sites



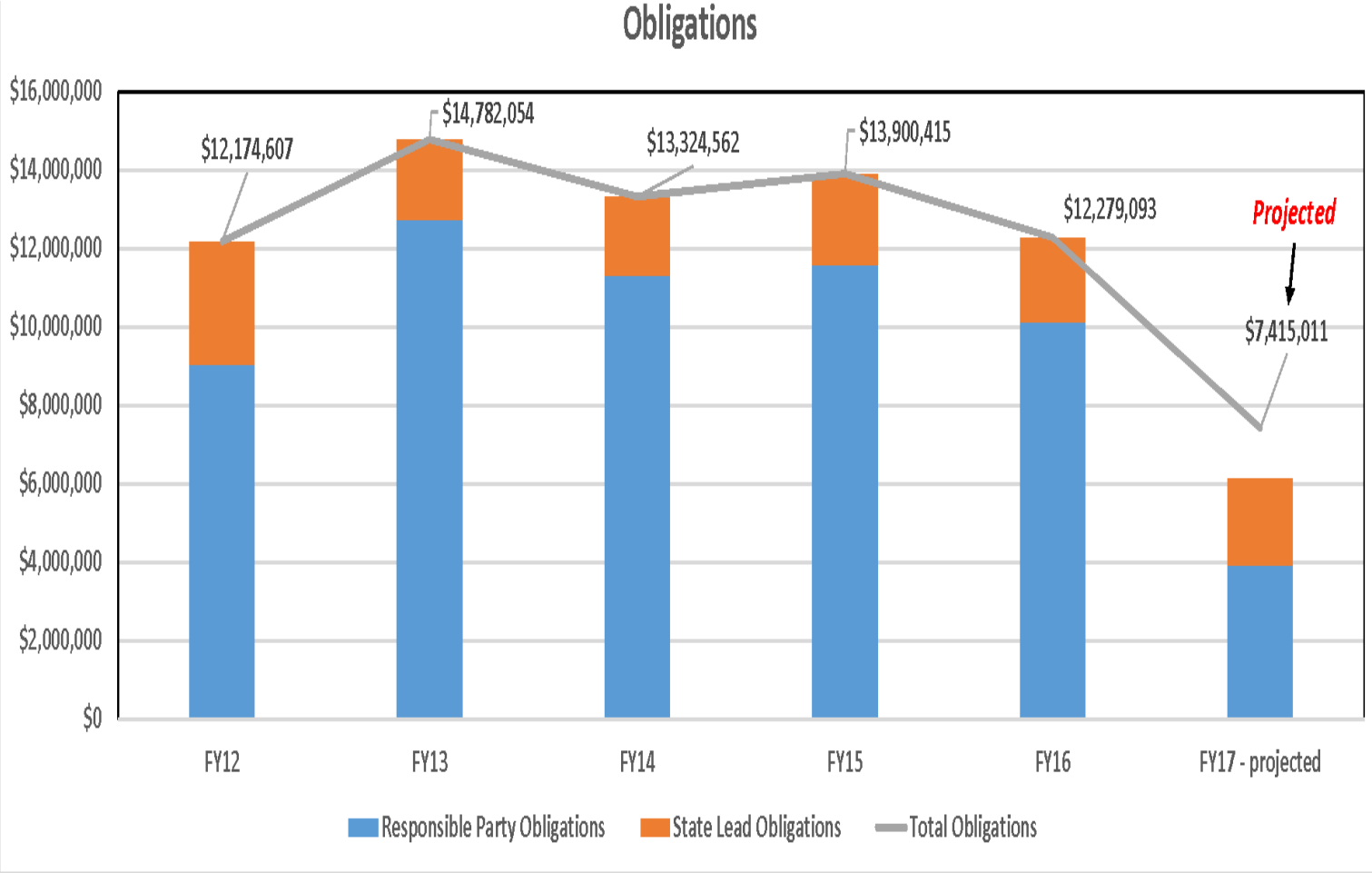
Open Leaking Petroleum Storage Tanks by County



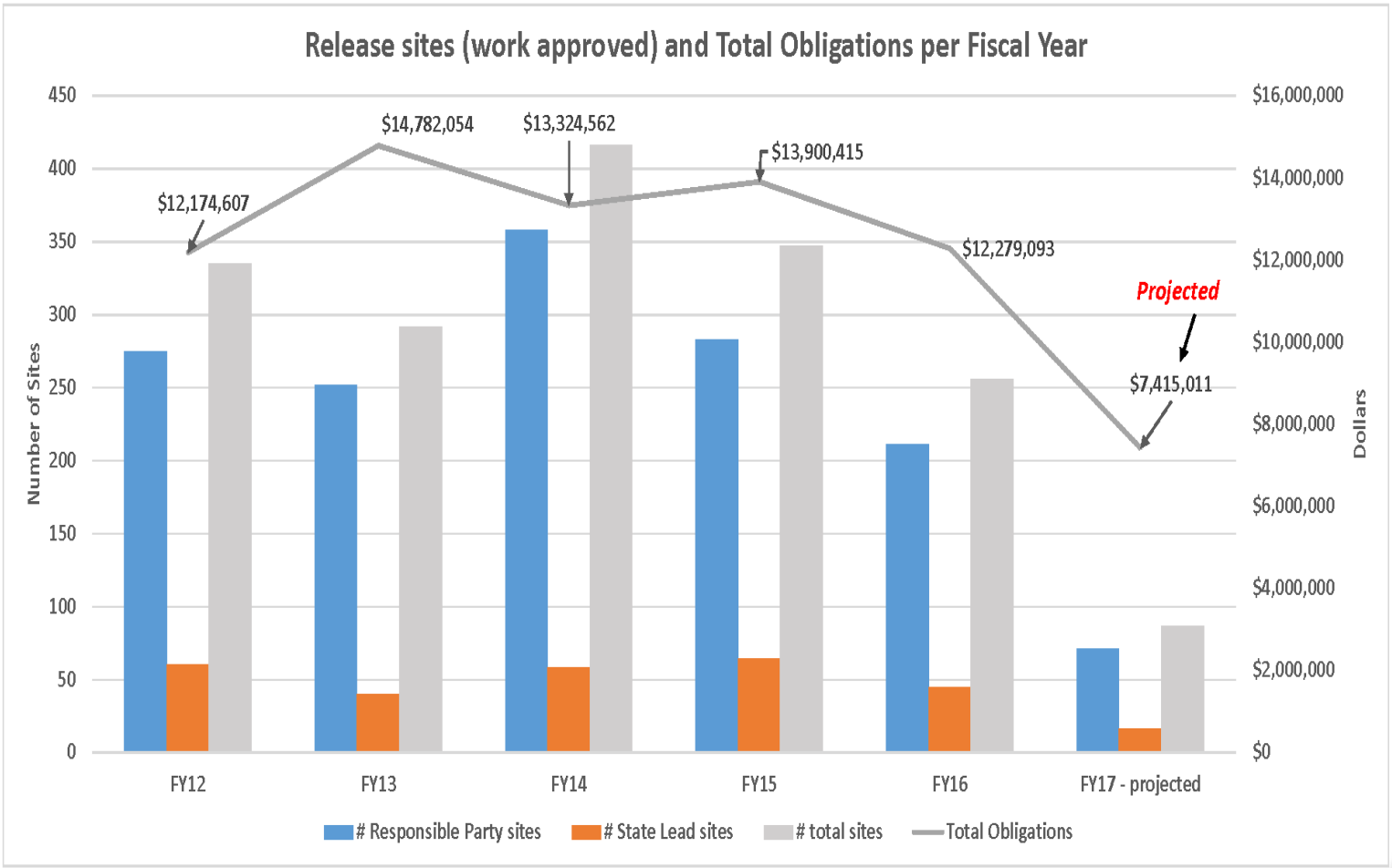
CAF Obligations Since 1998



Annual Obligations



Annual Obligations (cont'd)



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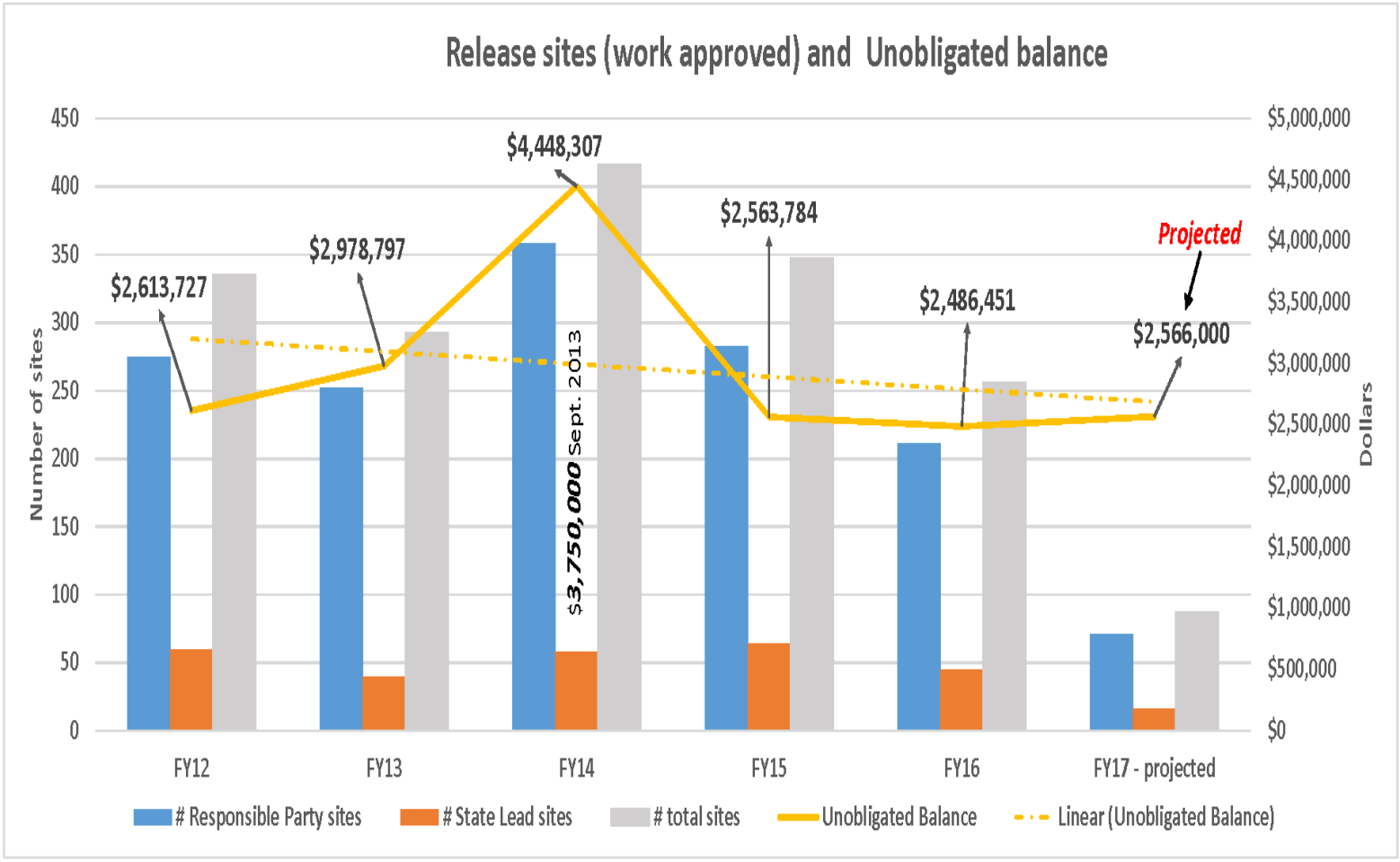
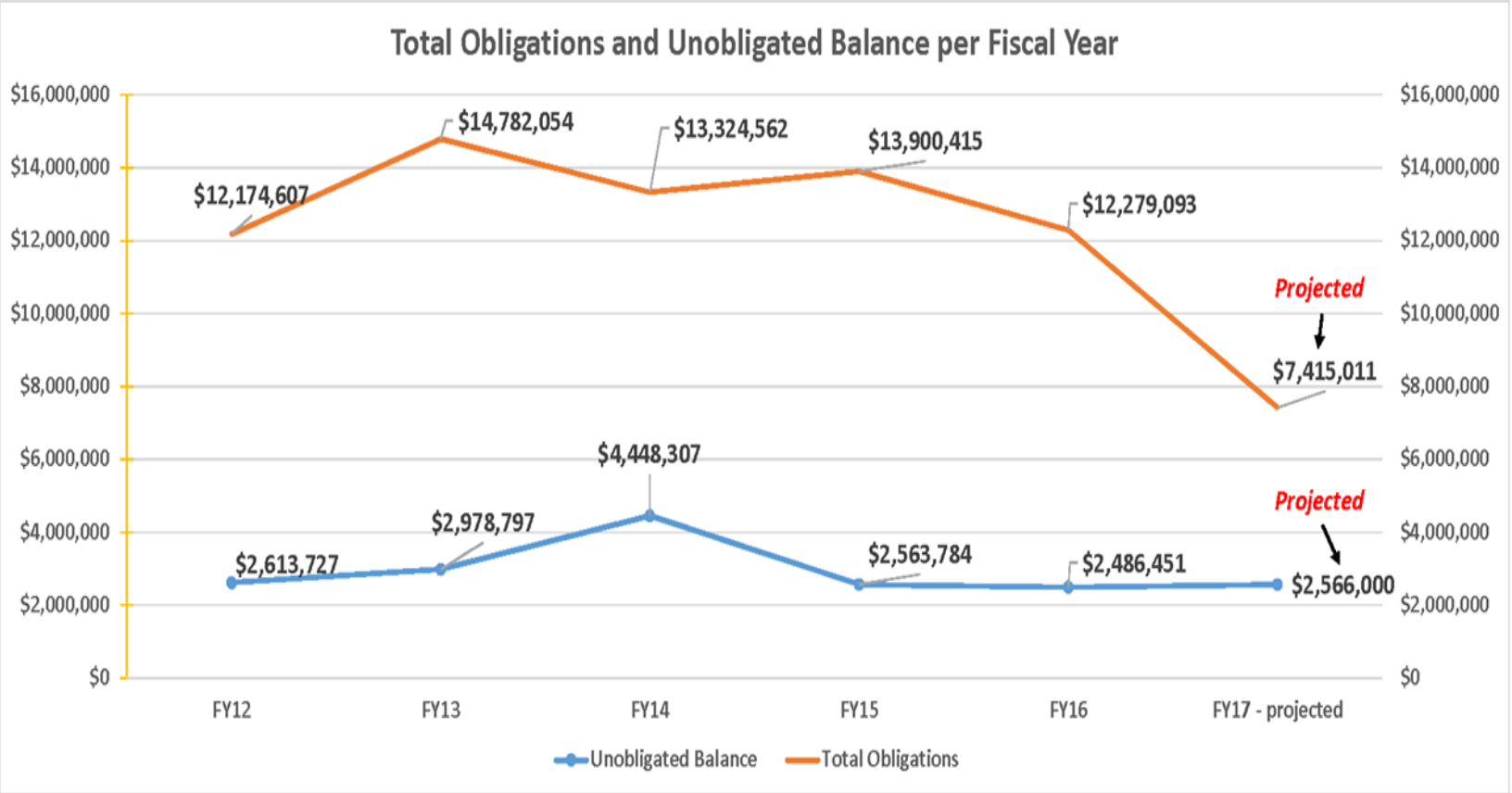


Annual Obligations (cont'd)

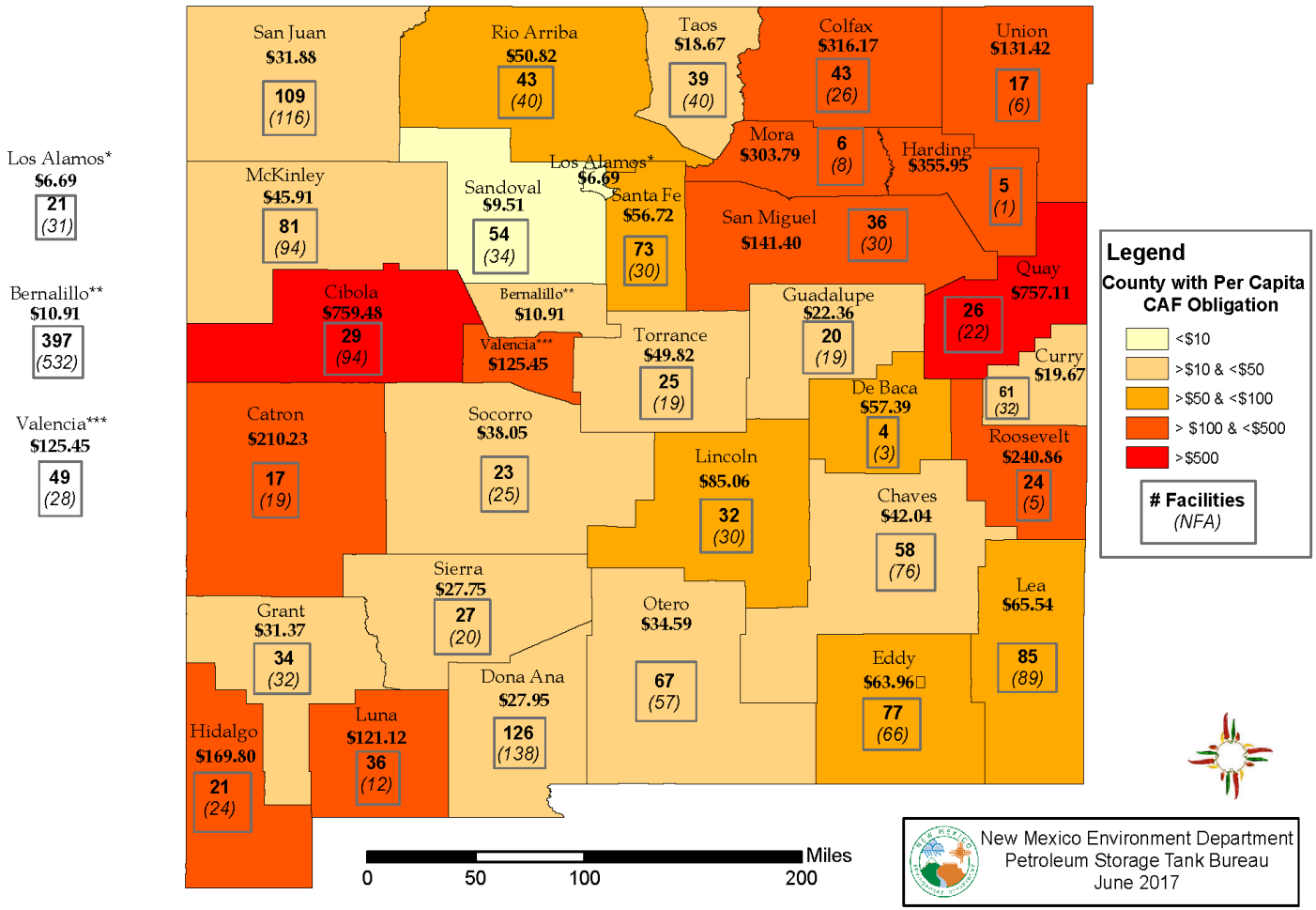


Remediation Costs (State Lead Sites)

- Based on the last 5 years "cradle to grave" remediation, the average cost to clean up a site is approximately $112K.
- The average cost of remediating the highest ranked site is $500K per year. Costs to clean up of sites with extensive contamination or where a public water supply system has been impacted exceed $5M.
- For "Priority 2" sites (where corrective action is required to contain or remove free product or treat saturated soils) initial remediation costs from $100K to $900K and subsequent system operation and/or ground water monitoring ranges from $10K to >$100K per year.

Per Capita Obligations

Per Capita CAF Obligations 7/1/2007 Through 6/1/2017



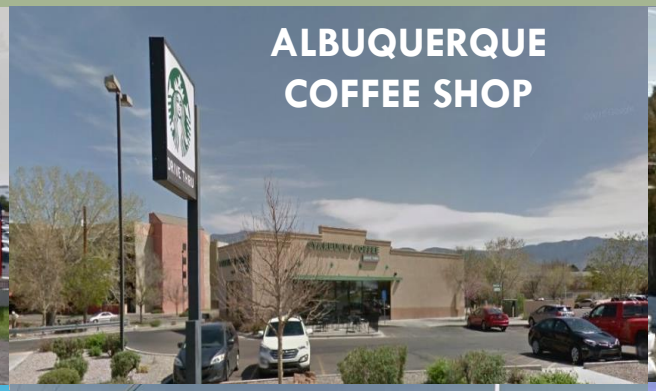
Why Does it Take So Long?

- 2,787 releases required investigation and corrective action
  - 66% (1,856) have achieved "No Further Action" Status most of which were funded by the CAF.
  - 889 require investigation or on going corrective action including monitoring and remediation.

Why Does it Take So Long? (cont'd)

- Challenges:
  - Tight Clays
  - Bedrock (basalt, granite, caliche)
  - Depth to groundwater
  - Recalcitrant contaminants – naphthalene, methyl tert-butyl ether (MTBE), ethylene dibromide (EDB), ethylene dichloride (EDC)
  - Prioritization of resources
    - Cannot obligate more than available revenue
    - Contractor and subcontractor availability

CAF Sites - Notable Successes



2. Gold King Mine (GKM) – Progress in 2016

- Monitoring
  - Alluvial aquifer mapping and well sampling
  - Continued river-water and sediment sampling
  - Installation of multi-parameter sondes in rivers
  - X-ray fluorescence (XRF) survey of metals in sediment
  - Solids analysis for minerals
  - Crop tissue survey
  - Fish-tissue and benthic macroinvertebrate surveys
  - Lead-contaminated aquifer sediment investigated
  - Biomonitoring of metals in urine and well water

GKM - Monitoring Results as of April 2017

- Heavy metal concentrations in river water are safe for both irrigation and livestock watering
- High flow continues to stir up metals in the Animas River, creating treatment concerns for public water systems
- Alluvial aquifer contained high iron and manganese before GKM spill
- No evidence that GKM spill contaminated water wells
- Sediment survey from GKM into Navajo Nation shows high metals still in Colorado, decreasing downstream
- Crop and fish tissue testing show no high metals
- No unusual livestock or wildlife distress, illness, or mortality observed

GKM - Stakeholder Outreach

- Developed a Risk Dashboard to help the community quickly and easily identify potential contaminant exposure pathways
- Developed an agricultural fact sheet assuring the public that river water is safe for irrigation
- Updated the 2017 Long-Term Monitoring Plan
- Updated the 2017 Spring Runoff Preparedness Plan
- Co-hosted the 2nd Annual Conference on Environmental Conditions of the Animas and San Juan Watersheds
- Continued bi-monthly meetings of the Citizens' Advisory Committee

GKM - Individual Claims for Damages

- January 13, 2017 – The US Department of Justice claims officer "concluded that the agency is not legally able to pay compensation for the claims…the agency's work is considered a "discretionary function" under [CERCLA]. Therefore, the circumstances surrounding the Gold King Mine incident unfortunately do not meet the conditions necessary to pay claims."

- "However, those who have filed claims and whose claims have been denied may challenge this decision with the United States District Court within six months of the date of the denial."

https://www.epa.gov/goldkingmine/decision-federal-tort-claims-act-claims

GKM - NM v. EPA et al

- State of New Mexico on behalf of NMED v. EPA, Gina McCarthy, Environmental Restoration, LLC, Kinross Gold Corporation, Kinross Gold USA, Inc., Sunnyside Gold Corporation (US District Court) Filed May 23, 2016
- Alleged violations of RCRA, CERCLA, and Clean Water Act.
- Alleged negligence, gross negligence, nuisance, and trespass.
- New Mexico seeks cost recovery, damages, injunctive relief, and attorneys' fees.
- New Mexico requested to amend complaint to include Federal Tort Claims Act on November 15, 2016.

GKM - NM v. EPA et al

- Current Status: Litigating Motions to Dismiss
  - Navajo Nation's lawsuit against EPA et al was consolidated with NM's lawsuit.
  - All defendants have filed motions to dismiss. NM has responded to them.
  - This issue has been fully briefed and we are now awaiting a ruling from the federal district court.
  - There is no deadline for the court to issue a ruling.
  - A ruling must be issued before the lawsuit can proceed further.

GKM - NM v. CO

- State of New Mexico v. State of Colorado (U.S. Supreme Court)
- June 20, 2016: NM requested leave to file complaint against CO in U.S. Supreme Court.
- Alleged violations of CERCLA and RCRA.
- Alleged public nuisance, negligence, and gross negligence.
- NM seeks cost recovery and damages under CERCLA; injunctive relief under RCRA; damages and abatement of nuisance; compensatory and punitive damages for negligence/gross negligence; attorneys' fees.
- U.S. Supreme Court has original jurisdiction over conflicts between states, but not required to exercise it.

GKM - NM v. CO

- Current Status:
  - CO opposed NM's request for leave to file complaint in U.S. Supreme Court (October 2016).
  - U.S. Supreme Court called for the view of the Solicitor General on question of exercising jurisdiction (January 2017). Both NM and CO briefed Solicitor General.
  - Solicitor General recommended against U.S. Supreme Court exercising jurisdiction (May 2017).
  - U.S. Supreme Court will decide whether to hear the case – decision may come by end of term (June 29, 2017). If not, decision will come in the fall after court summer recess.

3. Kirtland AFB Bulk Fuels Facility Spill

- Monitoring and wellhead protection
  - Quarterly results from monitoring well network shows a relatively stable plume
  - Sentinel wells show no detections of ethylene dibromide (EDB)
  - Monthly testing of drinking water supply wells show no detections of any EDB

Kirtland AFB Bulk Fuels Facility Spill

- In Situ Bioremediation Pilot Test
  - Work plan approved
  - Construction of pilot test components is ongoing
  - Baseline sampling postponed until June due to issue with a sample pump

Kirtland AFB Bulk Fuels Facility Spill

- Groundwater Treatment System
  - Treated groundwater contains no detectable fuel constituents
  - Expanded groundwater treatment system (GWTS) capacity to 800 gallons per minute (gpm)
  - 2-3 extraction wells operational throughout 2016
  - 4th extraction will come on line this summer
  - As of last Monday, 206.4 million gallons of groundwater has been treated, with ~62.88 grams of EDB removed
  - Discharge Permit issued April 2017 for underground injection control (UIC) wells

Kirtland AFB Bulk Fuels Facility Spill

- Resource Conservation and Recovery Act (RCRA) Facility Investigation Report (RFI Report)
  - Submitted by Kirtland AFB and currently under review
  - Risk Assessment – submittal by end of June

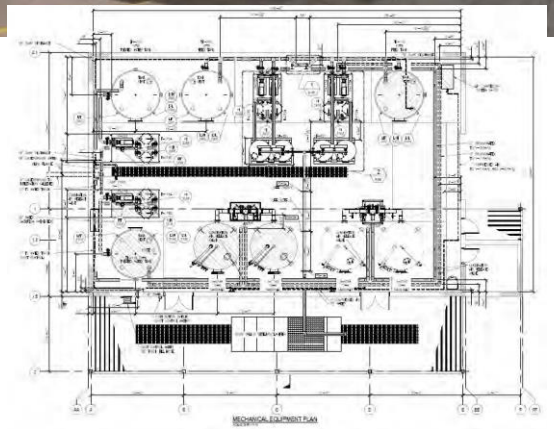
Kirtland AFB Bulk Fuels Facility Spill

- Public Outreach
  - Continue to meet with stakeholders and public on a regular basis
  - July 27, 2017 - Public Meeting and Poster Session
- Colonel Richard Gibbs assumed command of Kirtland AFB on June 16th

KAFB Groundwater Treatment System

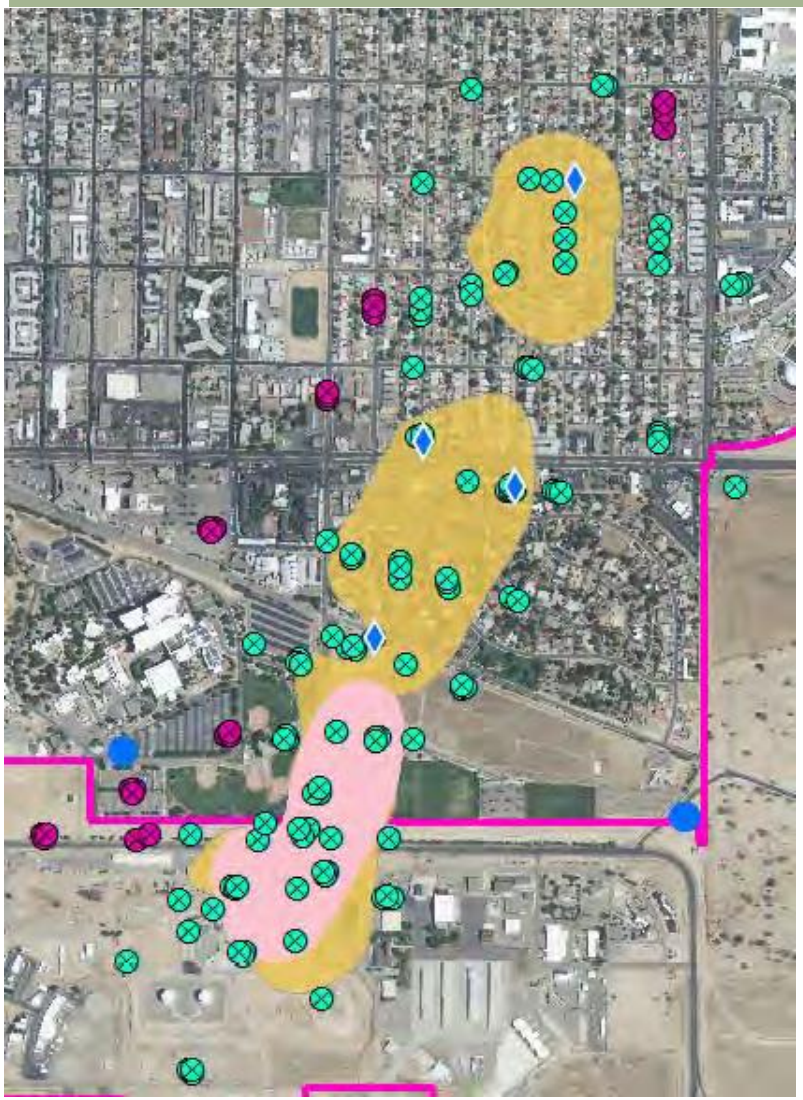
2 new 20,000 pound granular activated carbon (GAC) Tanks added

Sacrificial anode added to extraction wells to prevent corrosion



Addition of Sand Filters For Pre-Treatment

Ethylene Dibromide (EDB) Plume Collapse



Legend

- Drinking Water Supply Well
- Sentinel Well or Well Nest
- Groundwater Monitoring Well
- Extraction Well
- Q4 2016 Shallow Benzene Plume Footprint
- Q4 2016 Shallow EDB Plume Footprint
- KAFB Base Boundary

4. Waste Isolation Pilot Plant (WIPP)

- Salt hauler fire - February 5th , 2014
- Drum breach and radiological release - February 14th, 2014
- WIPP Facility suspends operations
- NMED issues three Administrative Orders and one Compliance Order in CY 2014
- Settlement Agreement and Stipulated Final Order signed on January 22, 2016; includes 4 Supplemental Environmental Projects (SEPs)
  - WIPP Roads in southern New Mexico ($34 million, total): some work completed; second phase funding expected in July
  - Construct Emergency Operations Center ($4 million): completed
  - Enhanced Training for Emergency Responders ($1millon): completed
  - Triennial Review ($500K): plan approved; work ongoing

Waste Isolation Pilot Plant (WIPP)

- December 2016 - NMED inspects and approves WIPP Facility to resume operations
- January 4, 2017 - WIPP begins waste emplacement starting with waste in surface Waste Handling Building at WIPP
- April 7, 2017 - WIPP receives first shipment of waste in three years
- Received 24 shipments and emplaced ~700 containers since
  - ~200 containers from WIPP Waste Handling Building
  - ~500 containers from newly received shipments
    - Idaho National Laboratory and Savannah River Site (South Carolina)
    - Waste Control Specialist (WCS) originating from Los Alamos National Laboratory

Waste Isolation Pilot Plant (WIPP)

- Waste Characterization Audits at Generator Sites in CY 2017 (NMED reviews and approves final audit reports)
  - Oak Ridge National Lab (Tennessee): April
  - Los Alamos National Lab: May
  - Idaho National Lab: June
  - Sandia National Lab: July
  - Argonne National Lab (Chicago): August
  - Advanced Mixed Waste Treatment Project (Idaho): September
  - Savannah River Site (South Carolina): October

- Class 3 (major) modifications to the WIPP Facility Hazardous Waste Permit
  - Panel Closure Redesign; currently under NMED review
  - Surface Storage; review will commence after Panel Closure Redesign

5. Los Alamos National Laboratory (LANL)

- NMED issued Compliance Order in CY 2014
- Settlement Agreement and Stipulated Final Order signed on January 22, 2016 included five Supplemental Environmental Projects (SEPs). Work plans approved for:
- Roads ($12M) - improve routes for transportation of transuranic waste to WIPP
- Triennial Review ($2.5M)
- Design and install engineering structures for storm water to improve water quality ($7.5M)
- Increase sampling and monitoring of storm water runoff ($2.5M)
- Replace aging potable water lines and install metering equipment for LANL potable systems ($10M)

Los Alamos National Laboratory (LANL)

- Breached drum at WIPP
  - Originated from LANL
  - Contained remediated nitrate salt-bearing waste (RNS)
- 60 drums of RNS kept in isolation at LANL due to safety concerns
  - Treatment of RNS drums started on May 18, 2017
  - 8 drums have been treated/processed to date
- 29 drums of unremediated nitrate salt-bearing waste (UNS) to be treated after RNS treatment is complete
- Similar RNS waste drums are currently stored at (WCS) in Andrews County, TX
  - DOE is conducting a feasibility study to address options for treatment and final disposition at WIPP

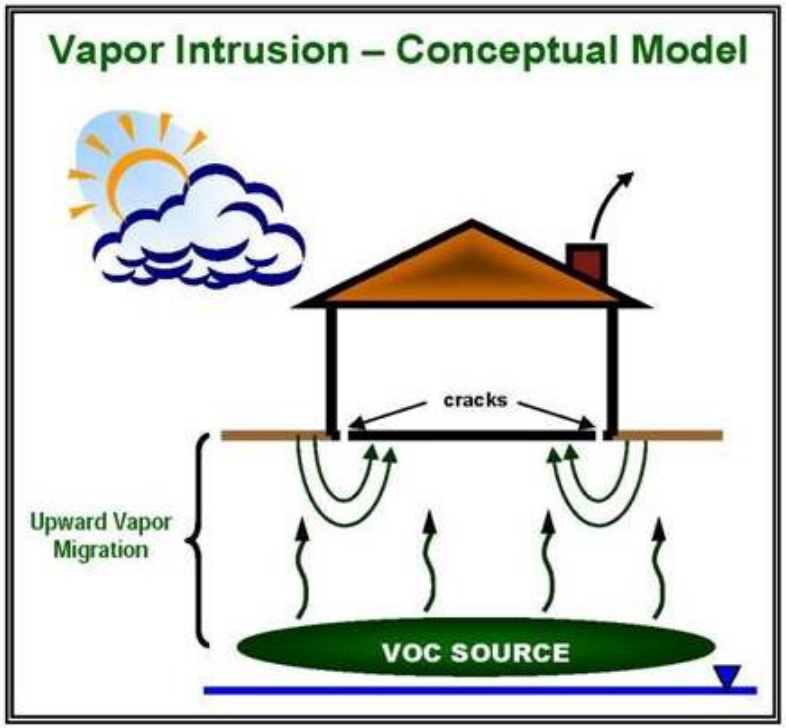
LANL Compliance Order on Consent

- Compliance Order on Consent (Consent Order) issued to the Department of Energy on June 14, 2016
  - Orders corrective action at remaining legacy sites
  - Approximately 1,400 legacy sites that need to be addressed under the Consent Order
    - Certificates of Completion (corrective action is complete) at approximately 300 of these sites
  - The Consent Order contains a clean up schedule for these sites
  - FY 2017 - all required documents have been submitted on time by LANL

What type of changes are we proposing to the Groundwater Regulations?

- **Adding vapor intrusion protections to the regulations**
- Lowering (making more stringent) the VOC standard for TCE and adding its daughter products (DCE)
- Changing GW Standards to Drinking Water Standards
- Clarifying Abatement Language
- Adding the regulatory oversight of Geothermal
- Adding technology based (electronic notifications) provisions to the public notice requirements

What is Vapor Intrusion ?



- VI is the migration of contaminants from the subsurface into buildings
- Almost always a chlorinated solvent like PCE (tetrachloroethene) or TCE (trichloroethene)
- Usually emanating from a former dry cleaner, auto repair, or semi-conductor type of degreasing facility
- Petroleum products can create VI, but it's very rare

Burlington Northern Santa Fe Railway Company (BNSF)

- Burlington Northern Santa Fe Railway Company (BNSF) Fueling Facility and Switching Yard has operated in Belen for over 100 years.
- This facility operates as a fueling Past operations, including a systemic practice of overfilling during fueling operations.
- Groundwater contamination was documented in the mid-1980s and several monitoring wells were installed. Soil contamination was identified in 1991 in a Gas Company of New Mexico right-of-way and BNSF submitted a Groundwater Remediation Plan that same year.
- More recent releases, have resulted in diesel fuel contamination in subsurface soils and groundwater, as well as seven distinct plumes of diesel product.

BNSF - Affected Adjacent Residential Properties

- June 2010, NMED received a complaint from an adjacent property owner to the east side of the Belen yard. This property is occupied by eight residences.
- NMED collected soil samples for laboratory analysis and two of the soil samples showed elevated concentrations of diesel fuel related hydrocarbon at depths between three and six feet below the surface.
- BNSF has conducted three subsurface investigations of the property to determine the extent of hydrocarbon impact to the soil and groundwater.

BNSF - Remediation

- A number of recovery trenches and wells have been installed at the facility. To date these recovery techniques have removed over 600,000 gallons of diesel fuel from the subsurface.
- The rate of product removal has slowed as the remediation has progressed – the system has removed 5,000 gallons over the past year.
- BNSF installed additional recovery trench segments in 2015 and three additional recovery wells have gone online this year to enhance product removal.
- There are 127 groundwater monitoring wells located on-site and off-site at adjacent properties.
- Installation of eight monitoring wells. The wells are gauged and sampled on a semi-annual basis; three of the wells have had LNAPL present since installation.
- BNSF also has two groundwater discharge permits (DP) for the facility. Pumped water is treated to NM Water Quality Control Commission Standards and returned to the subsurface through injection wells

BNSF – Current Status

- NMED continues to work with BNSF to insure that LNAPL recovery and groundwater remediation continue to progress.

- BNSF submitted timely renewal applications for both discharge permits and draft permits are currently under review.

Laun-Dry Supply Company (Laun-dry)

- The Laun-Dry Supply Company (Laun-dry) property and was developed in approximately 1959 and has been used as a laundry and dry cleaning supply distribution facility.
- Groundwater contamination was documented in the area east of Laun-Dry in the mid-1990s during investigation activities at three leaking underground storage tank (LUST) sites.
- Several subsequent investigations indicated that elevated concentrations of PCE and trichloroethene (TCE), a degradation product of PCE, were present in soil and groundwater near Laun-Dry.
- Groundwater concentrations were above the New Mexico Water Quality Control Commission (NMWQCC) standards.

Laun-dry – Remediation (Stage 1)

- In February 2004, the NMED requested that Laun-Dry complete a Stage 1 Abatement Plan to define the extent of groundwater contamination.
  - Groundwater concentrations are measured through semi-annual sampling of 44 monitoring wells, 3 soil vapor extraction (SVE) wells, 3 observation wells, and 5 irrigation wells.
  - Soil vapor concentrations were measured through a direct push soil vapor survey and two passive soil gas surveys.
  - Soil contamination was delineated through a direct push boring survey.
  - A vapor intrusion (VI) assessment to assess the vapor intrusion pathway at residential properties.
  - Due to concern about contaminant vapor intrusion into commercial and residential structures soil vapor and indoor air surveys have been conducted and additional air sampling is planned.

Laun-dry – Remediation (Stage 2 Development)

- Laun-Dry also conducted the following activities to gather information for development of a Stage 2 Abatement Plan:
  - Groundwater pumping tests to determine aquifer characteristics.
  - In situ bioremediation (ISB) pilot test of three different amendments (lactate, EHC-L, and powdered activated carbon).
  - A SVE pilot test began in December 2013 with the operation of four SVE wells to remediate soil and solute contamination.
    - Source area contaminant concentrations have been significantly reduced since installation of the SVE system.

Laun-dry – Remediation (Stage 2)

- Laun-Dry completed a Final Site Investigation Report in March 2016 and submitted a State 2 Abatement Plan Proposal in August 2016.
- The Stage 2 Abatement Plan proposes to use enhanced reductive dechlorination (ERD) or in situ bioremediation to reduce concentrations of chlorinated solvents in groundwater.
- ERD speeds up the process by introducing soil amendments that will act as a filter through which groundwater flows, trapping contaminants.
- Groundwater monitoring will continue to measure the success of the ERD.

Laun-dry – Current Status

- Laun-Dry continues to work with NMED to continue making progress on abatement of contaminants in groundwater and soil vapor.
- Laun-Dry has plans to reduce soil vapor contaminant concentrations under a nearby commercial property, Raks Building Supply.
- Groundwater monitoring is conducted on a semi-annual basis and will continue measure changes in plume characteristics.
- The Stage 2 Abatement Plan activities will be implemented later this year.
- Additional indoor air samples will be collected from potentially affected residential and commercial properties.