

# New Mexico Office of Natural Resources Trustee

## Natural Resource Damage Assessment: NASA White Sands Test Facility Groundwater Contamination

Water & Natural Resources Committee  
October 3, 2023



Maggie Hart Stebbins, Trustee  
Kate Girard, Executive Director

With Support from Abt Associates







# ONRT Mission

**Restore** natural resources and the services they provide when they have been injured by the release of hazardous substances or oil.



# ONRT Mission

Under federal and state law, natural resource restoration is an essential component of the State's authority to hold polluters accountable.

When toxic substances pollute water, wildlife, fish, habitat, soils and other natural resources, laws require the party responsible to:

- clean up contamination to protect public health and the environment,
  - restore natural resources to the way they were, pre-contamination, and
  - compensate communities for lost natural resources and the services they provide – including cultural services
- ONRT's role established by:
- New Mexico Natural Resources Trustee Act [NMSA 1978, §§ 75-7-1 et seq]
  - Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) [42 USC §§ 9601 et seq]
  - Oil Pollution Act of 1990 [33 USC §§ 2701 et seq]
  - Federal Water Pollution Control Act or Clean Water Act of 1972 [33 USC §§1321 et seq]





# Following a Release of Hazardous Substances into New Mexico's Environment, Responsibility is Shared:

## NMED: Remediation

NMED Requires Responsible Party to:

- (1) Identify and Characterize the Release(s); and
- (2) Clean up contamination to protect public health and the environment.



## ONRT: Restoration

ONRT uses the **NRDAR** Process to Require Responsible Party to:

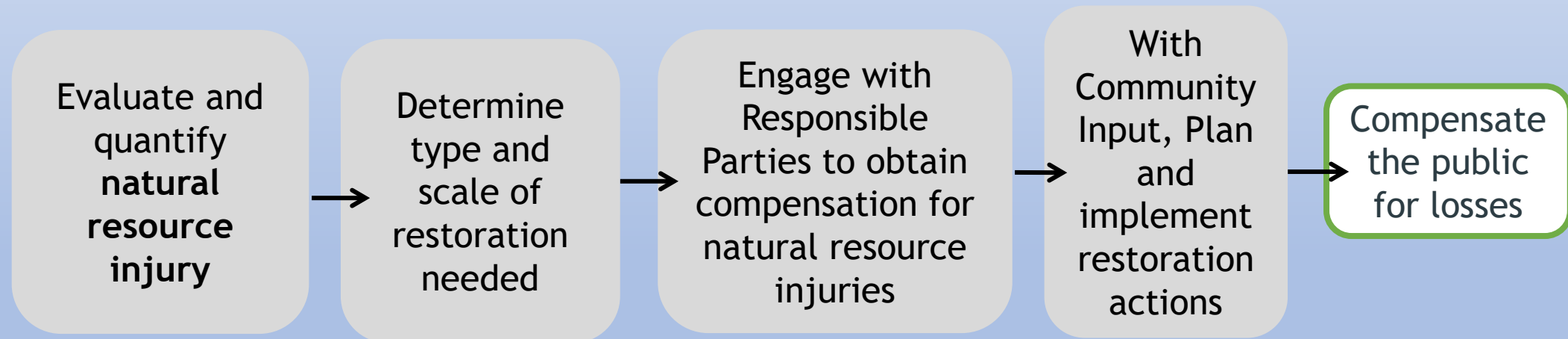
Restore Injured Natural Resources to Pre-Release Conditions to Compensate Public for harm that has Occurred Over Time, or When that's not possible in a timely way, to replace or acquire the equivalent.





# Natural Resource Damage Assessment and Restoration (NRDAR)

NRDAR is a process that allows Natural Resource Trustees to evaluate natural resource injuries caused by the release of hazardous substances to the environment.

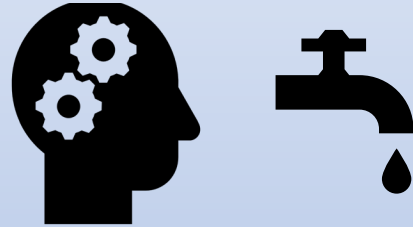




# Natural Resource Damage Assessment: Service Losses



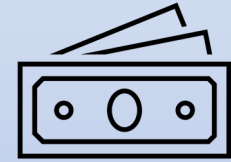
ONRT acts on behalf of the people of New Mexico to seek damages for injury to natural resources, and resulting service losses



**COMPENSABLE SERVICES:**  
Claimable categories of service losses include existence, bequest, option, and human use, e.g., as a drinking water source (we'll discuss these further later in the presentation)



All of these categories of loss have occurred at WSTF as a result of the contamination of a very large volume of groundwater due to releases of hazardous substances at the site



Recovered damages (money) used to restore the injured resource, or replace/acquire the equivalent; restoration ideas are solicited from the public and projects are selected based on applying established criteria





# White Sands Test Facility (WSTF) NRDA

- Contaminants:
  - Trichloroethylene (TCE)
  - Perchloroethylene (PCE)
  - Nitroso dimethylamine (NDMA)
  - Freon
- Co-Trustees:
  - ONRT
  - NASA
  - US DOD/US Army
- Potentially Responsible Parties:
  - NASA
  - US Army
- Milestones:
  - 2016: Preassessment Screen complete
  - 2019: Damage Assessment
  - 2022/2023: ONRT invited NASA and DOD to enter into discussions. Awaiting Answer.



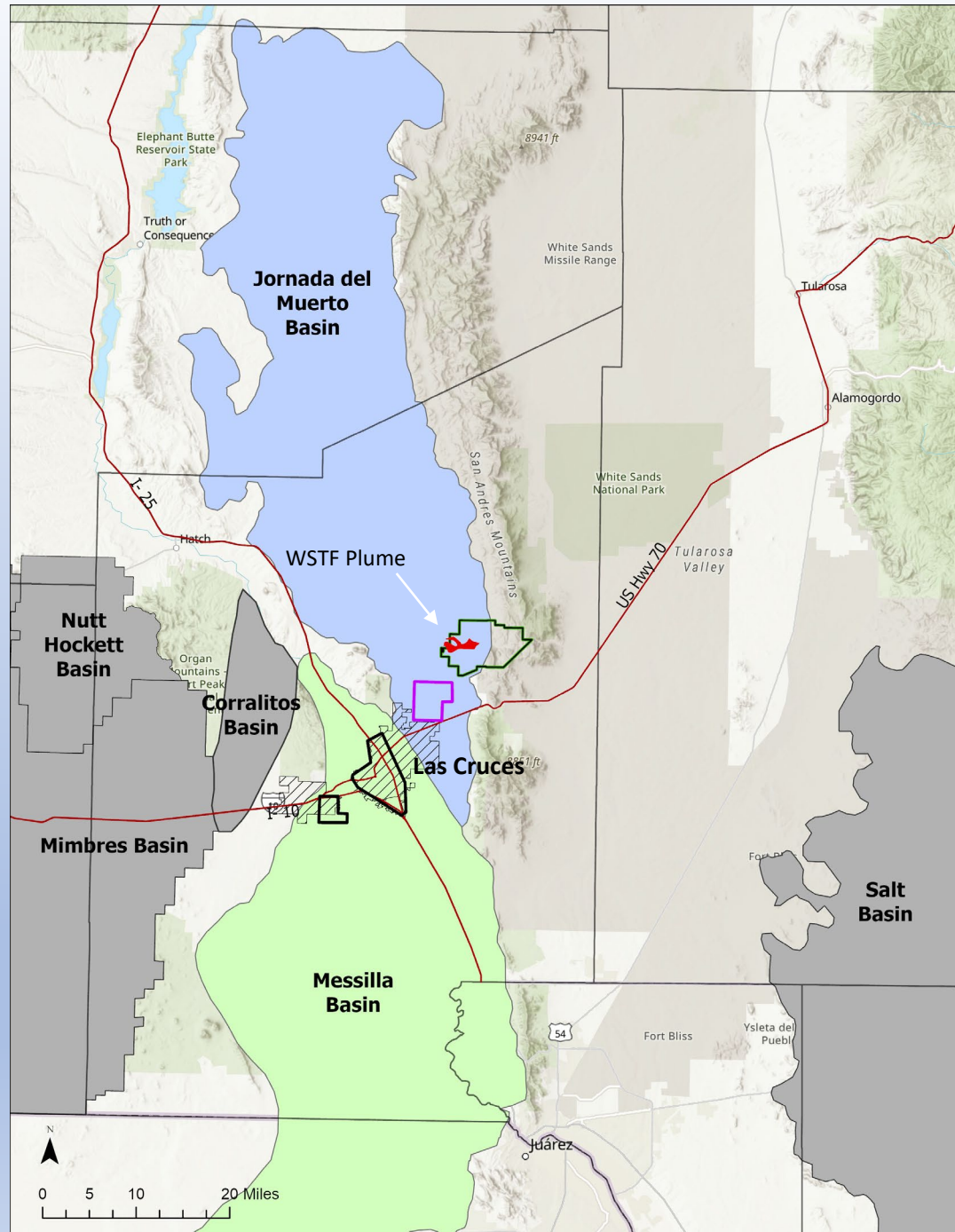


# WSTF Operations

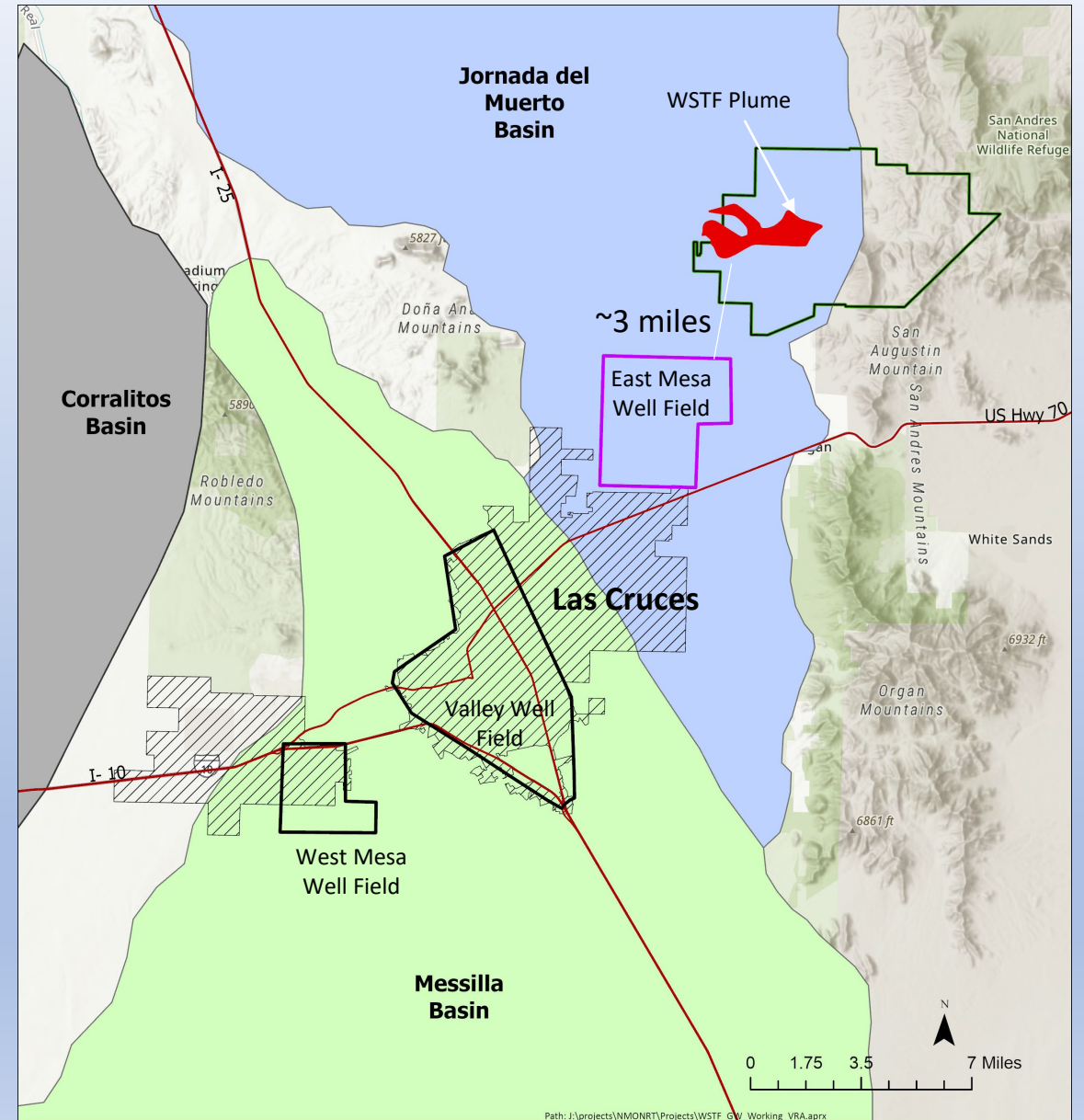
- Established to support the NASA Apollo Space Program in the early 1960s
  - Testing spacecraft propulsion systems
- Over time, focus shifted to Space Shuttle program hazard tests
- Ongoing operations at the Site:
  - Field test facility under NASA's Lyndon B. Johnson Space Center, supporting United States space program, private industry, and foreign government agencies







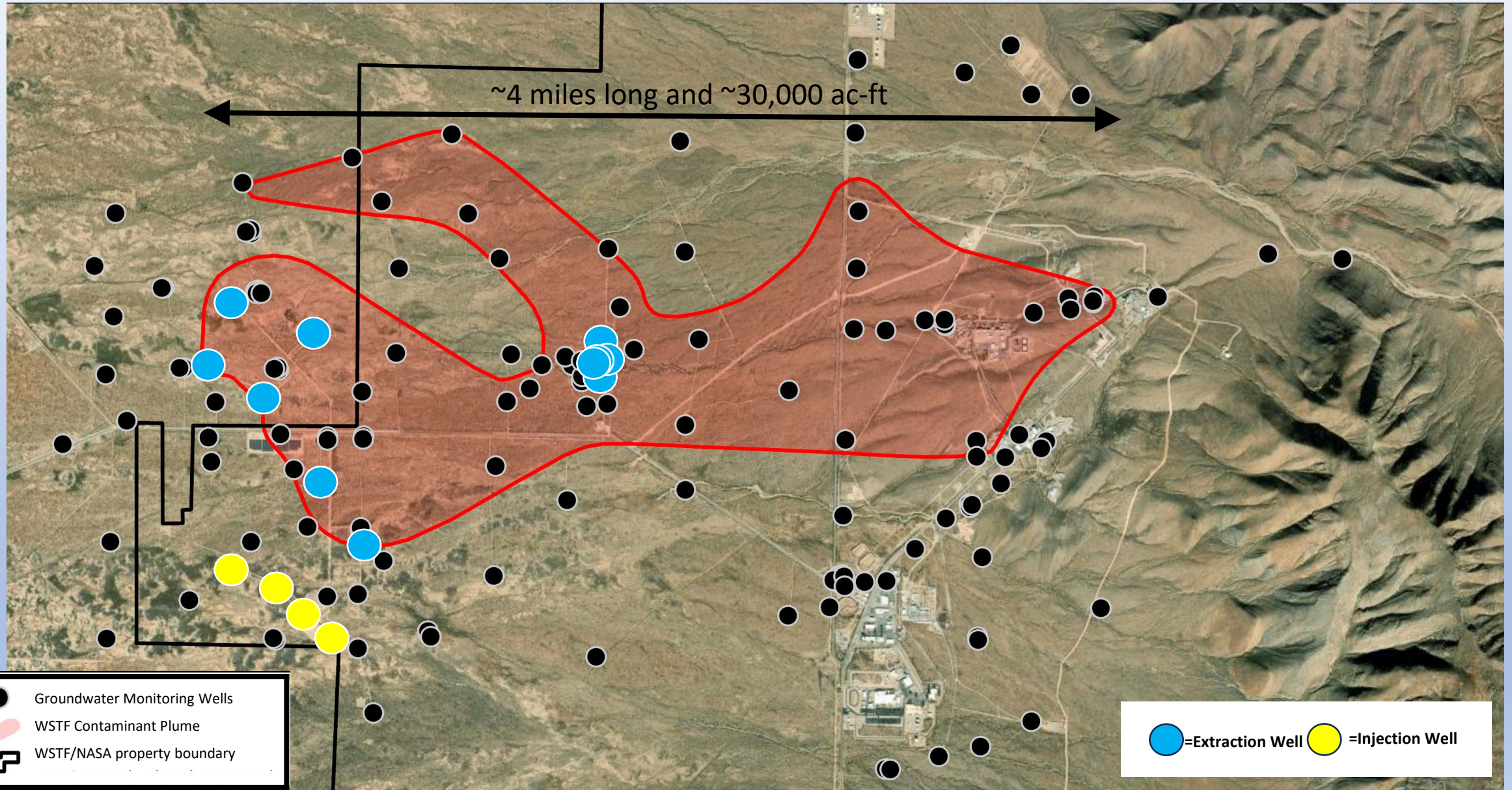
# Location of WSTF Groundwater Contaminant Plume Relative to Las Cruces



Path: J:\projects\NMONRT\Projects\WSTF\_GW\_Working\_VRA.aprx



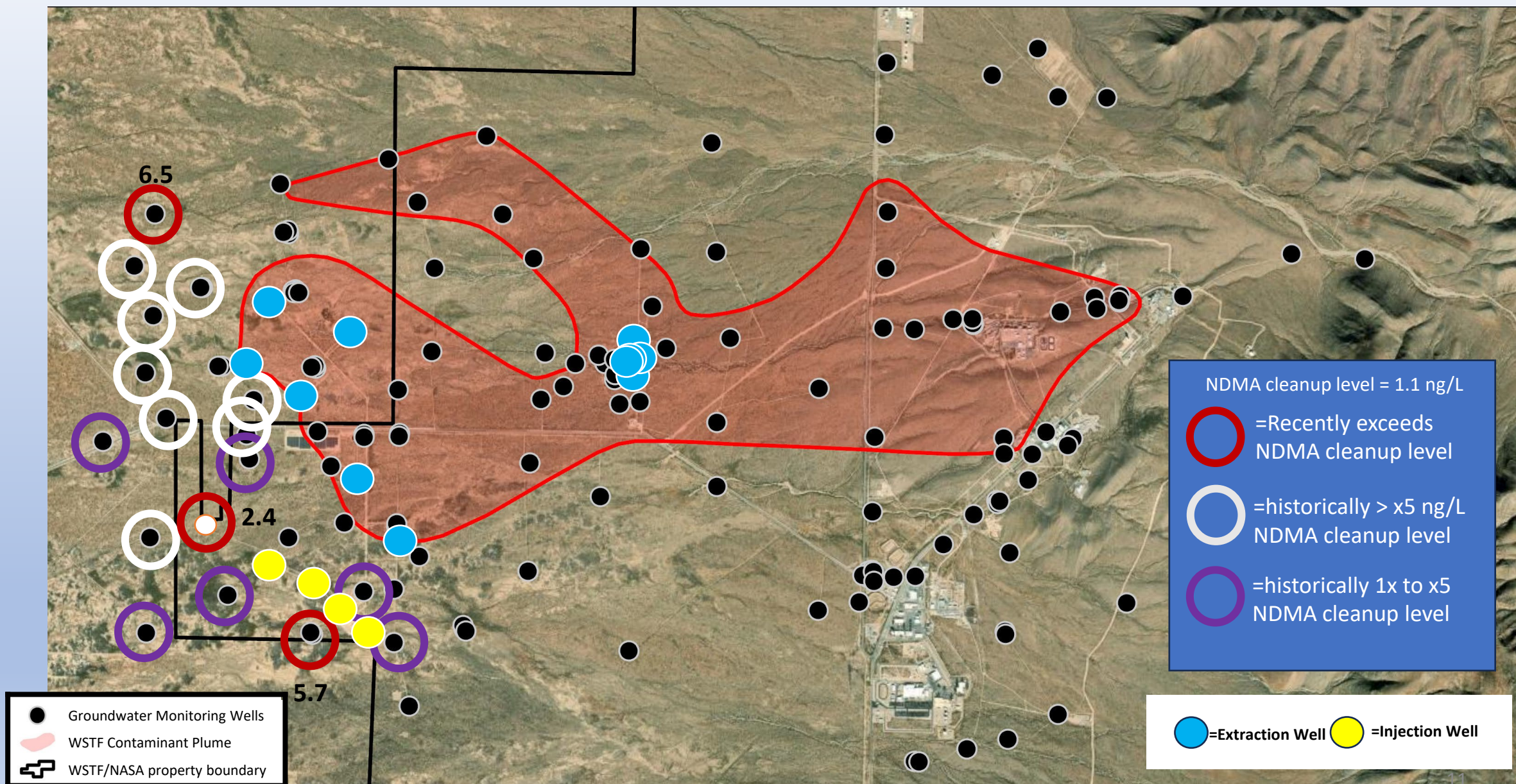
# Groundwater NDMA + TCE Contaminant Plume & Treatment System



NDMA = N-Nitrosodimethylamine TCE = Trichloroethene

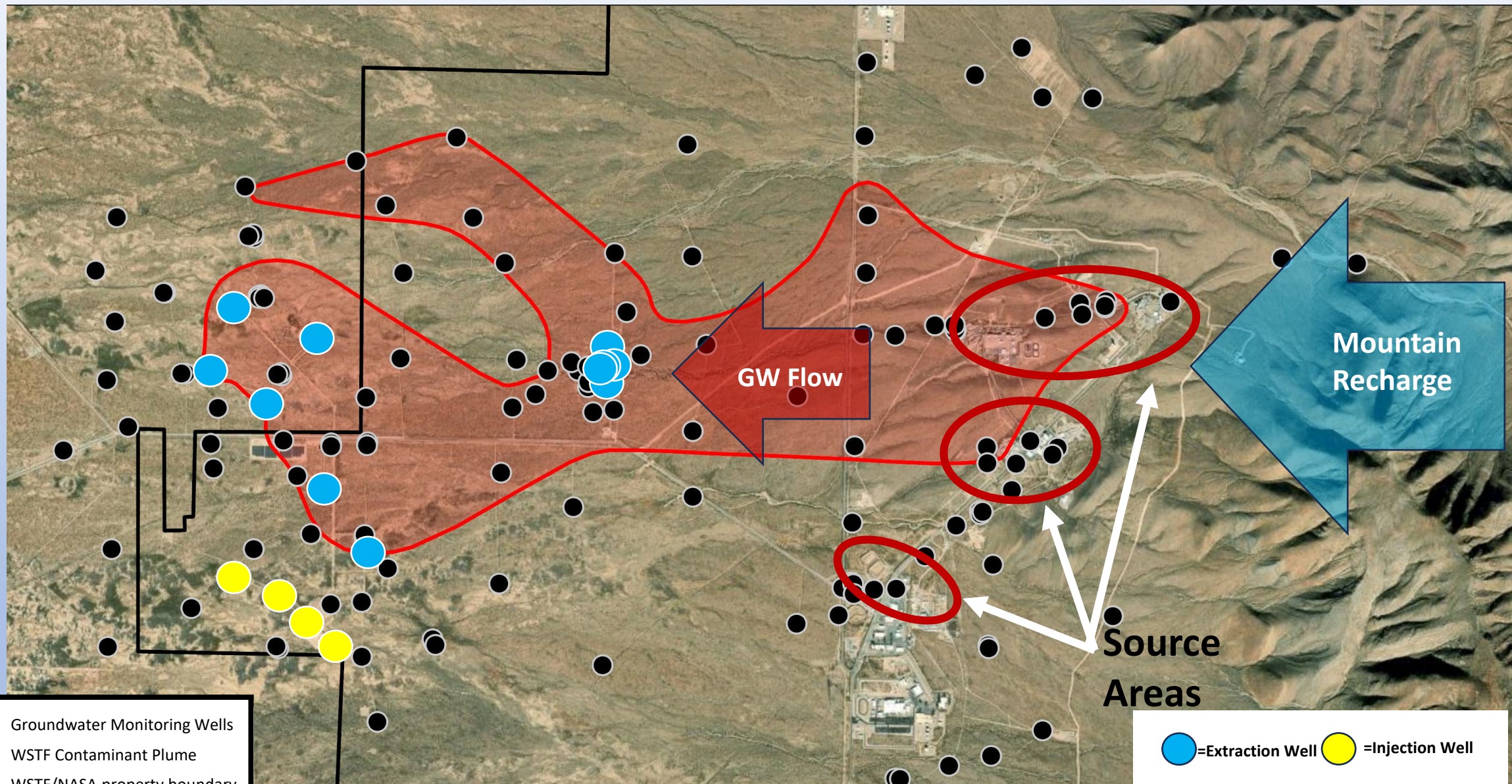


# Impacts are Likely Greater than Suggested by NASA's Plume Depiction





# Pathway of Contaminants



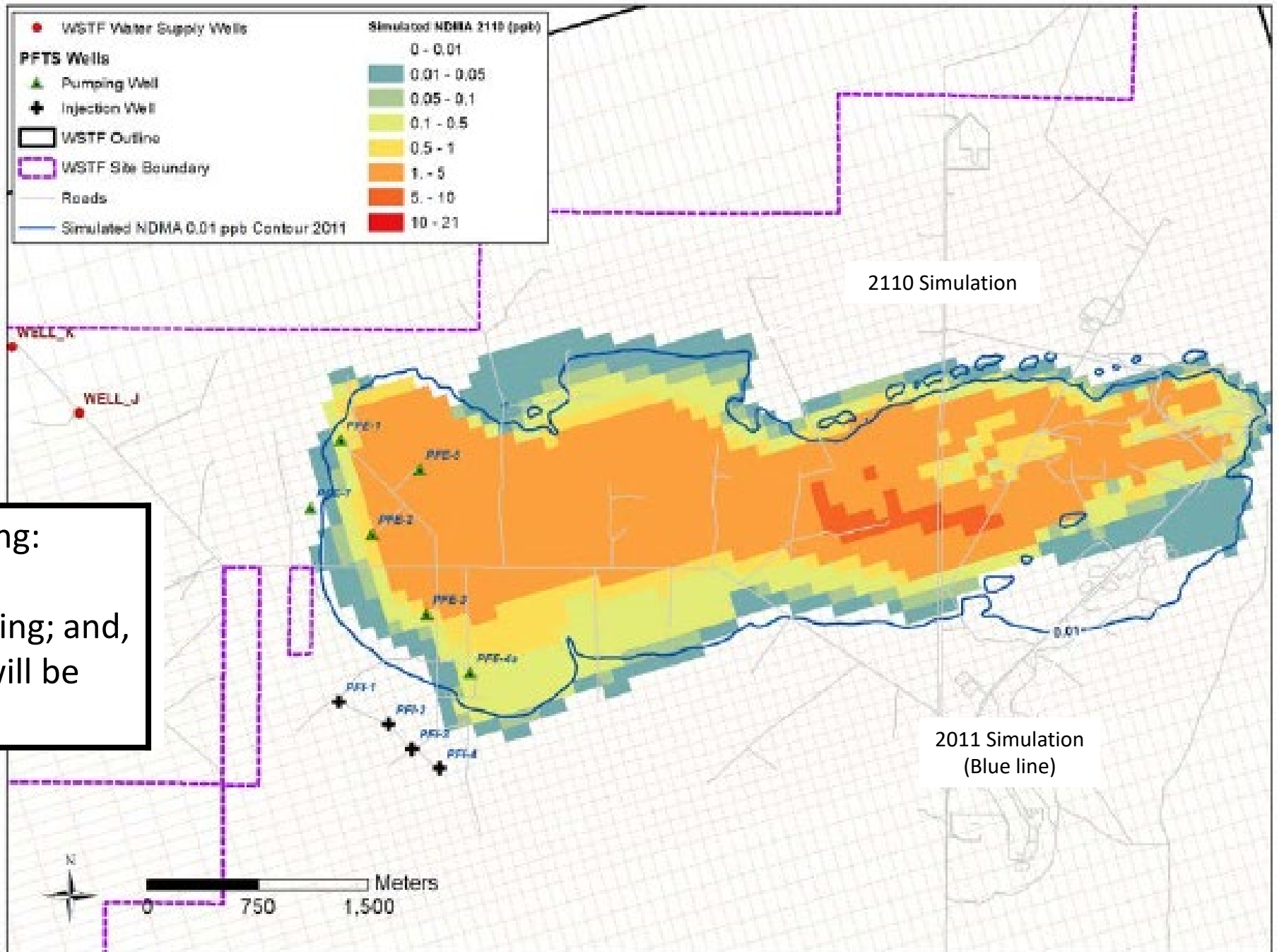


# Remediation Timeline is at least 100 Years

Per NASA's 2011 modeling:

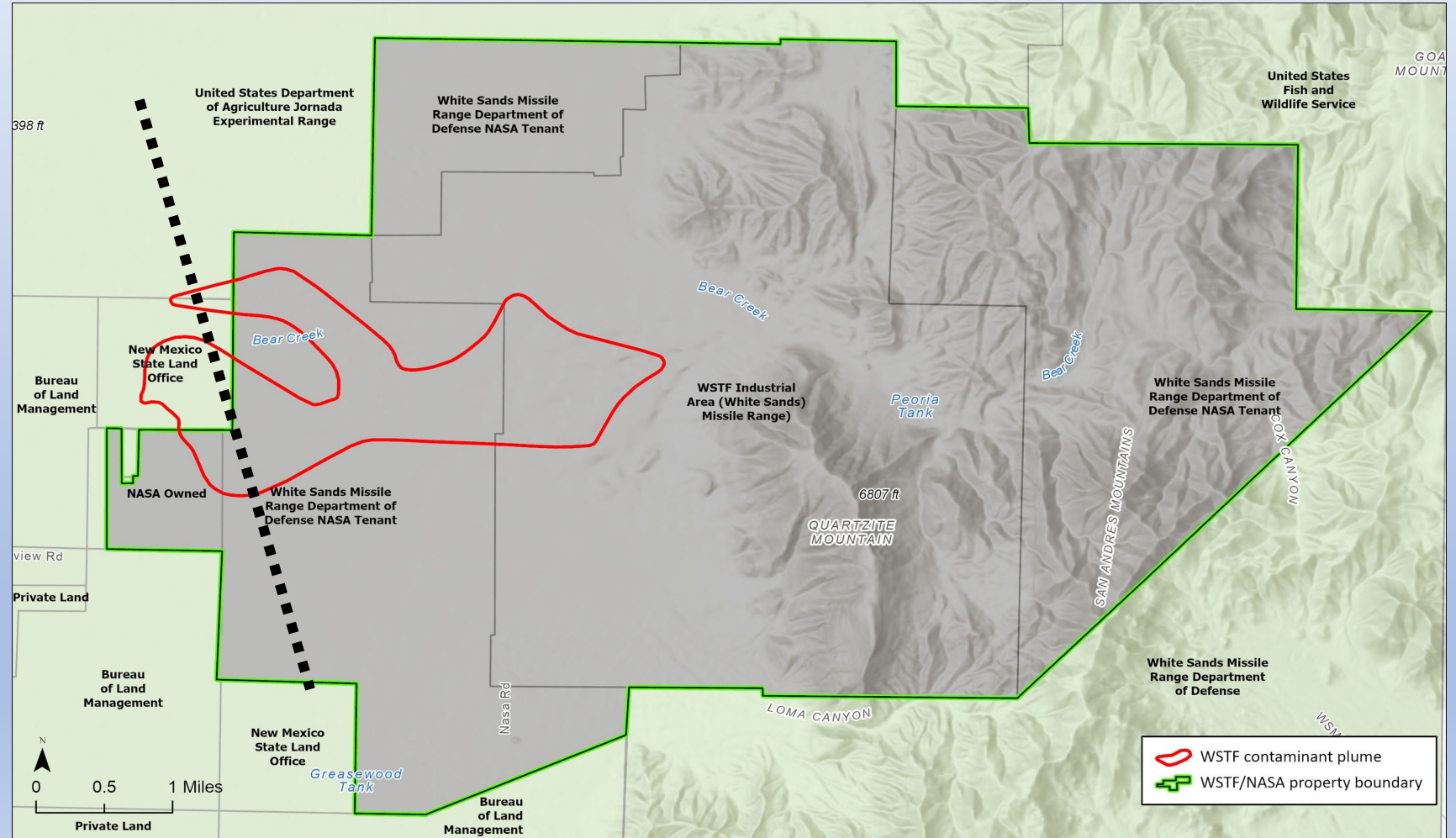
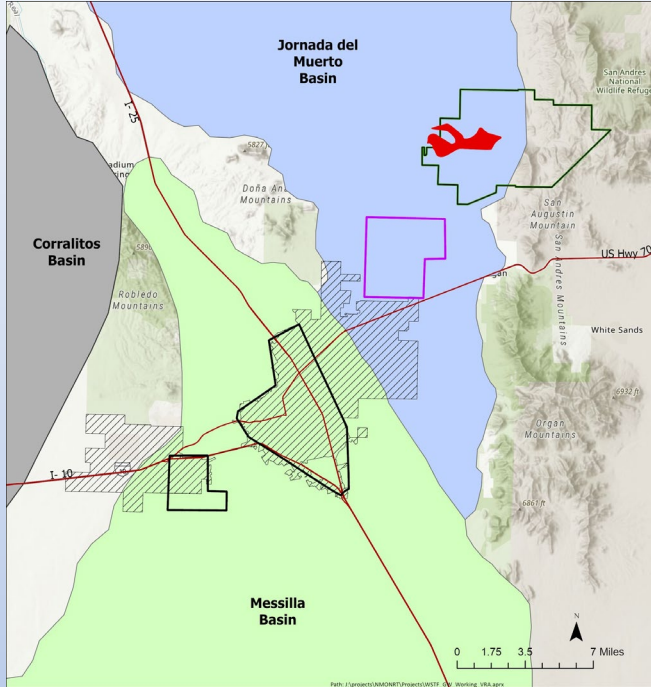
In 100 years:

- Cleanup will be ongoing; and,
- NDMA plume front will be about the same.





# Service Losses to New Mexicans Resulting from the WSTF Plume



# The Ultimate Goal - Restoration!



Goal of NRDA is to implement restoration projects to make the New Mexico public whole



Examples of groundwater projects include

- Installing recharge enhancement structures
- Preventing future contamination (wastewater systems)
- Funding water conservation
- Providing alternative water supplies
- Removing invasive species



Once a claim is settled, ONRT seeks input from the public on restoration projects to spend the settlement money



ONRT applies established criteria to select projects

For example:

- Geographical nexus to the injured resource and public
- Consistency with regional/local plans



# Current Status/Next Steps



- ▶ ONRT has invited NASA and the Army to discussions regarding natural resource injuries;
- or
- ▶ ONRT is hopeful and awaiting NASA and DOJ's response



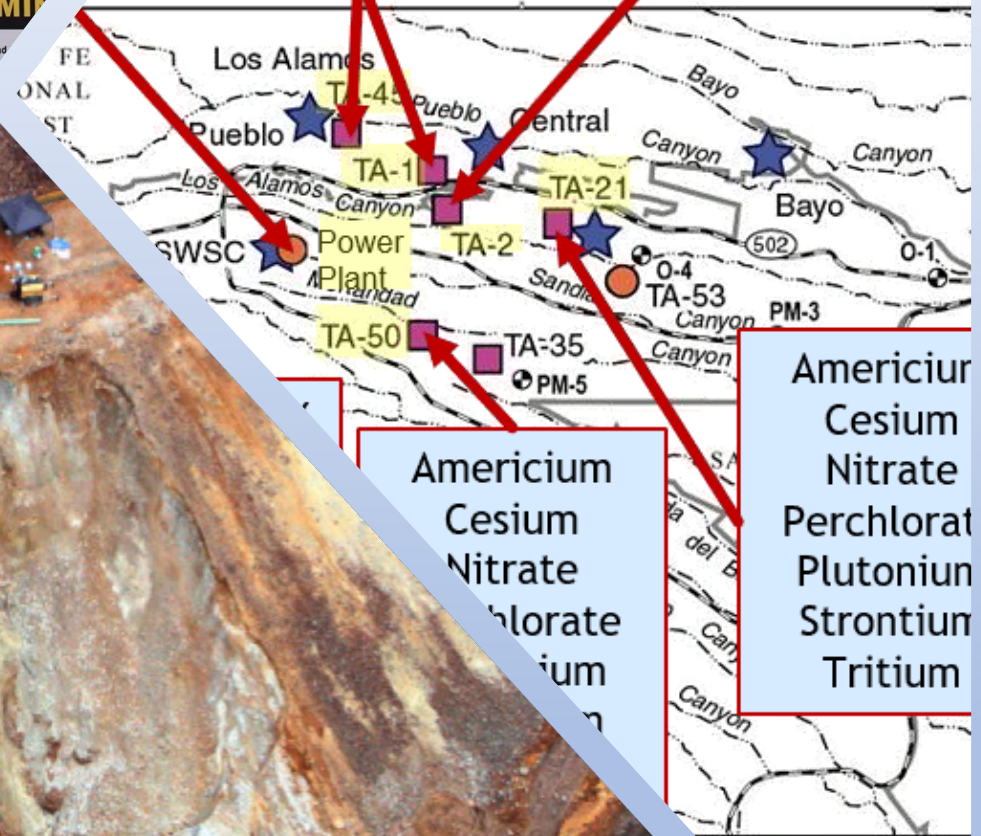


# Supplemental Information



Nitrate  
Perchlorate  
Plutonium  
Strontium  
Tritium

Tritium



Americium  
Cesium  
Nitrate  
Perchlorate  
Plutonium  
Strontium  
Tritium

Americium  
Cesium  
Nitrate  
Perchlorate  
Plutonium  
Strontium  
Tritium





# Settlements Since 2000 - \$45,341,226



- **Gold King Mine Spill**
  - EPA contractors: \$2,000,000 (Dec 2022)
  - United States EPA \$10,000,000 (June 2022)\*
  - Mining Defendants: \$1,000,000 (Jan 2021)
- **Ft Wingate Depot Activity/DOD \$1,451,069 (March 2022)\***
- **Fronk Oil/Cimarron River: \$150,000 (Dec 2020)**
- **Freeport-McMoRan Groundwater: Chino, Cobre, and Tyrone Mines (\$12,794,308)**
- **Freeport-McMoRan Wildlife and Wildlife Habitat: (\$5,500,000)**
- **AT&SF: Albuquerque's South Valley Tie Treater Facility (\$989,417)**
- **South Valley Superfund Site: Albuquerque/South Valley (\$4,857,548)**
- **Sparton Technology: Albuquerque Facility (\$1,000,000)**
- **SOHIO Western Mining L-Bar: Tailings Facility near Moquino (\$29,830)**
- **AT&SF: Clovis Rail Yard (\$404,456)**
- **Van Waters & Rogers: Albuquerque's South Valley Facility (\$135,000)**
- **ASARCO (Five Facilities): Blackhawk Mine near Hanover, (\$1,029,598)**
- **Chevron Mining: Molybdenum Mine in Questa, (\$4,000,000)**

\*Funds deposited into Federal Court Registry Accounts

# Gold King Mine Settlements

- EPA Contractors: \$2 million (Dec. 2022)
- US EPA: \$10 million (June 2022)
- Mining Defendants: \$1 million (Jan. 2021)

## Mining Defendants Restoration Projects

- Cedar Hill Boat Ramp on the Animas River - San Juan County \$160,000
- Festival and Farmer's Market Pavilion at Gateway Park - City of Farmington \$300,000
- San Juan Valley Soil Health Restoration Project - San Juan County Soil and Water Conservation District \$280,000
- Agricultural Irrigation System Upgrade Project - Tse Daa Kaan (Hogback) Navajo Community. \$250,000



**CEDAR HILL BOAT RAMP**



# GKM: EPA & EPA Contractors Restoration Projects - \$12m

- City of Aztec, North Main Wastewater Management Infrastructure (\$480,000)
- City of Aztec, Rehabilitation of Raw Water Reservoir 1 (\$950,000)
- City of Farmington, Whitewater Wave and Irrigation Diversion Dam at Farmington Gateway Park (\$2,000,000)
- Navajo Nation Department of Fish and Wildlife, Nenahnezad Chapter San Juan River Boat Ramp (\$65,575)
- New Mexico Interstate Stream Commission, San Juan River Water Lease Agreement Partnership (\$1,803,000)

- New Mexico State Parks Division, Aquatic Invasive Species Station on San Juan River Quality Waters (\$205,226)
- San Juan County, San Juan River Public Boat Ramps and Park Improvements (\$681,440)
- San Juan County, San Juan County Extension Service Office Building (\$2,300,000)
- San Juan County, Water and Wastewater Improvements for the Totah Subdivision (\$1,000,000)
- San Juan Soil and Water Conservation District, Irrigation Ditch Diversion Project (\$1,616,600)



# Economic Impact

## **Farmington Daily Times**

**“Infusion of government funding could mean good news for San Juan County labor market”**

“Despite continued concerns over the scheduled closure of the San Juan Generating Station later this month, several recent developments have helped generate a sense of optimism when it comes to economic development and the future of the job market in San Juan County.

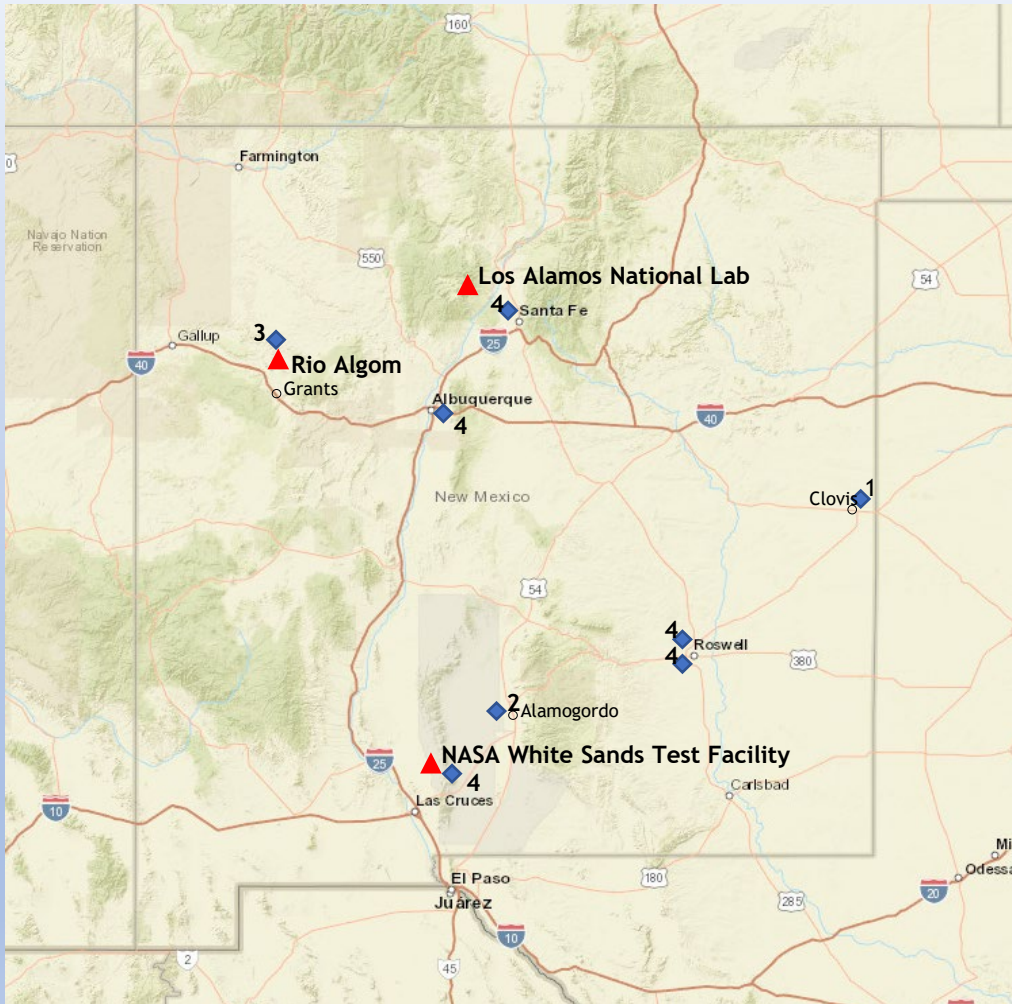
Chief among those is an announcement by the New Mexico Office of the Natural Resources Trustee that proposals are being accepted for projects that could receive some of the \$10 million the state received from the U.S. Environmental Protection Agency in June as part of a settlement over the 2015 Gold King Mine Spill . . .” *Mike Easterling, Farmington Daily Times, September 4, 2022*

Full text of article available at: <https://www.daily-times.com/story/news/politics/2022/09/04/san-juan-county-to-see-50-million-for-various-projects/65464662007/>





# Current and Potential Natural Resource Damage Assessments



- ▲ **Current Cases**
  - Los Alamos National Laboratory
  - NASA White Sands Test Facility
  - Rio Algom Quivira Uranium Mill and Mine Sites

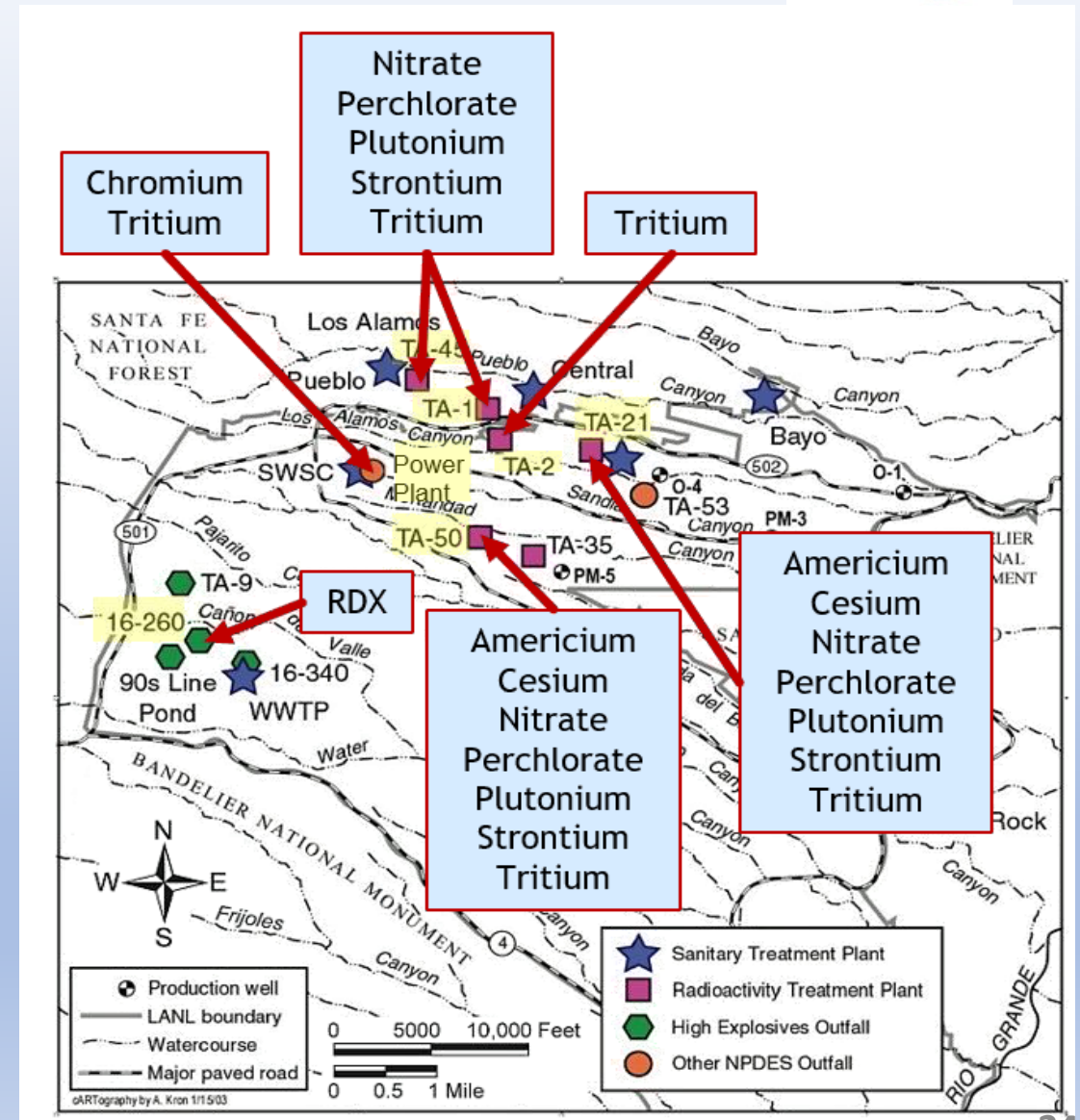
- ◆ **Potential New Cases**
  1. Cannon Air Force Base - PFAS (Clovis)
  2. Holloman Air Force Base PFAS (Alamogordo)
  3. Grants Mining District - Researching natural resource injuries, ONRT jurisdiction, and responsible parties across district. Over 85 legacy mines in the area.
  4. Researching potential PFAS releases at other military installations



# Ongoing Assessment - Los Alamos National Laboratory

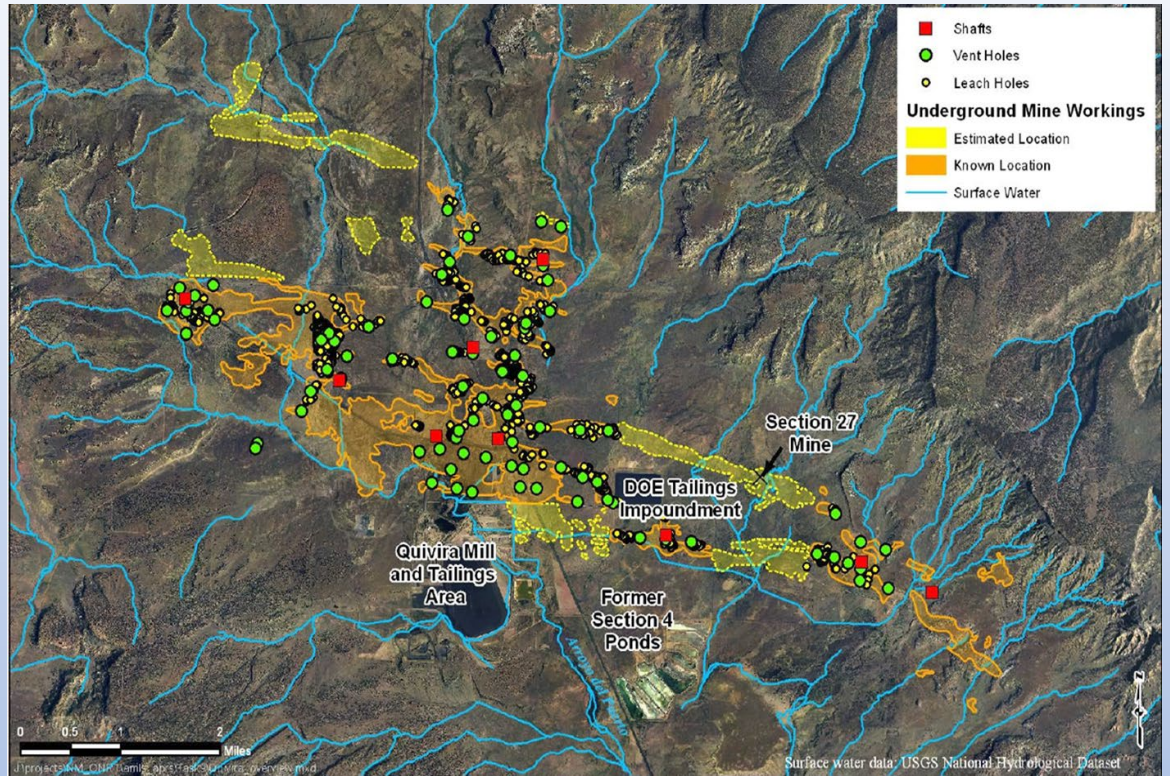


- Injuries:
  - groundwater, soils, surface water, and sediments contaminated with radiological substances, metals, and organic compounds
  - cultural service Losses
- PRP: DOE
- Co-Trustees
  - ONRT
  - Pueblo de San Ildefonso
  - Pueblo de Cochiti
  - Pueblo of Jemez
  - Santa Clara Pueblo
  - U.S. Forest Service
  - DOE (potentially responsible party)
- Status: Cooperative Damage Assessment
  - Cleanup and decommissioning ongoing
  - Damage Assessment Plan was completed in 2014
  - implementing the assessment activities described in that plan
  - Early restoration working group
- Next steps
  - complete injury assessment work and estimate damages
  - Begin settlement discussions with DOE



# Ongoing Assessment - Rio Algom Quivira Mill and Mines Site: Ambrosia Lake

- Injuries:
  - groundwater resources & terrestrial resources contaminated with radiological substances, metals, and organic compounds
    - radium, radon, thorium, and uranium
    - zinc, arsenic, beryllium, cadmium, copper, lead, nickel, sulfuric acid
- PRP: Rio Algom Mining LLC - subsidiary of BHP Billiton
- Co-Trustees;
  - ONRT
  - Navajo Nation
  - DOI
    - US Fish and Wildlife
    - Bureau of Indian Affairs
  - Rio Algom (PRP)
- Status: Cooperative Damage Assessment
  - injury assessment phase, evaluating existing data to determine the nature and extent of potential natural resource injuries
- Next steps:
  - quantifying type and magnitude of natural resource injuries, estimate damages, settlement discussions with RAML



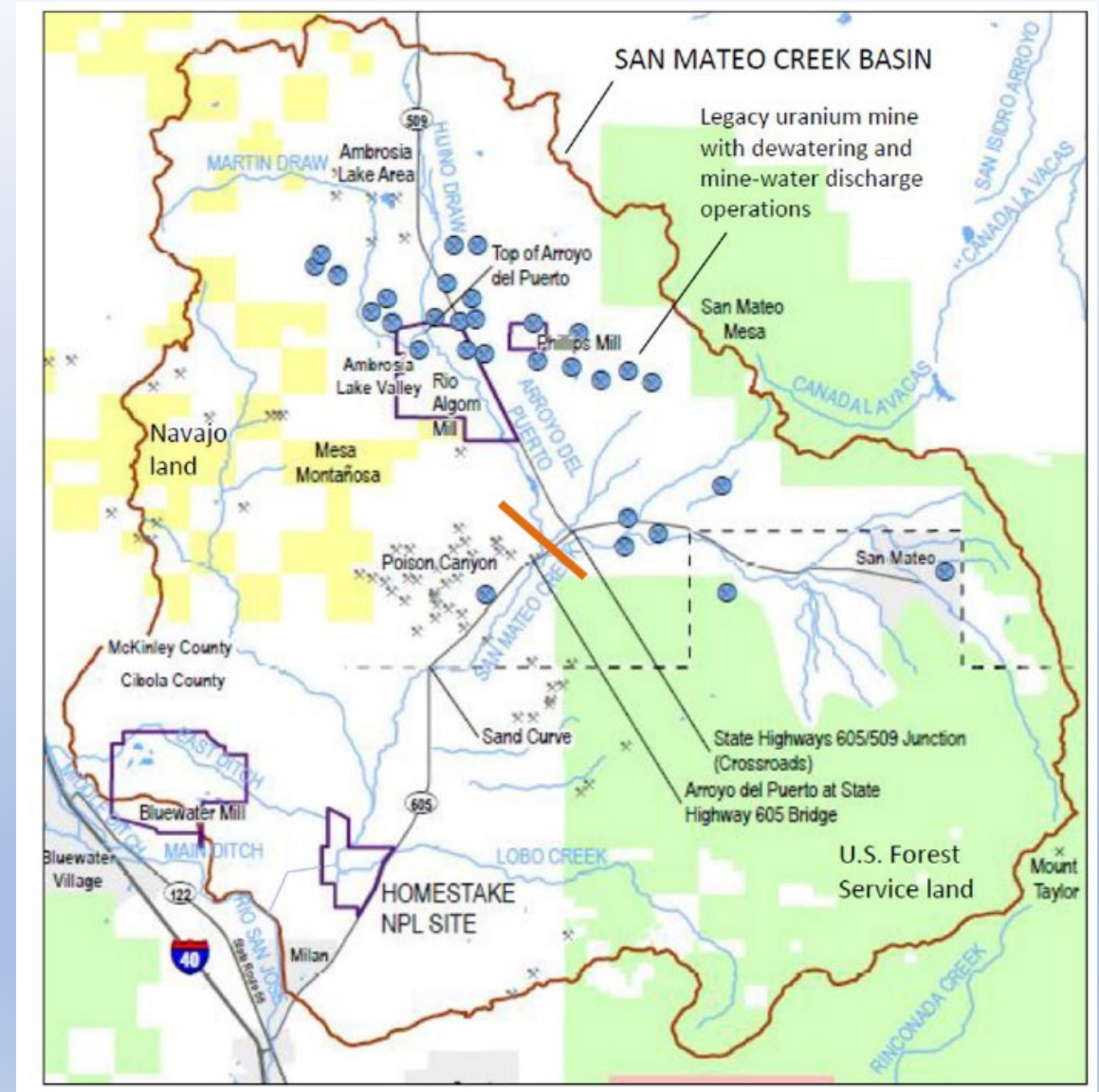


# Potential Natural Resource Damage Assessment: San Mateo Creek Basin

Intensive uranium mining and milling  
late 1940s - early 1980s

4 uranium mills and 85 uranium mines

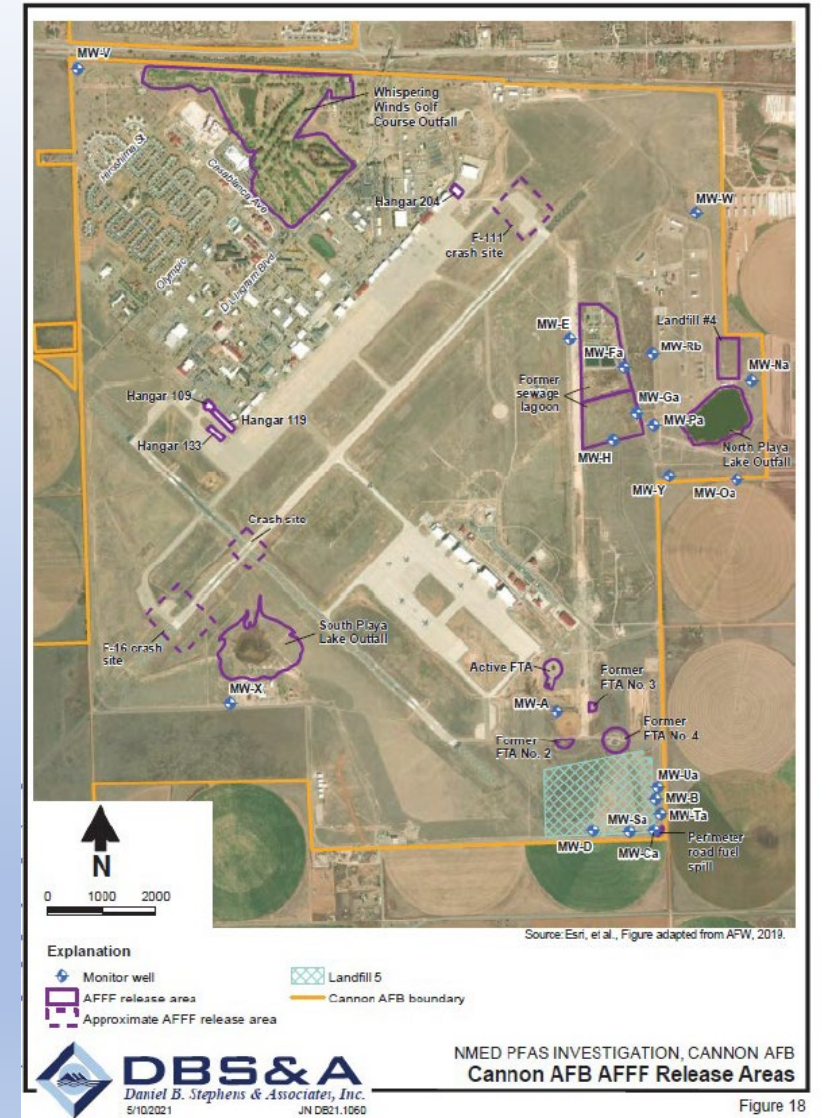
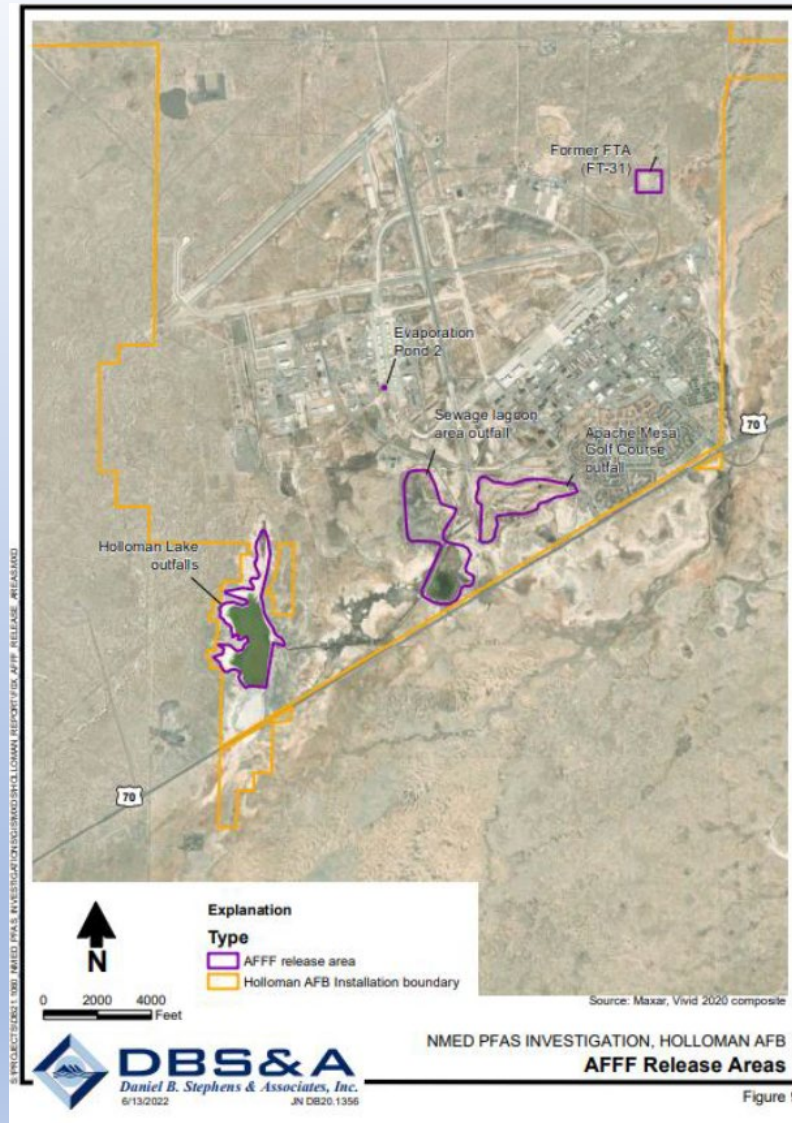
Mining and milling in these areas released  
uranium and other hazardous substances,  
contaminating soils, surface water, sediment,  
and groundwater





# Potential New Assessments – PFAS Releases at Cannon AFB and Holloman AFB

- PFOS
- PFOA
- PFHxS
- PFBS
- PFBA
- Perfluoropentanesulfonic acid (PFPeS)
- Perfluoropentanoic acid (PFPeA)
- PFHxA
- Perfluoroheptanesulfonic acid (PFHpS)
- Perfluoroheptanoic acid (PFHpA)
- PFNA
- PFDA
- Perfluoroundecanoic acid (PFUnA)
- Perfluorododecanoic acid (PFDoA)
- Perfluorotridecanoic acid (PFTrDA)
- Perfluorotetradecanoic acid (PFTeDA)
- 4:2 Fluorotelomer (4:2 FTS)
- 6:2 Fluorotelomer (6:2 FTS)
- 8:2 Fluorotelomer (8:2 FTS)
- Perfluorooctanesulfonamide (PFOSA)
- N-Ethyl perfluorooctanesulfonamidoacetic acid (NETFOSAA)
- N-Methyl perfluorooctanesulfonamidoacetic acid (NMEFOSAA)





# ONRT Partners and Project Locations

## Current Partners Include:

Navajo Nation, Zuni Tribe, Pueblo of San Ildefonso, Santa Clara Pueblo, Jemez Pueblo, Cochiti Pueblo, Aztec, San Juan County, City of Farmington, San Juan Soil & Water Conservation District, Tse Daa Kaan (Hogback) Navajo Community, US Dept of Energy, US Dept of Interior, Bureau of Indian Affairs, US Fish and Wildlife Service, US Dept. of Agriculture, US Forest Service, Cimarron Watershed Alliance, Amigos Bravos, Trout Unlimited, Village of Questa, Town of Silver City, Albuquerque/Bernalillo County Water Utility Authority, NM Environment Department, NM Interstate Stream Commission, NM Dept of Game and Fish, NM State Parks, NM Soil and Water Conservation Districts, private landowners

## Current/Past Project Locations:

San Juan County, Farmington, Aztec, Cedar Hill, Questa, Cimarron, Silver City, Albuquerque, Red River, Hogback, Nenahnezad, Los Lunas, Belen, Socorro, Alamogordo, Aztec, Clovis, Grants, Milan, Gallup, Santa Clara, Bayard, Hurley, Isleta Pueblo, Central Rio Grande corridor, Rio Rancho, Cebolleta, Bibo, Bosque Farms,, Los Alamos, White Rock, Hanover, Faywood, White Signal, Gila, Pinos Altos, and Cliff



# Questions?

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