New Mexico's Aquifer Mapping: September 2026 Update

Stacy Timmons

Associate Director for Water Programs

NM Bureau of Geology and Mineral Resources

NEW MEXICO AQUIFER MAPPING & MONITORING

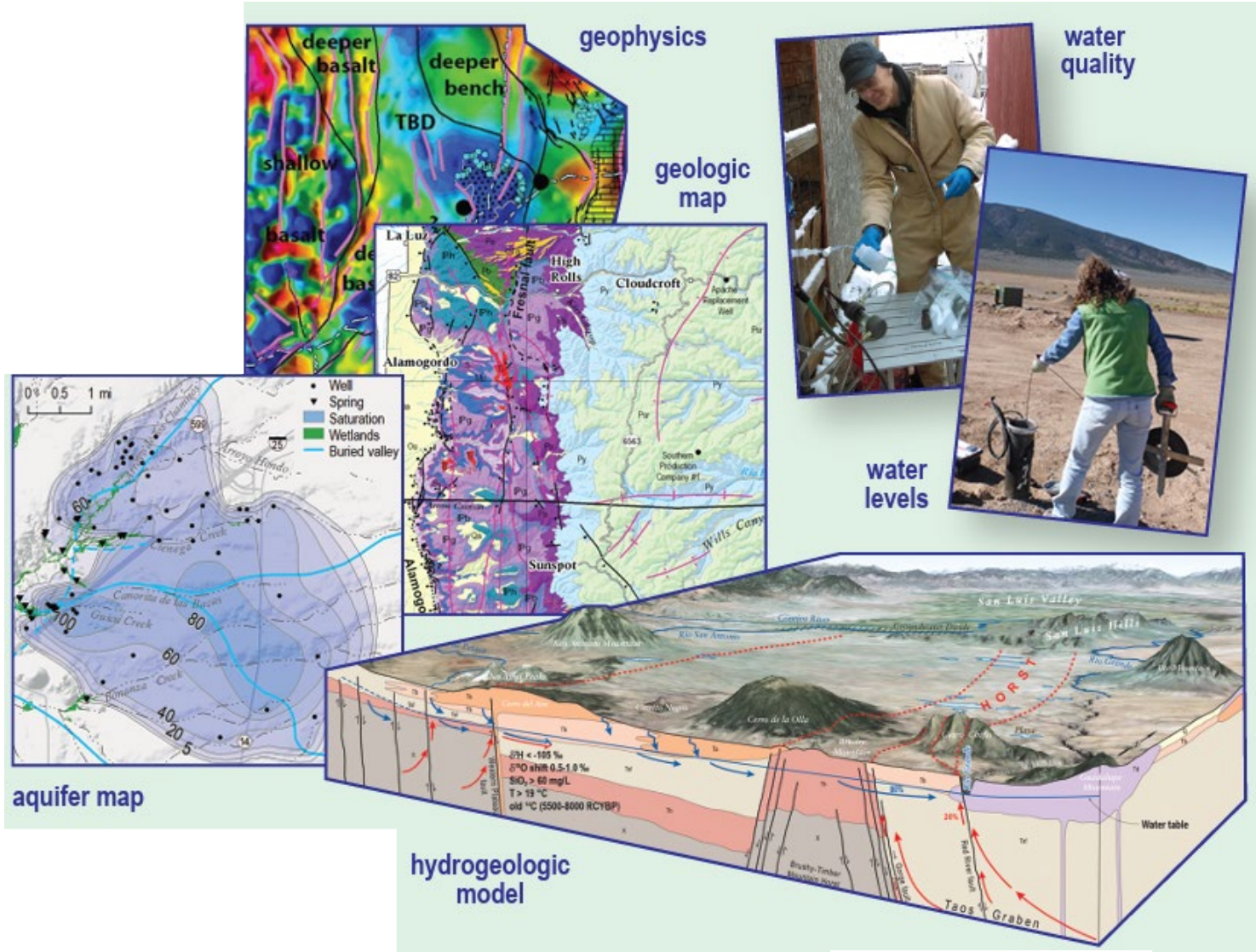
NEW MEXICO WATER DATA

NEW MEXICO WATER EDUCATION

The Aquifer Mapping and Monitoring Program

Our mission

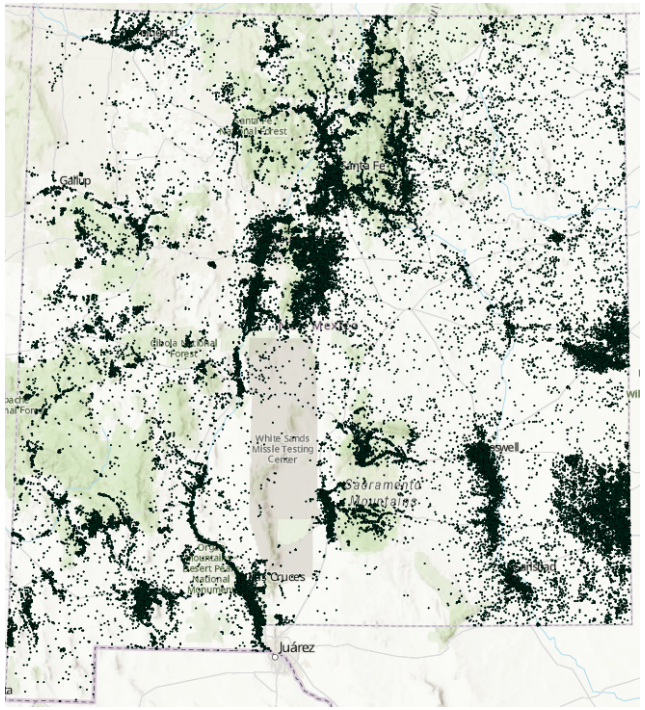
- Characterize quantity, quality, and distribution of groundwater within aquifers by integrating geology, geophysics, hydrology & geochemistry
- Our work is for New Mexico's communities, agencies, decision-makers, and managers to support informed, science-driven decisions on water resources
- We are funded by support from state, federal, local, and philanthropic sources

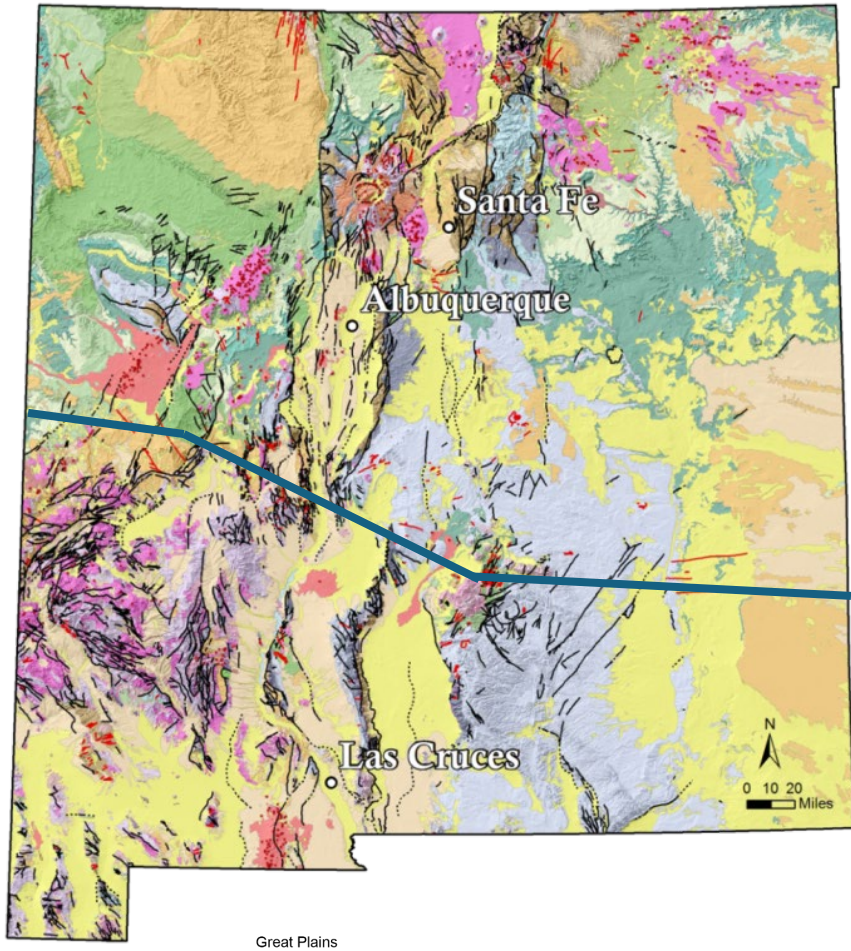


NEW MEXICO AQUIFER MAPPING & MONITORING

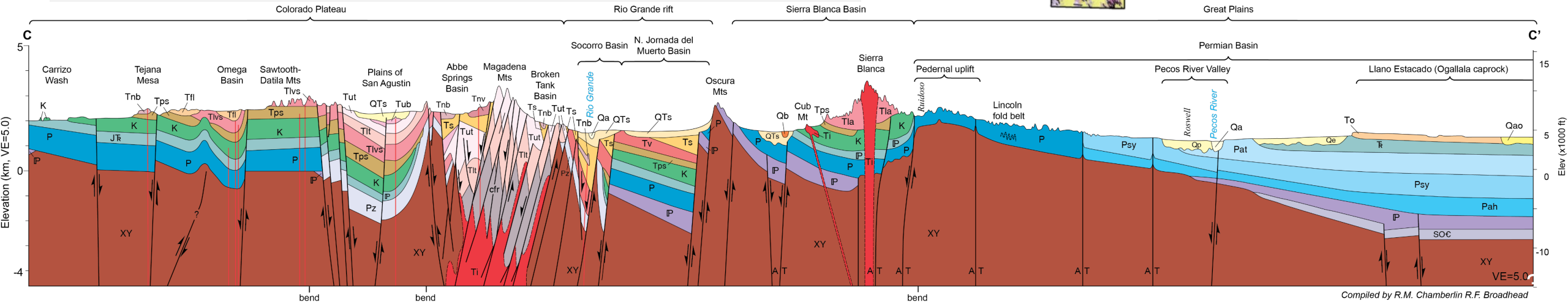
Our future depends on knowing our state's subsurface

- With unprecedented drought and weather extremes, we're seeing many impacts to our water resources
- Where the groundwater occurs, how fresh / salty, and how well it moves water is a result of our complex geology
- What we know about the subsurface is based primarily on geologic mapping, wells and geophysics





Example of complexity of subsurface geology through line (with 5x vertical exaggeration)



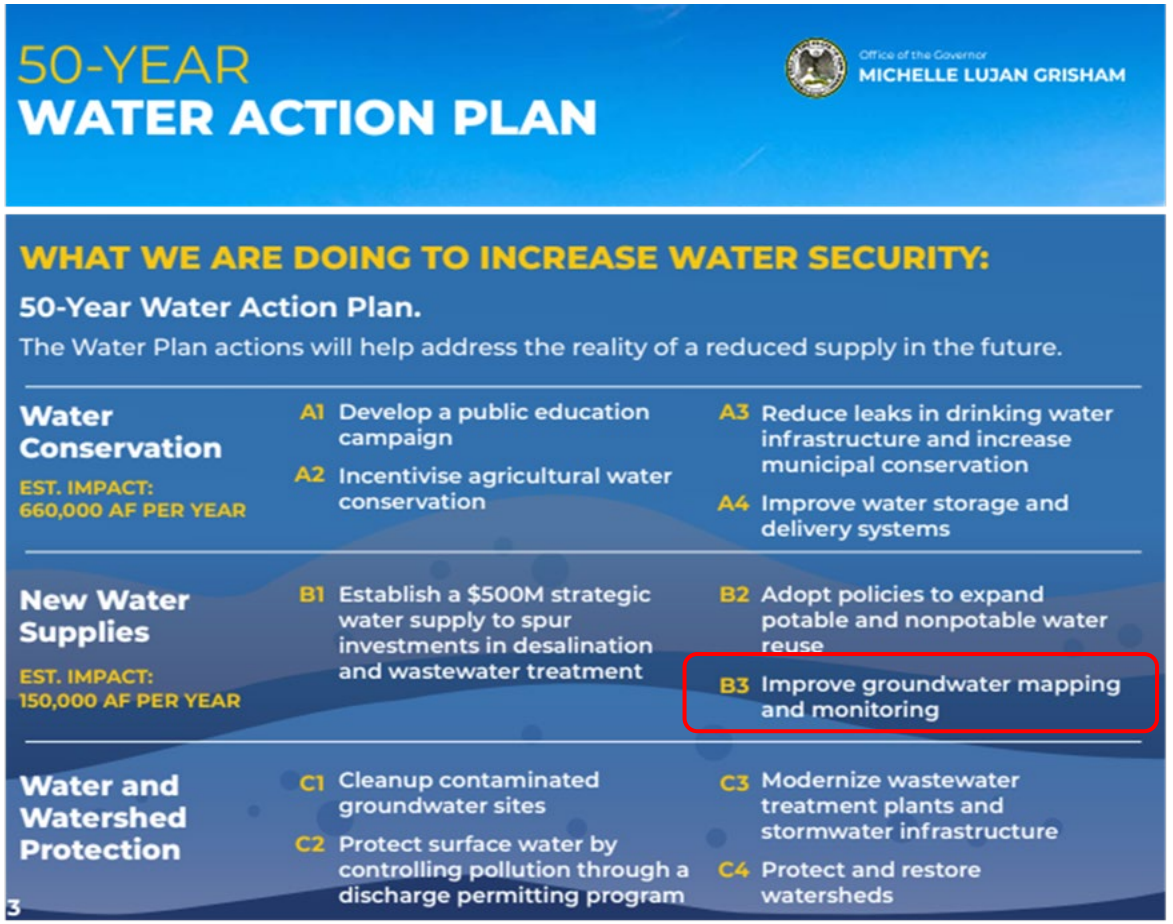
Role of NM Bureau of Geology in the 50-Year Water Action Plan

With funding support, the Bureau of Geology's role is to:

1. Characterize all major aquifers by 2032
2. Characterize all major and minor aquifers (fresh and brackish) by 2037
3. Build a statewide groundwater-monitoring network with 100 new dedicated wells by 2037

The Bureau's work supports:

- Identifying recharge locations and rates
- Groundwater budget estimation
- Tracking groundwater quality & contaminants
- Improving drought resilience
- Alternative water resource characterization & planning

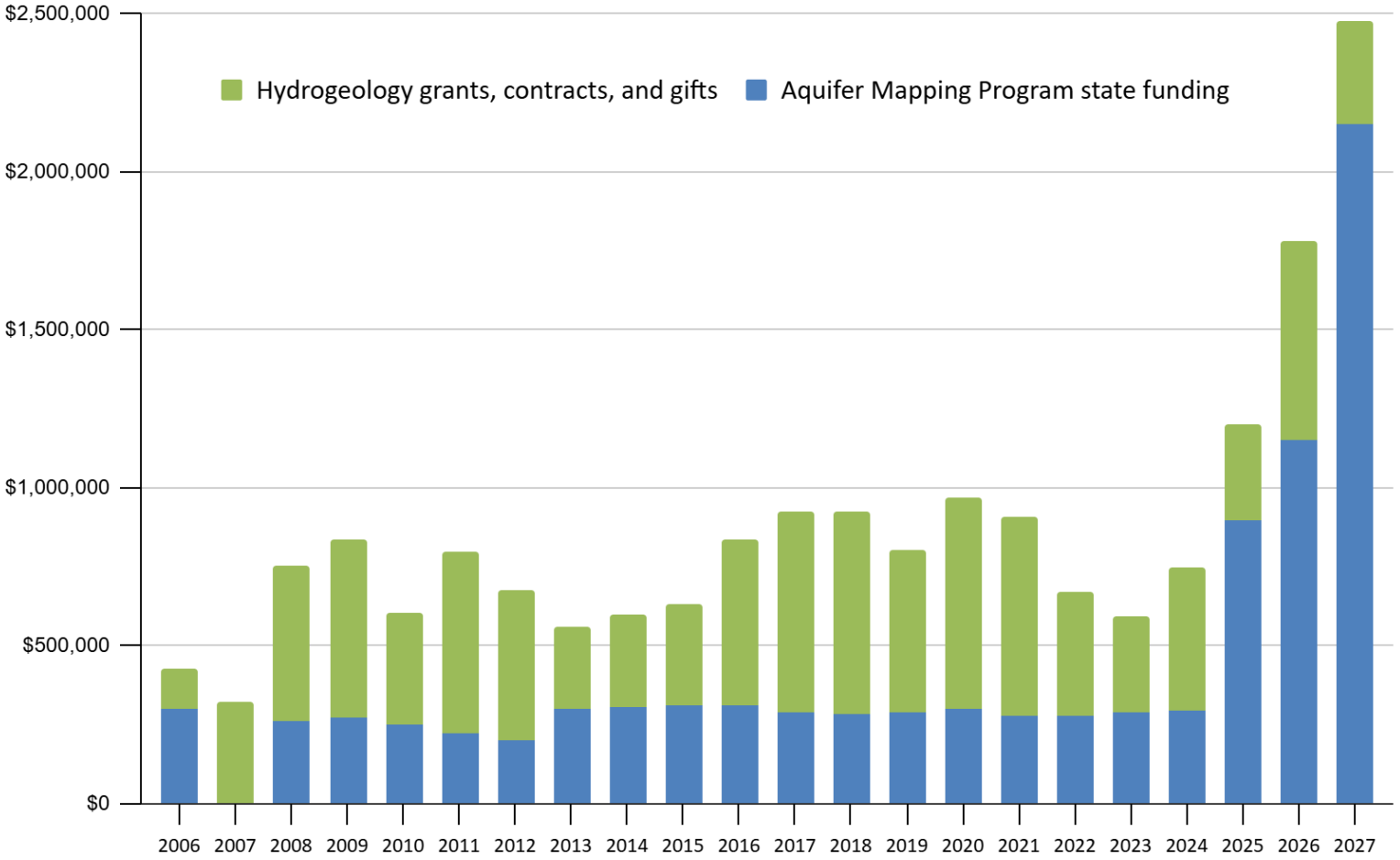


https://water-dashboard.nm.gov/

NEW MEXICO AQUIFER MAPPING & MONITORING

NEW MEXICO TECH
SCIENCE • ENGINEERING • RESEARCH UNIVERSITY

Recurring budget to NMBGMR for Aquifer Mapping



- **Growth in staff**
  - 10 new FTEs in 2025-26
- **Contractor support**
  - Approximately 30 new contractors through RFPs to provide new data collection, interpretation, model development, well drilling, etc.
- **Continued grants / regional projects**
  - Currently 5 other regional studies
  - Continuing Healy Groundwater Monitoring Network

Estimates for non-recurring annual budgets

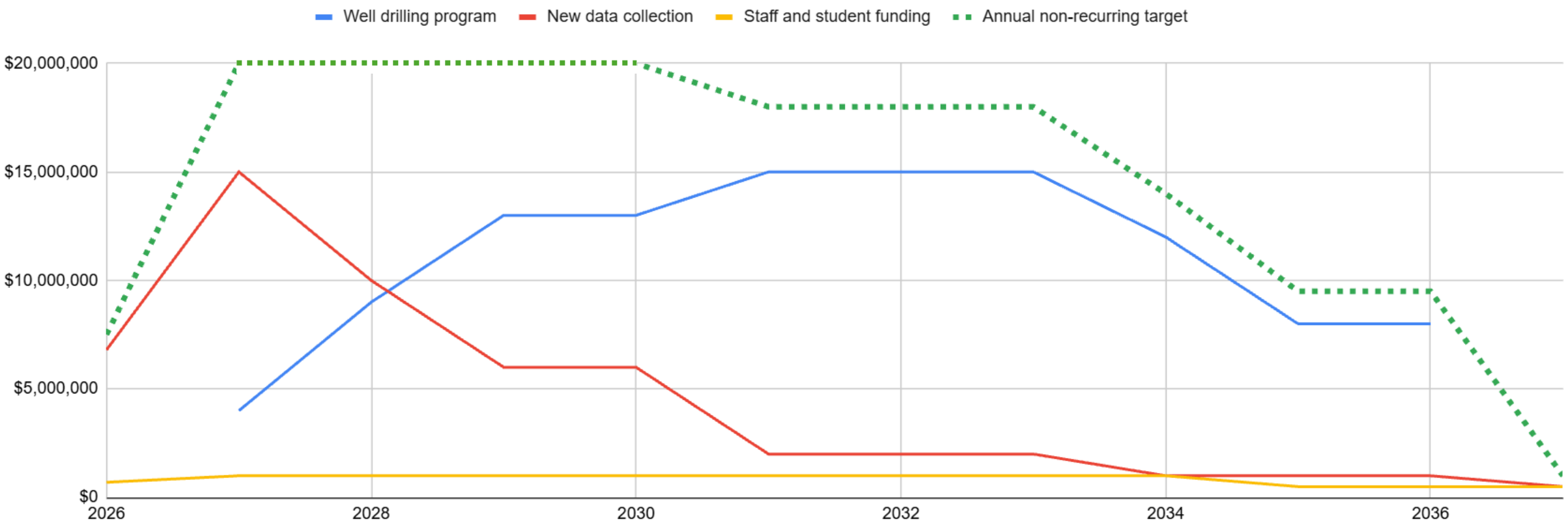
Year	FY	Well drilling program	New data collection (geophysics, mapping, updating models)*	Staff and student funding	Annual estimate	Number of wells**
1	2026		$6,800,000	$700,000	$7,500,000	0
2	2027	$4,000,000	$15,000,000	$1,000,000	$20,000,000	4
3	2028	$9,000,000	$10,000,000	$1,000,000	$20,000,000	8
4	2029	$13,000,000	$6,000,000	$1,000,000	$20,000,000	11
5	2030	$13,000,000	$6,000,000	$1,000,000	$20,000,000	11
6	2031	$15,000,000	$2,000,000	$1,000,000	$18,000,000	13
7	2032	$15,000,000	$2,000,000	$1,000,000	$18,000,000	13
8	2033	$15,000,000	$2,000,000	$1,000,000	$18,000,000	13
9	2034	$12,000,000	$1,000,000	$1,000,000	$14,000,000	11
10	2035	$8,000,000	$1,000,000	$500,000	$9,500,000	8
11	2036	$8,000,000	$1,000,000	$500,000	$9,500,000	8
12	2037		$500,000	$500,000	$1,000,000	
		$112,000,000	$53,300,000	$10,200,000	**$175,500,000**	100

- **Non-recurring state funding**
  - FY2026: $7.5M
  - FY2027-28: $22M*
    (*2M to NM Water Data)

** New data collection includes geophysical surveys (airborne and land based), mapping, modeling updates, well-based geophysics, student/ staff support, lab analyses, and field campaigns in regions of study.*

*** Well drilling costs are highly variable depending on site specifics, such as geology, well depth, land access, permitting, etc. Some wells may also be donated to program via Strategic Water Supply.*

Estimates for complete aquifer mapping and monitoring



NEW MEXICO AQUIFER MAPPING & MONITORING

NEW MEXICO TECH
SCIENCE • ENGINEERING • RESEARCH UNIVERSITY

Step 1

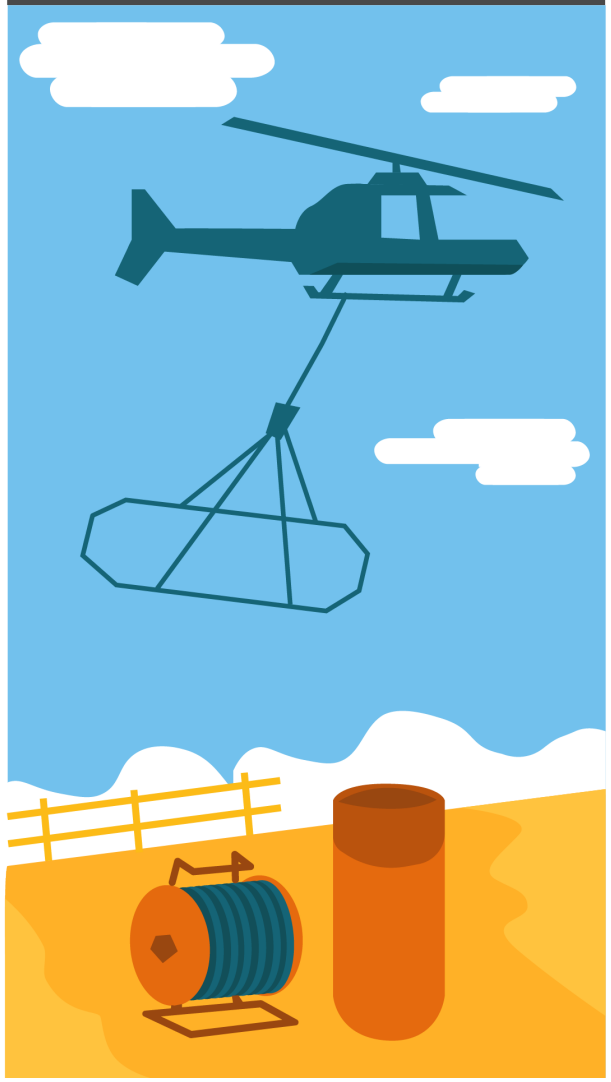
Collect Existing Data

Collection of surveys, well logs, cross sections, water quality data, and models

Step 2

Collect New Data

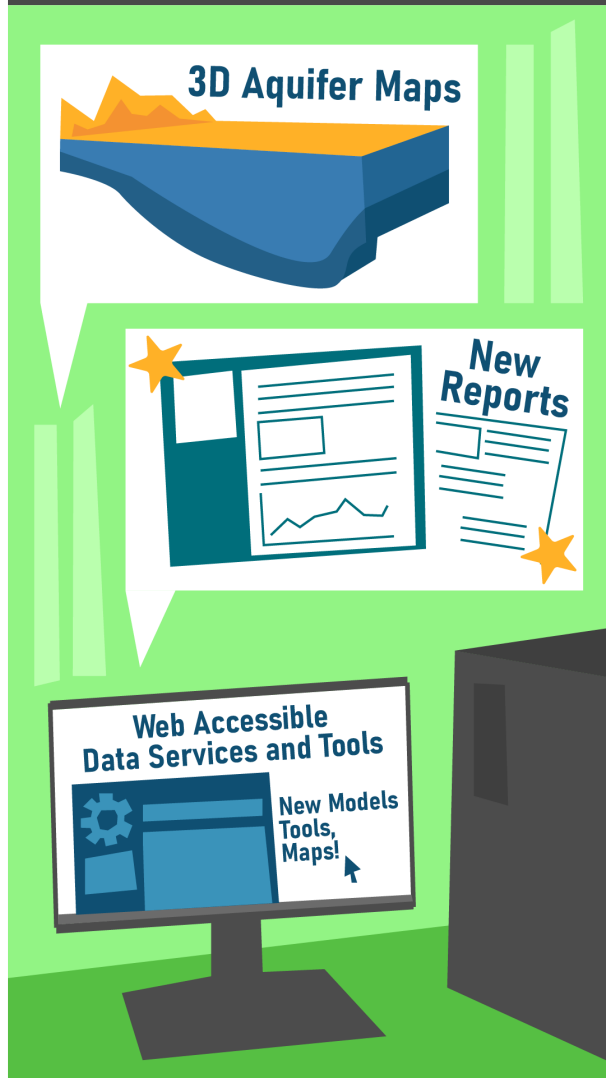
Conducting AEM surveys, drilling wells, groundwater level measurements



Step 3

Build New Aquifer Maps!

Building new models with new and old data, short reports, data services



NEW MEXICO TECH
SCIENCE • ENGINEERING • RESEARCH UNIVERSITY

NEW MEXICO AQUIFER MAPPING & MONITORING

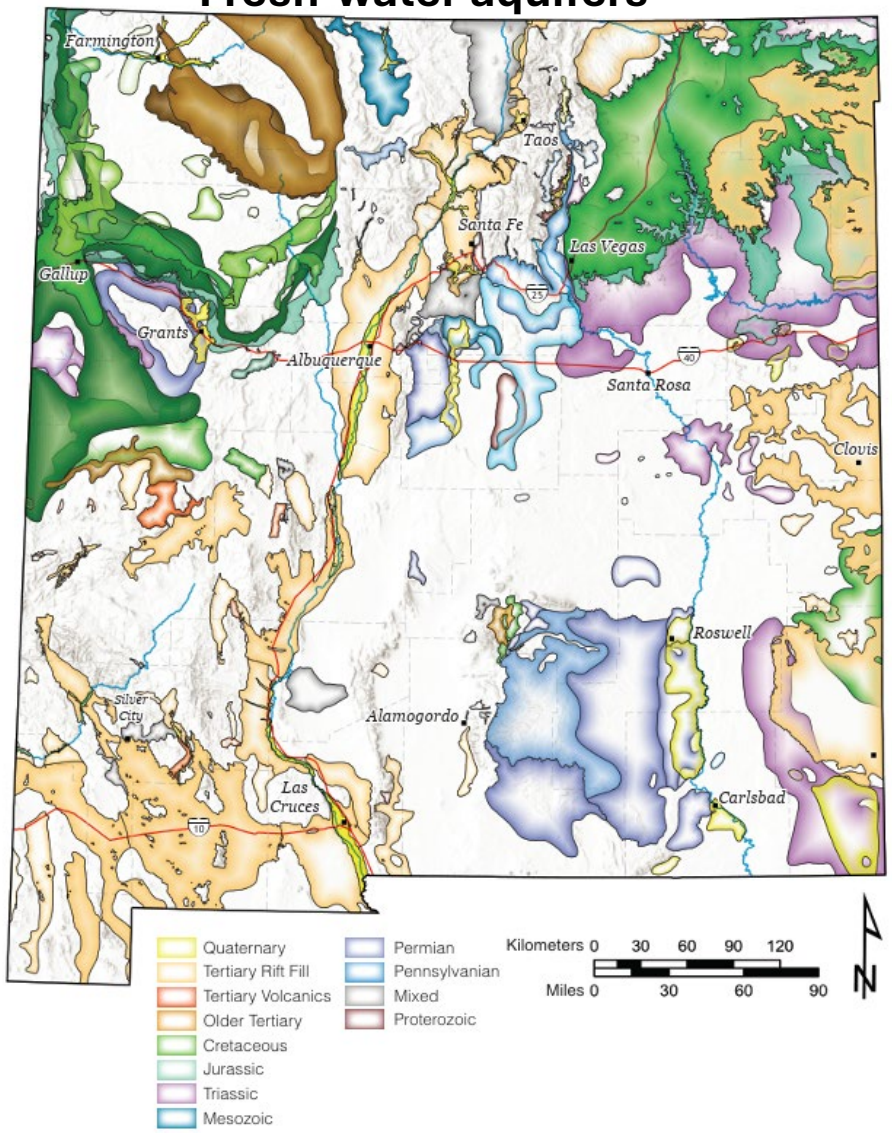
New Mexico Bureau of Geology and Mineral Resources
New Mexico Tech
Earth Science for the 21st Century

NEW! Statewide aquifer maps – Coming soon!

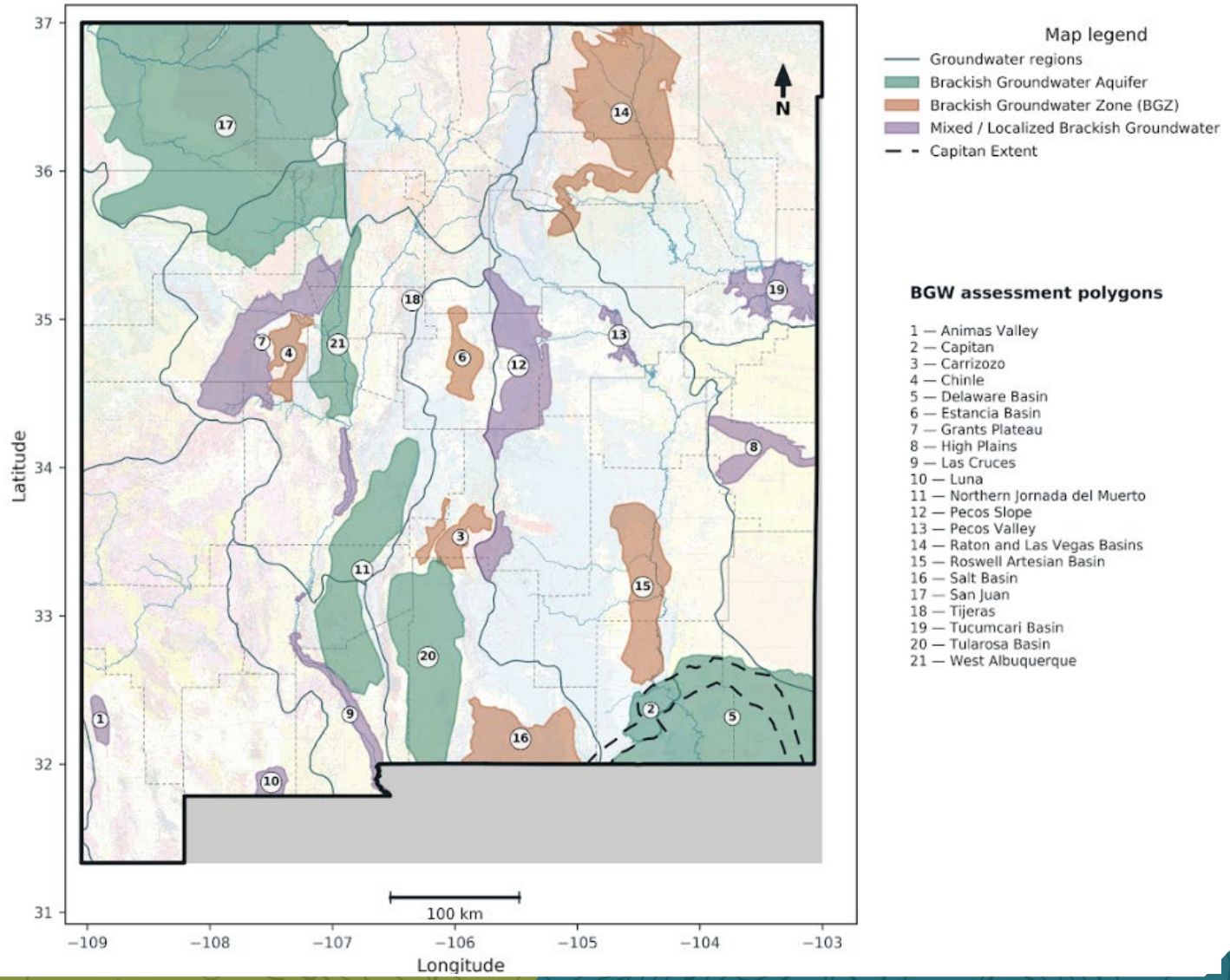
NEW MEXICO AQUIFER MAPPING & MONITORING

New Mexico Bureau of Geology and Mineral Resources — New Mexico Tech — Earth Science for the 21st Century

Fresh-water aquifers

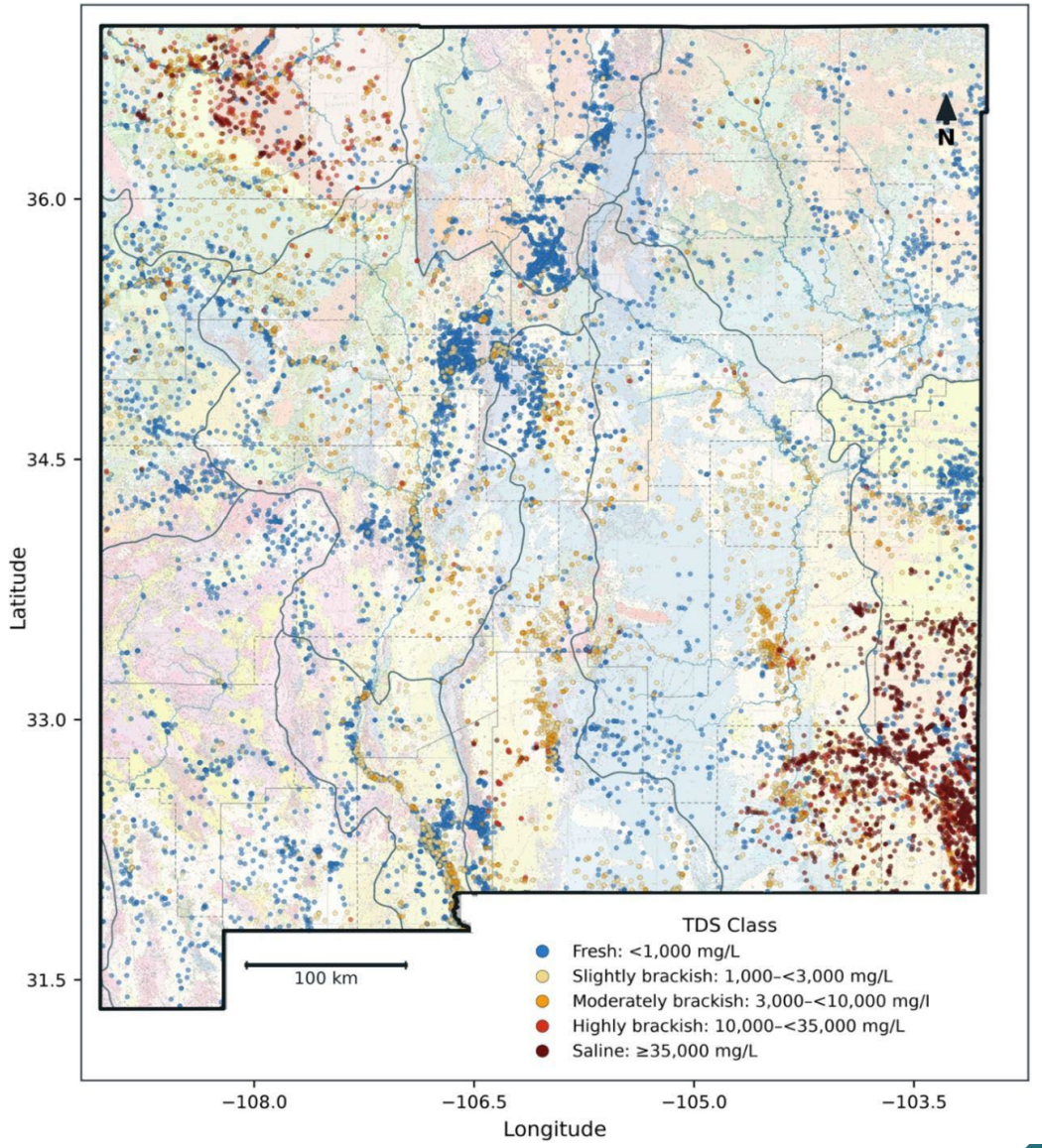


Brackish groundwater aquifers and zones



Brackish water occurs across most of the state

- About 13,700 wells have reported total dissolved solids (TDS) values digitally available; of those, about 9,500 have known depths.
- Because most water wells are drilled for fresh water use, there is limited info on the extent and chemistry of brackish groundwater
- The most significant brackish water basins likely include west Albuquerque, San Juan, Roswell, Capitan Reef, Estancia, Mesilla and Tularosa.
- Region specific studies are needed with exploratory wells focused on characterizing geology, water quality and aquifer properties



TDS Class
Fresh: <1,000 mg/L
Slightly brackish: 1,000–<3,000 mg/L
Moderately brackish: 3,000–<10,000 mg/l
Highly brackish: 10,000–<35,000 mg/L
Saline: ≥35,000 mg/L

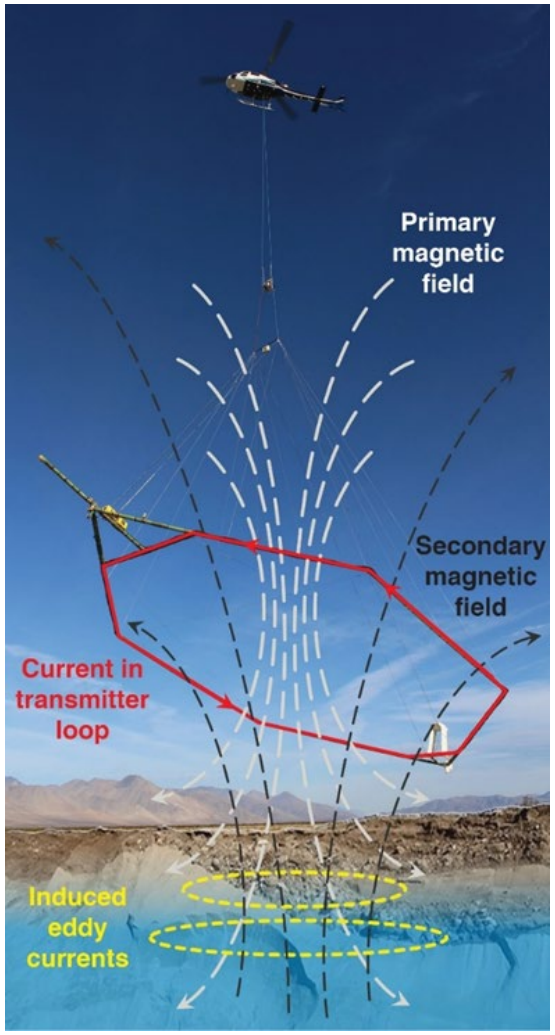
NEW MEXICO AQUIFER MAPPING & MONITORING

Geophysics for groundwater resources: Airborne Electromagnetic Surveys (AEM)

AEM surveys help to identify fresh & brackish groundwater

- Facilitate rapid mapping of aquifers & locate sites for new monitoring wells
- Enable coverage of extensive areas without disturbing the ground
- Depth of investigation: ~1500 ft (*depending on equipment & local conditions*)
- FY2026 pilot year: assessment of tools, teams, and optimize survey coverage

SkyTEM in flight



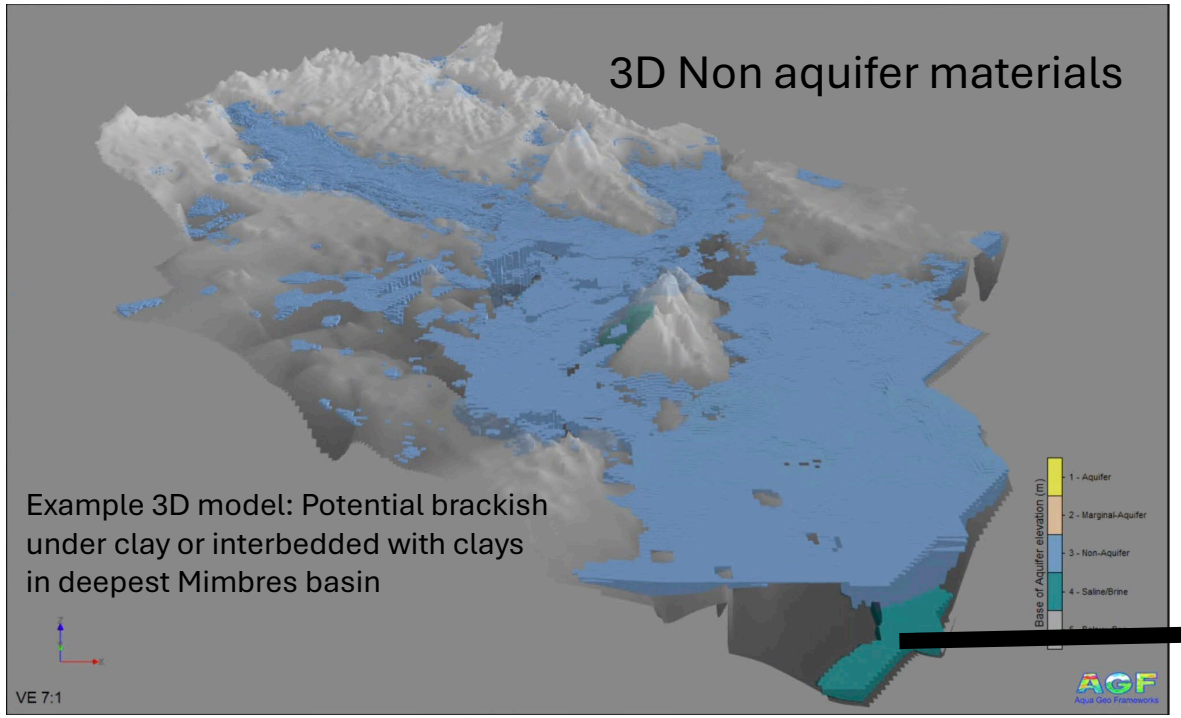
AEM Survey Schematic (from CA DWR)

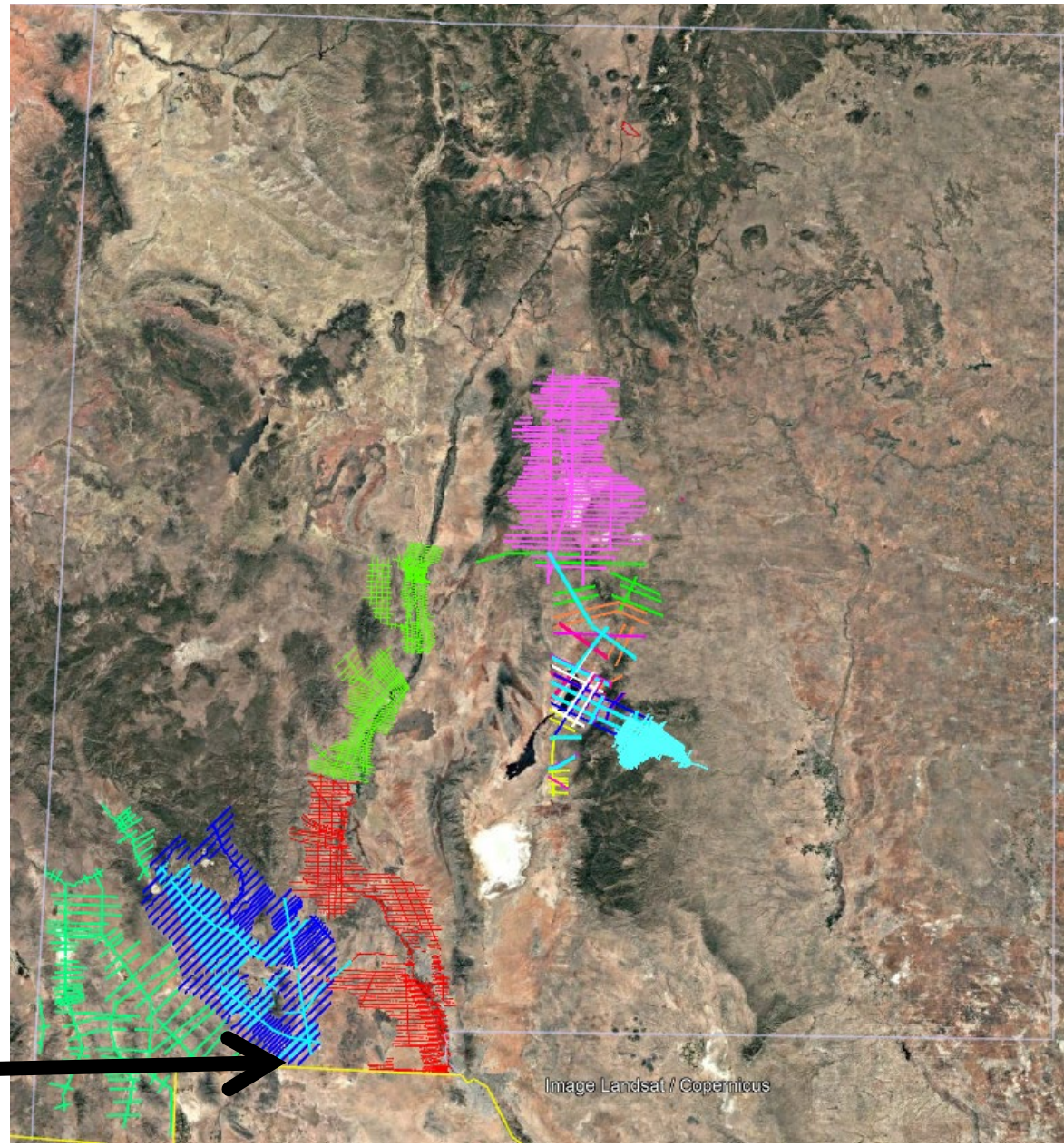
NEW MEXICO AQUIFER MAPPING & MONITORING

NEW MEXICO TECH
SCIENCE • ENGINEERING • RESEARCH UNIVERSITY

2026: AEM surveys complete

- ✓ Estancia Basin
- ✓ Middle Rio Grande Basin
- ✓ Lower Rio Grande Basins
- ✓ Mimbres Basin
- ✓ Southwest Bootheel – Gila - Animas Region
- ✓ Northern Tularosa Basin / Ruidoso Slope





Example: Lower Rio Grande basins

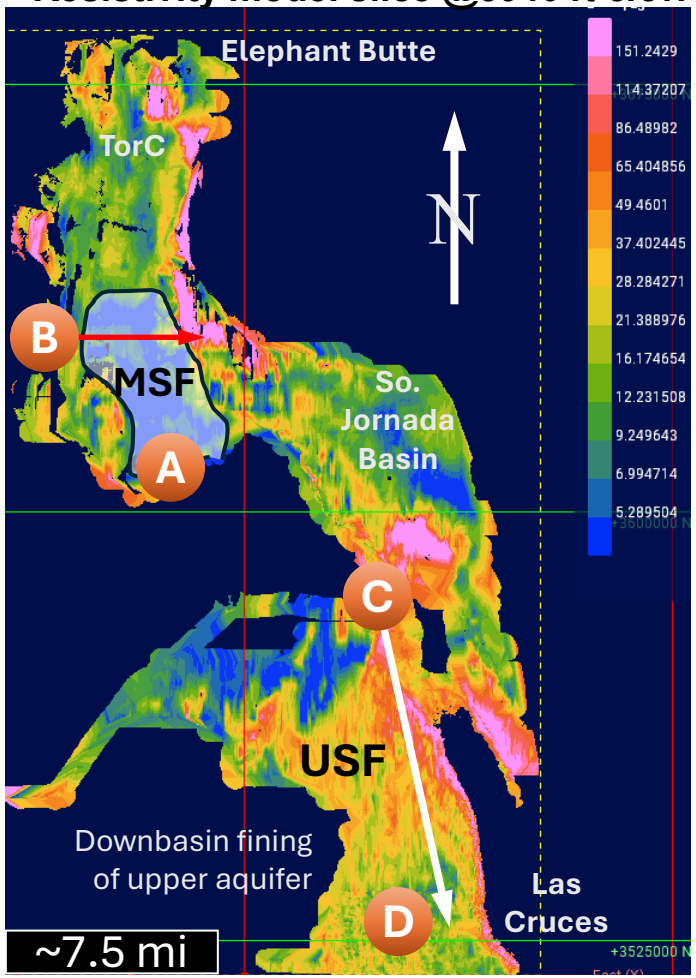
A. Map extensive aquitard in middle Santa Fe Group (MSF) regional aquifer system in the southern Palomas Basin

B. Resistivity trends show downstream changes in tributary aquifer lithology
   A. *Important information for defining Managed Aquifer Recharge opportunities*

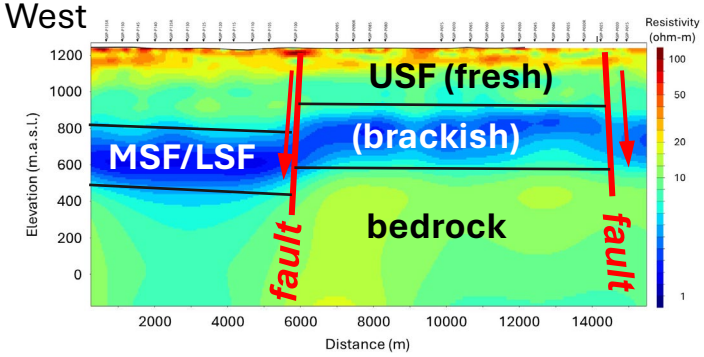
C. Upper Santa Fe Group (USF, ancestral Rio Grande) depositional patterns
   A. *Aquifer heterogeneity and connectivity*
   B. *Identify/Assess potential storage & recovery projects*

D. Ground-based magnetotelluric (MT) refinement of Santa Teresa area AEM studies
   A. *Refine location of brackish-water exploratory well (ISC)*

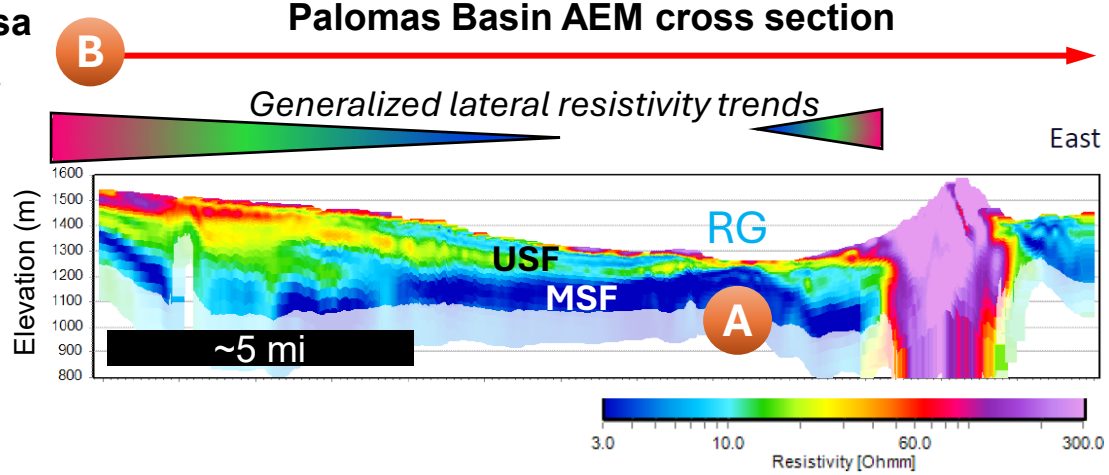
Lower Rio Grande Basins
Resistivity model slice @*3940 ft elev.*



D MT fault mapping near Santa Teresa



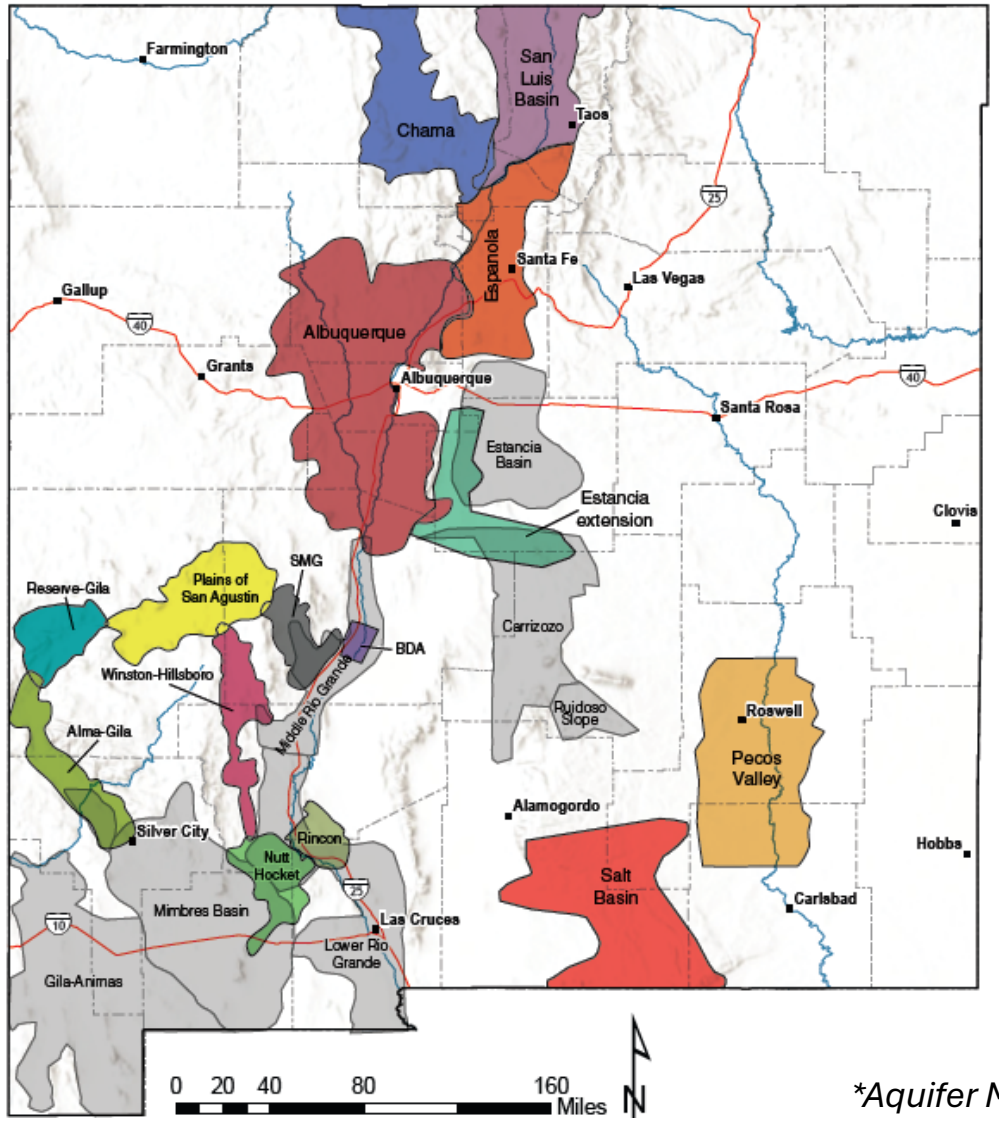
B Palomas Basin AEM cross section



NEW MEXICO AQUIFER MAPPING & MONITORING

NEW MEXICO TECH
SCIENCE • ENGINEERING • RESEARCH UNIVERSITY

Goals for FY2027 funding for Aquifer Mapping & Monitoring



- Focus AEM on new regions & data infill of FY26 study areas
- Evaluate additional geophysical techniques that can enhance bedrock aquifer studies
- Continue data collection, integration, and interpretation
  - Build & improve 3D hydrogeologic framework models using new datasets
  - Improve aquifer mapping & characterization for community water managers / planning
  - Carefully site long-term monitoring & brackish-water drilling sites
  - Continue community outreach & engagement
  - **FY28 Request: $22M for water programs* for 2 years**

**Aquifer Mapping and Monitoring & Water Data funding opportunity*

Thank you for helping us do this important work for New Mexico!

New Mexico Bureau of Geology and Mineral Resources
New Mexico Tech
Earth Science for the 21st Century

For more information, please contact Stacy Timmons: stacy.timmons@nmt.edu