New Mexico Bureau of Geology and Mineral Resources
A state agency and research division of
New Mexico Tech

Dr. J. Michael Timmons
Interim Director and State Geologist

About the Bureau of Geology and Mineral Resources

- Founded in 1927 through state legislation.
- A non-regulatory governmental agency (the state's geological survey) that conducts scientific investigations leading to responsible economic development of the state's mineral, water, and energy resources.
- Currently has 67 staff members at approximately 60 FTEs consisting of research scientists, professionals and permanent support staff, and emeritus staff. We also mentor and employ graduate students (12 students) and part-time undergrads (29 students).
- Two office locations: Socorro (59 staff), Albuquerque (3 staff) and remote (5 staff)
- Total Budget in FY22: Approximately 60% is hard money funding - 40% is soft money funding

Bureau's Mission

Conduct research and interact with industry and state or federal agencies to facilitate responsible development of the state's geological energy and mineral resources.

Distribute accurate information to scientists, decision makers, and the New Mexico public regarding the state's geologic infrastructure, mineral and energy resources, and geohydrology (including water quantity and quality).

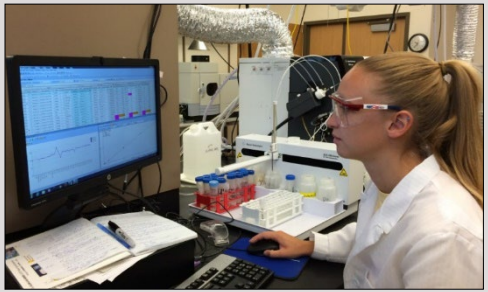
Create accurate, up-to-date maps

- New Mexico STATEMAP Program
- Aquifer Mapping Program

Bureau's Mission

Provide timely information on potential geologic hazards, including earthquakes, volcanic events, soils-and subsidence-related problems, and flooding.

Act as a repository for cores, well cuttings and a wide variety of geological data. Provide convenient physical and internet access for New Mexicans to such resources.



Provide public education and outreach through college teaching and advising, a Mineral Museum, and teacher- and student-training programs.

Programs at the Bureau of Geology

- Geologic mapping & hazards
- Hydrogeology
  - *Aquifer Mapping Program*
  - *3D hydrogeologic models*
  - *Water Data Act implementation*
- Analytical laboratories
- Outreach and education
  - *Publications*
  - *Archives and collections*
- Energy Resources
  - *Oil/Gas*
  - *Geothermal*
  - *Uranium*
- Mineral Resources
  - *Critical and Strategic Minerals*
  - *Metals*
  - *Industrial*

New Mexico Water Data Act: An update

New Mexico Water Data

AUGUST 2022
STACY TIMMONS
ASSOCIATE DIRECTOR, HYDROGEOLOGY
NEW MEXICO BUREAU OF GEOLOGY AND MINERAL RESOURCES

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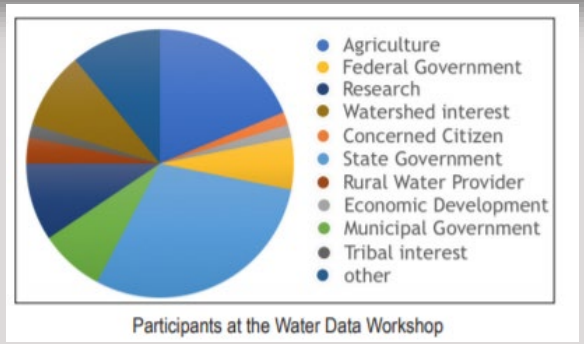
2019 Water Data Act becomes *statute* (NMSA 1978, §72-4B)

State agencies will collaborate with regional and national efforts to SHARE, INTEGRATE, and MANAGE water data.

- ***Convener:*** Bureau of Geology and Mineral Resources
- Office of State Engineer
- Interstate Stream Commission
- Environment Department
- Energy, Minerals and Natural Resources Department

Stakeholder questions and needs drive our work toward open data



Participants at the Water Data Workshop

From what we have heard, the needs for data are:

- To find data in one place
- Geospatially-based data searchable using maps or locations
- Metadata to indicate sources of data, quality, and intent of data collected
- A range of users can access
- Easy access to for download and use

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So far, two paths for data sharing and access

DATA CATALOG

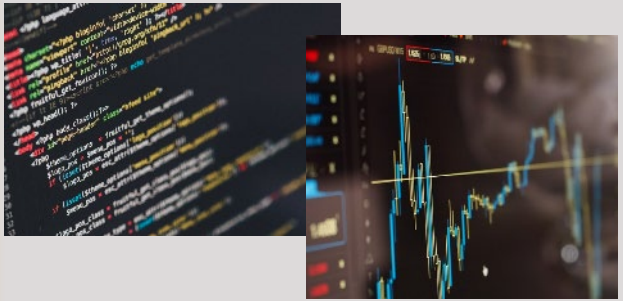
Data are discoverable by listing data on our catalog

Open source and community driven

FEDERATED DATA MODEL

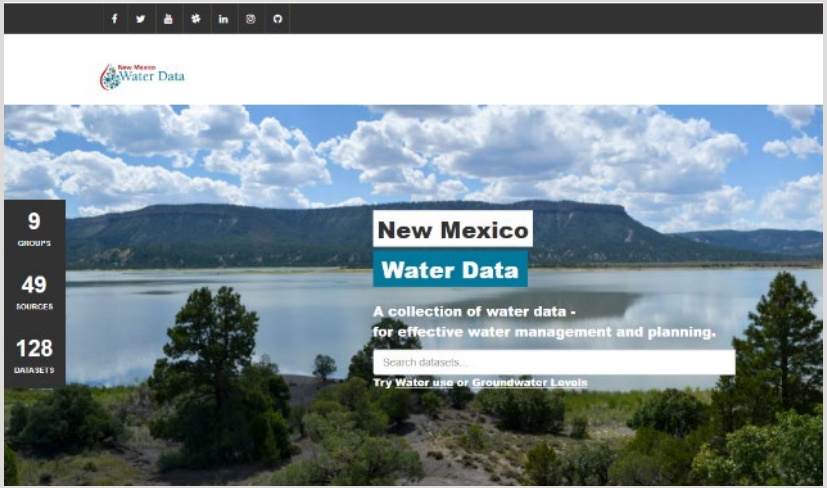
Data are shared by API, following specific data standard (OGC's SensorThings)

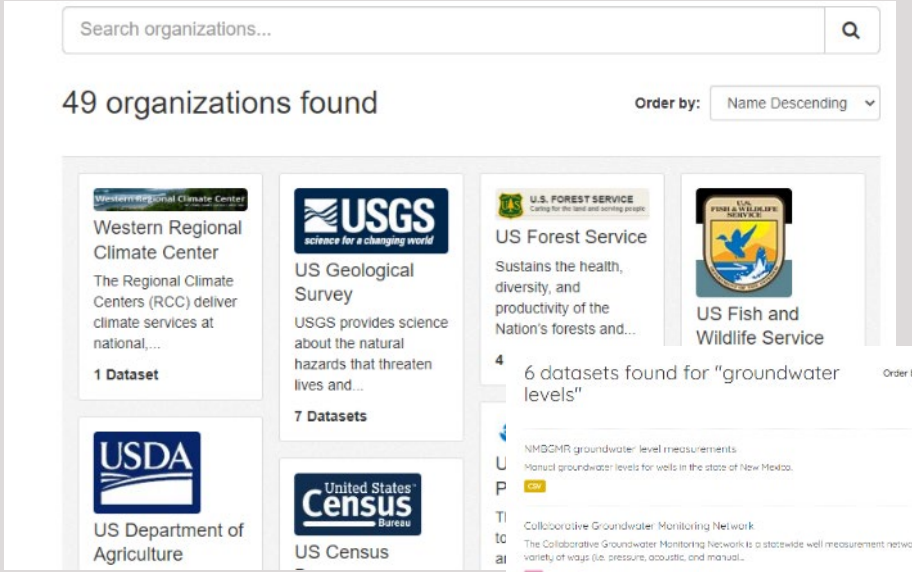
Applications developed using these robust and dynamic APIs

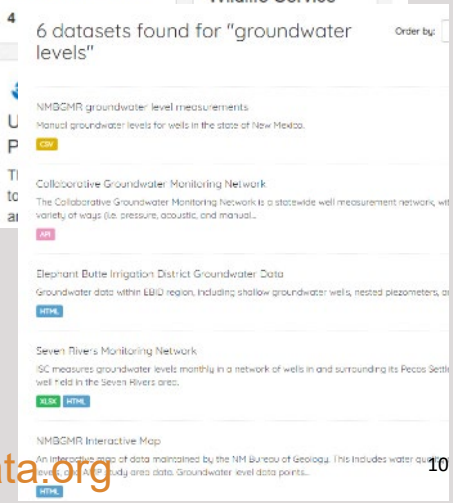


Explore the data catalog

- Initial data inventory
  - Illuminate the different data sources
  - Evaluate data readiness
- Promotes engagement
  - Feedback on data (do we have it all?)
  - Build interaction with data
- Launching point for future refinements



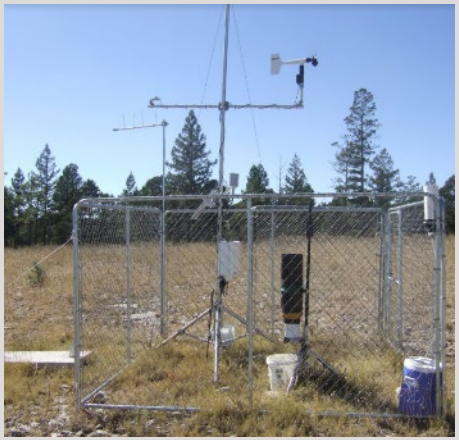


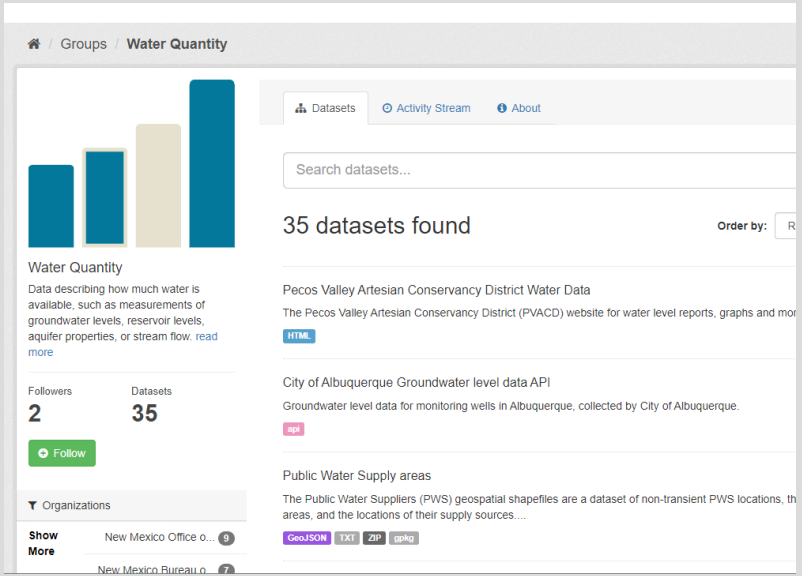


Built in CKAN platform (open source) hosted on Datopian cloud

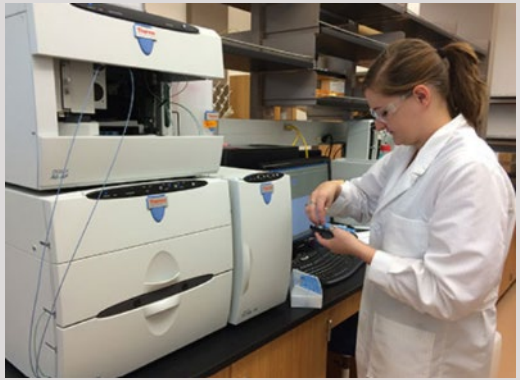
catalog.newmexicowaterdata.org

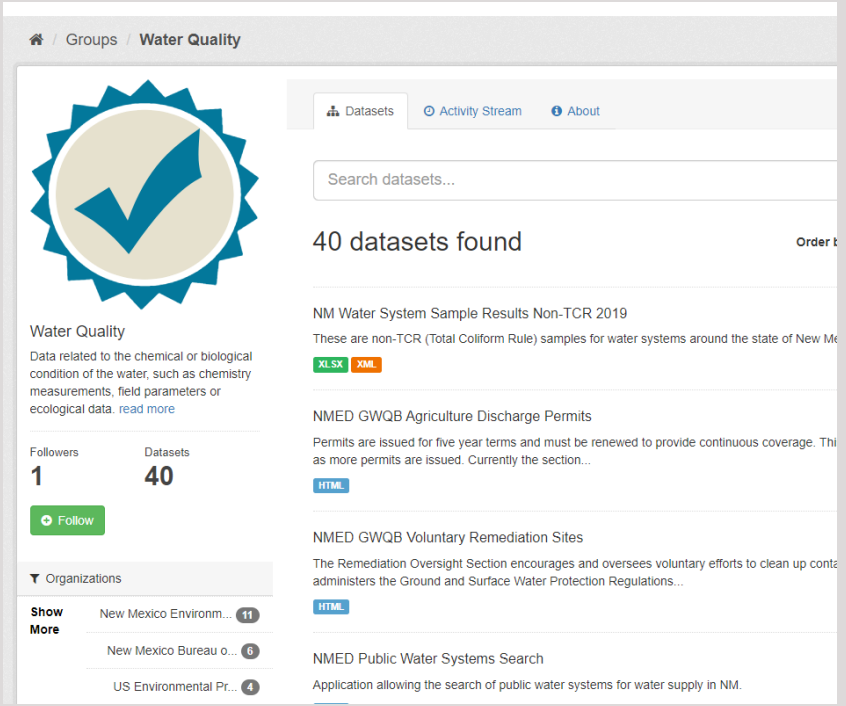
Example: Water quantity data





Example: Water quality data





Water data challenges are big, but not impossible!

Funding

Staffing at state agencies:

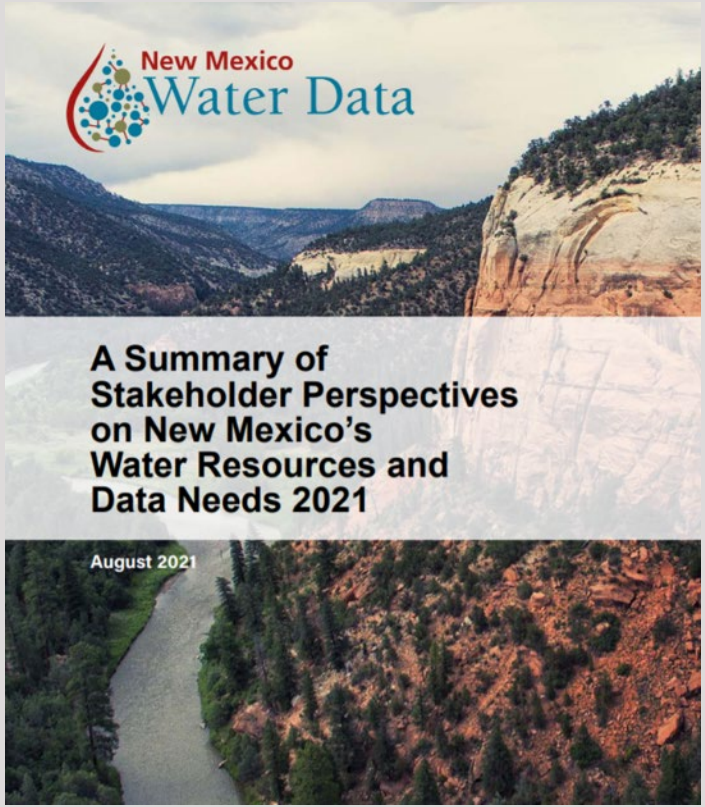
- Short and long term staffing needs
- Build data literacy
- Grow internal technical skills

Infrastructure:

- Upgrades to data systems for modernizing data management

Data gaps

A. Groundwater data
B. Water use data
C. Inaccessible paper records



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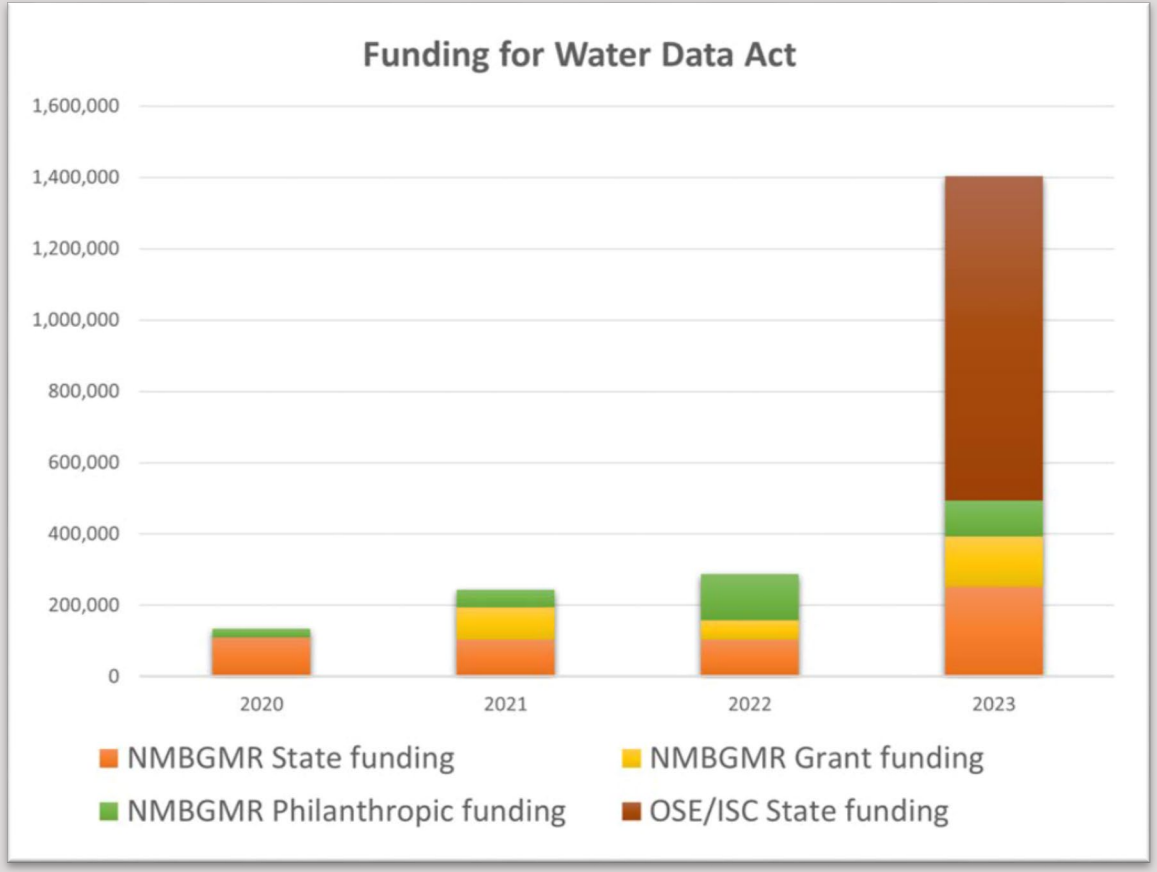
Funding has grown this year thanks to NM legislature



New state funding in FY2023 to NMBGMR and OSE/ISC

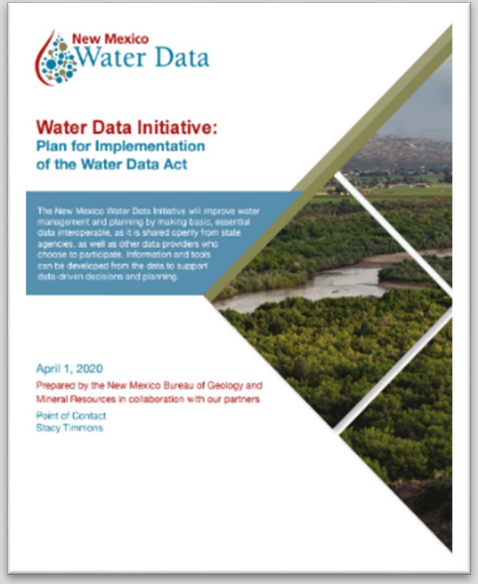
- NMBGMR: $250,000 annually recurring
- OSE/ISC: $410,000 annually recurring; $500,000 non-recurring

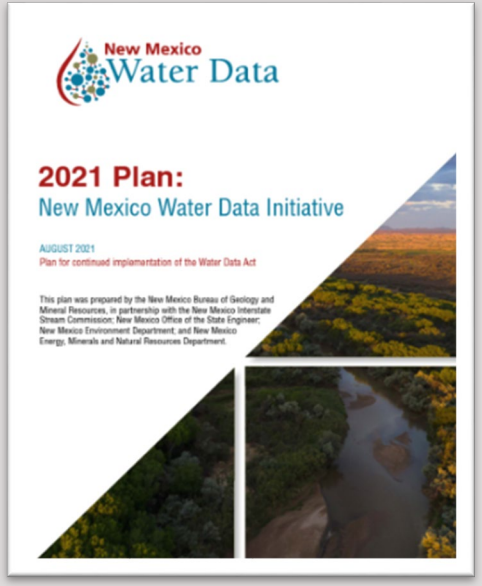
Opportunities for state funding to be leveraged additional federal funding, such as:

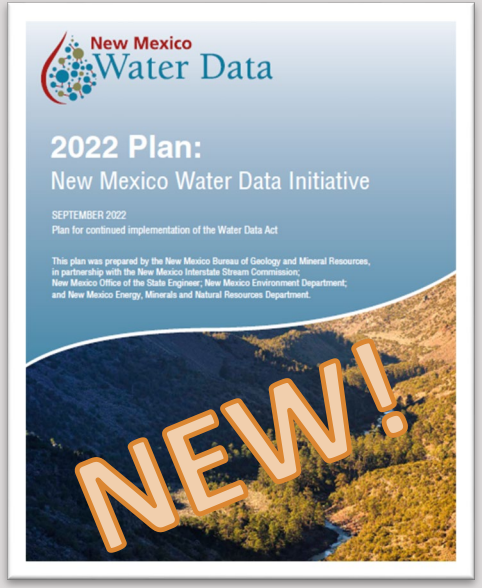
- U.S. Bureau of Reclamation WaterSMART Program
- U.S. EPA Environmental Information Exchange Network

Looking ahead for NM Water Data Initiative

- See Handout - Water Data Plan for 2022, as required by statute annually
- Shared to the Governor's office and interim legislative committees







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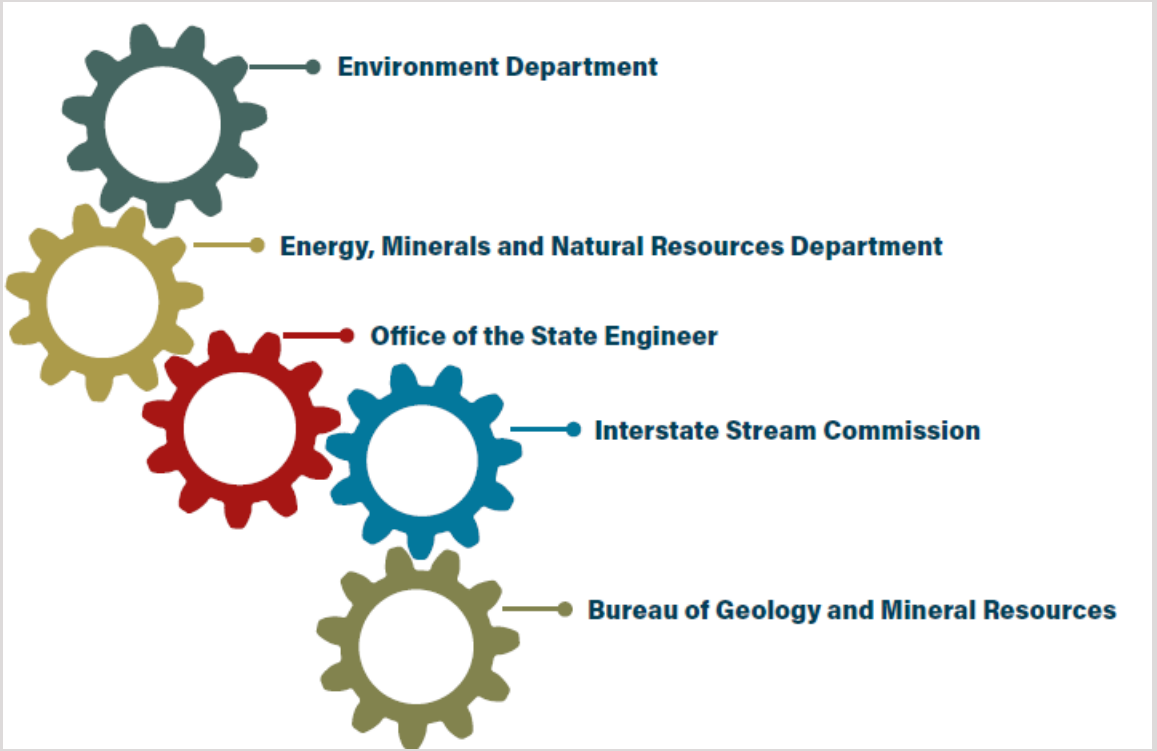
Budget needs identified in 2022 Water Data Plan

For the five agencies in the Water Data Act

Total Annual Recurring Funding Goal
$2 .65M

Total Non-Recurring Funding Goal $6.5M

See handout pages 7-8



Environment Department

The Environment Department plans to develop, implement, and support technology infrastructure to improve the agency's water data collection, data management, data documentation, and data access through application programming interfaces. This work will be supported by five divisions within the NMED that collect or maintain water data.

Staffing Need

- 5 FTEs (2 in IT section, 2 in Water Protection Division, 1 in Resource Protection Division)

Funding Requirements

- Annual recurring estimate: $725K
- Non-recurring estimate: $1M

Energy, Minerals and Natural Resources Department

The Energy, Minerals and Natural Resources Department plans to make improvements to automate data compilation/collection; build structured, standardized databases; and develop/maintain data access points using application programming interfaces. This work will be supported by three divisions of EMNRD that collect water data.

Staffing Need

- 2 FTEs (IT section), plus other contract or temporary staff

Funding Requirements

- Annual recurring estimate: $250K
- 5-year non-recurring estimate: $1.9M

Office of the State Engineer and Interstate Stream Commission

In order to fully engage in the Water Data Act, the OSE/ISC, with a shared IT department, needs to develop, implement, and support improvements in water data collection, data management upgrades, and data sharing capabilities. New funding is essential to expand staff capacity, get paper data in an electronic and accessible format, and support essential technology infrastructure to improve inter- and intra-agency water work within numerous bureaus and district offices.

Staffing Need

- 10 FTEs (in IT services and OSE/ISC management positions)

Funding Requirements

- Recurring funding received for FY23: $410K
- Non-recurring funding received for FY23: $500K
- Additional annual recurring estimate: $1.175M
- Additional 5-year non-recurring estimate: $3.3M

Bureau of Geology and Mineral Resources

(under Higher Ed at NMT)

The Bureau of Geology and Mineral Resources serves as the convening agency of the Water Data Act, coordinating all the water data agencies, working with regional and national water data efforts, reporting and planning, and hosting numerous data services. Additionally, the NMBGMR collects and maintains water data about streams, springs, and aquifers as part of the Aquifer Mapping Program. This funding estimate includes both roles: convening the Water Data Act and as a data provider.

Staffing Need

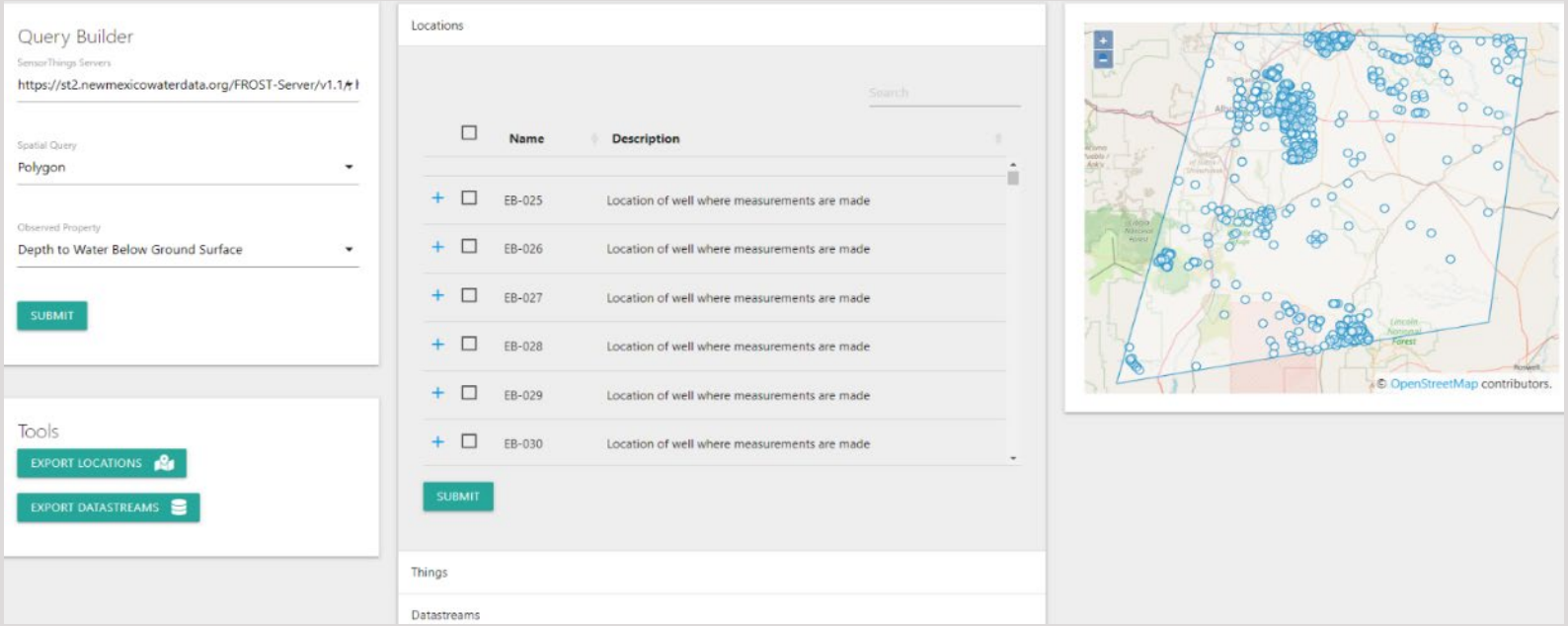
- 6 FTEs (in IT services, support, and management positions)

Funding Requirements

- Recurring funding received for FY23: $250K
- Additional annual recurring estimate: $500K
- 2-year non-recurring estimate: $300K

Looking ahead for NM Water Data Initiative

Data access and analytical tools in development now using APIs



Thanks to our collaborators and supporters

- Staff contribution and management support at OSE, ISC, NMED, EMNRD, NMBGMR and NMT
- Funding from State of New Mexico, Healy Foundation, U.S. Bureau of Reclamation (WaterSMART), Thornburg Foundation
- Collaboration from Internet of Water Coalition, Sandia National Laboratories, Earth Data Analysis Center at UNM, Datacequia, Sol Web Solutions, Wellntel, and Moxiecran Media
- Tremendous legislative support for water data funding
- We appreciate our regional collaborators, data providers and advocates for water data!

New Mexico Water Data

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