



# 2023 Plan: New Mexico Water Data Initiative

SEPTEMBER 2023

Plan for continued implementation of the Water Data Act

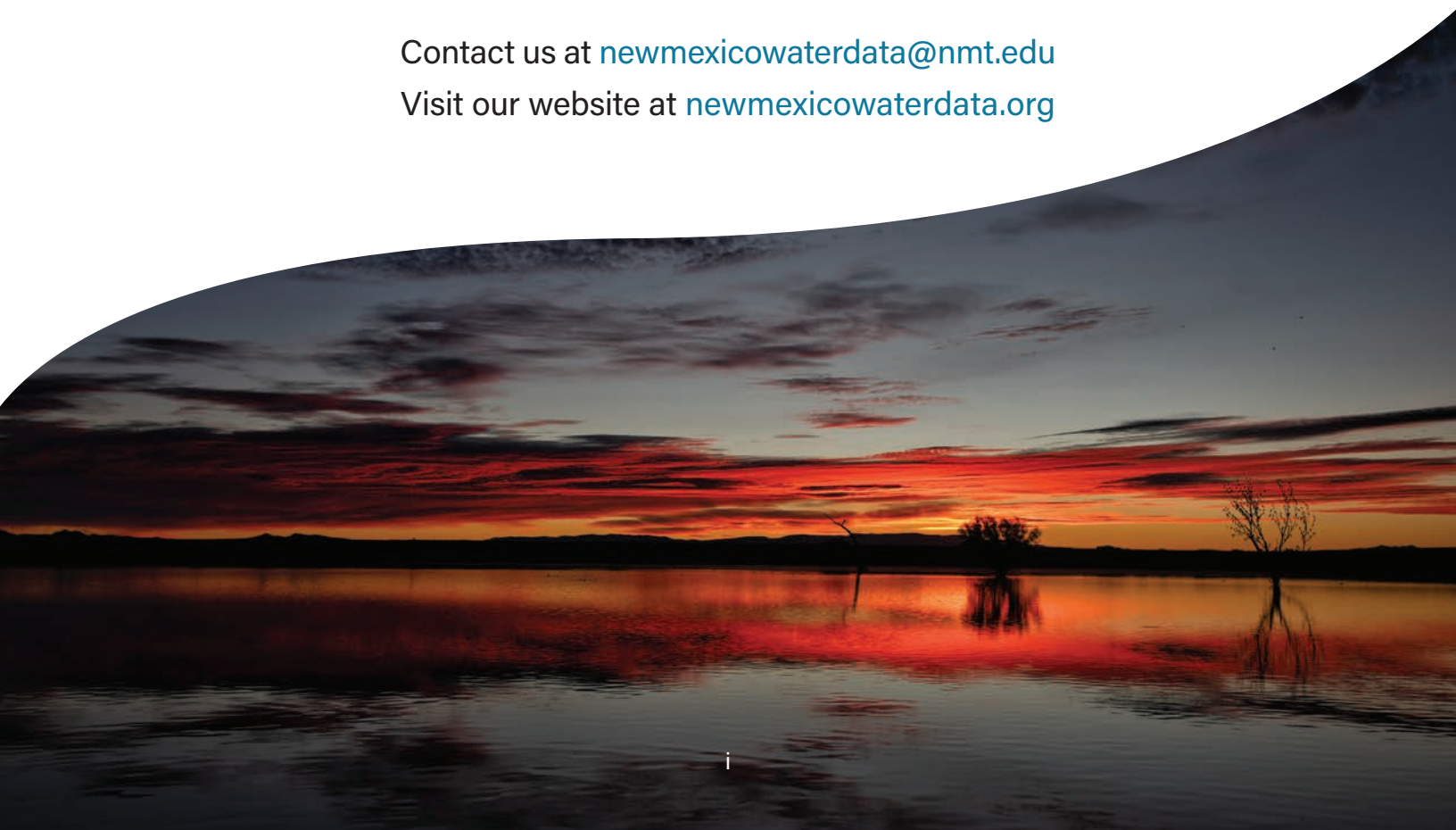
This plan was prepared by the New Mexico Bureau of Geology and Mineral Resources in partnership with the New Mexico Environment Department; New Mexico Energy, Minerals and Natural Resources Department; New Mexico Office of the State Engineer; and New Mexico Interstate Stream Commission.

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Contact us at [newmexicowaterdata@nmt.edu](mailto:newmexicowaterdata@nmt.edu)  
 Visit our website at [newmexicowaterdata.org](http://newmexicowaterdata.org)



## Executive Summary

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As of the publication of this document, the Water Data Act (NMSA 1978, § 72-4B) has been in effect for over four years. During that time, it has only become even more apparent that findable, accessible, interoperable, and reusable (FAIR) water data are essential for informed water management and planning in New Mexico. Facing extended drought and climate change, New Mexicans are feeling the effects of reduced water supply and occasional water outages. Having ready access to data helps us more quickly address these challenges and evaluate resilient options. This collaborative project with five directing state agencies, along with local, regional, and federal partners, is referred to here as the Water Data Initiative or WDI. The WDI is convened by the New Mexico Bureau of Geology and Mineral Resources (NMBGMR) working with the New Mexico Environment Department (NMED); New Mexico Energy, Minerals and Natural Resources Department (EMNRD); New Mexico Office of the State Engineer (OSE); and New Mexico Interstate Stream Commission (ISC).

Directing agencies participating in the Water Data Act have experienced a gradual increase in funding throughout the past four years. In its first year, NMBGMR was funded with \$110,000 in recurring state funds. Now, in state fiscal year 2024, the State of New Mexico has increased its support to include \$785,000 of recurring annual funding combined for four of the five directing agencies named in the Water Data Act. With this support, the directing agencies have been able to fill staff positions, improve internal data management, and develop initiatives to support data sharing. However, the funding received so far only represents approximately 25% of the long-term recurring costs needed by the agencies involved.

This document describes some of the advancements the WDI has made over the last year, the goals it has achieved, and the challenges it faces. Also included are goals and funding needs for each directing agency participating in the WDI for the upcoming fiscal years. This 2023 Water Data Initiative Annual Plan fulfills an annual requirement for the New Mexico Water Data Act to provide information to the governor and legislators on the progress, goals, metrics, and budget requirements for improving New Mexico's water data.

### **Water Data Initiative Directing Agencies**

**New Mexico Environment Department**

**New Mexico Energy, Minerals and Natural Resources Department**

**New Mexico Office of the State Engineer**

**New Mexico Interstate Stream Commission**

**New Mexico Bureau of Geology and Mineral Resources (Convening Agency)**

## Background

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New Mexico enacted the Water Data Act (NMSA 1978, § 72-4B) in 2019 with the goal of making water data more accessible to decision makers and the public. Since the signing of the act, the five named directing agencies have been working collaboratively to **share, integrate, and manage** water data. Key water data and information are available in the WDI's data catalog ([catalog.newmexicowaterdata.org](http://catalog.newmexicowaterdata.org)). However, the data catalog is only one tool in the WDI's data-sharing toolbox. This document serves as the Annual Plan, pursuant to section 3D of the statute to report on progress made toward implementing the Water Data Act and plan for upcoming work:

*Within two hundred seventy-five days of enactment of the Water Data Act, and thereafter **annually by September 1 of each year**, the agencies shall develop and submit a plan to the governor and the appropriate interim legislative committee that details: (1) an assessment of water data and information needs to support water management and planning; (2) goals, targets and actions to carry out the purposes of the Water Data Act in the upcoming fiscal year; (3) budgetary resources to carry out the purposes of the Water Data Act; and (4) metrics for achieving the purposes of the Water Data Act.*

In 2022, NMBGMR published the report *Climate Change in New Mexico Over the Next 50 Years: Impacts on Water Resources*. This report described the effects of climate change that New Mexico can expect in the next 50 years, including rising temperatures, greater variability in precipitation, decreasing snowpack, hotter droughts, reduced river flows, and greater demands on groundwater, among other significant effects. These climate changes will lead to greater challenges for water management agencies, and access to high-quality water data will be essential to address these challenges.

Building the data and information platform that integrates multiple agencies' water data in a robust, dynamic way is a large and critical project to undertake. This is a multiyear project that will require each participating agency to make tremendous improvements in how they manage water data. Without adequate funding, progress will be slow. As New Mexico faces increasing and exceptional water uncertainty—with numerous water-management challenges and ambitious goals for water planning—it is essential that the Water Data Act be fully funded to keep pace with current and future water challenges. This is New Mexico's opportunity to break new ground and fund what we refer to as "life"—our water.

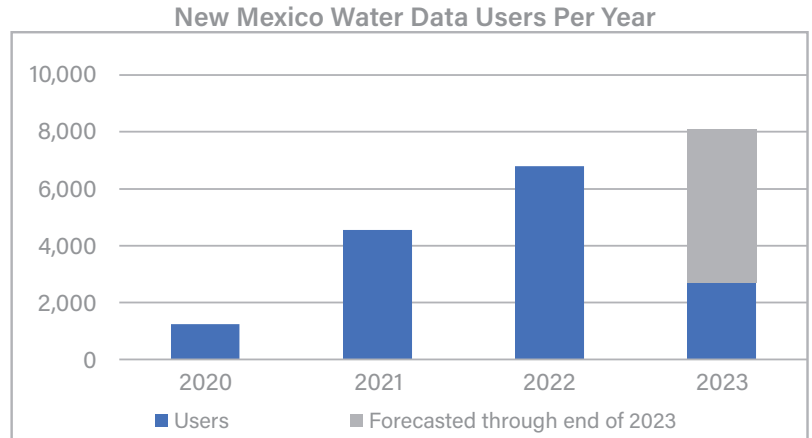
***"All water users in the state will experience decreased water availability as the climate warms and aridification occurs. This decrease in water availability will likely trigger changes in use from lower-value uses to higher-value uses, and this generally means a migration from agricultural water use to municipal/ industrial uses. New Mexico has a rich and diverse history of water use that is central to its collective identity. This permanent shift toward a more arid climate will upset the hydrologic balance that has weathered cyclical drought. The declining mean and increasing variability in the surface-water supply is not cyclical, and recovery periods will be fewer and farther between. This will require difficult and divisive policy and management decisions, undoubtedly accompanied by an increase in disputes and litigation."***

***—Climate Change in New Mexico Over the Next 50 Years:  
Impacts on Water Resources***

# New Mexicans Are Using New Mexico Water Data

## How many users?

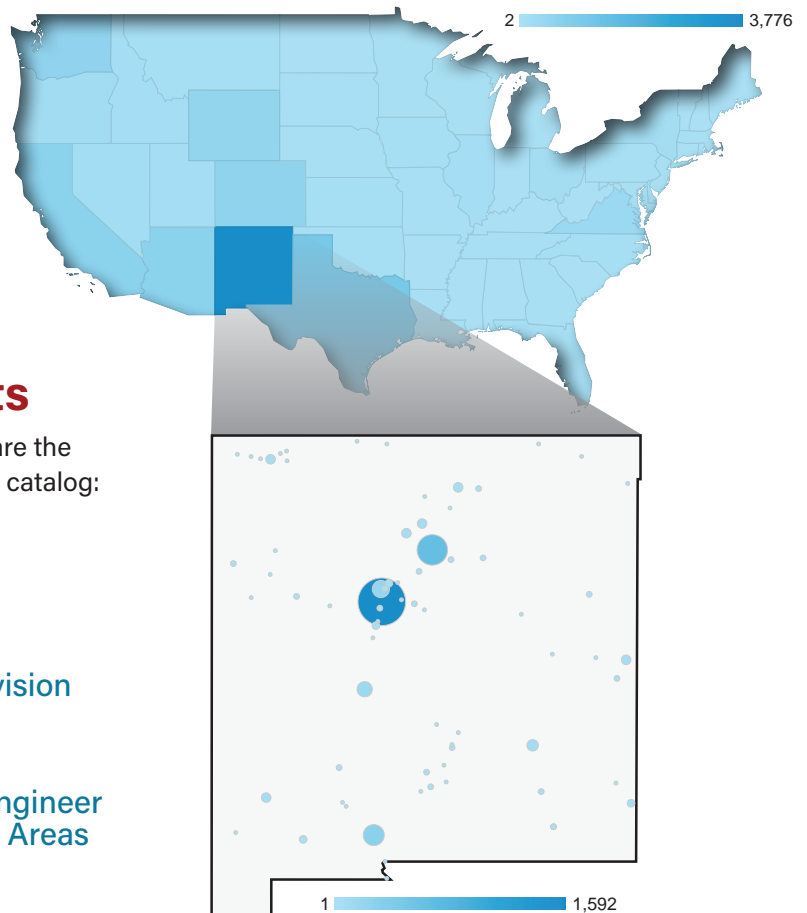
Site users at [newmexicowaterdata.org](http://newmexicowaterdata.org) have increased year over year as more people become aware of the project and the momentum of ongoing activities builds.



Data are from Google Analytics for the number of users at [newmexicowaterdata.org](http://newmexicowaterdata.org). Forecasted users for 2023 is based on the number of site users from January 1, 2023, through April 30, 2023. User data from 2020 are from August 2020 onward.

## Where are our users?

From August 2020 through April 2023, users from all 50 states visited [newmexicowaterdata.org](http://newmexicowaterdata.org). The largest group of users was from New Mexico, where there were over 3,500 unique users. Cities with the highest number of users were Albuquerque, Santa Fe, Las Cruces, and Rio Rancho. In addition, the site had users from 71 different towns across the state, including Artesia, Waterflow, Hatch, and Thoreau, to name a few.



## Most popular datasets

From January through April 2023, here are the most popular datasets in the water data catalog:



1. NMED Public Water Systems Search



2. Oil Conservation Division Well Search Tool



3. Office of the State Engineer Public Water Supply Areas

Scan the QR code to go directly to the dataset.

# Progress Made in Achieving Overall WDI Goals for FY2023

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The 2022 Annual Plan included goals for WDI agencies to address collaboratively, in addition to specific goals set by each agency. This section describes how the WDI worked toward its goals in FY2023. Individual agencies have provided reports on progress toward their specific goals in Appendix 1.

## Goal 1:

**Provide help to build directing agencies' required resources to implement the Water Data Act.**

- Increased recurring funding from 2022 legislative junior funds to NMBGMR and OSE/ISC has allowed for the hiring of several key positions and the implementation of new initiatives to enhance water data sharing.
- The WDI has made website improvements, including added developer resources, a new data visualizations page, and added map tools.
- Beyond state agencies, the WDI has added additional organizations and datasets to the water data catalog and made updates to metadata requirements.

## Goal 2:

**Grow the data-literate community among directing agencies, working with local, regional, and national data experts and data contributors.**

- The WDI hosted a Water Data Workshop on May 4, 2023, with over 130 attendees from state, local, and federal agencies; academic institutions; students; and interested community members. Sessions were held on data needs and data sharing for New Mexico.
- Representatives from NMBGMR presented about the WDI at dozens of state and national conferences, meetings, and webinars during FY2023.
- With annual recurring funding at NMBGMR and OSE, four new full-time equivalent (FTE) staff positions have been filled, which increased progress, outreach, and educational opportunities.

## Goal 3:

**Maintain stakeholder engagement and working group activities to refine data priorities and evaluate applications using water data in New Mexico.**

- Members of multiple contributing agencies continued to participate in the WDI's technical working group. This multi-agency group meets monthly to develop and refine standards and to learn from each other about New Mexico water data.
- Representatives from all five directing agencies participated in the Internet of Water Coalition's technology adoption program. This program helped agencies set interim goals to advance water data sharing.
- The WDI continued its bi-monthly newsletters and social media engagement throughout 2022 and 2023.

## Where Are We Going?

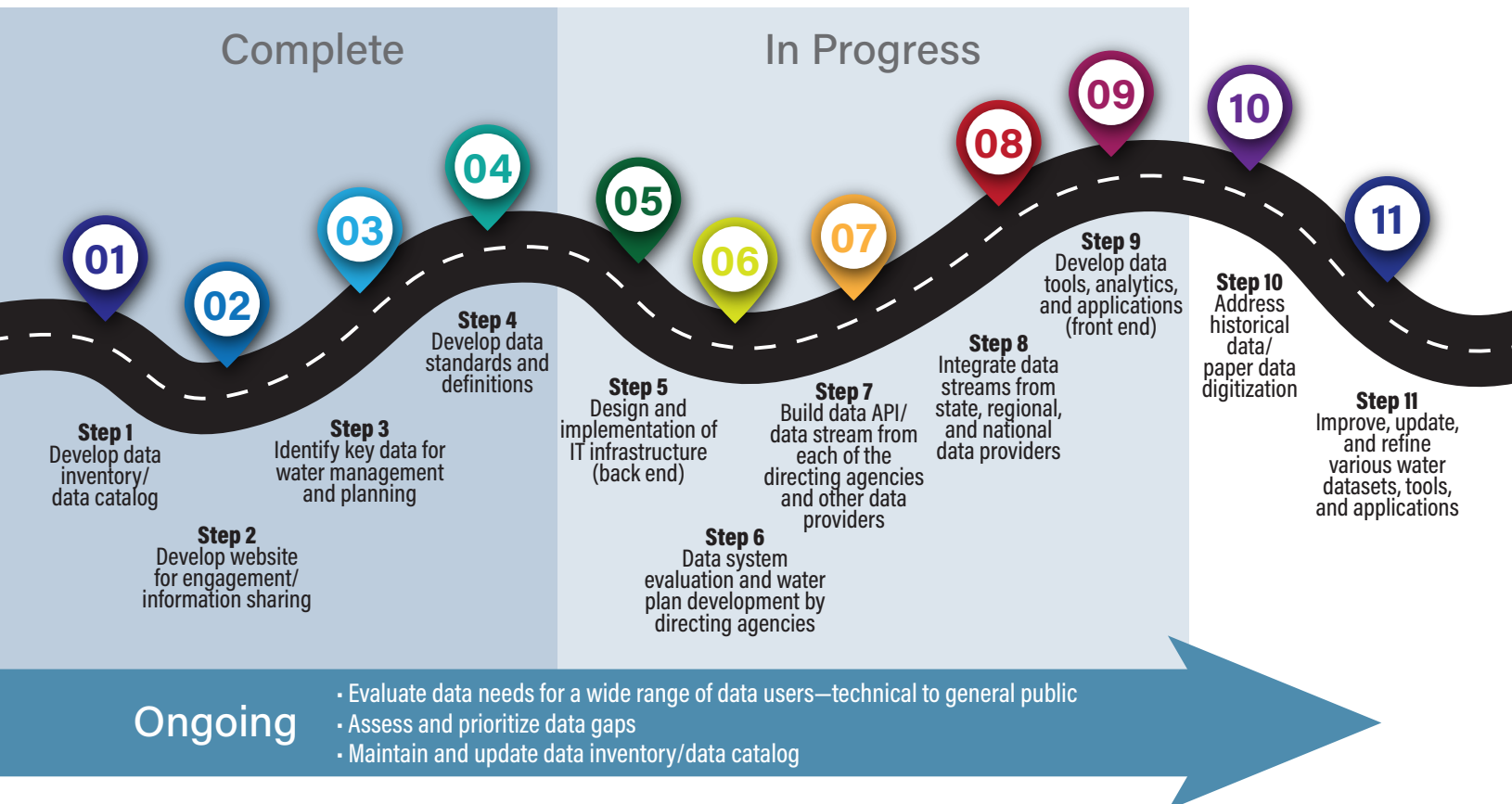
The WDI has been steadily working to share, manage, and integrate New Mexico’s water data. As shown below, many tasks are concurrently in progress. In order to keep the momentum going, the directing agencies gathered in person in September 2022 as part of the Internet of Water Coalition’s technology adoption program (TAP).

The program was designed to 1) facilitate agency-wide consensus on the need for water data modernization, 2) identify obstacles and challenges to water data modernization, and 3) deliver the high-impact behavioral and cultural change necessary to improve data use for water resources management. The goal of TAP is to provide education and training for both management and staff to implement technology adoption in their public agency.

## SUCCESS STORY: Planning for the Future

At the May 4, 2023, Water Data Workshop, EMNRD presented on the New Mexico Climate Risk Map ([nmclimaterisk.org](http://nmclimaterisk.org)). The Climate Risk Map is designed to help New Mexico communities and citizens identify the factors that contribute to their overall climate change risk. Utilizing this tool, a user can generate maps and create a local data summary report for their area of interest, such as a county or community. By creating a tool that helps New Mexico communities assess their climate risk, EMNRD is helping New Mexicans plan for the future.

## Water Data Act Roadmap



*“Data infrastructure modernization at public agencies is a complex process. It depends not only on the adoption of modern technologies, but also on an organizational and cultural evolution in how data are managed, shared, and deployed for decision-making.”*

*—Internet of Water Coalition Technology Adoption Program in New Mexico*

Some of the challenges to modernization that were identified by ALL agencies during the program include:

- Multiple data and databases with little or no standardization leads to a lack of data integrity and confidence, but also makes it difficult to produce data that are user friendly. There is a need to develop a culture that prioritizes a “standardization of sharing” rather than a “standardization of data” that addresses the difficulty in data consistency across agencies due to dissimilar ways of representing data.
- Agencies and their leadership need to thoughtfully define “data modernization” and create an environment that ensures modern data infrastructures and practices are in place. This requires buy-in from leadership, who will then report to the legislature what is required to address the needs of identified data users (both internal and external to the agency).
- Existing policies can impede data sharing, such as when data standards and rules conflict with stakeholder needs. Exacerbating this challenge is the lack of comparability of data due to a lack of standards for data and metadata, as well as a mismatch between the requirements of end users and issues of proprietary data and data privacy.
- Data continue to be collected in paper formats, increasing the legacy data problem. There is a need to harmonize different data streams to reduce the reliance on paper formats; however, this effort can be overwhelming and time consuming. To stop the use of paper formats and non-digital data, management must enforce regulations for electronic submissions.

As part of the TAP program, the agencies collaboratively developed ideas to overcome these challenges. The information gained during the program has directly informed the agency plans that are included in Appendix 2 of this document. The program was a critical step to creating strategies that both address the appropriate challenges for each agency and do so within the organization’s context and capacity. Having all agencies sharing data in machine-readable formats is a significant undertaking that will require a sustained commitment over the next several years to achieve. By consistently working toward our overarching goals, we will continue to make more water data available to New Mexicans.

## SUCCESS STORY: Dedicated Agency Members

Within each directing agency, highly motivated staff are working to make water data more accessible. Staff members at the NMED Office of Information Technology uploaded all existing sample data from the Safe Drinking Water Information System (SDWIS) to an application programming interface (API) server in WDI’s preferred format called SensorThings. This shares SDWIS data on the internet for use in multiple applications. The next steps are to create a nightly update routine and add violations, making data available in real time. Once the SDWIS data are available via API, NMED will identify data from other bureaus, such as the Surface Water Quality Bureau, that can be made available via API.



# Goals, Actions, Targets, and Metrics for FY2024

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Building on work completed since 2019, the WDI has developed broad goals for all directing agencies. Each directing agency has developed achievable actions, targets, and metrics for FY2024, which are listed in Appendix 2. The FY2024 goals for the WDI directing agencies are as follows.

## **Goal 1:**

**Maintain inter- and intra-agency communications about activities and implementation of the Water Data Act.**

Often, a small group within each agency is supporting the Water Data Act, but other programs or teams within that agency may not be aware of their work. Disseminating information about the Water Data Act within each agency is a key goal. Frequently reporting on work accomplished within the agency to other participating agencies will help increase awareness, sharing of ideas, and support between agencies. It will also be important to continue external outreach activities such as workshops and newsletters.

## **Goal 2:**

**Work with the WDI groups to build digital data availability and integration using modern web services and documentation.**

All agencies will continue to work toward the primary goal of the WDI: to make water data digitally available to the citizens of New Mexico. This could include digitizing records, updating database software, introducing automated data entry methods, or implementing modern data infrastructure such as sharing data through an application programming interface (API).

## **Goal 3:**

**Identify and communicate Water Data Act funding needs to decision makers.**

The most significant advances in 2022 have been made at agencies that have received funding specifically for WDI activities. Funding to support necessary data positions, make upgrades to data workflow, or improve data management and sharing remains key to achieving WDI goals. To that end, all agencies will work to communicate funding needs to decision makers for upcoming fiscal years.

## **Goal 4:**

**Work collaboratively within the WDI groups to develop data standards and support the maintenance of data standards.**




By learning more about data provided or used at each agency, functional data standards can be developed and implemented to make integrated data more usable. Collaboratively developed data standards, such as a metadata standard for SensorThings, is essential to the long-term sustainability of the WDI. Agencies must work together on standards so that everyone can align.








Planned data integration and transformation process

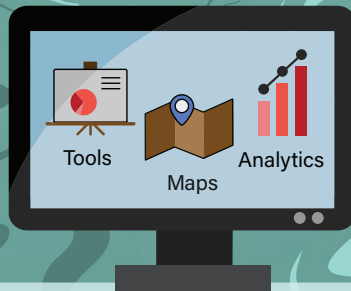
The Confluence

### Water Data Providers

-  Regional
-  State
-  Research
-  Federal

### Water Data Types

-  CKAN
-  Dataset
-  API
-  Geodatabase
-  Database



Data available to user community and developers for application and web tool development

## The Vision for Water Data Integration

To help visualize some of the complexity and data flow required to fully integrate water data (as noted at step 8 on the Water Data Act Roadmap on p. 4), this braided stream visual depicts the combination of “water data streams” from multiple regional, state, research, and federal data providers. These data providers, at the top of this figure, are the tributaries.

Each data provider can be considered an individual stream that is a tributary flowing toward a “confluence” of multiple data streams. Data providers with various internal data systems, such as databases or spreadsheets, can make data available in different ways, which are shown as channels on this figure.

For example, a state data provider such as NMED may have multiple data sources from different divisions stored in different types of data systems.

- One channel could be a geodatabase that provides the locations and water quality data from monitoring wells, served on an ArcGIS website with a REST API.
- A second channel might be a dataset with water level measurements entered into a .csv file. This file can be uploaded following a standard format to the WDI, built in our cloud-based CKAN data catalog ([catalog.newmexicowaterdata.org](http://catalog.newmexicowaterdata.org)). From CKAN, an API endpoint is also available.
- Another channel might be an internal database, such as MSSQL, storing surface water quality data. Using standard formats for water data through the SensorThings API, these data can also be made available for use.

Although each channel represents different methods of internally storing and externally sharing data, each can be shared via API. An API (application programming interface) allows a computer to share data with other computers, servers, or programs. Data shared on the internet via API are available for developers to use to make dashboards or interactive maps.

The goal is to bring all channels together at a confluence, shown as a beaver dam in this illustration, that integrates all of the data into a coherent whole. For example, all groundwater quality data will be integrated and transformed into similar units and data types. Or all groundwater level data from a variety of data providers, such as USGS, NMBGMR, and OSE, can be integrated so that analytical tools, maps, or AI applications can quickly evaluate trends. Working to build and integrate these data sources is a current focus for the WDI.

Integrated data will allow developers to use different data streams to create tools, maps, or analytics, which will allow data users to compare data from multiple providers. This will ultimately save time and make accessing and using data more efficient and effective for decision making.

# Allocated Funding

Thanks to the efforts of New Mexico legislators and agency leadership who understand the importance and urgency of the Water Data Act, funding received for the act and level of engagement has increased year over year since its enactment. The graph below illustrates the combined recurring and nonrecurring funding allocated to the WDI directing agencies since the passage of the act. During the 2022 and 2023 legislative sessions, significant recurring and nonrecurring funds were allocated to directing agencies, allowing them to make strides in hiring staff and modernizing data systems. However, there is still a significant funding need. The collaborative funding request found in the following pages describes the current funding needed by each agency.

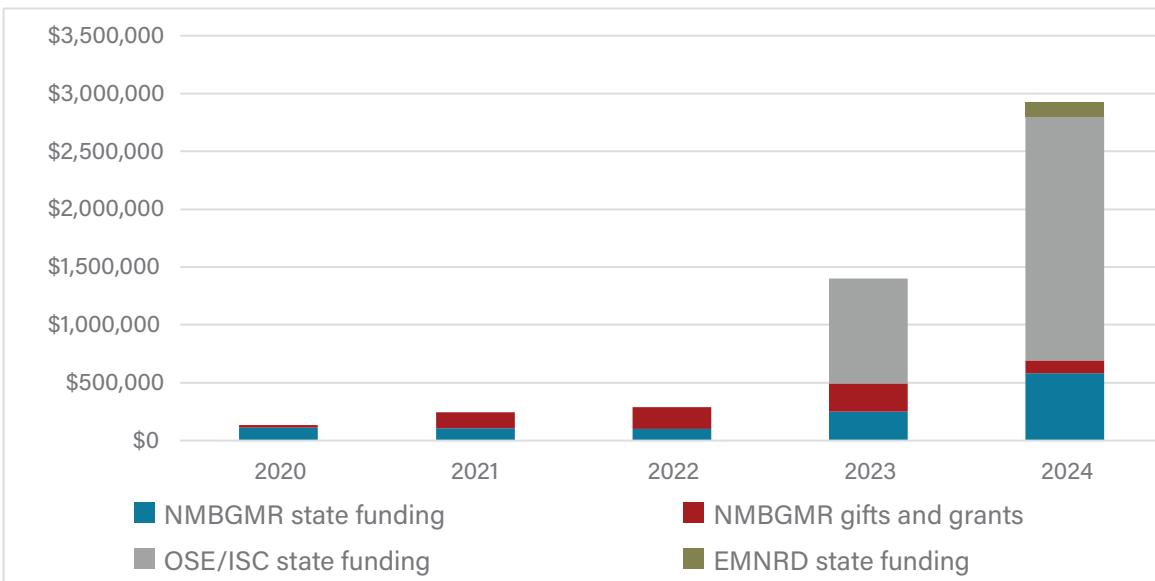
As shown in the graph below, state funds have been provided to NMBGMR over the past four years. These have been leveraged for federal grant programs and gift contributions from philanthropic organizations, including the Healy Foundation (2020–2023) and the Thornburg Foundation (2022–2023). Over the regular and special legislative sessions in 2022, new recurring (\$410,000) and nonrecurring (\$500,000) funds were allocated to OSE and ISC for FY2023. Additionally, NMBGMR received an additional \$150,000 in recurring state funding to support the Water Data Act.

During the legislative session in 2023, new recurring funding (\$125,000) was allocated to EMNRD to support an IT position for water data work. Additional nonrecurring funding was allocated to NMBGMR (\$325,000) to improve data management internally and add water data analytical tools. At OSE/ISC, \$1,695,200 from the New Mexico Department of Information Technology’s (DoIT) C2 funding is being used to improve the water rights adjudication system. To date, NMED has not received any specific state funding to implement the Water Data Act.

## SUCCESS STORY: Improvements in IT Infrastructure

The NMBGMR software development team made huge strides this year in improving the WDI data pipeline. The NMBGMR is now able to share groundwater level readings through a SensorThings API that were collected by data logging devices in the field as recently as the previous day. Hydrographs of the data are displayed on a groundwater dashboard available to the public. This pipeline is operating with minimal maintenance by the WDI team, serving as a proof of concept for our long-term data sharing goals and providing an example for other agencies to work from.

**Combined Recurring and Nonrecurring Funding for Water Data Initiative Directing Agencies**



*Funding has increased year over year for the directing agencies of the Water Data Act; however, additional funding is still needed to make the infrastructure improvements necessary for each agency.*

# Collaborative FY2025 Funding Request

## SUCCESS STORY: Funding Leads to Progress

With the passage of the Water Data Act, New Mexico became a national leader in addressing climate and water challenges by making water data a priority. The goal of the act is to identify key water data, information, and tools needed to support water management planning, develop common standards, and develop an integrated platform by coordinating the efforts of multiple agencies in the state. We are building collaborations and working groups, cataloging data, and establishing data standards. And yet there is significant work ahead to complete our digital transformation, improve the accessibility of New Mexico’s water data, and increase the efficiency of New Mexico’s water agencies.

This section lists the annual recurring and nonrecurring funding needs for each agency in FY2025. Meeting the expectations of the 2019 Water Data Act requires a significant expansion of duties and infrastructure for each agency. All the partnering state agencies require additional and sustained funding to meet and maintain the objectives of this ambitious statute. This multi-agency funding summary outlines the general needs of each agency, with more detailed information to come through each agency’s budget request.

The OSE and ISC were awarded \$410,000 in recurring funding and \$500,000 in nonrecurring funding for FY2023. This has allowed the agencies to hire three Water Data Act positions. These positions have allowed OSE and ISC to initiate several new projects to enhance the sharing of water data, including setting up a server to share water data via an API. The hiring of a water data liaison position has increased communication about water data both within ISC and OSE as well as with the public. The agencies were also able to tackle a multi-division taxonomy project to help align data of similar nature in different databases.

**Annual Recurring Funding Received: \$785,000**

**Annual Recurring Funding Still Needed: \$2.875M**

State Agency	Annual Recurring Funding Acquired	Annual Recurring Funding Still Needed	Nonrecurring Funding Needed (FY2025)	Staffing Needs
NMED	None	\$975,000	\$575,000	<b>5 FTEs</b> 2 FTEs in IT section 2 FTEs in Water Protection Division 1 FTE in Resource Protection Division
EMNRD	\$125,000	\$125,000	\$900,000	<b>2 FTEs</b> Funding for 1 FTE in IT section acquired in FY2024 1 FTE needed in IT section
OSE/ISC	\$410,000	\$1,275,000	\$1,100,000	<b>10 FTEs</b> Funding for 3 FTEs in IT section acquired in FY2023 7 FTEs needed in IT and management divisions
NMBGMR (convening agency)	\$250,000	\$500,000	\$300,000	<b>6 FTEs</b> Funding for 2 FTEs acquired in FY2023 4 FTEs needed in IT services, support, and management positions
<b>GRAND TOTAL</b>	<b>\$785,000</b>	<b>\$2,875,000</b>	<b>\$2,875,000</b>	<b>23 NEW state jobs total</b> <b>6 already funded</b>

FTE = Full-time equivalent

## New Mexico Environment Department

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

### Staffing Needs

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

### Funding Requirements

Annual recurring estimate: \$975K  
One-year nonrecurring estimate: \$575K

## New Mexico Energy, Minerals and Natural Resources Department

The EMNRD plans to make improvements to automate data compilation and collection; build structured, standardized databases; and develop and maintain data access points using APIs. This work will be supported by three divisions within EMNRD that collect water data.

### Staffing Needs

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

### Funding Requirements

Recurring funding received FY2024: \$125K  
Annual recurring estimate: \$125K  
One-year nonrecurring estimate: \$900K

## New Mexico Office of the State Engineer/ Interstate Stream Commission

The OSE/ISC needs additional funding for improved water data collection and reporting systems, data management upgrades, and improved data sharing capabilities to carry out the following duties at 21st century speed: plan for and respond to water shortages and emergencies, decrease time to carry out regulatory processes, and rapidly investigate public concerns. Additional funding is essential to build staff capacity, convert paper processes to electronic processes, digitize paper data more quickly, and upgrade or construct information technology infrastructure at agency offices statewide.

### Staffing Needs

10 FTEs (in IT services, OSE, and ISC positions)

### Funding Requirements

Recurring funding received FY2023: \$410K  
Nonrecurring funding received FY2024: \$1.69M  
Annual recurring estimate: \$1.27M  
One-year nonrecurring estimate: \$1.1M

## New Mexico Bureau of Geology and Mineral Resources (under Higher Education/New Mexico Tech)

The NMBGMR 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, 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 acting as a data provider.

### Staffing Needs

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

### Funding Requirements

Recurring funding received FY2023: \$250K  
Nonrecurring funding received FY2024: \$325K  
Annual recurring estimate: \$500K  
One-year nonrecurring estimate: \$300K

In 2022, Governor Michelle Lujan Grisham authorized the State Engineer to form a Water Policy and Infrastructure Task Force of water and natural resources experts, senior state agency staff, and stakeholders from around New Mexico to study the problems of climate change.

A key recommendation from the Task Force is that New Mexico:

***“Fully fund the 2019 Water Data Act (NMSA 1978, § 72-4B) with recurring and nonrecurring funding needs set forth in the most recent Water Data Initiative annual plan, thereby making reliable water data and information widely available for water resource problem solving.”***

***—New Mexico Water Policy and Infrastructure Task Force Final Report***

## Impact

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Even in a year with higher-than-average snowpack, questions about water allocation remain critical to the people of New Mexico. Just as the effects of climate change will not reveal themselves overnight, transitioning to a modernized data sharing infrastructure across New Mexico’s water management agencies is a project that requires sustained commitment into the future. In the past year, each agency made upgrades to their IT systems, hired staff, and developed tools. Each of these small steps brings us closer to making comprehensive water data available to New Mexicans.



# Appendix 1

## Directing Agency Reports on Progress from Previous Year

This appendix includes a report from each of the directing agencies describing how their agency worked toward the goals of the Water Data Act over the past reporting period.





## New Mexico Environment Department

The following provides a status update summary of NMED activities related to the 2022 (FY2023) Water Data Initiative Annual Plan.

### **FY2023 Goal 1: Maintain agency internal and external communications about water data.**

John Rhoderick, director of the Water Protection Division (WPD) at NMED, is the agency point of contact (POC). Environment Department staff from the Ground Water Quality Bureau (GWQB), Surface Water Quality Bureau (SWQB), Drinking Water Bureau (DWB), Petroleum Storage Tank Bureau (PSTB), and Office of Information Technology (OIT) meet quarterly to review progress and realign activities to move forward with implementation of the Water Data Act. The PSTB has appointed a new POC, Corey Jarrett, geoscientist, in FY2023. Communications have been primarily through email and in-person meetings with the WDI team and NMED POC John Rhoderick on a quarterly basis. The PSTB has also engaged Jim Gibb, geoscientist supervisor, in participating in Water Data Act implementation. Communication has been maintained, and PSTB has engaged in all meetings in FY2023.

### **FY2023 Goal 2: Implement a plan for engaging in the Water Data Act.**

The NMED continues to work on digitizing all paper data, and received funding from the legislature through Infrastructure Capital Improvement Plan authorization to develop a consolidated records repository. Funding to begin digitization of paper records has been authorized through DoIT C2 funding to OIT, and digitization is anticipated to begin in FY2024. The NMED continues to pursue funding to add dedicated staff in WPD and PSTB to manage information. Additionally, NMED has identified funding to move forward with acquisition of database solutions to allow electronic handling of all water data.

The PSTB has performed an initial evaluation of existing water data that is used by the agency, and is currently investigating agency needs and best practices for implementing a database to host water quality and spatial data that uses the Microsoft Power Platform. The PSTB has engaged two staff members new to the Water Data Act with experience in databases to lead communication, evaluation, and investigation for implementing Water Data Act needs: Corey Jarrett, geoscientist, and Jim Gibb, geoscientist supervisor.

### **FY2023 Goal 3: Build digital data availability and integration using modern web services and documentation.**

The PSTB has continued to maintain spatial data for facilities and releases using the Open Enviro Map app on the NMED website, and provides water data through PDF reports linked to each facility or release. The PSTB is still evaluating workflows and best practices to collect, host, and make water quality data available to the public using the Microsoft Power Platform database and to share using an API.

### Agency-Specific Goals

- Acquire and implement new databases for GWQB, SWQB, and PSTB.

*The NMED is working toward this goal, but has not yet been able to acquire and implement needed databases due to delays in development.*

- Complete development of the process to automatically upload daily sampling data from the Safe Drinking Water Information System (SDWIS) and Drinking Water Watch. Once completed and operational, share the developed process with other states.

*Zack Stauber (OIT) was able to upload all existing sample data from SDWIS to the SensorThings API (STA) servers, which use a software that implements the STA standards called FROST. Next steps are to create a nightly update routine and add in violations as well. The SDWIS data come from DWB, so once the bulk of DWB data are available through STA, SWQB data will be prioritized.*

- Continue work on water data features to share by API.

*The OIT has not added any additional staff but has come close to full staffing levels over the past few months, with one employee with experience in creating APIs working closely with SWQB.*

- Include new data features on current web mapping services.

*The OIT and PSTB jointly have met with WDI coordinators to discuss laying the groundwork for linking current PSTB digital data in the WDI's catalog website, and to plan for some eventual work getting PSTB remediation monitoring well data into digital form.*

- Initiate paper data digitization.

*Scheduled to begin in FY2024.*

- Build capacity by adding staff in OIT, GWQB, SWQB, DWB, and PSTB to develop, maintain, and expand NMED's ability to make data available to the public.

*Budget has not allowed for expansion of staff, and NMED still struggles with high vacancy rates. The NMED continues to pursue a dedicated budget.*

- Explore funding sources to cover ongoing costs of developing, implementing, and maintaining necessary staff and resources to fully implement the Water Data Act.

*Ongoing.*

## New Mexico Energy, Minerals and Natural Resources Department

The following provides a status update summary of EMNRD activities related to the 2022 (FY2023) Water Data Initiative Annual Plan.

### **FY2023 Goal 1: Maintain agency internal and external communications about water data.**

Goal 1 has been met by Kevin Myers continuing as the EMNRD point of contact. Staff from EMNRD participated in the September 2022 workshop at the Randall Davey Audubon Center and a planning meeting held by NMBGMR in March 2023, both in Santa Fe. A good cross section of the agency participated in the workshop and meeting, including Internet Technology Office (ITO), Energy Conservation Management Division (ECMD), Mining and Minerals Division (MMD), and upper management. Some additional conversations have been held for each legislative session about the proposed EMNRD budgetary needs for the Water Data Act. Otherwise, EMNRD communication and meetings related to water data have been relatively few because of the lack of funding through FY2023. Additional conversations in the last quarter will continue between ITO and MMD with respect to the one FTE funded for FY2024.

### **FY2023 Goal 2: Implement a plan for engaging in the Water Data Act.**

Goal 2 was partially met by submittal of the budget for the 2023 legislative session. The funding request's partial fulfillment with a new ITO position for FY2024 will allow for some planning steps prior to July 2023 to identify duties for implementation of a limited number of tasks. This FTE is recurring funding, and nonrecurring costs were not provided for FY2024. Additional funding will be requested for FY2025 to implement all proposed tasks, and EMNRD can begin to implement some tasks in FY2024.

### **FY2023 Goal 3: Build digital data availability and integration using modern web services and documentation.**

Goal 3 has not been met. However, in October 2022, ITO added the Oil Conservation Division (OCD) data feed for the induced seismicity response protocol forms and data. These are required for injection wells within a 10-mile proximity to seismic events that are induced in nature. The ITO will select some duties for the new staff person, such as making data more API-accessible for the MMD Coal Program's water quality data. The new IT application developer II (or similarly titled position) will be advertised and filled after July 1, 2023.

## New Mexico Office of the State Engineer and Interstate Stream Commission

The following provides a status update summary of OSE/ISC activities related to the 2022 (FY2023) Water Data Initiative Annual Plan.

### **FY2023 Goal 1: Maintain agency internal and external communications about water data.**

Edward Rivera has been hired as the IT Water Data Business Liaison for OSE/ISC and is serving as the point of contact for the OSE/ISC regarding the WDI. Staff from OSE/ISC have participated in inter-agency meetings convened by NMBGMR, including a meeting in Santa Fe in September 2022 discussing technology adoption, an in-person meeting in Santa Fe in March 2023 discussing WDI goals and planning, and an inter-agency water data workshop open to the public and hosted by NMBGMR in Socorro in May 2023 with a diverse group representing OSE/ISC. Intra-agency WDI virtual meetings of the technical working group are held monthly and mostly attended by IT staff. Communication has improved with the recent addition of staff, which has allowed for interviews with internal water data users and increased communication with NMBGMR.

### **FY2023 Goal 2: Implement a plan for engaging in the Water Data Act.**

The funding and support from the 2022 New Mexico legislative session enabled OSE/ISC to better realize the intent of the Water Data Act to “identify and integrate key water datasets.” The OSE has created three new permanent positions, including an IT Water Data Business Liaison and two application developers. These permanent positions will work toward implementing the Water Data Act. Technology adoption and modernization have progressed with a new contract to modernize an existing application and databases, and development continues with the goal of implementing a SensorThings API to meet WDI technical needs. Resources are available to identify and address communication gaps, water data inventory, and technology gaps. Issues such as data quality, staffing, and communication have been identified and will be addressed in this plan.

### **FY2023 Goal 3: Build digital data availability and integration using modern web services and documentation.**

The OSE/ISC has a history of making data publicly available from the [OSE/ISC](#) website, and 15 datasets are publicly available on the New Mexico [water data site](#)/data catalog. The OSE IT application developers currently have a test FROST-Server and have deployed a FROST-Server to their local environments. Development continues to build out the API for data sharing. The OSE Information Technology Services Bureau application development team has been working to implement the data service layer to interface with the OSE WATERS database. The interface to the WATERS data objects is complete, and OSE is currently working to confirm that all the relationships in the interface between these objects are valid. The immediate development priorities are to complete the interface relationships and work toward sharing the measurement data via the SensorThings API.

The following points serve as a summary of OSE/ISC goals from the 2022 (FY2023) Water Data Initiative Annual Plan.

- The OSE/ISC has demonstrated its support for the WDI by securing more human resources and modernizing existing IT assets.
- Two application developers were hired to focus on the WDI.
- An IT Water Data Business Liaison was hired to focus on the WDI.
- The modernization of existing water data applications is under development.
- The SensorThings API interfaces are being developed.

- Inter-agency communication is ongoing and increasing.
- The agency is engaged in a taxonomy initiative with the goal of standardizing language use and naming conventions across business applications, programs, and bureaus. This initiative will improve water data quality.
- The water data inventory is currently under development.
- New water datasets have been identified and shared on the New Mexico water data site.

## New Mexico Bureau of Geology and Mineral Resources

The following provides a status update summary of NMBGMR activities related to the 2022 (FY2023) Water Data Initiative Annual Plan. Data at NMBGMR include groundwater level measurements, stream flow measurements, spring characteristics, water quality data, environmental tracers and age data of water, precipitation data, and interpretations such as mapping of aquifers with geology.

### **FY2023 Goal 1: Maintain agency internal and external communications about water data.**

- Oversaw the publication of eight newsletters in FY2023, in addition to numerous social media and blog posts about WDI activities.
- Convened meetings in March 2023 with each of the directing agencies to plan for the coming year and discuss goals and needs.
- Held an internal meeting in December 2022 to disseminate water data information to personnel in the Aquifer Mapping Program.
- Helped coordinate and participated in the Internet of Water Coalition's technology adoption program.
- Hosted the water data workshop on May 4, 2023. There were over 130 attendees from state and federal agencies and academic institutions, as well as interested community members.
- Bureau personnel participated in numerous conferences, webinars, workshops, and meetings to increase awareness of the WDI.
- Convenes and directs the WDI technical working group.
- Participates in monthly meetings with OSE to discuss infrastructure updates.
- Contributed to a national water data tool—Geoconnex—developed by the Internet of Water Coalition to improve data access globally.

### **FY2023 Goal 2: Implement a plan for engaging in the Water Data Act.**

- The NMBGMR leads the annual planning efforts, and coordinated the drafting and publication of this document.
- Coordinated with state decision makers on upcoming budgets during the 2023 legislative session.
- The NMBGMR was awarded funding by the U.S. Bureau of Reclamation for a WaterSMART applied science grant. This grant will help fund work to increase the availability of data for modeling work performed by ISC in the middle Rio Grande.
- This year, NMBGMR filled the position of Water Data Program Manager, its first full-time staff member dedicated to the WDI.

**FY2023 Goal 3: Build digital data availability and integration using modern web services and documentation.**

- The NMBGMR has developed a fully automated data pipeline, which allows data to be shared by the bureau's SensorThings API endpoint and automatically updated on a daily basis.
- The NMBGMR is currently collaborating with the Pecos Valley Artesian Conservancy District (PVACD) to build web applications to help manage and share data in the Pecos Valley region of southern New Mexico. This work is part of a U.S. Bureau of Reclamation WaterSMART applied science cooperative grant, which began in 2020.
- One application in development will provide improved, web-based data management for the PVACD team. This will allow PVACD to track the water meters installed on wells in the district, and improve coordination and data sharing with the regional Water Master at OSE.
- Another tool NMBGMR has developed with PVACD is a data system and data collection instrumentation for the PVACD team and local collaborators, with data access and quick visualizations of groundwater change over time.
- The NMBGMR maintains a partial FTE to curate the data catalog, continually working to add new datasets and organizations to the WDI data catalog.
- The NMBGMR implemented a new web-based form for data entry into the Aquifer Mapping Program database.

# Appendix 2

## Directing Agency Planning

Each of the directing agencies was asked to provide an outline or plan to describe how their agency will participate in the Water Data Act in the upcoming years, and to provide estimates for budgetary requirements that would expedite the goals of the act. This information is presented here for the purpose of estimating what an agency needs to meet the requirements of the act; it should not be considered an official budget request. It is critical that meeting this need does not take away from directing agencies' ability to conduct their current missions and goals. Funding the Water Data Act will require expansions to agency budgets. However, due to the increased agency efficiency that will result from funding this effort, this investment will pay for itself in the coming years. Large IT projects, such as large database replacements and multiyear data digitization efforts, will be directed through the DoIT C2 computer system funding process.





## New Mexico Environment Department

The following section provides goals for NMED for FY2024 and budgetary needs starting in FY2025 for the next five years.

### **Goal 1: Maintain inter- and intra-agency communications about activities and implementation of the Water Data Act.**

**Action:** The PSTB will maintain a staff member to be the designated point of contact (POC) for the Water Data Act. This person will work with NMED's POC and WDI teams to periodically check within PSTB to evaluate progress on goals and data sharing, or to set plans for future years with PSTB management.

**Metric:** The PSTB will maintain a POC for the Water Data Act.

**Target:** Improved communication and understanding of the steps needed to implement the Water Data Act will be achieved by designating and maintaining a consistent POC for communication with other NMED bureau POCs and the WDI team.

### **Goal 1A: Continue collaboration with OSE and EMNRD through the Water Policy and Infrastructure Task Force.**

**Action:** The NMED will remain actively engaged with OSE/ISC and EMNRD on issues of both water quantity and quality throughout New Mexico.

**Metric:** The NMED will meet at least quarterly with OSE/ISC and EMNRD to coordinate water management efforts, including data management.

**Target:** Increased communication between NMED, OSE/ISC, and EMNRD.

### **Goal 2: Work with the WDI groups to build digital data availability and integration using modern web services and documentation.**

**Action:** The PSTB will continue to investigate and evaluate agency needs and best practices while working with other WDI agencies to ensure a consistent approach on a standardized platform.

**Metric:** The PSTB will participate in upcoming meetings and projects to address WDI digital data availability and integration needs and build a knowledge base for PSTB data integration.

**Target:** Identification of data and metadata required for integration of PSTB water quality and spatial data into NMED standardized databases.

### **Goal 3: Identify and communicate Water Data Act funding needs to decision makers.**

**Action:** The NMED will review funding needs and progress quarterly, and will brief executive leadership in preparation for requests for capital outlay and other legislative special funding requests prior to the next legislative session.

**Metric:** Review budgetary needs quarterly and provide updates to executive leadership.

**Target:** Prepare funding requests for capital outlay and other legislative funding for two years.

**Goal 4: Work collaboratively within the WDI groups to develop data standards and support the maintenance of data standards.**

**Action:** The PSTB will communicate and compare findings of data and best practices evaluations and investigations with the WDI groups to ensure PSTB data meet data standards.

**Metric:** The PSTB will participate in meetings, sharing the evaluation results and data needs with the WDI group and building a knowledge base for implementing and maintaining data standards.

**Target:** Participation in upcoming meetings of WDI groups and updating PSTB needs based on feedback.

**Agency Budgetary Needs**

Type of Cost	Funding in Place*	Projected Costs					TOTAL
		FY2025	FY2026	FY2027	FY2028	FY2029	
Nonrecurring	\$0	\$575,000	\$525,000	\$0	\$0	\$0	\$1,100,000
Recurring: services, contracts, licensing, etc.	\$0	\$450,000	\$450,000	\$450,000	\$450,000	\$450,000	\$2,250,000
Recurring staff costs	\$0	\$525,000	\$525,000	\$525,000	\$525,000	\$525,000	\$2,625,000
<b>TOTAL</b>	<b>\$0</b>	<b>\$1,550,000</b>	<b>\$1,500,000</b>	<b>\$975,000</b>	<b>\$975,000</b>	<b>\$975,000</b>	<b>\$5,975,000</b>

\* Recurring funding in place will be applied toward the projected costs for each upcoming FY.

**FY2025**

**Recurring:** Web hosting, data integration, database maintenance, and staffing (2 FTEs in IT, 2 FTEs in Water Protection Division, and 1 FTE in Resource Protection Division) to manage data coordination and IT interface.

**Nonrecurring:** Database acquisitions, integrations, and digitizing services.

**FY2026**

**Recurring:** Web hosting, data integration, database maintenance, and staffing (2 FTEs in IT, 2 FTEs in Water Protection Division, and 1 FTE in Resource Protection Division) to manage data coordination and IT interface.

**Nonrecurring:** Digitizing services and database customizations.

**FY2027**

**Recurring:** Web hosting, maintenance, and staffing (2 FTEs in IT, 2 FTEs in Water Protection Division, and 1 FTE in Resource Protection Division) to manage data coordination and IT interface.

**Nonrecurring:** None.

**FY2028**

**Recurring:** Web hosting, maintenance, and staffing (2 FTEs in IT, 2 FTEs in Water Protection Division, and 1 FTE in Resource Protection Division) to manage data coordination and IT interface.

**Nonrecurring:** None.

**FY2029**

**Recurring:** Web hosting, maintenance, and staffing (2 FTEs in IT, 2 FTEs in Water Protection Division, and 1 FTE in Resource Protection Division) to manage data coordination and IT interface.

**Nonrecurring:** None.

**Ongoing costs**

Going forward, NMED estimates that approximately \$975,000 per year will need to be allocated to maintain IT infrastructure and staff to ensure continued implementation of the Water Data Act. The NMED will be seeking funding from multiple sources, including legislative appropriations, federal grants, and infrastructure capital improvement plan appropriations, to meet the financial requirements of implementing the Water Data Act.

**Summary**

The NMED estimates it would need \$5,975,000 over five years for the agency to develop, implement, and support technology infrastructure to improve the agency's water data collection, data management, data documentation, and data access through APIs to fulfill its responsibilities under the Water Data Act. The NMED expects that ongoing funding after the first five years of development and implementation will be necessary to meet the requirements of the Water Data Act, and ongoing maintenance and upgrade costs are estimated to be approximately \$975,000 per year.

## New Mexico Energy, Minerals and Natural Resources Department

The following section provides goals for EMNRD for FY2024 and budgetary needs starting in FY2025 for the next five years.

### **Goal 1: Maintain inter- and intra-agency communications about activities and implementation of the Water Data Act.**

**Action:** Continue active participation in inter- and intra-agency communications with EMNRD point of contact, key staff, and upper management.

**Metric:** Requires active participation and communication both inside and outside EMNRD for topics related to the Water Data Act.

**Target:** The EMNRD point of contact providing timely responses to NMBGMR, attending workshops and meetings, keeping EMNRD informed, and learning about water data implementation at other agencies. The frequency of contact will be at least monthly inside EMNRD and quarterly outside the department.

### **Goal 2: Work with the WDI groups to build digital data availability and integration using modern web services and documentation.**

**Action:** Will be advanced by the start of one full-time ITO position with specific job duties and support for the new hire.

**Metric:** The number of dedicated IT staff working toward water data technical goals.

**Target:** One dedicated IT staff.

### **Goal 3: Identify and communicate Water Data Act funding needs to decision makers.**

**Action:** Assist with steering committee meeting and scheduling.

**Metric:** Requires informing upper management of goals and budgetary needs for FY2025.

**Target:** Measured by EMNRD participation at steering committee annual meeting and intra-agency communication of Water Data Act budgetary needs for FY2025 budget cycle.

### **Goal 4: Work collaboratively within the WDI groups to develop data standards and support the maintenance of data standards.**

**Action:** The EMNRD will participate in data groups.

**Metric:** Requires attending one or more groups on data standards development and maintenance.

**Target:** Measured by the newly hired data analyst or other EMNRD staff participating in one or more data standards groups.

### Agency Budgetary Needs

Type of Cost	Funding in Place*	Projected Costs					
		FY2025	FY2026	FY2027	FY2028	FY2029	TOTAL
Nonrecurring OCD	\$0	\$400,000	\$300,000	\$100,000	\$100,000	\$100,000	<b>\$1,000,000</b>
Nonrecurring MMD	\$0	\$500,000	\$100,000	\$100,000	\$100,000	\$100,000	<b>\$900,000</b>
Recurring: services, contracts, licensing, etc.	\$0	\$0	\$0	\$0	\$0	\$0	<b>\$0</b>
Recurring staff costs ITO	\$125,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	<b>\$1,250,000</b>
<b>TOTAL</b>	<b>\$125,000</b>	<b>\$1,150,000</b>	<b>\$650,000</b>	<b>\$450,000</b>	<b>\$450,000</b>	<b>\$450,000</b>	<b>\$3,150,000</b>

\* Recurring funding in place will be applied toward the projected costs for each upcoming FY.

### Ongoing costs

The first year of funding for one ITO position is FY2024, and the specific duties will be developed for advertising an IT application developer II position.

### Summary

Funding for one ITO position represents only 20% of the five-year budgetary needs in the table above. Since this was not fully funded during the January–February regular legislative session, the estimates made earlier in 2022 continue as the basis for FY2025 requests. The EMNRD ITO developed a business case that estimated total cost of ownership using recurring and nonrecurring costs that considered new and existing data projects. The MMD’s Coal Program also estimated costs necessary for updating and transitioning its coal water quality dataset. Any funding will require a further assessment of priorities and next steps to begin implementation through the procurement process and assigning tasks within EMNRD for projects selected. Part of the assessment will set boundaries on the extent of paper and electronic data that are not yet in a findable, searchable, and usable form for an API-accessible database.

### Key project activity areas

- Identify key data for water management and planning
- Develop data standards and definitions, especially for data feeds primarily provided by EMNRD
- Design and implement IT infrastructure required to support APIs
- Evaluate data system
- Create agency data-specific water data plan
- Build data API/data stream
- Develop data tools, analytics, and applications for public and partners
- Address historical data/paper data digitization
- Improve, update, and refine various water datasets, tools, and applications

***EMNRD data feeds that have been identified as part of WDI and are planned to be in scope for our API implementations***

- Oil Conservation Division
  - ◇ Produced water volumes
  - ◇ Injected and disposed water volumes
  - ◇ Water dispositions (related to oil and gas properties)
  - ◇ Recycled water volumes
  - ◇ Hydraulic fracturing volumes
    - Water use reports
    - Hydraulic fracturing chemical disclosures (e.g., list of chemicals used in each frack)
  - ◇ Daily water injection reports for injection wells affected by induced seismicity
  - ◇ Remediation-related water quality test reports (C-141)
  - ◇ Groundwater abatement plan-associated water data
  - ◇ Discharge permit-associated water data
- Mining and Minerals Division
  - ◇ Coal water quality data
- State Parks
  - ◇ Weekly reservoir water level data
- More data feeds are expected

***Primary tasks for IT personnel supporting Water Data Act implementation***

- Development and support of multiple publicly facing APIs, including geospatial capabilities, that support programmatic inquiry into all of EMNRD's water data.
- Development of automated/paperless processes related to water data collection that will replace current unstructured/manual processes and that will result in data in structured databases and not disorganized files in non-standard formats.

## New Mexico Office of the State Engineer and Interstate Stream Commission

The following section provides goals for OSE/ISC for FY2024 and budgetary needs starting in FY2025 for the next five years.

### **Goal 1: Maintain inter- and intra-agency communications about activities and implementation of the Water Data Act.**

**Action:** The OSE/ISC will create a comprehensive communication plan focusing on internal users, inter-agency users, and other entities. The NMBGMR hosts most of the inter-agency meetings and communications. However, OSE/ISC will collaborate with NMBGMR to expand outreach to the other directing agencies.

**Metric:** This goal is measured by the number of communication channels, the frequency of the communication, and the quality of the communication.

**Target:** A clear and consistent strategy for communicating information, updates, and feedback regarding the WDI to inter- and intra-agency stakeholders and public water data consumers.

### **Goal 2: Work with the WDI groups to build digital data availability and integration using modern web services and documentation.**

**Action:** The OSE/ISC will continue with the implementation of the SensorThings API using a FROST-Server implementation. Until the SensorThings API is deployed to production, OSE will continue to make digital data available through the New Mexico water data site with links to the OSE Open Data site for source data.

**Metric:** Increased digital data availability and integration using the SensorThings API and less reliance on manually uploading files to the New Mexico water data site.

**Target:** Increase the amount of digital data available using the SensorThings API, with support from NMBGMR and key external resources like the Internet of Water Coalition.

### **Goal 3: Identify and communicate Water Data Act funding needs to decision makers.**

**Action:** Past surveys, existing documentation, and recent user feedback will be reviewed by the IT Water Data Business Liaison and OSE/ISC users to identify gaps in resources, including human resources, that are deemed critical to the success of the WDI.

**Metric:** A gap analysis will be created and shared with OSE/ISC decision makers.

**Target:** Funding gap analysis by late December every year to internal decision makers.

### **Goal 4: Work collaboratively within the WDI groups to develop data standards and support the maintenance of data standards.**

**Action:** The OSE/ISC will collaborate with internal users and other directing agencies to develop and adhere to data standards for water data.

**Metric:** Continue development of data standards in collaboration with other WDI groups and communicate those data standards among groups.

**Target:** Documented and completed water data standards by the end of the 2023 calendar year, with regular reviews and maintenance thereafter.

**Additional OSE/ISC Goals**

- Secure alternative funding sources to mitigate barriers to success for the WDI.
- Submit an RFI (request for information) to start the process of gathering information to modernize the WATERS application.

**Agency Budgetary Needs**

The OSE/ISC currently estimates that it would need approximately \$34 million through FY2029 for its activities in support of Water Data Act implementation and general agency operations that rely on vital database systems. Of this amount, an estimated \$25 million is needed just to replace the WATERS database, which is instrumental to agency functions. These activities may include, but are not limited to, the development, implementation, and support of technology infrastructure, including GIS, to improve and expand the agency’s water data collection and sharing capabilities. Activities may also include improving and expanding agency data management, development, and integration; data documentation; digitization of records; and data access through APIs to fulfill its responsibilities under the Water Data Act. Replacement of the WATERS database is essential for agency processes and will be a primary contributor to the agency’s Water Data Act data sharing. (Funding for phase II of the WRATS database replacement was received in the 2023 legislative session. Funding for database replacement will be sought through the DoIT C2 computer system funding process.)

In the 2022 legislative session, OSE/ISC received \$410,000 in recurring funding for staffing and \$500,000 in nonrecurring funding for required upgrades in security and infrastructure to meet WDI goals. Estimated ongoing maintenance and upgrade costs after the first five years, including \$410,000 per year in recurring funding, is estimated at approximately \$2 million per year.

Estimated funding breakdown over five years to reach a maintenance level is provided in the table below.

Type of Cost		Funding in Place*	Projected Costs					TOTAL
			FY2025	FY2026	FY2027	FY2028	FY2029	
Nonrecurring	OSE	\$1,695,200 (FY24) \$500,000 (FY23)	\$1,000,000	\$500,000	\$25,000,000**	\$500,000	\$500,000	\$27,500,000
	ISC	\$0	\$100,000	\$100,000	\$100,000	\$0	\$0	\$300,000
	<i>Subtotal</i>	<i>\$2,195,200</i>	<i>\$1,100,000</i>	<i>\$600,000</i>	<i>\$25,100,000</i>	<i>\$500,000</i>	<i>\$500,000</i>	<i>\$27,800,000</i>
Recurring: cloud-based services, software licensing, digitization, contracts	OSE	\$0	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000	\$2,000,000
	ISC	\$0	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$375,000
	<i>Subtotal</i>	<i>\$0</i>	<i>\$475,000</i>	<i>\$475,000</i>	<i>\$475,000</i>	<i>\$475,000</i>	<i>\$475,000</i>	<i>\$2,375,000</i>
Recurring staff costs	OSE	\$0	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$2,500,000
	Agency IT (OSE)	\$410,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$500,000
	ISC	\$0	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$1,000,000
	<i>Subtotal</i>	<i>\$0</i>	<i>\$800,000</i>	<i>\$800,000</i>	<i>\$800,000</i>	<i>\$800,000</i>	<i>\$800,000</i>	<i>\$4,000,000</i>
<b>TOTAL</b>		<b>\$2,605,200</b>	<b>\$2,375,000</b>	<b>\$1,875,000</b>	<b>\$26,375,000</b>	<b>\$1,775,000</b>	<b>\$1,775,000</b>	<b>\$34,175,000</b>

\* Recurring funding in place will be applied toward the projected costs for each upcoming FY.

\*\* Funding for database replacement will be sought through the DoIT C2 computer system funding process.



*FY2025*

**Recurring:** Web hosting services, data integration, database maintenance, software licensing, data collection, and staffing, including a database administrator for various database cleanup and restructuring projects.

**Nonrecurring:** Database acquisitions and integrations, digitizing services, database customizations, a one-time document digitization push, and an RFI (request for information) to start the process of gathering information to modernize the WATERS application.

*FY2026*

**Recurring:** Web hosting services, data integration, database maintenance, software licensing, data collection, and staffing.

**Nonrecurring:** Database acquisitions and integrations, digitizing services, and database customizations.

*FY2027*

**Recurring:** Web hosting services, data integration, database maintenance, software licensing, data collection, and staffing.

**Nonrecurring:** An estimated \$25 million will be needed to replace the WATERS database, a 25-year-old application. Database acquisitions and integrations, digitizing services, and database customizations.

*FY2028*

**Recurring:** Web hosting services, data integration, database maintenance, software licensing, data collection, and staffing.

**Nonrecurring:** Database acquisitions and integrations, digitizing services, and database customizations.

## New Mexico Bureau of Geology and Mineral Resources

The following section provides goals for NMBGMR for FY2024 and budgetary needs starting in FY2025 for the next five years.

### **Goal 1: Maintain inter- and intra-agency communications about activities and implementation of the Water Data Act.**

**Action:** Make internal and external communications from NMBGMR about the New Mexico Water Data Act more systematic and regular.

**Metric:** Internal communications to NMBGMR personnel about the WDI at least four times per year. External communications through newsletters, blog posts, or social media posts once per month on average.

**Target:** Increased awareness of Water Data Act goals and resources within NMBGMR. Increased opportunities for engagement with contributing agencies and the public.

### **Goal 2: Work with the WDI groups to build digital data availability and integration using modern web services and documentation.**

**Action:** Using FY2024 nonrecurring funding, expand and upgrade NMBGMR's internal data ecosystem, to include data ingestion processes and data management, quality control, and retrieval.

**Metric:** Implement new database and/or access to database for hydrogeology programs at NMBGMR.

**Target:** All projects within hydrogeology programs will work toward data ingestion, management, and retrieval processes that are consistent with WDI goals.

### **Goal 3: Identify and communicate Water Data Act funding needs to decision makers.**

**Action:** The NMBGMR will continue to communicate funding needs for the Water Data Act as a bureau and New Mexico Tech priority, building grant funding in the short term and building recurring state resources in the long term.

**Metric:** The NMBGMR will work to maintain funding levels at \$250,000 annually or greater, supported by state funding, with other gifts and grant opportunities.

**Target:** The NMBGMR will develop factsheets and clear documentation of funding uses and funding needs for the bureau, as well as broader WDI efforts, for decision makers.

### **Goal 4: Work collaboratively within the WDI groups to develop data standards and support the maintenance of data standards.**

**Action:** The NMBGMR will convene discussions to select, develop, and maintain metadata schemas or API formats.

**Metric:** The first draft of a metadata schema for groundwater levels will be implemented by the end of FY2024.

**Target:** Agencies and other data providers will incorporate the metadata schemas and data standards into the development of their SensorThings endpoints.

### Agency Budgetary Needs

The NMBGMR is the convening agency of the Water Data Act, tasked with providing support for Water Data Act implementation, including coordinating directing agencies and building, implementing, and supporting IT infrastructure for data service, data transformation, and reporting. Additionally, NMBGMR must improve its own water data collection, data management and documentation, and data access through automation of APIs, particularly related to the Aquifer Mapping Program.

The NMBGMR requires increased staffing and significant technical data upgrades for successfully implementing the Water Data Act. The NMBGMR estimates needing a recurring annual total of \$750,000 to support the Water Data Act and agency needs. Of this total, NMBGMR has already received \$250,000 in annual recurring funding from the state, bringing the remaining need for funding to \$500,000 in recurring costs. This funding is needed largely to support full-time positions in program management of the Water Data Act, developer positions in IT, a data manager for NMBGMR, and technical support positions. Additional remaining recurring funds are required to maintain data services and cloud-based storage, as well as periodic contract services for application development and annual software licenses.

Type of Cost		Projected Costs					TOTAL
		FY2025	FY2026	FY2027	FY2028	FY2029	
Nonrecurring		\$300,000	\$100,000	\$100,000	\$300,000	\$100,000	<b>\$900,000</b>
Recurring	Recurring staff costs	\$750,000	\$750,000	\$750,000	\$750,000	\$750,000	<b>\$3,750,000</b>
	Recurring funding in place*	(\$250,000)	(\$250,000)	(\$250,000)	(\$250,000)	(\$250,000)	
	<i>Recurring costs still needed</i>	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	<b>\$2,500,000</b>
<b>Total Projected Costs: Recurring and Nonrecurring</b>		<b>\$800,000</b>	<b>\$600,000</b>	<b>\$600,000</b>	<b>\$800,000</b>	<b>\$600,000</b>	<b>\$3,400,000</b>

\* Recurring funding in place will be applied toward the projected costs for each upcoming FY.

**Recurring annually:** Web hosting and development services, data integration, database maintenance, and FTEs for one coordinator for Water Data Act, two full stack developers (one for Water Data Act, one for NMBGMR water data), one data manager for NMBGMR water data, one Water Data Act technical support staff, and one water data liaison.

**Nonrecurring:** Outreach events, data collection improvements, and data integration.

**Ongoing:** As a water research state agency and convener of the Water Data Act, NMBGMR estimates that an additional \$500,000 per year going forward will need to be allocated to maintain internal and external IT infrastructure and staff to ensure continued functioning of the Water Data Act.

# Water Data Initiative Directing Agencies



## **New Mexico Environment Department**

Harold Runnels Building  
1190 St. Francis Drive, Suite N4050  
Santa Fe, NM 87505  
(505) 827-2855  
[env.nm.gov](http://env.nm.gov)



## **New Mexico Energy, Minerals and Natural Resources Department**

1220 South St. Francis Drive  
Santa Fe, NM 87505  
(505) 476-3200  
[emnrd.nm.gov](http://emnrd.nm.gov)



## **New Mexico Office of the State Engineer and Interstate Stream Commission**

407 Galisteo Street, Suite #101, Bataan Memorial Building  
P.O. Box 25102  
Santa Fe, NM 87504  
(505) 827-6160  
[ose.state.nm.us](http://ose.state.nm.us)



## **New Mexico Bureau of Geology and Mineral Resources**

801 Leroy Place  
Socorro, NM 87801-4796  
(575) 835-5490  
[geoinfo.nmt.edu](http://geoinfo.nmt.edu)

