



**Technical
Customer Advisory Committee**

AGENDA

Members

Elias Archuleta
Mark Begay
John Fleck
Brian Freeman
Kerry J. Howe

Donald T. Lopez
Anjali Mulchandani
Jill Peterson
Mario Nuño-Whelan

Public participation for this meeting will be via WebEx video conference. To request login information for this meeting or to submit public comment, contact Jordan Salas at jsalas@abcwua.org or 505-289-3100. Requests for login information and public comment must be submitted before 2:00 PM the date of the meeting.

Thursday, December 4, 2025

4:00 PM

**1441 Mission Ave NE
Conference Room 204**

1. Call to Order
2. Approval of Agenda
3. Approval of November 6, 2025, Action Summary
4. Public Comment
5. Using the NO-DES System to Combat Dirty Water
6. Education Program Update
7. Water Report and Water 2130 Update
8. Other Business
9. Adjournment

NOTICE TO PERSONS WITH DISABILITIES: If you have a disability and require special assistance to participate in this meeting, please contact the Water Utility Authority Office, Suite 5012, Albuquerque/Bernalillo County Government Center, phone 289-3100, as soon as possible prior to the meeting date.



Using the NO-DES System to Combat Dirty Water

Presentation to the Technical Customer Advisory Committee (TCAC)

Johanna Malouff, PE
Chief Engineer
Field Operations-Water Distribution

Agenda

- Overview of Field Distribution
- Dirty Water Complaints Process
- Selecting Locations for the NO-DES
- Components of the NO-DES System
- Results and Future Efforts



Overview of Field Distribution



- 146 Employees
- Water and Non-Potable Line Maintenance
- Pressure Reducing Valve Operation & Maintenance
- Meter Reading and Installation
- Line Location
- *Flushing Program to address dirty water*



Dirty Water Complaints

- Customers can submit dirty water complaints through Dispatch/Customer Service – Customer Inquiries (CINQ) process
- *A Field employee (runner) is dispatched the same day to investigate*



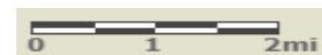
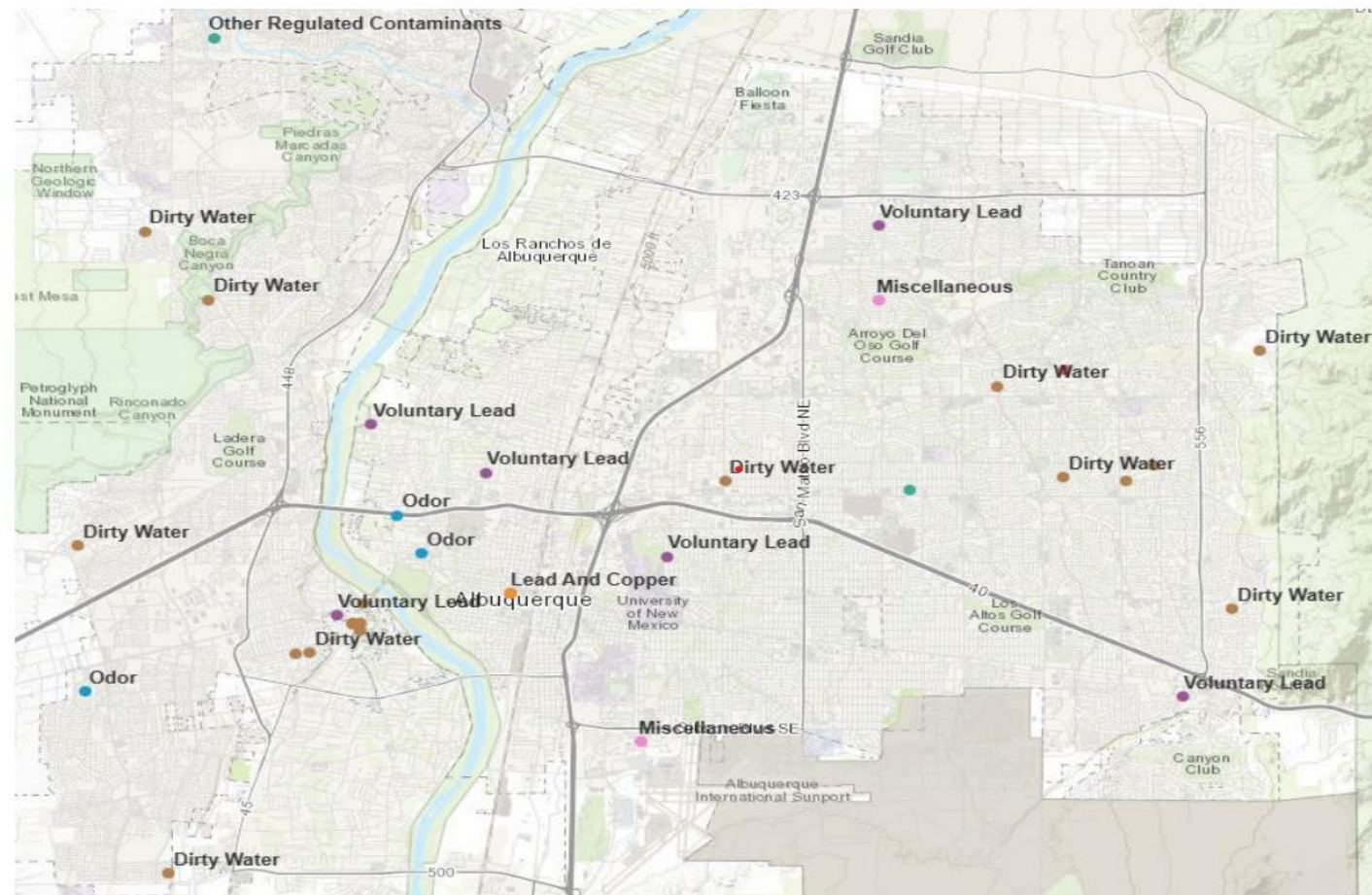
Dirty Water Complaints



- Water Quality is provided a service request (SR) for all dirty water complaints
- These compiled on a map that is reviewed monthly by Water Quality and Distribution Staff



- LABEL
- Dirty Water
 - Voluntary Lead
 - Odor
 - Miscellaneous
 - Other Regulated Contaminants
 - Lead And Copper
 - Taste



October 2025 Customer Inquiries (CINQ) Map

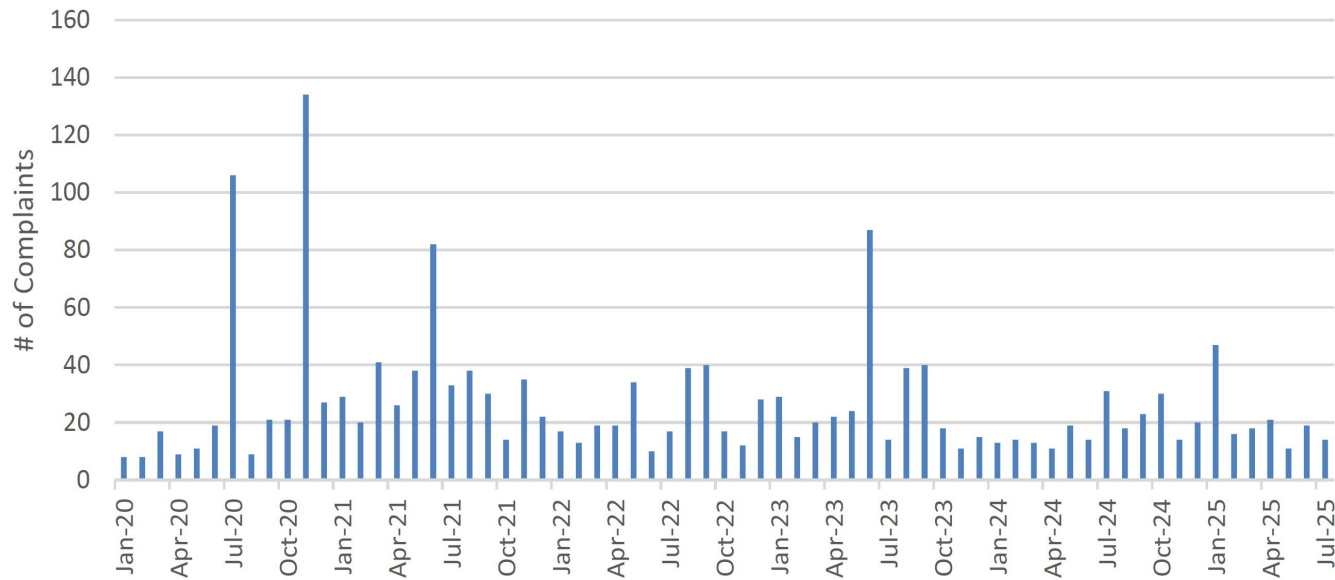
Entered as Service Request in Maximo

*Mapped 34 of 34 total addresses available

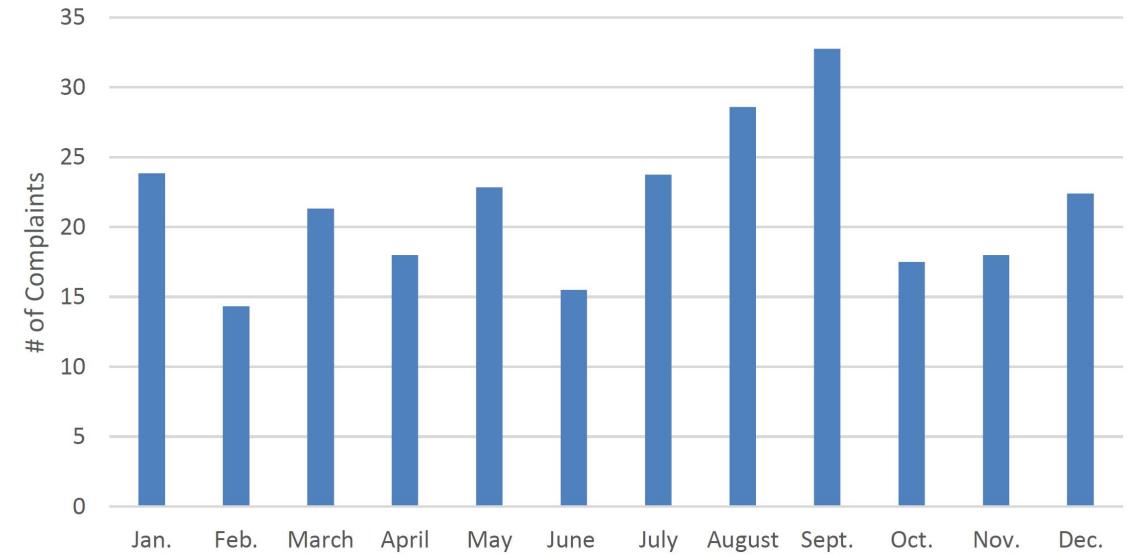


Dirty Water Complaints

Dirty Water Complaints Jan. 2020 - July 2025



Average # of complaints by month 2020 - July 2025
without 4 events



Graphs created by Thomas Hopkins



What is Zero Discharge Flushing (ZDF) or the NO-DES system?

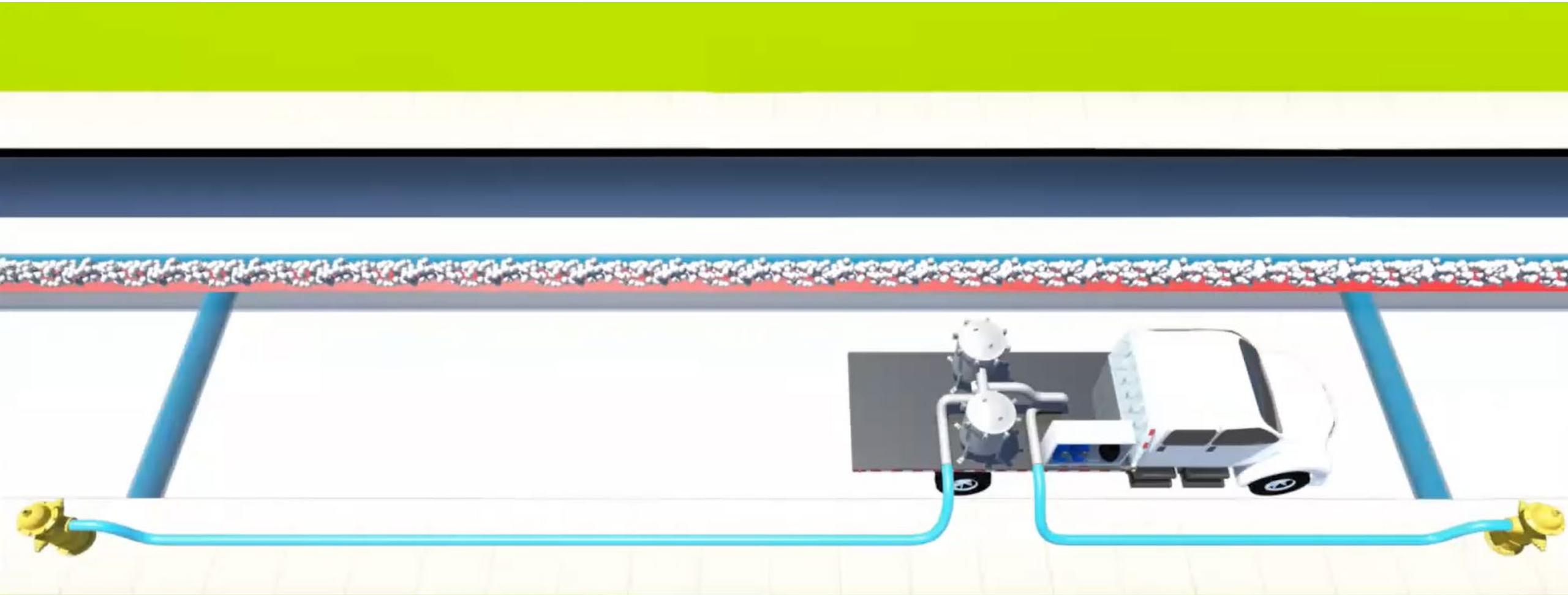
- Self-contained truck mounted filtration system
- Include approx. 1,400 feet of NSF rated 6-inch lay flat hose
- Works by connecting two fire hydrants creating a temporary water loop
- Purchased in 2021



What is the NO-DES system? cont.

- Pressurized water is circulated in the loop with enough velocity to scour the pipe between the two hydrants





Selecting a Location for the NO-DES

- Two hydrants within 1,300 feet preferably on the same side of the street
- A mainline valve in between the two hydrants for looping. Note- the loop needs to be isolated not to create secondary loops



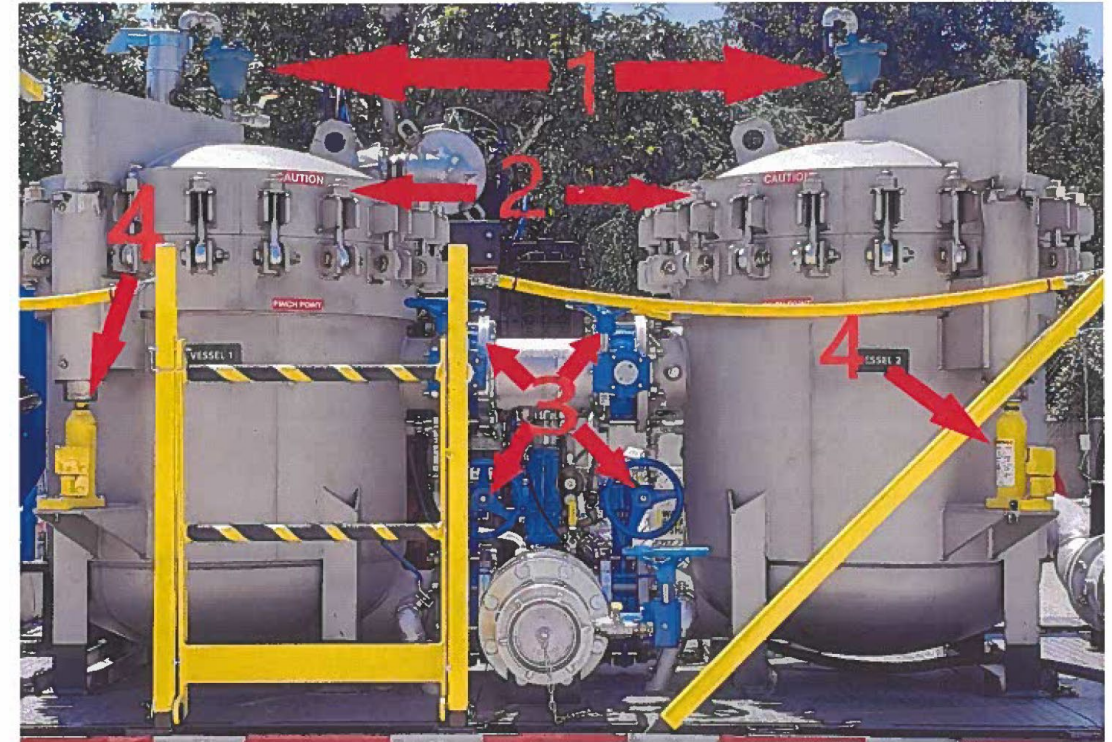


Image Provided by NO-
DES Hydrologics

Filter Vessels

- Fil-Trek – manufacturer of the vessels
- Filter vessel bags – change out based on differential pressure
- Capable of removing any particle down to one micron in size

NO-DES "Neutral-Output Discharge Elimination System"
Truck Mounted 275 psi Model Water Main Flushing System
SOP Safety & Training Reference Manual
NO-DES, Inc.



Filter Vessel's

1. Air release valves

2. Vessel lid bolt's and nut's

3. Vessel bypass Valve's

4. Vessel lid lift jack's



Monitoring on the NO-DES System



- Turbidity
- Flow
- Disinfectant Residual
- Time



Typical Operating Conditions

- For 5 ft/sec Velocity-
 - 6-inch water main- 441 GPM
 - 8-inch water main- 783 GPM
 - 10-inch water main- 1224 GPM
- Flush is complete once Turbidity reaches below 1.0 NTU



High Flow Adapter from NO-DES Hydrologics



Benefits of NO-DES System

- Water Conservation- allows for zero water waste during routine flushing – regular hydrant flushing at 500 gpm for one hour wastes 30,000 gallons!
- No discharge of chlorinated water to storm drain or street
- No water running down the street, prevents ice from forming



Challenges of NO-DES System

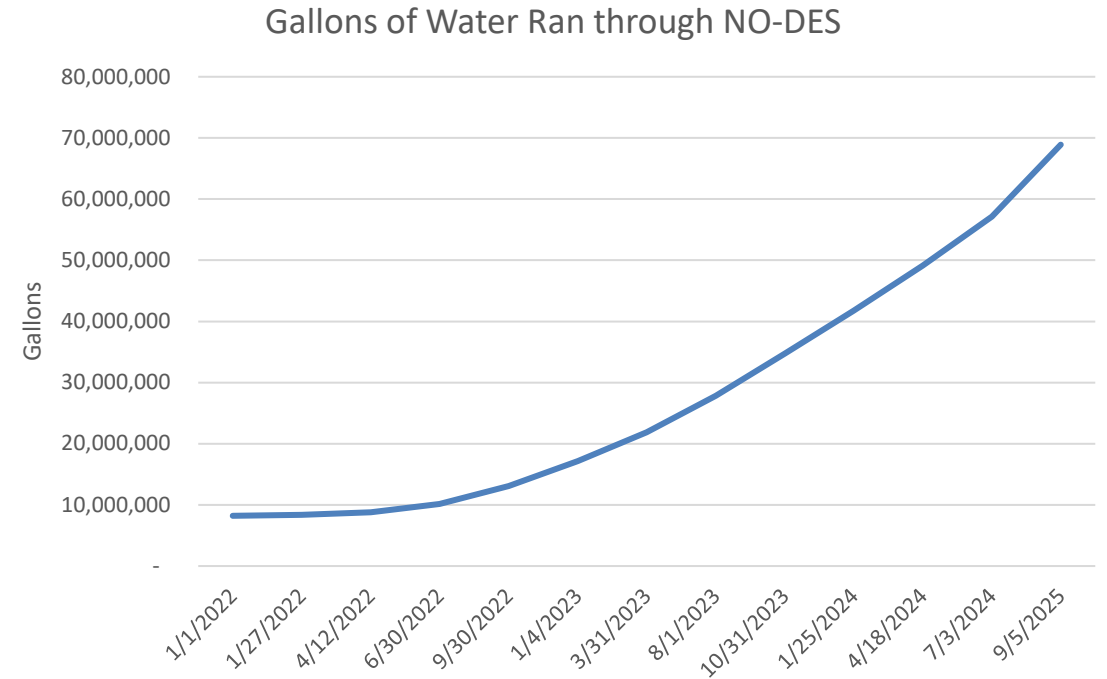


- Preparation – verifying valves are operational
- Typically, not used on dead-end mains that are prone to dirty water
- Specialized equipment and parts required
- Introducing air in the system



Results

- 68,889,272 gallons of water ran through the machine as of Sept. 2025
- Deployed at over 90 different locations since it was purchased



Results



Image from JXN Water for Required Hydrant Flushing

- More sustainable flushing practices
- Improved public perception
- Encouraged public outreach



Future Efforts

- Run at least once every two weeks
- Chlorine dosing
- Maintaining turbidity records and analyze data to determine any correlations
- Utilize results from Corrosion Control Study

Clear Data				NODES Flushing Truck Chlorine Dosing Calculator			
Step 1- Enter the length of each diameter hose used in loop							
		Size (inches)	Length (feet)				
Feet of hose:		5					
Feet of hose:		2.5					
Step 2- Enter Diameter and Length of each pipe segment in loop							
		Size (inches)	length (feet)				
Pipe segment 1		12					
Pipe segment 2		6					
Step 3- Observe your target flow range based on your longest pipe segment							
Feet/Second		3		5			
Target Flow (gpm):							
Step 4- Enter your actual flow rate and your Targeted dose per loop							
Current Flow:				gpm			
Dose per loop:				mg/L			
Step 5- Use the loop time below to set your pump stroke rate and dosing pump timer							
Loop Time:				minutes			
Set Pump Rate to:				Strokes/min			
PUMP MAX IS 360 Strokes/Min							
* Use 1.23 lbs/gal for 12.5% chlorine solution							
*Chemical dosing pump delivers 0.11 mL per stroke per manufacturer specs							
*Optimal pump rate is 180 strokes per minute (50% stroke speed).							

Calculator Developed by San Jose Water Company California



Future Efforts



- Responding to potential instances of contamination (chlorine dosing) main leaks, backflow events
- Flushing and disinfecting newly constructed mains waiting for tie-in



Questions?
Thank you!



WUA Education Overview and Update

FOR TCAC 12/04

Program overview and updates



Our education program reaches nearly 20,000 students each year, and has won two national awards: The Water Environment Federation (WEF) Public Education and Outreach Award and the National Association of Clean Water Advocates (NACWA) award for Public Information and Education.

Read more about our awesome programs below, or just sign up right here for:

Puppet Show (grades pre-K to 1st) • In-Class Activity (grades 1-3, and 5-12) • 4th Grade Trip to the River • Reclamation Tour (5th grade & up!)

In-person learning opportunities include:



General information about all of our in-person programs

Or just jump directly to each activity:



Free in-class puppet shows for K-2



Free Hands-On Classroom Presentations for 1-3rd and 5-12th grade



Free 4th grade trip to the river!



Wastewater Reclamation Tours

Online learning opportunities include:



Take a virtual tour of our drinking water or wastewater treatment plants.



Videos of Lessons and Puppet Shows



Online Curriculum

- Walk in the Woods
- Additional Educational Resources

Puppet Shows pre-K through 3rd

This year's puppet show is "Turtles from Outer Space"



Hands-on experiments and presentations for 1st-3rd, 5th through 12th



ELEMENTARY SCHOOL PRESENTATIONS

Grade 1 – H.2.Grow Students play a game in which they move drops of water from underground, up the roots of plants, through the stem, out of the leaves and into the clouds. When enough water has collected in the clouds, it rains. Find the activity guide with standards covered [here](#).

Grade 2 – Water Year 'Round: Students solve the riddle, "Which season am I?" Each clue shows a phase of water that students link to sounds of percussion instruments. Find the activity guide with standards covered [here](#).



Grade 3 – Incredible Journey: Students roll the die and move through the water cycle, collecting colorful beads to make their own bracelets along the way. Find the activity guide with standards covered [here](#). We have created [Informational Text](#) about plant adaptations to supplement this lesson, which comes with vocabulary words and questions. It is also available in [Spanish](#).

Grade 4 – [Click here](#) to learn about the RIO Field Trip for all Albuquerque area fourth grades.



Grade 5 – Leaky Faucet: Students learn how little fresh drinking water we have on earth. They measure and calculate how much water is wasted in a leaky faucet. Find the activity guide with standards covered [here](#). We have created [Informational Text](#) about the water available on earth to supplement this lesson, which comes with vocabulary words and questions. It is also available in [Spanish](#).

MIDDLE SCHOOL PRESENTATIONS



Grade 6 – The Water-Energy Connection: Students must supply water and electricity to their town. They'll quickly discover that they can't get electricity without water, and they can't get water without electricity. Our movie, *The Power Couple* is a good introduction or summing-it-up resource. Find the activity guide with standards covered [here](#). We have created [Informational Text](#) about power generation for Albuquerque to supplement this lesson, which comes with vocabulary words and questions. It is also available in [Spanish](#).

Grade 7 – Mighty Macroinvertebrates: Students will use math and sampling techniques to simulate a bioassessment. Using a net to scoop up colored beads that represent macroinvertebrates, they determine the relative health of their water sample. Find the activity guide with standards covered [here](#). We have created [Informational Text](#) about pollution in the river and dogs to supplement this lesson, which comes with vocabulary words and questions. It is also available in [Spanish](#).



Grade 8 – Go with the Flow: Using trial and error, students determine the height they must build their reservoir so that water will flow to homes upon demand. Find the activity guide with standards covered [here](#). We have created [Informational Text](#) about how evaporation affects water storage to supplement this lesson, which comes with vocabulary words and questions. It is also available in [Spanish](#).

HIGH SCHOOL PRESENTATIONS



Biodiversity is Grand: What are invasives? Why are our cottonwoods in peril? Cover your bosque board to learn how our decisions impact the future biodiversity of NM. Find the activity guide with standards covered [here](#).

Pollution Detective: Students use pH paper to search through their plot of dirt to find the source of groundwater pollution. If it's out of sight, should we keep it in mind? Find the activity guide with standards covered [here](#).

What Scientists Do with Number One and Number Two – Students fill their plastic cup toilet with wastewater and figure out how to clean it. After they separate water, trash, and sludge, they learn what Albuquerque's Wastewater Treatment Plant does with each. Micrographs and videos of our microscopic workers cleaning water are always a big hit! Find the activity guide with standards covered [here](#). [Take a digital tour](#) of the wastewater plant as a way to introduce the lesson or review.

4th grade Field Trips

We pay for the buses,
and frequently provide chaperones.

We bring Albuquerque area fourth graders to the river!!

Free Field Trip for all 4th Grades in the area!



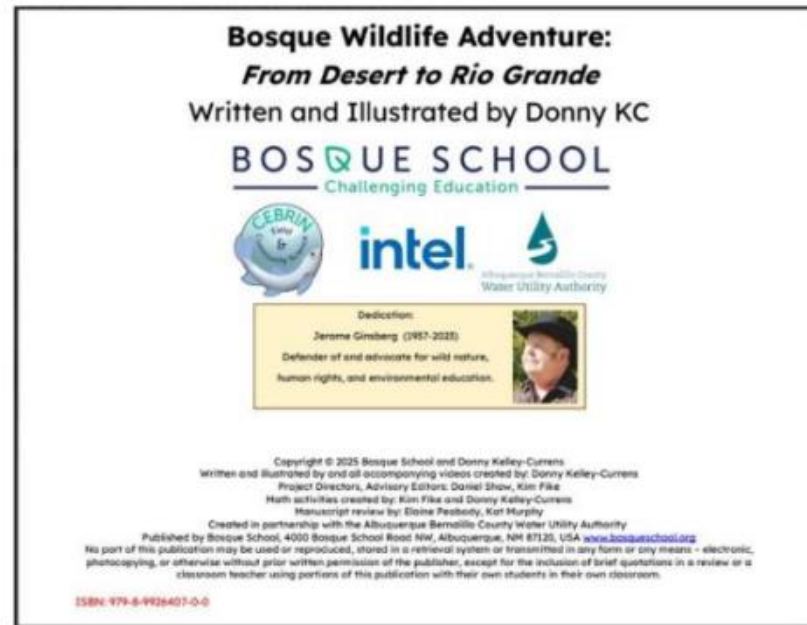
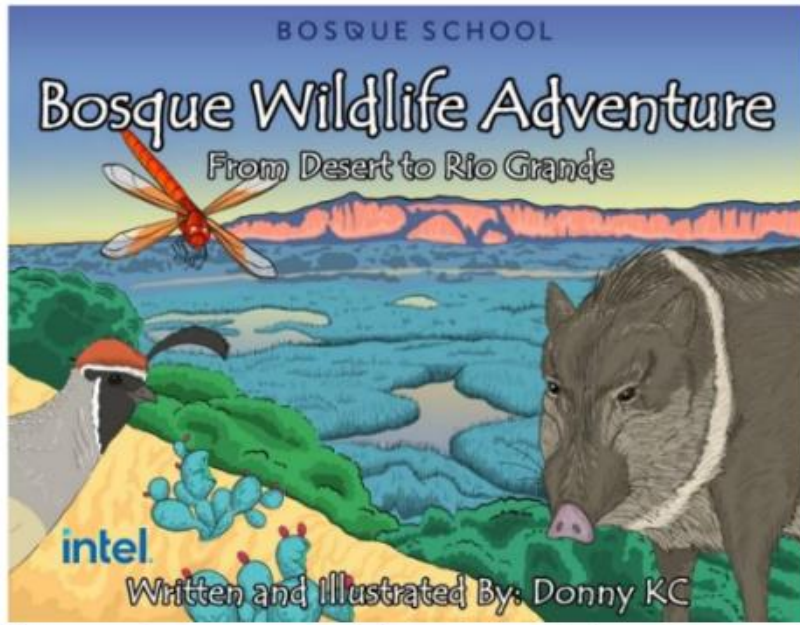
We want everyone to be a good steward of our water resources. That's why we are dedicated to taking all APS fourth-grade classes on a field trip to the river. There is no cost to teachers or schools. The Water Authority provides free roundtrip bus transportation for area fourth-grade classes. We do not supply lunches or water.

Our education coordinator assigns a date to each school. [Please register here](#) so we have your current contact information, and can provide your students with the valuable experience of going on this award winning field trip!

The RIO Field Trip takes place at either The Rio Grande Nature Center or The ABQ Botanic Gardens. Each class has a Water Authority guide who leads the class in three activities that come with standards.

- *Albuquerque Waters* teaches students about where the water in the rivers and aquifers comes from. Students learn how precious our water is, here in the desert.
- Students learn about Cultural Water Use, NM history, and how we use virtual water to make everything we use or consume.
- Everybody's favorite, is the hike in the bosque.

About ¼ of the students we take didn't know the Rio Grande was part of the city, and about ½ have never been to the river.



How Dry Is New Mexico?

New Mexico is a dry state. Its surface is mostly dry. Lakes, rivers, streams, and wetlands are rare. In fact, of all the 50 states, New Mexico has the smallest fraction of its land covered by water.

A: New Mexico is about 300,000 square kilometers. Of that area, only about 600 square kilometers are covered in water. What fraction of New Mexico is covered in water?

B: New Mexico also has many forests and several cities. There are 100,000 square kilometers of forests and 175,000 square kilometers of farmland covering the state. What fraction of New Mexico is covered in forests and farmland?

C: Here is a 10 by 10 square. If this grid was all of New Mexico's area, how much area would each box represent?

D: How many of its boxes would be covered in water, forest, and cities? Color the number of water boxes **blue**. Color the number of forest boxes **green**. Color the number of farmland boxes **red**.

(Note: 300,000 square kilometers is about 116,000 square miles)

A Flooded Habitat

The bosque marsh is a mix of water and land. Both water and land are home to animals. Some animals just live in the water. Others live only on the land. And others live in both.

Beaver can be found on land and in the water. On land, they use their strong teeth to chop down trees. In water, they build dams across streams. The dams make ponds where they can build their lodges.

Other animals, besides beaver, also use these ponds. One is the **Bluegill**. This fish is a predator and eats smaller fish and insects. It also makes grunting sounds. Lots of underwater animals make noises.

Snapping Turtles, the biggest reptile in the area, also live in beaver ponds. They rarely bask on river banks like some other types of turtles. Instead, they stay low in the water looking for prey. They are hard to see because they are often at the bottom of a pond. But look for a large brown object, barely sticking out of the water, because it might not be a log but the head of a huge turtle.

Watery habitat, like the bosque marsh, is rare in New Mexico. It is one of the reasons that the bosque is so special. How do you think people like you can protect watery habitat?

To watch a video about these aquatic animals found in the bosque, scan this QR code.



► Last year we added a preparatory visit before the field trip which has increased our presence from less than 1,000 students presented to per month to more than 2,000 students presented to each month.

► We gave a copy of a book about the bosque to each 4th grade class going on the river field trip.

► The updated version with pages we have customized will go to press as money from Intel is released. This will produce copies to 4th graders for the next 2 years.

Reclamation Tours

We added a new [clay animation tour](#) video as supplemental material

Have You Ever Wondered How We Clean Wastewater?

Then this Tour Is for YOU!

Would you like to take your students on a field trip they won't forget? For grades 5th grade and up, you can bring them to the Southside Wastewater Reclamation Plant (SWRP). We clean approximately 50 million gallons of wastewater every day, but most of us never stop to wonder about what it takes to accomplish that. Our employees work:

- to ensure public and environmental health,
- to maintain good water quality of the water we put into the river, and
- to reclaim a portion of our water resources for re-use.



During the two-hour tour, students will do more than just hear about how we clean Albuquerque's wastewater, they'll see it. We look under the microscope at a drop of activated sludge to see the microorganisms that clean the water. We walk the plant following the path of the wastewater as it is cleaned. At the end of the tour, standing on the banks of the Rio Grande where the cleaned water is released into the river, we discuss current wastewater issues.

Tours are approximately two hours long, cover about 2 miles, and stairs are involved. We can accommodate up to 40 students per tour. There is no cost for the tour, but we do not provide transportation to or from SWRP.

This [fantastic clay animated tour of our facility](#) by Sharon Sivinski is a great way to prepare or review the trip!



[Click here to schedule a tour.](#)

ADDITIONAL RESOURCES

Take the virtual tour of our drinking water or wastewater treatment plants. Learn more about the history of sanitation [here](#).

Questions? Call Jeff Tuttle at (505) 289-3027 or email jtuttle@abcwua.org

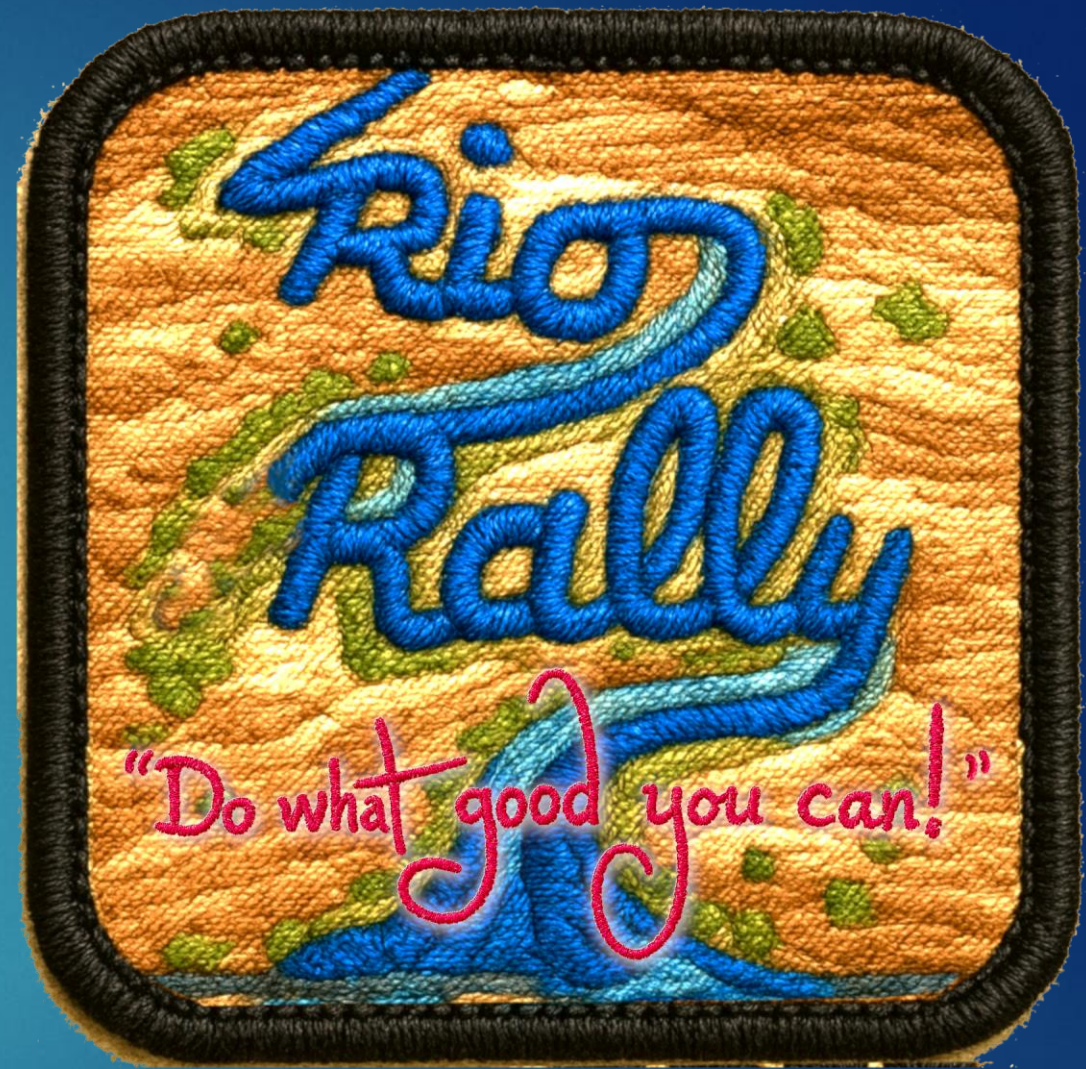
Coming to a Summer near you..

Play the Rio Rally! Collect stickers, as you go on quests around our city! Besides earning a point for a quest, you can earn points if you take a city bus, walk or ride a bike to your quest, and drink tap water from a reusable water bottle! It takes less water when you conserve anything, because water is involved in the production of everything!

You can make stickers into a gameboard, or put them on a metal water bottle and use a magnetic player token to move it a sticker space each time you drink up all the good water from your water bottle! Yes, our tap water is so good we keep winning the President's Award for Superior finished water quality, and more!

The Rio Rally will be played **June 20th through July 12th, 2026**. Get started by going to any city library, the Botanic Garden, or the Zoo, the NM Natural History Museum, Explora, anddThe National Atomic Museum Bring your Rio Rally Explorer's patch to the Zoo and the Botanical Garden (one time for each group of 4) during the game for a discounted rate of \$3.00 per person!, Then collect your sticker from the Zoo and Botanical Gardens and Aquarium!

Winners of the Rio Rally will receive rebates from the Water Authority, a family pass to the Natural History Museum, and other prizes! Most importantly, just playing you can learn and act on ways to help our river!



Developing:

- Additional clay animations for conservation applications and Surface Water
- Bear Canyon Tour
- Surface Water Plant Tour

And...

The collaborative work with Bosque School has led to other Developing work:

A curriculum of place
with a place

A Field & Community Science Building

A Gateway for teaching civic engagement through bosque research & investigating nature

The Antidote for Despair is Action



Doing our part, not to give our children a dry river inheritance.



Teaching agency and stewardship through hands-on field science.



Creating a future for a healthy environment, economy, & community.

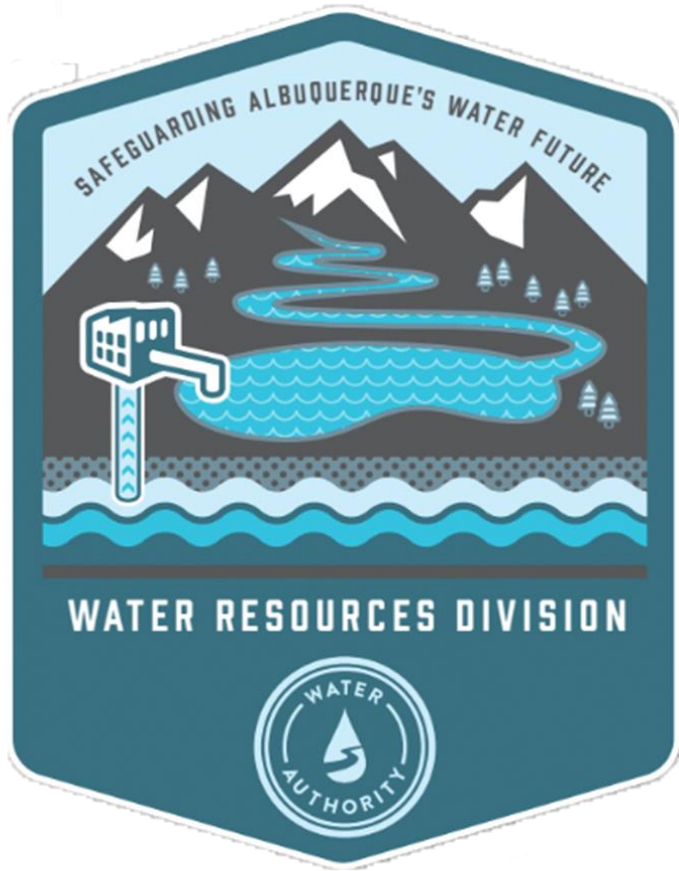
A Field & Community Science Building Will Be:

- A gateway for over 7,500 students a year to learn how water is the life blood of the three-legged stool of a healthy environment, economy, and human community. We will draw from our 30-year experience of having engaged more than 100,000 New Mexican students in field science.
- A partnership with the Albuquerque Bernalillo County Water Utility Authority (Water Authority) to host all 5,800 Albuquerque fourth grade students to have a hands-on environmental field session along the Rio Grande and in its riverside forest, launched each day from dedicated classrooms to support that program.
- A refugia, in partnership with the US Fish and Wildlife Service to raise the endangered Rio Grande Silvery Minnow to serve as a learning lab with aquaria for students to help raise endangered fish for release to the wild by area students, including those from the Water Authority program.
- A site for high school students from throughout the region to participate in science that matters beyond the classroom through field research opportunities and lab work in partnership with the University of New Mexico Center for Stable Isotopes and its Fish, Floodplains, & People program.



- Future Water Authority Water Reclamation Facility
- Suggested location of wastewater treatment plant with water flow-through for fish rearing tank
- Future Field & Community Science Building Rio Grande silvery minnow refugia/rearing tank (approx. 100,000 sq ft)
- North end of Bosque School campus



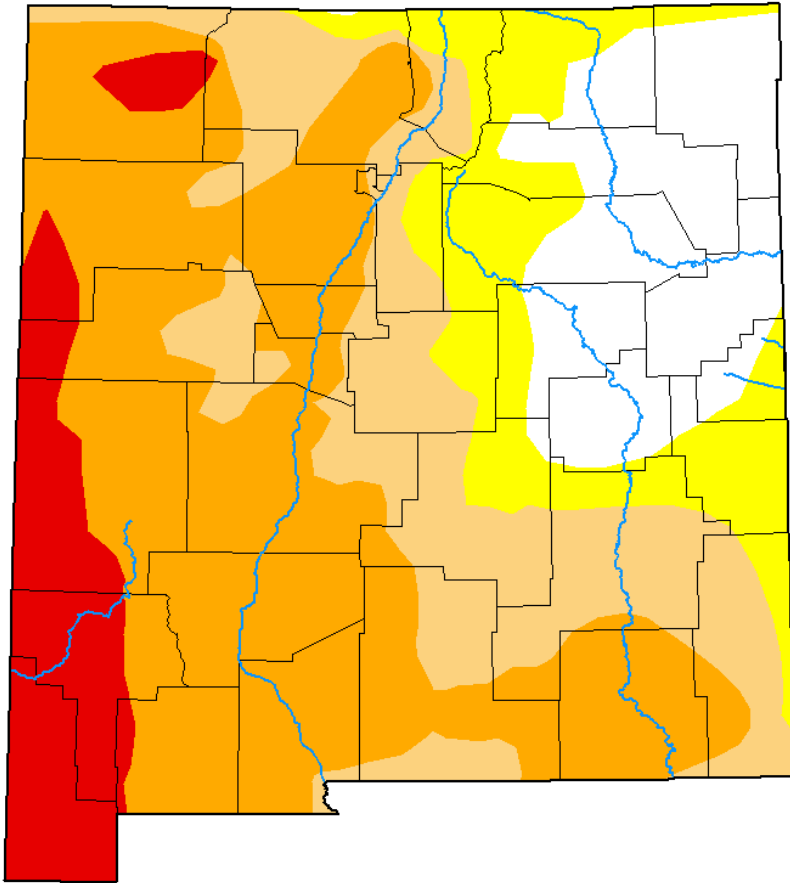


Water Resources Division

Water Report

Mark Kelly, PE
Water Resources Manager

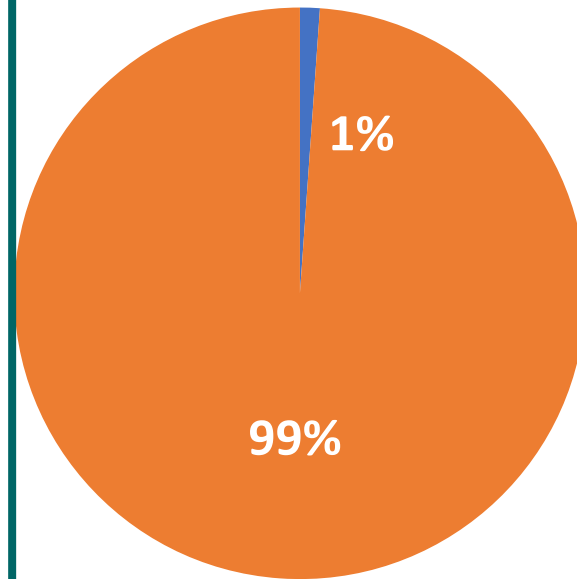
SUPPLY METRICS SNAPSHOT



D0 D1 D2 D3 D4

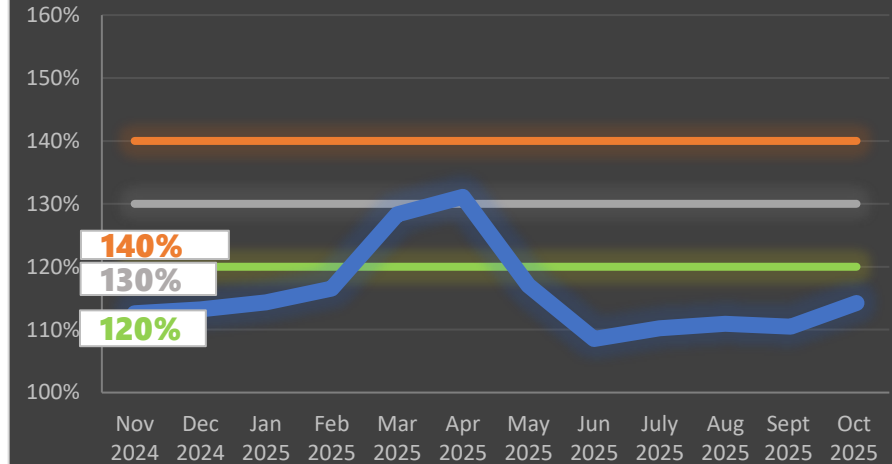
Water Authority
Drought Stage:
None

December 2025 (October Supply Data)



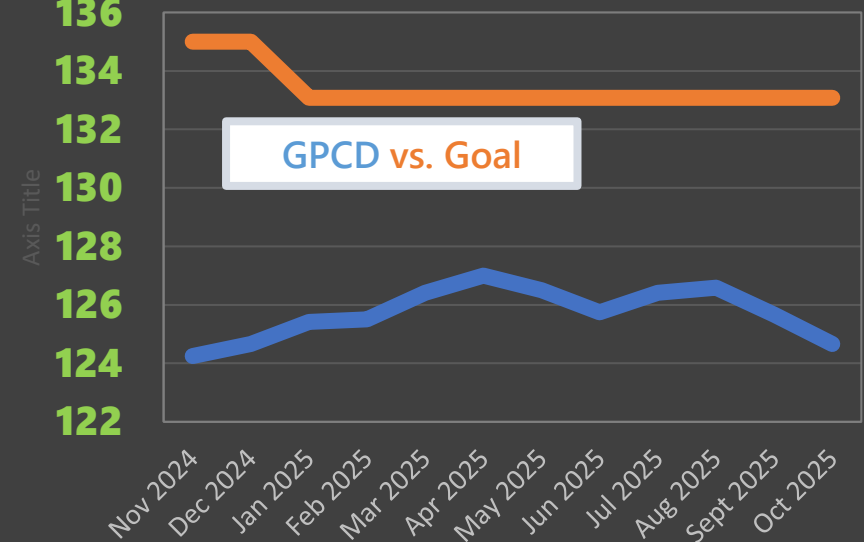
Groundwater Production
Surface Water Production

GW Pumping vs Goal



136
134
132
130
128
126
124
122

GPCD vs. Goal



Outline

- Water Supply Planning Process Overview
- Advancing Water 2120 to Water 2130
- Water 2130 Progress
- Next steps

Water Supply Planning Process Overview

Planning Purpose: Securing Our Water Future

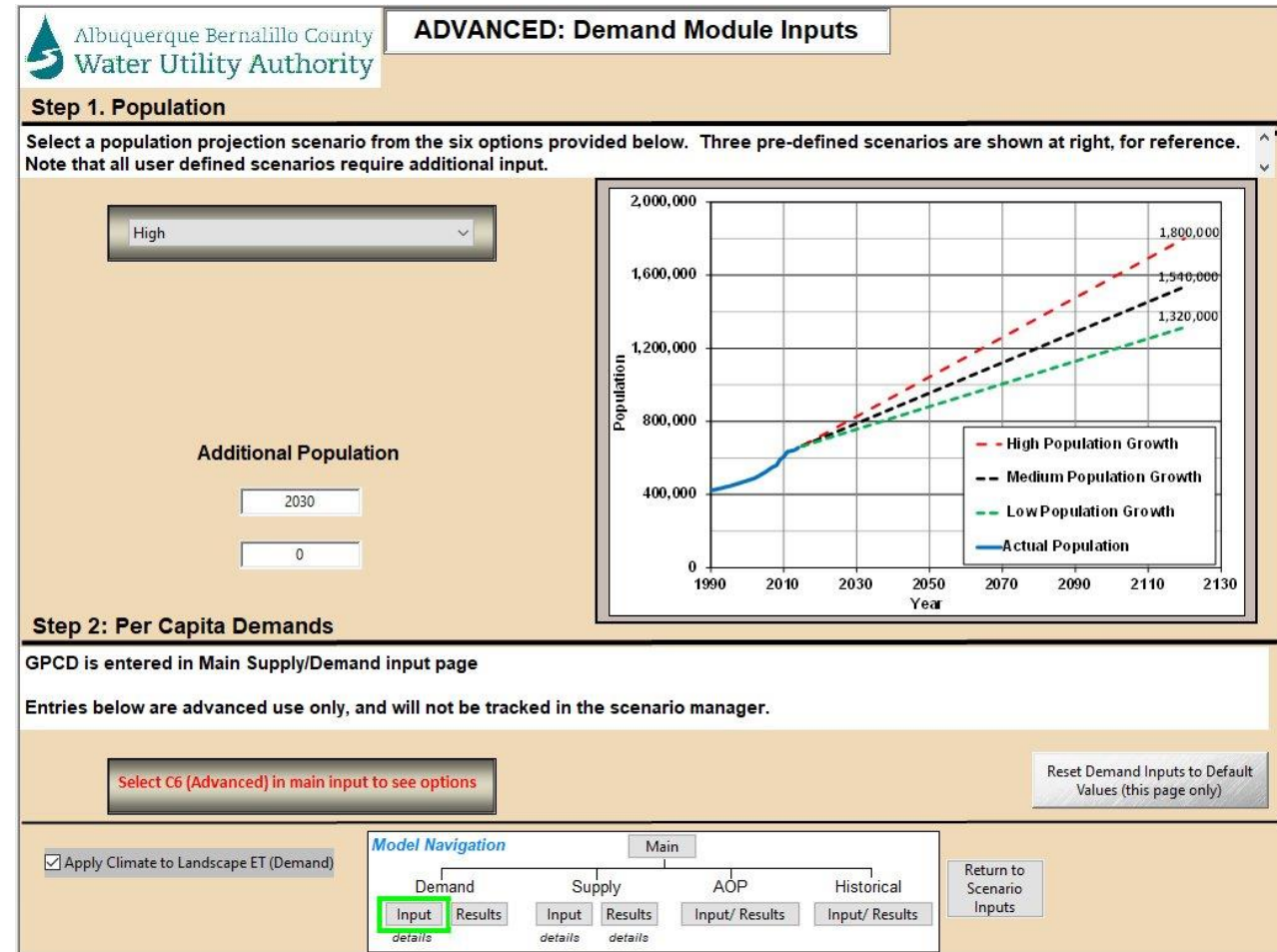
- Water 2120 built on the 1997 and 2007 Water Resource Management Strategy (WRMS) approaches.
- Purpose
 - Prepare for uncertainty and support resilient planning
 - Inform decision making
 - Maximizing existing resources
 - Protect the aquifer
 - Enable adaptive management



How Supply Modeling Supports Planning

- Simulate system performance today and into the future
- Analyze uncertainty and system resiliency
 - Testing system performance under a range of conditions
 - Climate
 - Demand
- Evaluate portfolios of options and test what-ifs
 - Test combinations of supply projects like conservation, reuse, storage, etc.

Tool to support the planning process

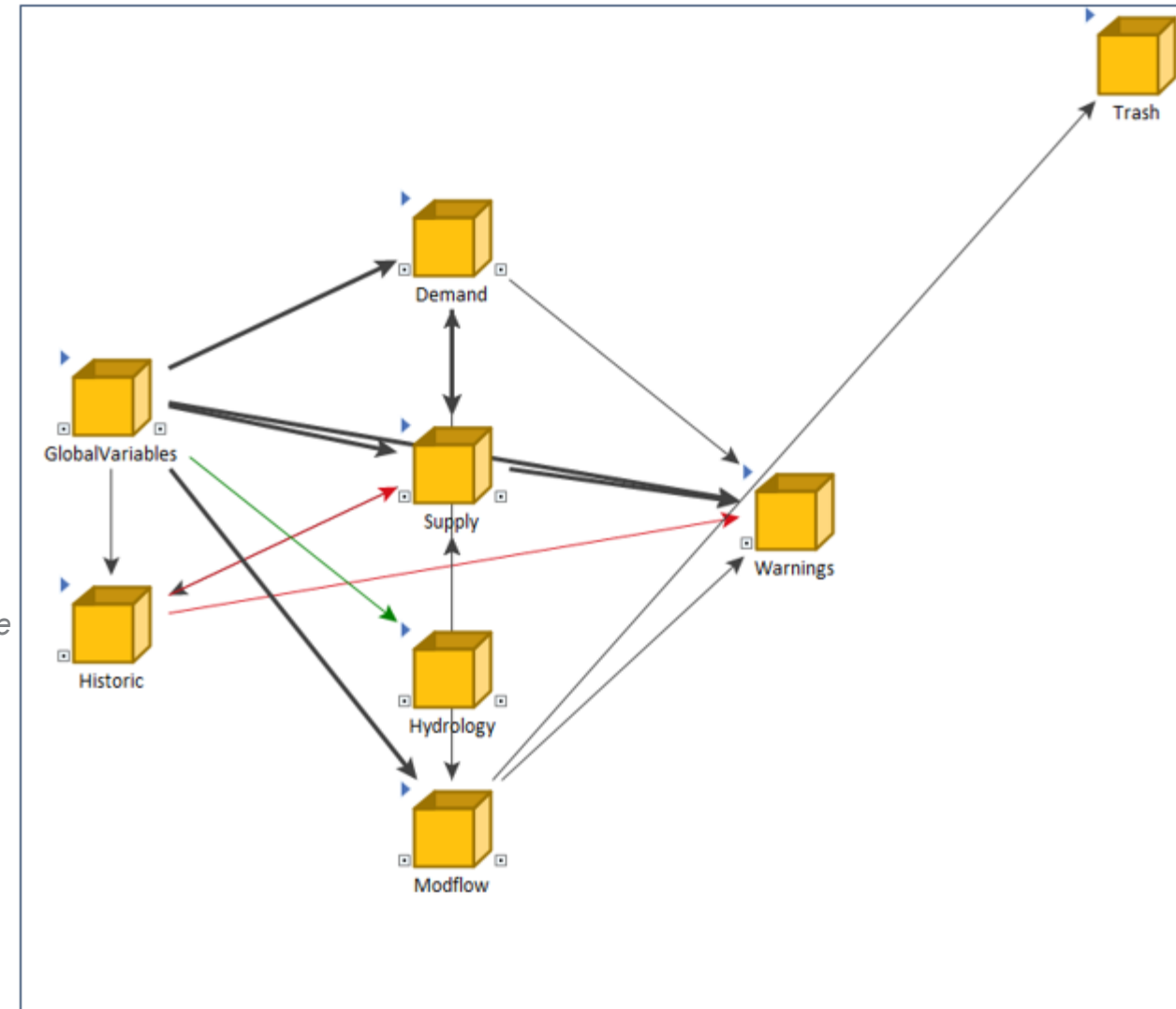


Advancing Water 2120 to Water 2130

Water 2120 – Modeling Overview

Background

- Water 2120 Model
 - GoldSim platform with a link to MODFLOW groundwater model
 - Monthly timestep
 - 100+ year planning horizon
- Model Uses
 - Demand/conservation modeling
 - Historical accounting
 - Annual Operating Plan
 - *Model uses prior year historical data and projected diversions to estimate supplies*
 - Long Term Supply Planning
 - *User-input scenario planning*
 - *Climate scenarios (CMIP3) and demand projections (low, med, high)*
 - *Future alternative selections*



Current Supply Portfolio Represented

- Surface Water
 - San Juan-Chama Project
 - Vested and acquired native rights
- Groundwater
 - Over 60 wells active in the service area
- Reclaimed Water
- Reuse/non-potable Water
 - Irrigation of green spaces in Albuquerque
- Aquifer Storage and Recovery
 - Surface recharge and injection



Portfolio 1 from Water 2120

Future Alternatives

- Existing supplies (groundwater and surface water)
- Conservation – 110 GPCD in 20 years
- Connect North I-25 Nonpotable to Southside Reuse
- Additional reuse
- ASR
- New storage (off-channel reservoir)
- IDPR
- Storm water capture
- Watershed management

Water 2130 Motivations – Building on the Foundation of Water 2120



Continuous Improvement

Essential to revisit and refine to ensure long-term resilience
Adaptive management



Updated science and data

Incorporate the latest climate projections and revised demands to reassess future projections



Refreshed baseline

Ensure future planning is grounded in today's assumptions and operations

Water 2130 Progress

2025 Model Update Objectives

1

*Update existing
GoldSim model
ahead of Water
2130 Revisions*

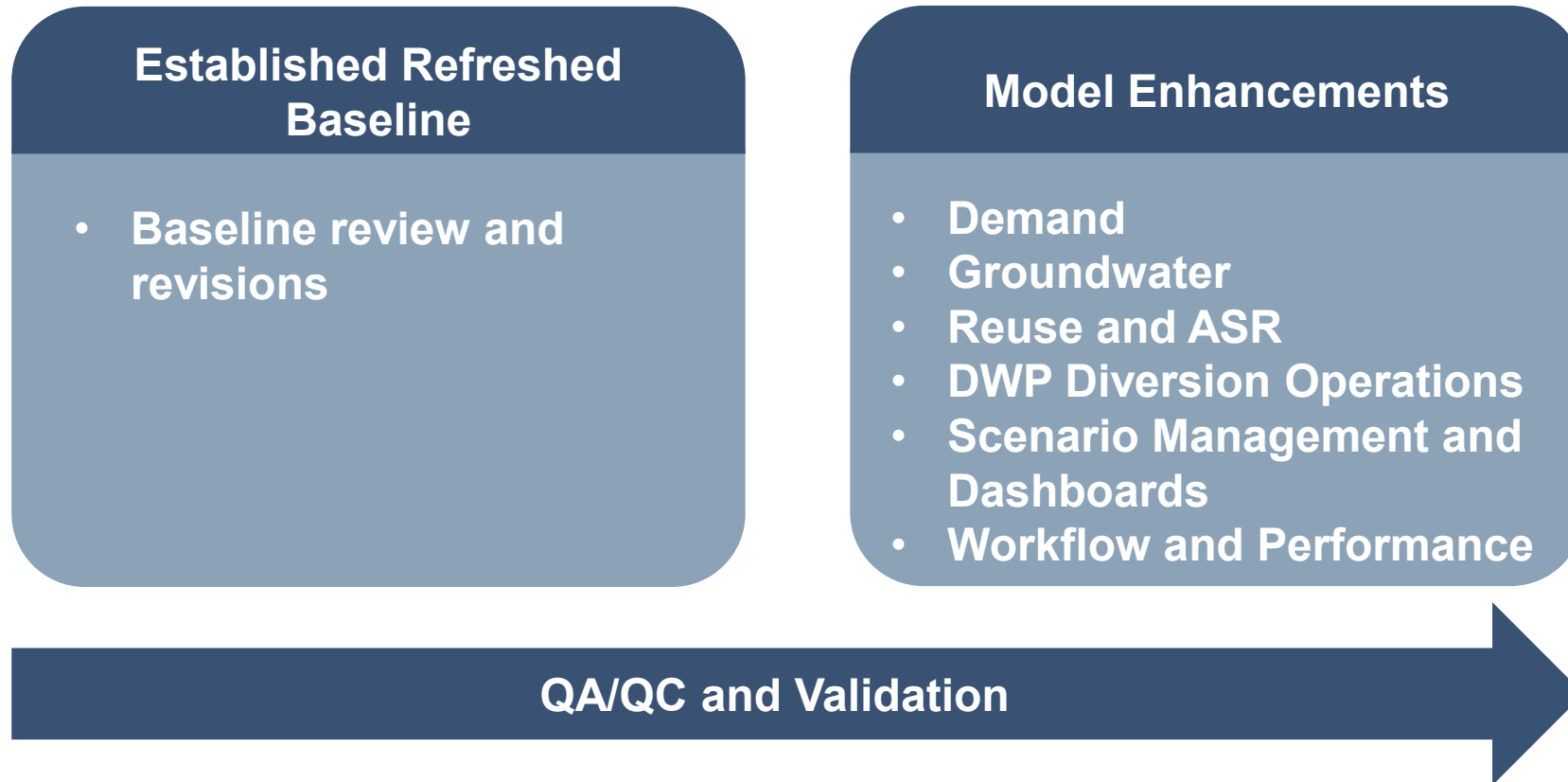
2

*Align baseline
model with current
conditions and
assumptions*

3

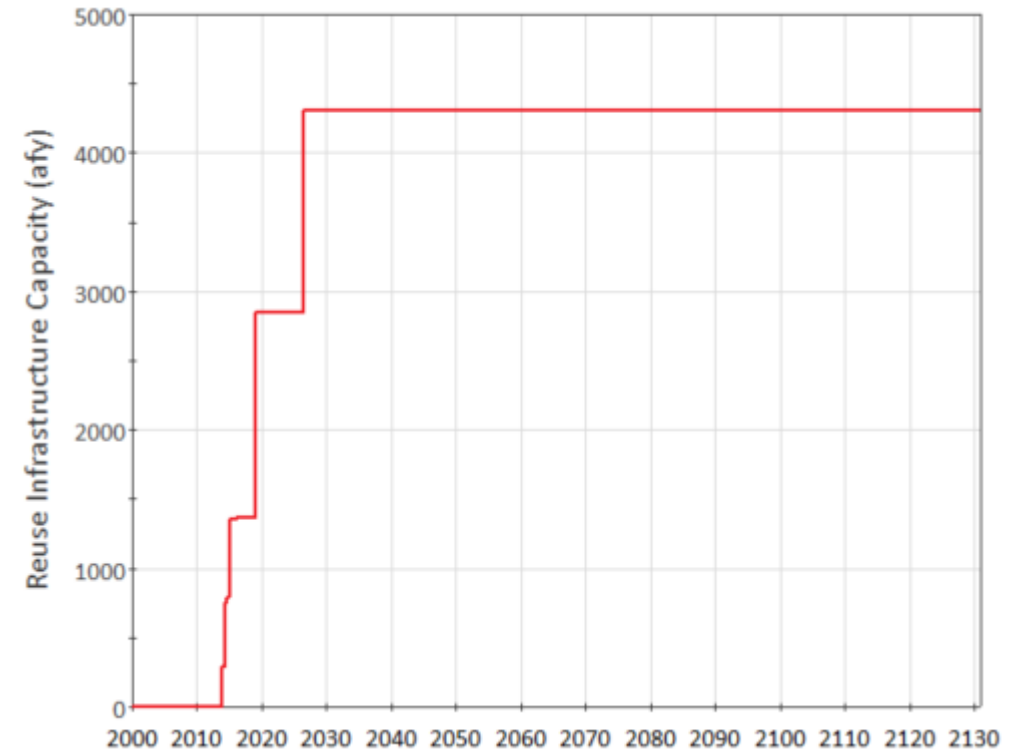
*Enhance the
performance of
existing modules to
establish a robust
foundation,
ensuring optimal
preparedness*

Key Tasks



Baseline and Portfolio 1 Updates

- Reviewed current supply portfolio capacities and general assumptions
- Added Winrock reuse project with updated capacity and timing
 - Additional capacity of Southside reuse of 900 gpm beginning in June 2026
- Revised baseline scenario to include only the following alternatives:
 - Westside reuse
 - Winrock reuse
 - ASR – currently includes Bear Canyon and DWTP Large-Scale ASR
- Finalized new baseline run



Groundwater Pumping Analysis

Issue identified: The minimum system pumping rate required for infrastructure (10 MGD) was applied to total pumping (not system pumping, which resulted in **negative system pumping early in the projected period**).

$$\text{System Pumping} = \text{Total Pumping} - \text{Non-System Pumping} - \text{NMU Pumping}$$

Old Methodology

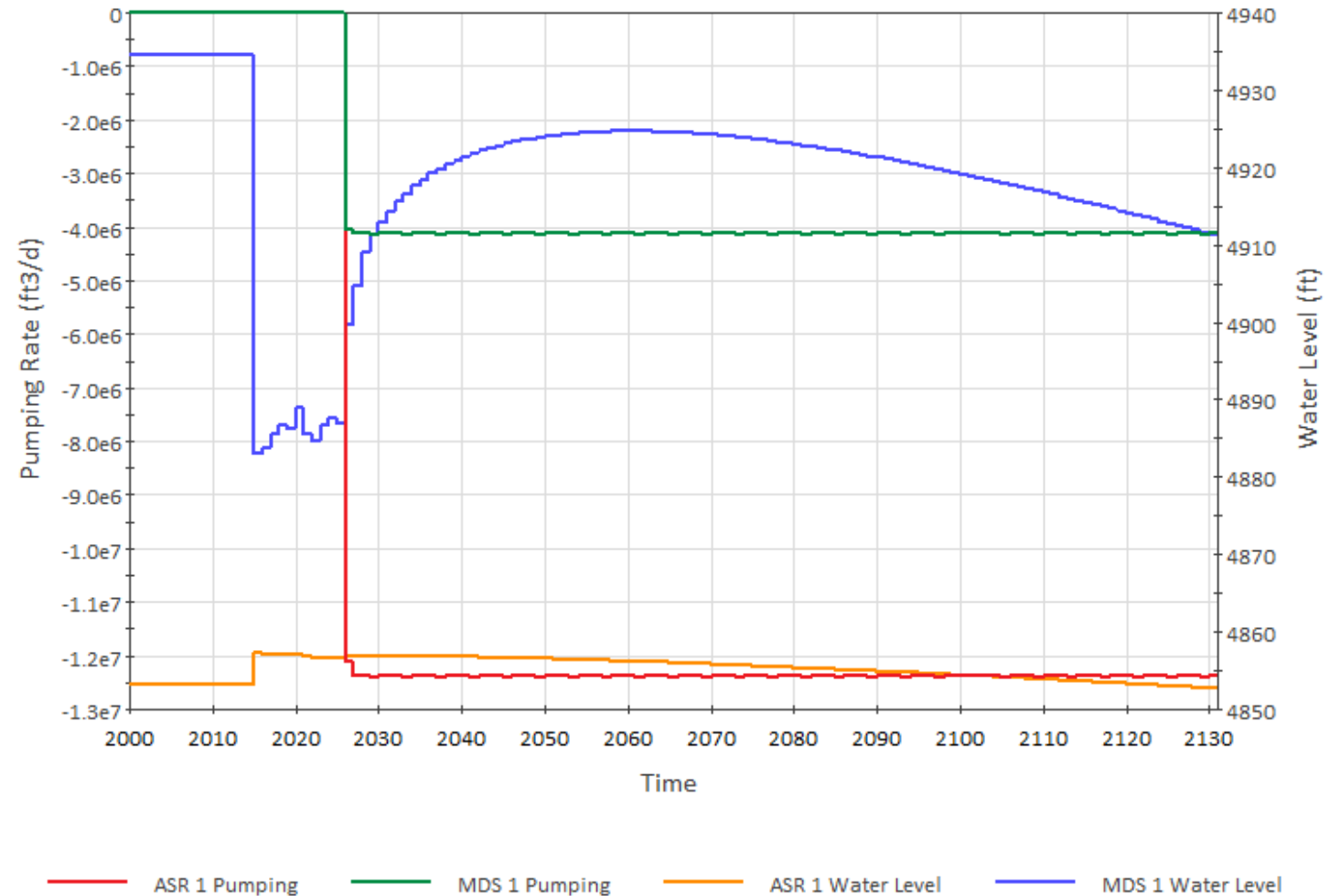
- Total groundwater diversion is the sum of two diversions:
 - Minimum pumping rate: 10 MGD
 - Additional pumping: includes system, non-system, and NMU
- Non-system and NMU pumping volumes are calculated from user-defined baseline rates

New Methodology

- Modified minimum pumping rate to include system minimum (10 MGD), non-system, and NMU pumping rates
- Additional pumping represents system pumping required to meet demand beyond the minimum 10 MGD
- Ensures that system pumping never falls below 10 MGD

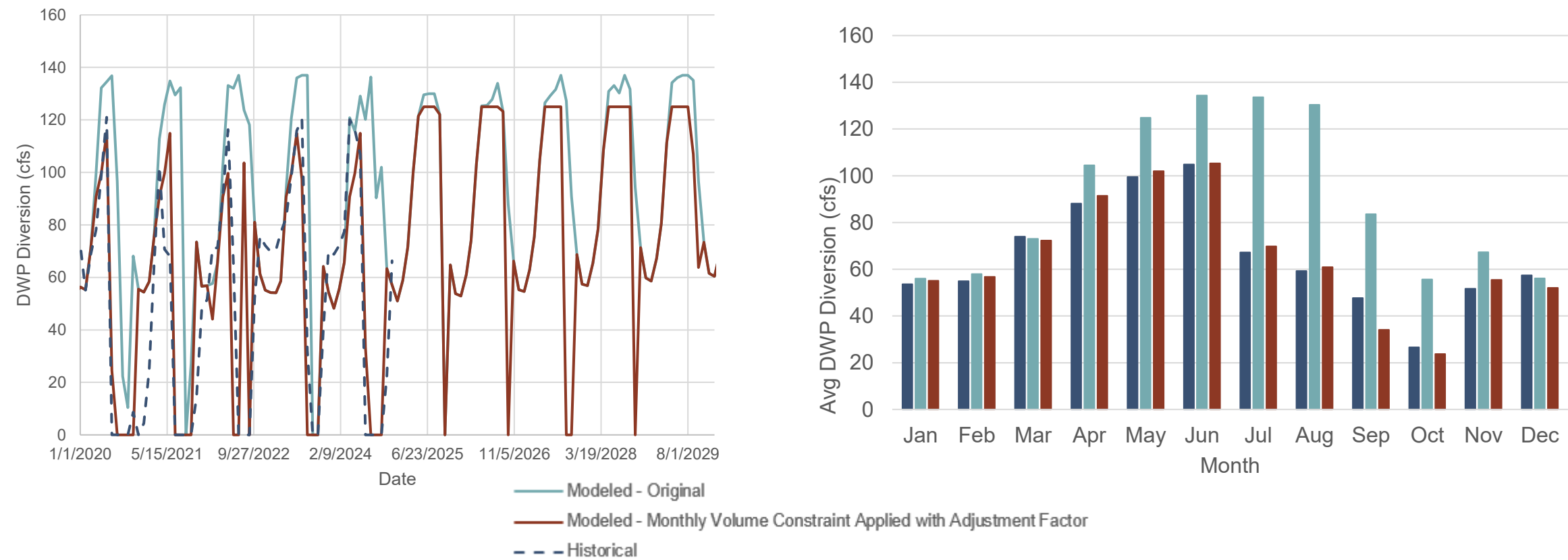
MODFLOW Updates

- Dynamic Link Library (DLL) update to improve model stability
- Updates to groundwater solution
 - Convergence error was causing groundwater model to fail late in the model period (2127)
 - *Preconditioned Conjugate-Gradient (PCG) solver iterates until head values at each node converge*
 - *2 convergence criteria must be met: maximum head change and maximum residual; values specified as model inputs*
 - *Slightly increasing the maximum head change criteria resolved the convergence error*



DWP Diversion Constraint Updates

- Revised solution: Monthly Volume Constraint Applied with Adjustment Factor
 - The highest-performing approach with respect to 2014-2024 historical diversions used the updated Rio Grande flow constraints and adjusted monthly volume restrictions



Next Steps

- Update model with revised climate and demand data (on-going development)
- Reanalysis of gap in supply and demand
- Reconsideration of timing and need for conservations goals and projects

Questions

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The logo for Hazen, featuring the word "Hazen" in a white, serif font. The letter "z" is stylized with a horizontal line passing through its middle. The logo is set against a dark blue background.