2025

THE STATE OF THE STREAMS

Maia Schweikert, Natural Resource Specialist

Ennis, Montana - June 2026

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Executive Summary

The 2025 monitoring season began much earlier than previous years, with Madison Conservation District staff visiting weekly sites at the end of March. Volunteers and staff continued performing weekly monitoring until mid-October of 2025. In addition to weekly water quality data collection efforts, our stream team deployed dataloggers at all seven monitoring sites to collect information on streamflow continuously. In late-August, the Stream Team held their 6th annual Tributary Blitz event, collecting nutrient samples and general water quality information on 15 impaired tributaries in the Madison Watershed and the mainstem of the Madison River. We are continuing to strive to increase data quality and transparency with the help of long-time partner and local expert, Dr. Adam Sigler with Montana State University – Extension Water Quality (MSUEWQ). As such, the data from this year's sampling season is available on MSUEWQ's Data Hub (https://waterquality.montana.edu/datahub_about/index.html).

Despite seeing warm temperatures earlier than expected, late-February and early-March precipitation events provided a much-needed boost to the Madison Watershed's snowpack and general water supply. At the end of March, the Madison was at almost average for precipitation accumulation (99% of median) and snowpack levels (96% of median), leading us into a "better Spring" water supply wise than in 2024. While the Madison continued to see precipitation events well into May, snowpack dwindled by the end of the month, with levels at 56% of the median expected at that time of year. Warmer than normal May temperatures ushered in seasonal transitions and rapid snowmelt.

Overall, temperatures in the Madison Valley had slight variability, but trended towards the normal-to-high range when comparing to historical data. The pattern in temperatures during the summer months (June-August) could be considered comparable to 2024, though has more consistent daily variability.

Precipitation in the Ennis area totaled just above average by the end of the year, with annual levels at 12.20 inches compared to an average 12.11 inches. Even with cumulative normal precipitation, the hottest months of the year, fared well below average. For example, June and July, showed approximately 27% of the annual expected precipitation. An August refresh of precipitation provided some support, however by early September, over 70% of Madison County was experiencing extreme drought conditions.

As with most things, long-term trends are the true indicator of environmental conditions and trends. This report provides a snapshot of conditions in the Madison Watershed during a moment in time. We'll continue to work with stakeholders to monitor the health of our streams, improve Best Management Practices, and restore sections of water that have the potential to improve long-term drought conditions in our area. Thanks for your continued support.

Kind Regards,

Maia Schweikert, Natural Resource Specialist

Madison Conservation District

Introduction

The Madison Stream Team focused regular monitoring efforts for 2025 on three tributaries in the Madison Watershed: South Meadow Creek, Moore Creek, and Jack Creek. These streams are of high importance to the health of the Madison River ecosystem, and they act as an important source of water to landowners and residents in the Madison Valley. The Stream Team also completed synoptic sampling of 15 tributaries to the Madison River, as well as the mainstem, in the sixth annual *Tributary Blitz*.

The Stream Team is a volunteer-driven effort, and it would not be possible without the time and energy of many dedicated individuals. These volunteers participate in a thorough training, and then have the opportunity to monitor various streams during the summer season. In 2025, the Madison Stream Team conducted 25 monitoring events, totaling approximately 360 volunteer hours.

As manager of the Madison Stream Team (MST), the Madison Conservation District (MCD) has made efforts to look through historic data, do quality control, and work towards making all MST data publicly available on Montana State University's Data Hub. Additionally, MCD has been uploading current and historic MST data to MT-eWQX, the Department of Environmental Quality's database. Dr. Adam Sigler and his team from MSU have provided significant help with both of these efforts. His guidance and expertise have informed MCD each step of the way. We have also received immense support from Deanna Tarum and Abbie Ebert at MT DEQ, who have been a valuable resource while navigating MT-eWQX. For more information about the MSU Data Hub and MT-eWQX, see appendix item 2.

Stream Monitoring

Water quality monitoring is a good avenue for examining stream health and can indicate when something is off balance or needs attention. The scientific terms used to talk about water quality can be difficult to understand and are not always explained in terms of real-world impacts. The Madison Stream Team monitors water quality indicators such as turbidity, conductivity, dissolved oxygen, and stream discharge. While having this data is important, it's not nearly as useful without an understanding of what these measurements say about the water.

Parameters

Turbidity is a measure of how much suspended sediment is in the water. The clearer the water, the lower the turbidity. There is a natural fluctuation of turbidity throughout the season. During high flows and spring runoff, turbidity is likely to be high because of sediment running into the stream and powerful flows releasing sediment from the stream bottom and banks. When soil is exposed or without vegetation, it is highly susceptible to erosion and will likely lead to increased turbidity in nearby streams. Too much suspended sediment in streams can be detrimental to fish health for multiple reasons. When the water is turbid, sediment can bury and suffocate fish eggs and larvae, make it difficult for fish to find food, and it can clog their gills making it difficult to breathe. High turbidity can also impact aquatic plants by preventing sunlight from reaching the stream bottom, and disrupt irrigation infrastructure by clogging pumps and nozzles.

Conductivity is the ability of water to carry an electrical current. Additives that increase this ability are salts, phosphorus, nitrogen, metals etc. We use conductivity as a way to measure the abundance of these dissolved elements in a stream. A high conductivity can indicate pollution from road salt, excessive fertilizer, or runoff from urban landscapes. Conductivity can also change based on water temperature, which is important to consider when interpreting data. Higher water temperatures are generally associated with increased conductivity.

Dissolved Oxygen (DO) is simply the amount of oxygen dissolved in the water. Oxygen enters the water from the air and from aquatic plants as a result of photosynthesis. A diverse stream structure with riffles encourages water mixing and increases dissolved oxygen. Aquatic organisms can't survive without dissolved oxygen, so it's important to monitor declining levels. One common cause of low DO is algal blooms. When microorganisms break down algae, they rapidly consume oxygen and create an imbalance in the system. Algal blooms occur when there are excess nutrients, such as nitrogen and phosphorus, in the water. DO levels can also fluctuate naturally within a stream system depending on time of day, water temperature, and altitude. One can expect DO level to be lower in the early morning, as aquatic plants have not been producing oxygen since sunset. Colder water and water at low altitudes also have a greater capacity to hold oxygen.

The natural range of each of these water quality measurements can vary depending on geographic area, land use, and the surrounding conditions. With consistent water quality data, trends over time can be monitored. Ideally, remedies can be implemented to address issues that are identified via monitoring.

Methods

The regular monitoring of South Meadow Creek, Moore Creek, and Jack Creek included water quality, quantity, and photo monitoring. Several water quality parameters were measured using a YSI multi-meter (conductivity, dissolved oxygen, and water temperature). The multi-meter was calibrated the morning before each sampling event and regularly maintained. Two turbidity samples were taken at each site, using procedures outlined in the 2025 Sampling and Analysis Plan (SAP), and a turbidity meter was used to take three readings of each sample. The readings of each site are then averaged and recorded in the public database. Water quantity was measured using a flow meter. Total stream discharge (in cubic feet per second, cfs) is calculated by summing the discharge of multiple intervals across a channel cross section. The discharge for each interval is determined by multiplying its width, average depth, and water velocity. The data set, figures, and MST infographic can be found in the appendix at the end of this document.

In addition to weekly monitoring performed by staff and volunteers, a datalogger located at each sample site collected hourly air temperature, water temperature, and water level (stage) through the sampling season (May - October). The maximum average water temperature from each day was used to visualize stream temperature in relation to the Montana Fish, Wildlife, and Parks' recommended trout threshold, or the water temperature at which trout experience extreme stress.

Discharge was calculated using estimates taken during weekly monitoring to develop a rating curve and estimated discharge equation. The equation is used to calculate hourly discharge based on the stage of the stream recorded by each station's datalogger. Stage "point" measurements were used to calculate discharge instead of the average because of the capacity of different dataloggers to record average measurements.

Monitoring Sites

Weekly Monitoring

South Meadow Creek: Snowmelt collected in South Meadow Lake forms the headwaters of this tributary. The headwaters region was historically mined, but is now primarily used for recreation. After flowing through agricultural and residential properties, the creek joins North Meadow Creek before entering Ennis Lake. It has been monitored since 2010 and two sites were included in the 2025 data collection: SM-WEIR and SM-EDC.

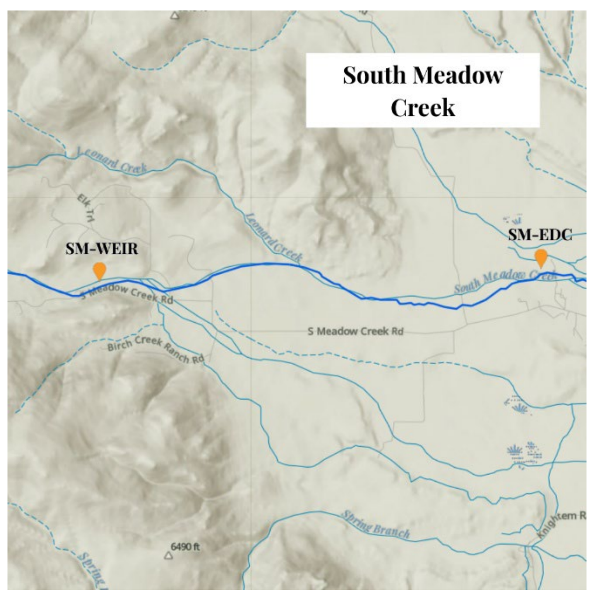


Figure 1: South Meadow Creek Monitoring Sites

The upstream site, SM-WEIR, primarily receives pressure from residential uses. Installed dataloggers typically collect continuous measurements for water temperature, air temperature, and water height used to estimate streamflow. The datalogger installed at this site lost operation mid-way through the season and was not replaced. Overall manual streamflow measurements depict a similar pattern to previous years, likely with a slightly earlier peak in late-May or early-June. The stream often experiences decreased flows further on in the season, until August when flows increase again, to taper off soon after. Manual measurements of temperatures at SM-WEIR remained cool all season and were well below the threshold identified as “healthy” for trout (73°F) with the hottest recorded temperature occurring in mid-July at 55°F.

Downstream, SM-EDC peaked in late-May as well, at approximately 22 cfs. This section of stream often shows lower flows than the upstream, likely due to increased pressure from agricultural users and private landowners. This is also reflected in the late season variations in flow. There were periodic spikes in water temperature during late-July and early-August, though generally the water stayed below the threshold. The increase in water temperature from SM-WEIR to SM-EDC is likely due to the lower flow, as well as the physical environment for this section of stream. After flowing out of dense forest cover, the channel is fairly exposed and shallow. Conductivity and Dissolved Oxygen levels were within normal ranges for both sites. Turbidity remained low for both sites, with the exception of peaks in late-May that correspond with high flows from Spring runoff.

Moore Creek: Starting in the southern end of the Tobacco Roots in United States Forest Service (USFS) public lands and Moore Creek quickly enters private ranchlands. It continues to flow east for approximately 10 miles until it runs through the town of Ennis. Moore Creek is largely impacted by urban land uses in the Madison River drainage. Although it produces little flow, its concentrations of water quality contaminants are significant. Downstream of town, it enters a large portion of the greater Madison valley floor and wetland complex before connecting with Ennis Lake (Reservoir). It has been monitored since 2010, and four sites were included in the 2025 data collection: MC-RD, MC-HOME, MC-RV, and MC-KACK.

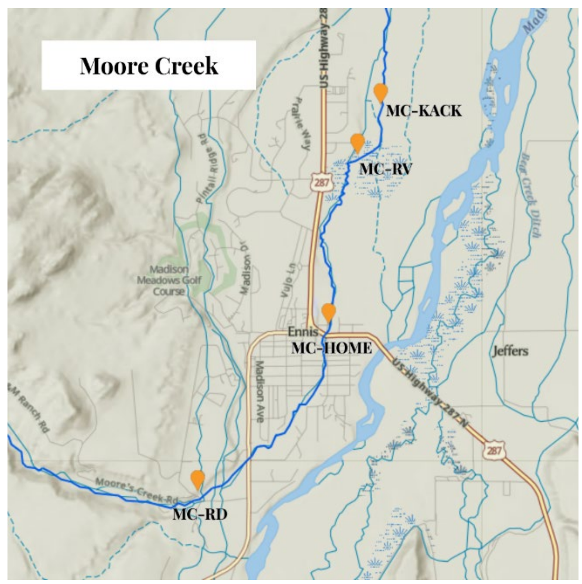


Figure 2: Moore Creek Weekly Monitoring Sites

The datalogger installed at the most upstream site, MC-RD, lost operation mid-way through the season and was not replaced. This site also showed changes in the structure of the channel, just upstream of the datalogger. A large culvert on Moore Creek was clogged by debris, resulting in water levels rising upstream and a small pond forming at the mouth of the culvert. Based on manual measurements, the site stayed cool for the entirety of the sampling season, never exceeding the trout threshold, with peak temperature of 66°F. The streamflow at this site usually becomes very slow-moving and shallow in July, and into August, with decreased flows likely caused by irrigation withdrawals upstream.

MC-HOME, the monitoring site just north of town, has a slightly different hydrograph compared to other weekly monitoring sites. Moore Creek often shows peak flows in the Fall, indicating that flow may not be driven by snowmelt and rather may be heavily influenced by irrigation uptake or springs. The flow rate often has a similar pattern to the upstream site, with minimal flow in July and August. Streamflow throughout the season is rather consistent, sitting at 2 - 6 cfs, minus periods of low flows in Summer and peaks Fall (late-September, early-October).

One of two newer monitoring sites, MC-RV, is located in a recently restored section of Moore Creek that was thought to have been altered in the early 1900's. The stream temperature here, increased slightly from MC-HOME, with temperatures exceeding the recommended healthy threshold several times in June and July. The streamflow further continues to decrease from upstream sites, however has similar temporal periods of peak and low flows.

The most downstream site, MC-KACK, experienced the highest water temperatures of any site. The majority of the sustained highs occurred from June to August. There was significant warming from MC-RV to MC-KACK. This is likely because this section of stream has very little shade and is straight and shallow. The temperature may also be influenced by the presence of hot springs and warming ponds that populate the nearby area. Streamflow at MC-KACK has a similar temporal pattern to its upstream sites, with higher-flow periods in May, July, and September, and minimal flow in August. The flow is generally lower than other Moore Creek sites, but is very similar to MC-RV.

MC-HOME experienced periods of low dissolved oxygen, below the recommended range. Conductivity for Moore Creek was generally higher than other streams, especially at the most downstream sites, and consistently exceeds standard concentrations (200 µS/cm). It is likely that Moore Creek has a naturally higher conductivity because of influence from the geology of the area. For example, streams that run through areas with clay or limestone tend to have higher conductivity because of materials that break down when introduced to water. Lower Moore Creek generally runs through dense clay and sees heavy spring influence.

Jack Creek: Jack Creek originates in the high country between National Wilderness Areas. From within the boundaries of an area of major human development (Big Sky and Moonlight Area), it flows west through the Madison Range, multiple canyons and along a significant gravel road prior to spilling onto the Madison Valley floor. There are a number of diversions and at least one spring that influences the creek prior to its confluence with the Madison River. Jack Creek has been included in the monitoring program since 2006 and 3 sites were included in the 2025 data collection: JCP-SSR, JCP-CY, and JCP-JCR. While 2025 allowed for the installation of a new datalogger at JCP-SSR, the datalogger at the downstream site, JCP-JCR became inoperable midway through the season, therefore readings are not available.

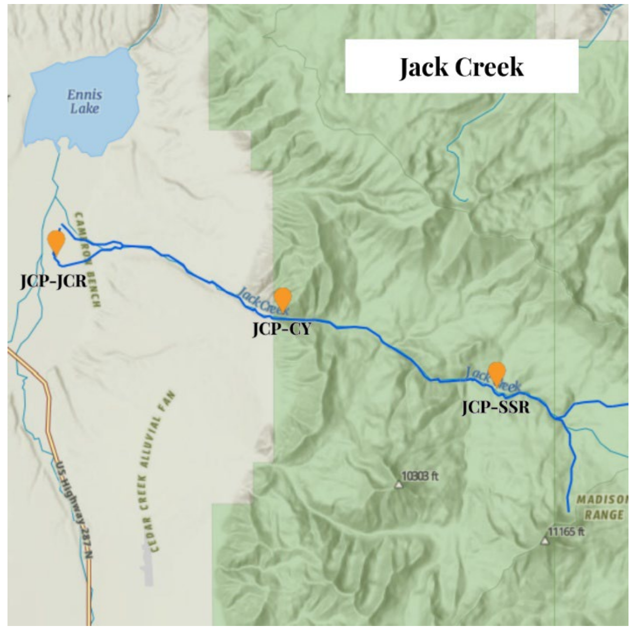


Figure 3: Jack Creek Winter and Weekly Monitoring Sites

The most upstream site, JCP-SSR showed low stream temperatures, well below the trout threshold, with minimal variation throughout the season. The new datalogger at this site was installed in July, so it is difficult to determine when peak flow occurred, however for the time installed, JCP-SSR saw peak flow in early July at approximately 25 cfs.

Stream temperatures at JCP-CY likely remained below the trout threshold as well. Manual measurements indicate that temperatures were similar or colder to manual measurements at the upstream JCP-SSR site. This datalogger is expected to be replaced in June of 2026, allowing more accurate readings of streamflow, water temperature, and air temperature.

Manual measurements of water temperature at JCP-JCR remained within the healthy range, with the highest temperatures occurring in August.

Dissolved Oxygen levels remained well-within the recommended range all season at JCP-SSR and JCP-JCR. Dissolved Oxygen at JCP-CY showed a sharp decline in July, however levels remained above the threshold later in the season despite higher water temperatures. Turbidity was fairly high for the Jack Creek sites in May; however, this likely corresponds to high flows from Spring runoff. All Jack Creek monitoring sites experienced increased levels of conductivity, well above concentrations from the prior year. If this pattern continues, further investigating may be warranted.

Winter Sampling

The Jack Creek baseline or low-flow nitrate sampling occurs in mid-winter. 2025 marked the 5th year of winter data collection, with the first winter sampling of nitrate on Jack Creek occurring on February 20, 2021 with David Laufenberg, Sunni Heikes-Knapton, and Adam Sigler. Jack Creek was identified as a high priority stream for the sampling to occur, due to the rapid development happening in its upper watershed. Sampling during winter or periods of low-flow, allows us to obtain baseline information of nitrate levels from groundwater influence.

Nitrate levels at all sites exceeded the DEQ threshold (0.10 mg/L). These concentrations are generally consistent with previous years' data. Nitrate concentrations for Jack Creek are generally higher in the Winter, than in the Summer when our nutrient sampling events occur.

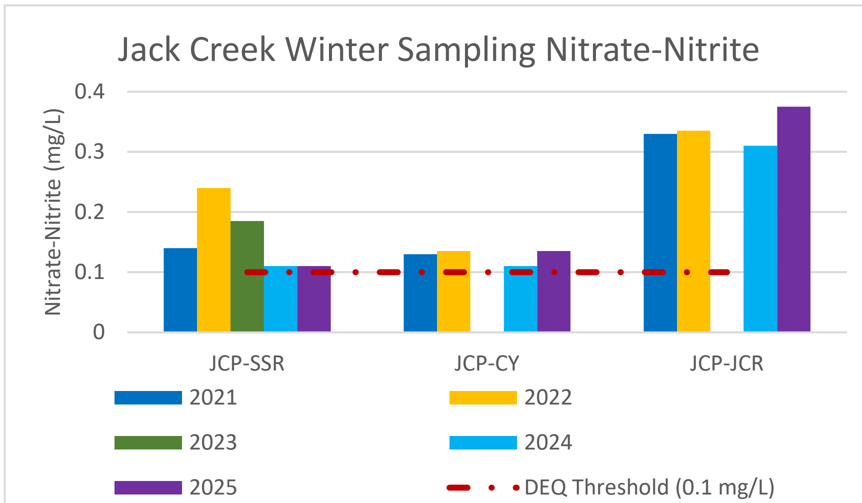


Figure 4: Nitrate-Nitrite concentrations during Jack Creek Winter Sampling Events from 2021-2025 (NOTE: sampling only occurred on JCP-SSR in 2023 due to time constraints within the sampling period)

Tributary Blitz

This year marked the sixth annual Tributary Blitz, a one-day sampling event, held in late August, during which volunteers monitor fifteen important tributaries and the mainstem of the Madison River. This is a form of synoptic sampling, or the sampling of several locations over a short period of time, typically a few hours. The conditions in a river or stream can change dramatically day to day, depending on weather and temperature. Completing all of the sampling in one day, provides a representative snapshot of the Madison Tributaries.

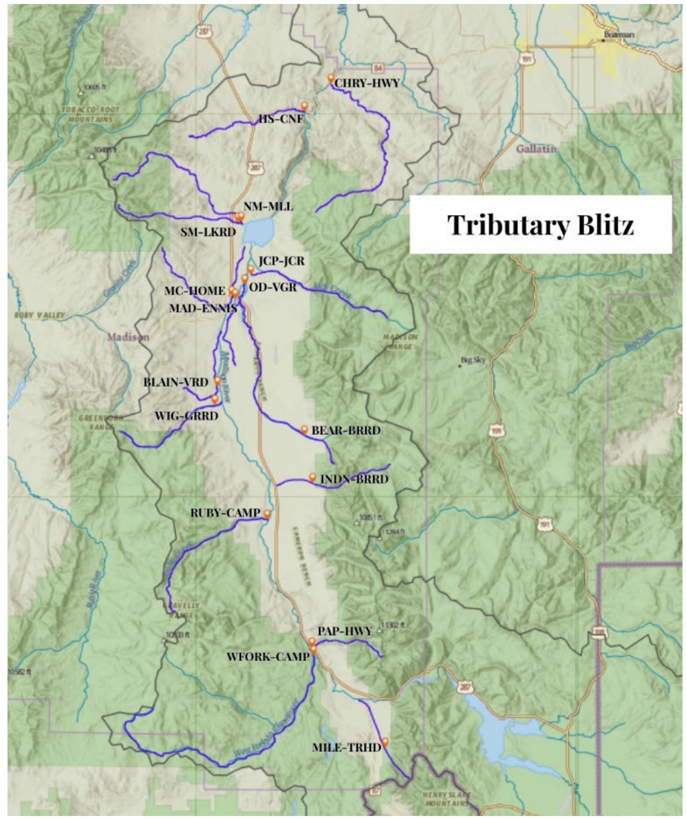


Figure 5: Tributary Blitz Monitoring Sites

The Tributary Blitz is made possible thanks to groups of volunteers that used a 'divide and conquer' method to sample all of the streams within hours. Volunteers were divided into three teams, and assigned five or six streams to visit, determined by the mountain range where each tributary begins. Each team used a multi-meter to record water temperature, Dissolved Oxygen, and conductivity. Turbidity samples were taken at each site and were evaluated using a turbidimeter at MCD's lab. Several nutrient samples were taken at each site and sent to Energy Labs for analysis. These samples included Total Persulfate Nitrogen, Nitrate-Nitrite, Total Phosphorus, and Dissolved Orthophosphate, all of which are important indicators of water quality. Because there is natural variation of the nutrient levels in water, the Total Phosphorus and Total Nitrogen thresholds were determined based on eco-region and time of year. The thresholds used in this report reflect the Middle Rockies eco-region from July 1st to September 30th, as determined by DEQ.

The Tributary Blitz monitoring event is made possible thanks to funding and technical support through the DEQ Volunteer Monitoring Lab Analysis Support Program (VMLASP).

Table 1: Tributary Blitz Monitoring Plan

Tributary Blitz Teams		
Gravelly	*Tobacco*	*Madison*
Mile Creek	Cherry Creek	Papoose Creek
West Fork	Hot Springs Creek	Indian Creek
Ruby Creek	North Meadow Creek	Bear Creek
Wigwam Creek	South Meadow Creek	O'Dell Creek
Blaine Springs Creek	Moore Creek	Jack Creek
	Madison River	

Phosphorous

Many sites had similar concentrations of total phosphorous (TP) to previous years. Moore Creek, South Meadow Creek, North Meadow Creek, and Hot Springs Creek all had TP levels that exceeded the DEQ recognized threshold of 0.03 mg/L. Most of these streams are consistently above the threshold and two are recognized as impaired for nutrients in the *Madison Nutrient, E. coli, and Metal TMDLs and Water Quality Improvement Plan,* from 2019. South Meadow Creek remained just below the threshold last year, however a significant increase this year, resulted in it exceeding the DEQ established threshold.

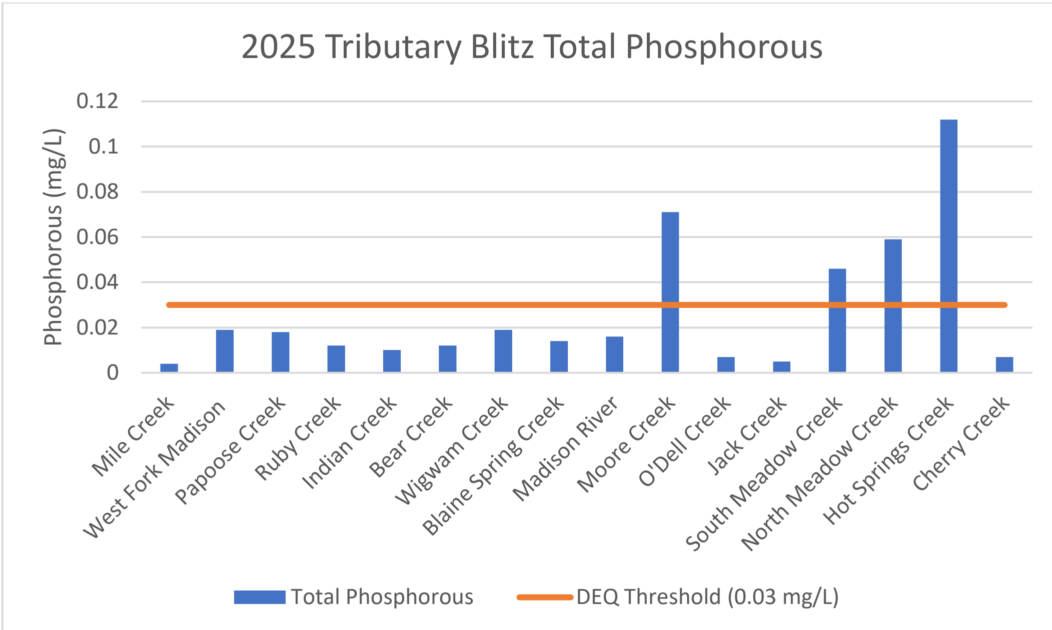


Figure 6: Total Phosphorous for all Tributary Blitz sites in 2025

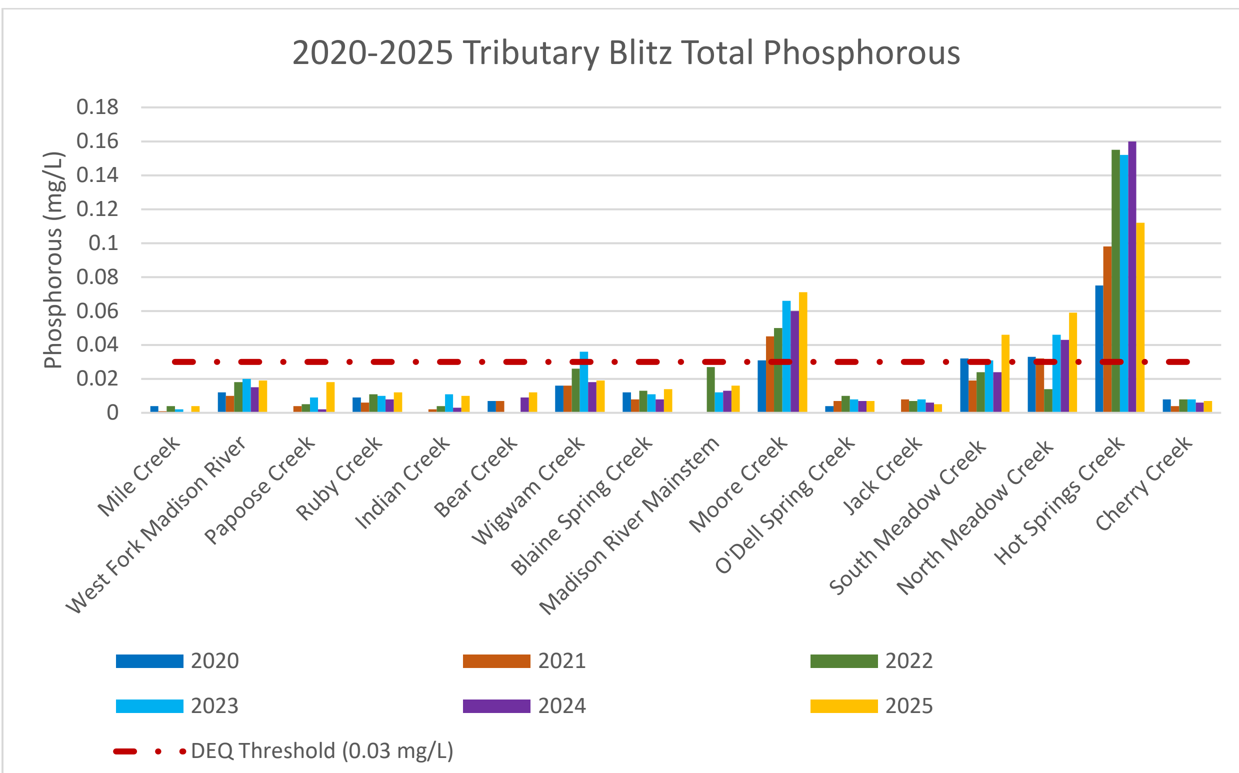


Figure 7: Total Phosphorous for all Tributary Blitz sites from 2020-2025

Nitrogen

Two forms of nitrogen are collected during Tributary Blitz: Total Persulfate Nitrogen (TPN) and Nitrate-Nitrite. As with phosphorous, Nitrogen is an important naturally occurring nutrient, but when in excess can be harmful to fish and wildlife. Comparing the Nitrate-Nitrite to TPN provides information on whether the nitrogen is naturally occurring or from anthropogenic (human-caused) sources. Sources of nitrates include wastewater treatment plants, runoff from fertilized lawns and cropland, and septic waste.

In 2025, eight streams had levels of Nitrate-Nitrite above the threshold of 0.10 mg/L. These streams were Mile Creek, Papoose Creek, Wigwam Creek, Blaine Spring Creek, Moore Creek, O'Dell Creek, Jack Creek, and South Meadow Creek. Of these, four streams are also above the threshold for TPN of 0.30 mg/L. Streams that are above the threshold for TPN include Wigwam Creek, Blaine Spring Creek, Moore Creek, and South Meadow Creek.

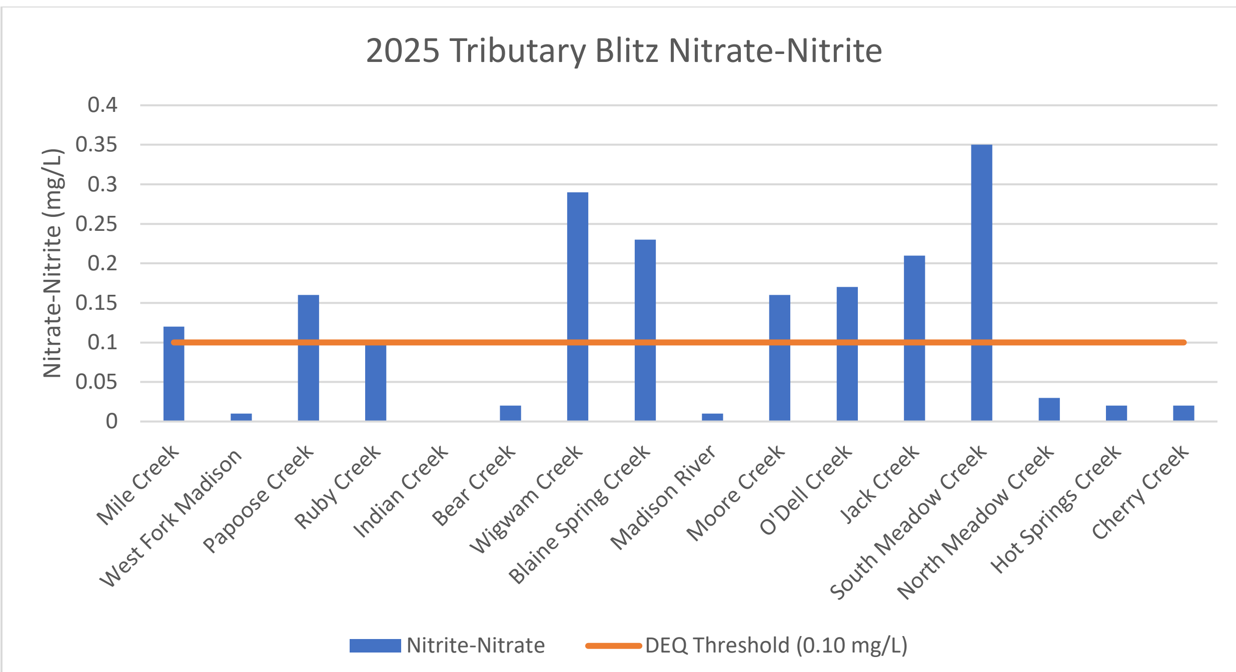


Figure 8: Nitrate-Nitrite levels for all Tributary Blitz sites in 2025

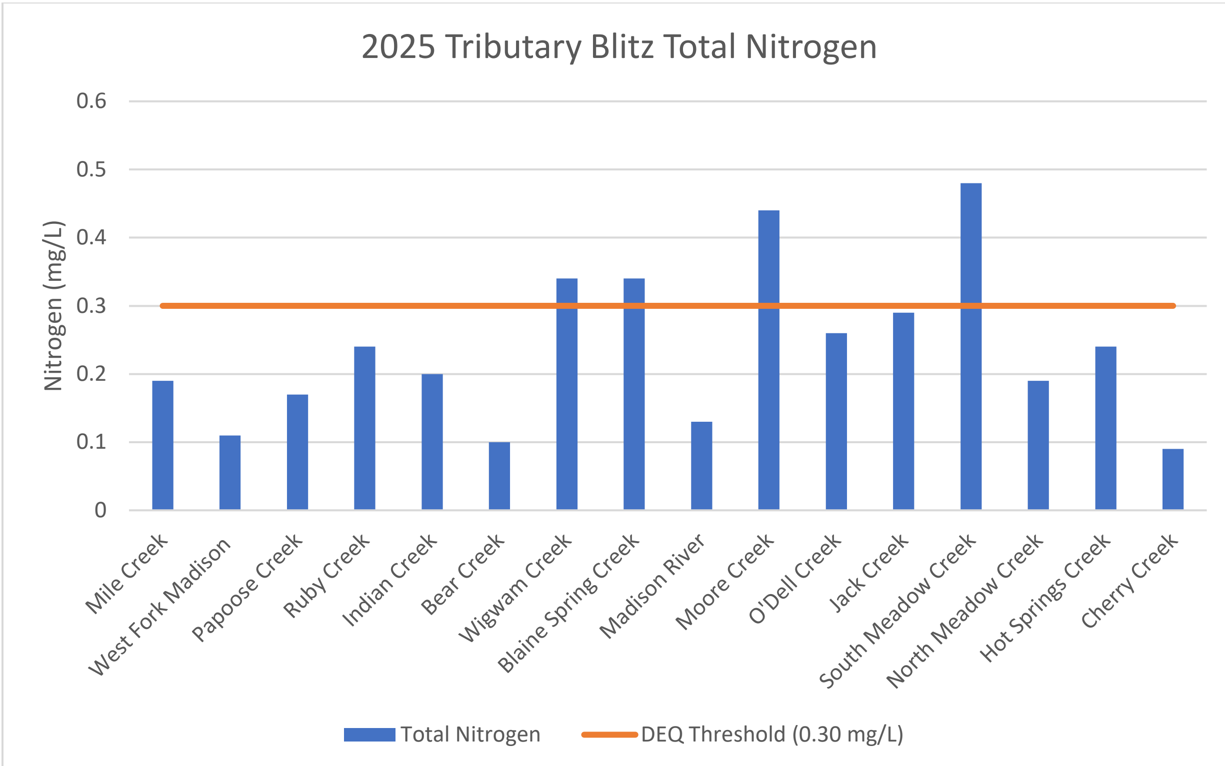


Figure 9: Total Nitrogen for all Tributary Blitz Sites in 2025

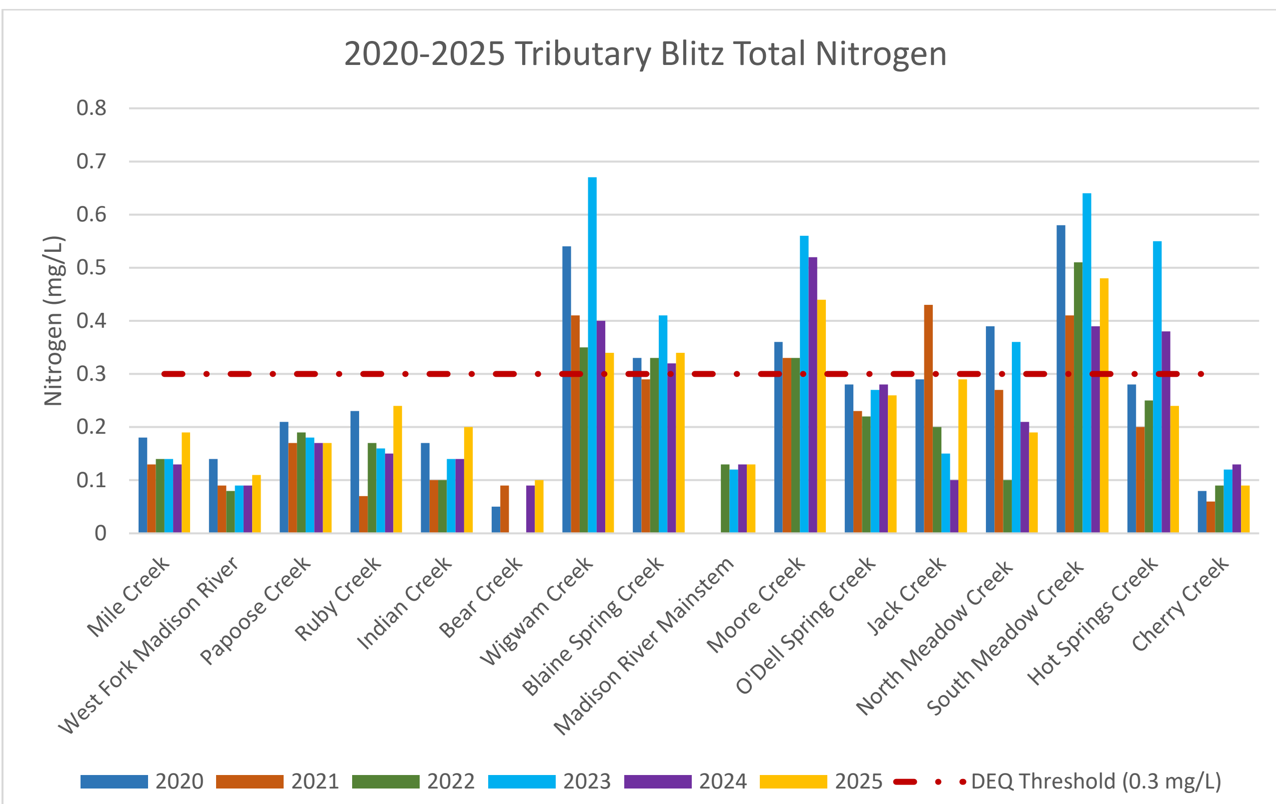


Figure 10: Total Nitrogen for all Tributary Blitz sites from 2020-2025

Future Considerations

In August 2025, four major wildfires burned across the Madison Watershed. While these fires directly affected the areas they burned, their impacts extend far beyond the fire perimeter, influencing surrounding ecosystems and downstream water quality. As vegetation is consumed and root systems are lost, soils become more vulnerable to erosion from rainfall and wind, increasing the amount of sediment and turbidity in nearby streams.

Although research on post-fire water quality is still evolving, studies have shown that burned watersheds often experience elevated concentrations of organic carbon and phosphorus during the first one to five years after a fire, while increased nitrogen and sediment loads can persist for up to eight years. Given the extent of the 2025 wildfires within the Madison Watershed, changes in nutrient and sediment levels should be anticipated in the coming years, particularly within the most heavily affected subwatersheds.

Stream Restoration

Lower Jack Creek

The primary goal of Lower Jack Creek Riparian Restoration Project was to install treatments that provide habitat improvements and to stabilize eroding, historically altered streambanks. To achieve this goal, the treatments incorporated design materials that were appropriate for the site and able to withstand the variable flows of this high energy system. The Madison Conservation District completed this project in partnership with Trout Unlimited, Trout and Salmon Foundation, Northwestern Energy, Montana Watershed Coordination Council, R.E. Miller and Sons, Montana Conservation Corps, Montana DNRC, and Montana Fish, Wildlife and Parks (FWP). It would not have been possible without the landowners, The Madison Valley Ranch and Fasules Family.

Figure 11: Large bend on part of Lower Jack Creek Restoration. Note the spillover of high water onto banks that soaked into the riparian area and provided water for soil recharge and establishing plants during the project's first year.

The final planting of the Lower Jack Creek restoration project was completed in 2020, after several years of engineering. In 2021 regular monitoring and watering of the site was done to ensure successful establishment of the cottonwood and willow plantings. Every cottonwood planted in 2020 has survived, and watering will continue if drought persists. Due to extreme drought and low flows, many of the willow cuttings had difficulty accessing water and had a low success rate.

Figure 12: Cottonwood planting from 2020 at the Lower Jack Creek Restoration in 2021

Lower Moore Creek

Originating in the southeastern flanks of the Tobacco Roots Mountain Range, Moore Creek collects a number of smaller tributaries in its descent towards the Town of Ennis. The creek is colloquially known as "Poop Creek" given its 150-year history of Europeans settling and establishing along its banks. This name has proven to be representative of recent conditions as Moore Creek was listed as impaired for E. Coli from both human and cattle. In addition to E.

Coli, Moore Creek has the most recognized impairments than any stream in the Madison Watershed.

Figure 13: Straightened and Incised Section of Moore Creek Pre-Restoration

The Lower Moore Creek restoration project seeks to restore degraded and historically channelized conditions on a segment of lower Moore Creek near the confluence with the Madison River (Ennis Lake/Res.). The project aims to improve instream and riparian wildlife habitat by enhancing water quality and restoring riparian and wetland vegetation. It will also reduce sediment inputs by stabilizing eroding banks and preventing further stream incision and erosion.

Notably, this site is located in valuable wildlife habitat given its proximity to the confluence with the mainstem, and the geographic context within the productive and diverse river valley bottom. Species of interest that project partners anticipate benefitting from this project include resident and migratory avian species (Trumpeter Swan, Wilson's Snipe, etc.), amphibians, and reptiles. The landowners have also collaborated with NRCS and MCD to develop riparian pastures to ensure high quality management of cattle near sensitive streamside habitat on their property.

This comprehensive project will unfold in multiple phases over the coming years and will incorporate several agencies, organizations and landowners. Phase 1 of the Moore Creek project began in winter of 2024. Thus far, this phase comprised approximately a 0.3 mile section of Moore Creek that was straightened, incised, and devoid of woody vegetation. The restoration plan involved the construction of 0.53 mile of new stream channel and floodplain features with a focus on: a.) restoring eroding streambanks; b.) re-establishing channel cross-sections dimensions, plan from and longitudinal profile dimensions; and c.) increasing floodplain connectivity. Project completion also resulted in the restoration of approximately 6 acres of previously drained wetland area. This phase also included passive restoration efforts, such as implementing riparian fencing, hardened crossings, and water gaps to protect sensitive riparian areas and vegetation.

Figure 14: Construction of New Moore Creek Stream Channel

Natural Streambed and Land Preservation Act Projects

Since 1975, conservation districts in the state of Montana have been championing the Natural Streambed and Land Preservation Act, commonly known as "310 Law". The associated permitting process is required when any private party is proposing to conduct work in or near a perennial stream. These are unique opportunities to be in the field with local landowners to discuss the proposed work and potential impacts. The state's Fisheries Biologist is also present for most field inspections and helps make recommendations to the MCD Board of Supervisors. Our board is comprised of 7 members of the public, and they make the final decision on whether a permit is jurisdictional, approved, modified, or denied. A majority of the permits received in 2025 were "other," meaning roads, bridges, utilities, etc. The updated list of 310 permits in 2025 is on the Madison Conservation District website.

Decision/Type	AG RELATED	FORESTRY RELATED	MINING RELATED	OTHER (URBAN, UTILITIES, ROADS)	TOTAL
Approved as Proposed	7			7	14
Approved with Modifications	2			4	6
Denied					0
Withdrawn/Not a Project/Canceled	1		1	4	6
Emergencies	1				1
Complaints				3	3
Arbitrations					0
Total	11	0	1	18	30

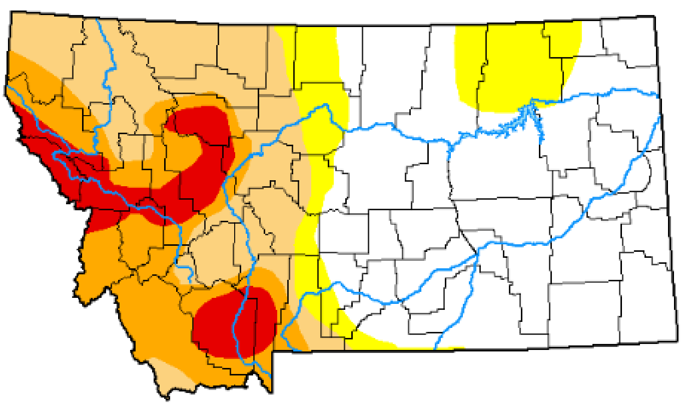
Figure 15: 310 Permit Applications in 2025

Appendix

US Drought Monitor for Tributary Blitz

U.S. Drought Monitor

Montana



August 26, 2025

(Released Thursday, Aug. 28, 2025)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	47.29	52.71	41.95	22.40	8.24	0.00
Last Week 08-19-2025	47.29	52.71	41.95	22.40	5.86	0.00
3 Months Ago 05-27-2025	22.17	77.83	53.50	23.21	0.00	0.00
Start of Calendar Year 01-07-2025	6.70	93.30	54.22	27.25	13.79	0.00
Start of Water Year 10-01-2024	15.18	84.82	42.24	21.05	9.44	0.90
One Year Ago 08-27-2024	0.00	100.00	65.92	22.98	9.00	0.90

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:

Brad Rippey

U.S. Department of Agriculture

droughtmonitor.unl.edu

MT-eWQX and Data Hub Summary

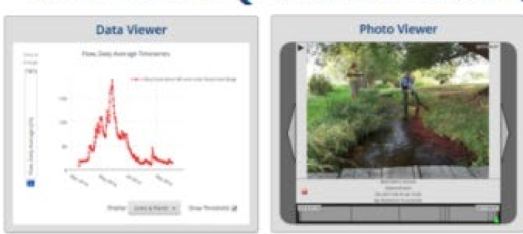
MT-eWQX **national WQX**

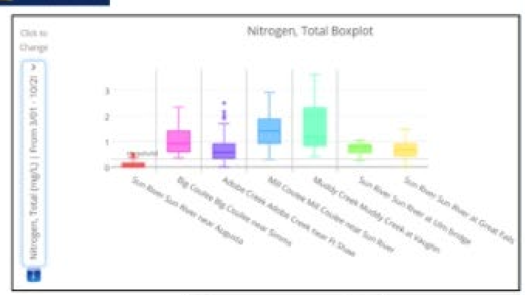
	A	H	L	M	N
1	#Activity_ID	Characteristic_Name	Result_Value	Result_Value_Unit	Result_Qualifier
2	#Text(35)	Text(120)	Text(20)	Text(12)	Text(5)
3	20200831_BC-ROAD	Total Phosphorus, mixed fo	0.007	mg/l	
4	20200831_BC-ROAD	Total nitrogen, mixed form	0.05	mg/l	
5	20200831_BC-ROAD	Orthophosphate	0.006	mg/l	H
6	20200831_BS-VARNEY	Total Phosphorus, mixed fo	0.012	mg/l	
7	20200831_BS-VARNEY	Total nitrogen, mixed form	0.33	mg/l	
8	20200831_BS-VARNEY	Orthophosphate	0.006	mg/l	H
9	20200831_CC-HWY	Total Phosphorus, mixed fo	0.008	mg/l	
10	20200831_CC-HWY	Total nitrogen, mixed form	0.08	mg/l	

Supports robust long-term storage of data and metadata	Yes ✓	Supports interactive visualization of data by the public	No ✗

- Emphasis on secure long-term storage of data and metadata
- Montana DEQ stores data in MT-eWQX (aka EQuiS) database
- MT-eWQX pushes data to the national Water Quality Exchange (WQX)
- Uploading data to MT-eWQX requires robust quality assurance and metadata
- MT-eWQX data is accessible via the national WQP (not directly from MT-eWQX)
- No data visualization options are built into the WQP
- Downloading data from the WQP can be somewhat cumbersome

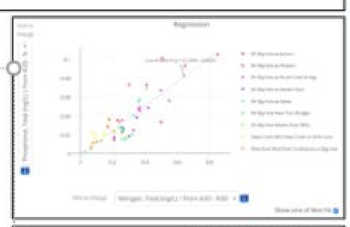
MSUEWQ Data Hub

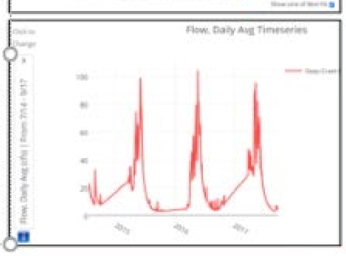




Supports robust long-term storage of data and metadata	No ✗	Supports interactive visualization of data by the public	Yes ✓

- Emphasis on public access and exploration of data
- Stores water quality numeric data and photos
- allows easy plotting of data with different plot styles (boxplots, time series, regressions, etc.)
- Easily downloaded to make your own plots
- Direct data upload is possible/simple, but we encourage uploading to MT-eWQX first and then working with MSUEWQ to transfer data from WQP to Data Hub





Weekly Monitoring Figures

South Meadow Creek

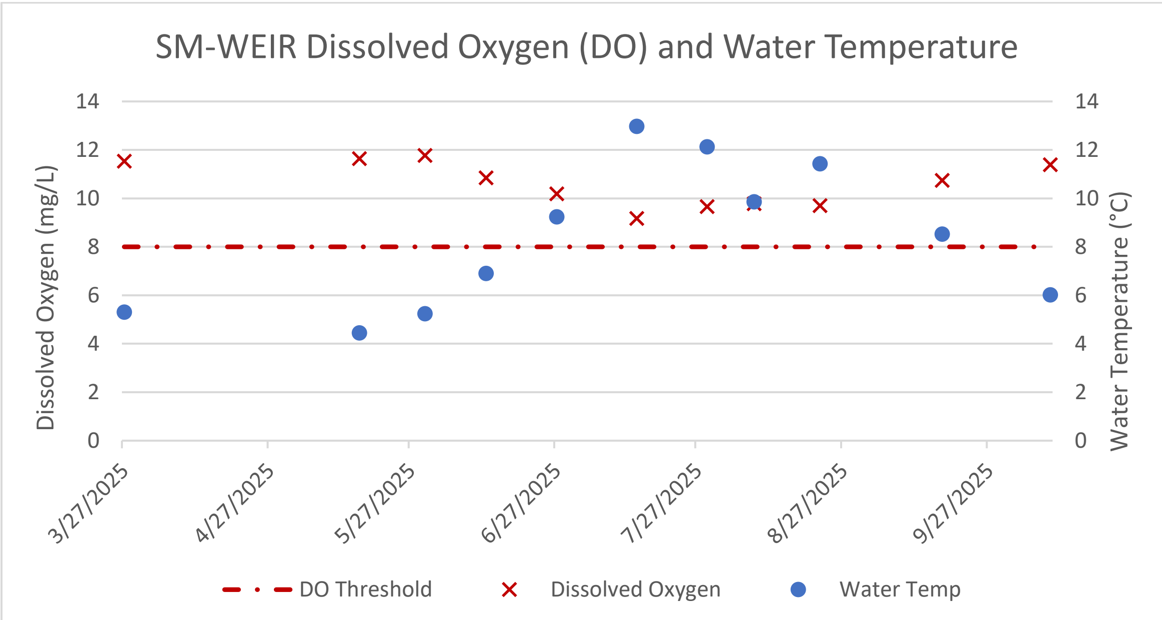


*Figure 16: Relationship between Dissolved Oxygen (mg/L) and Water Temperature (*C) at SM-WEIR for 2025*

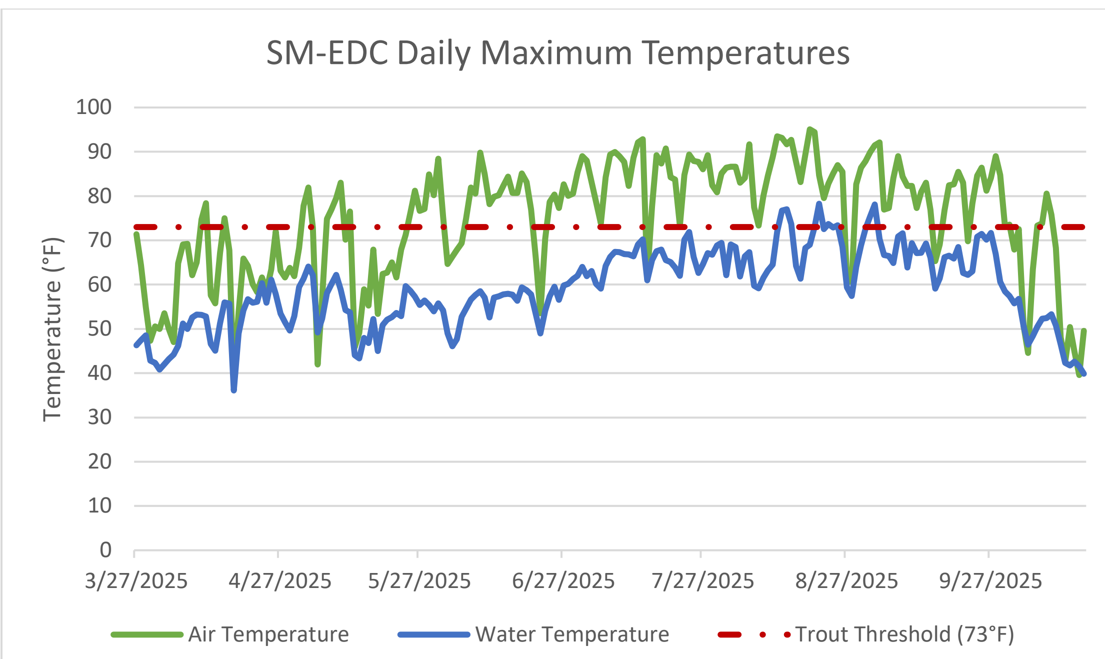


*Figure 17: SM-EDC Daily Maximum Air and Water Temperature (*C) for 2025*

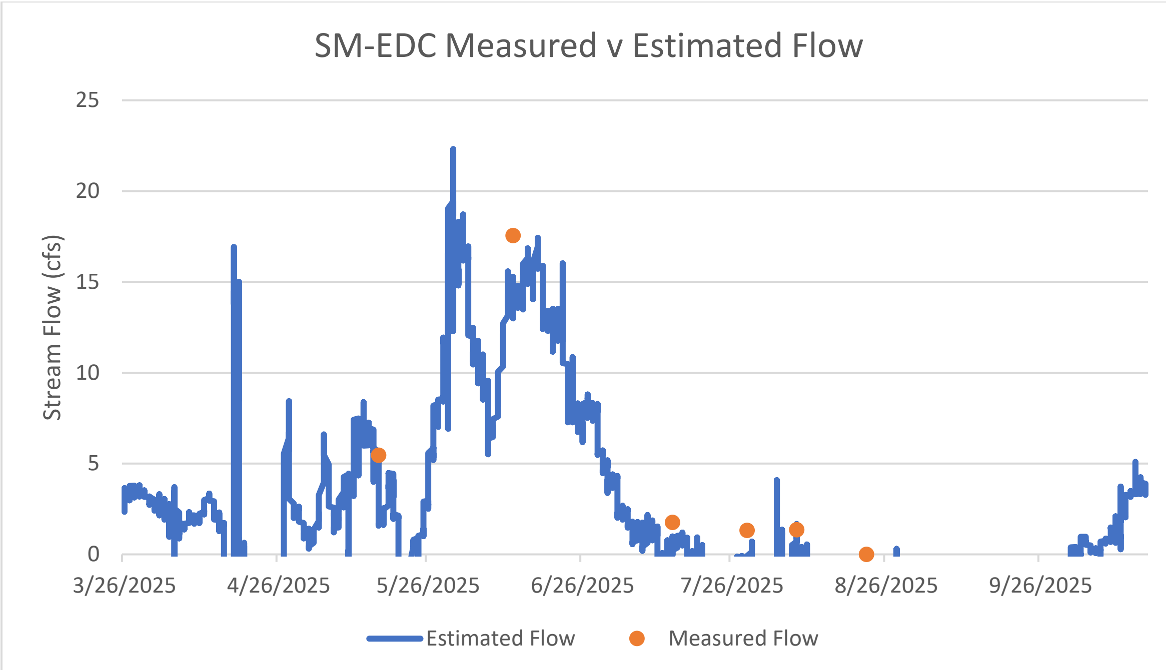


Figure 18: SM-EDC Estimated and Measured Discharge for 2025

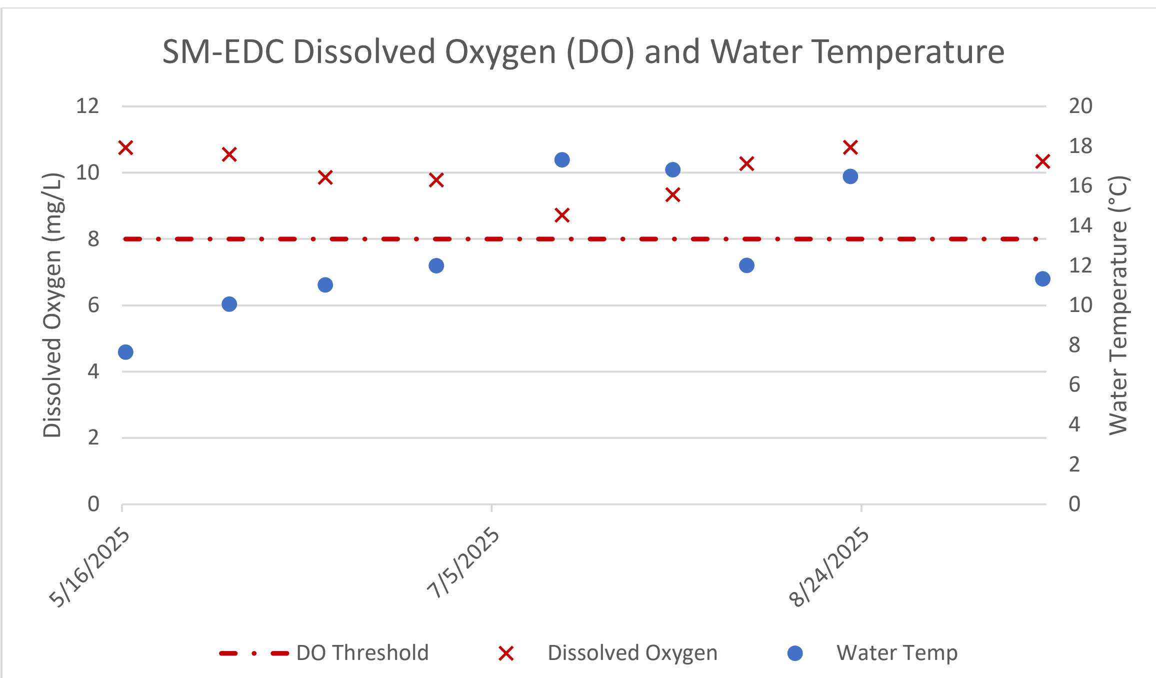


*Figure 19: Relationship between Dissolved Oxygen (mg/L) and Water Temperature (*C) at SM-EDC for 2025*

Moore Creek

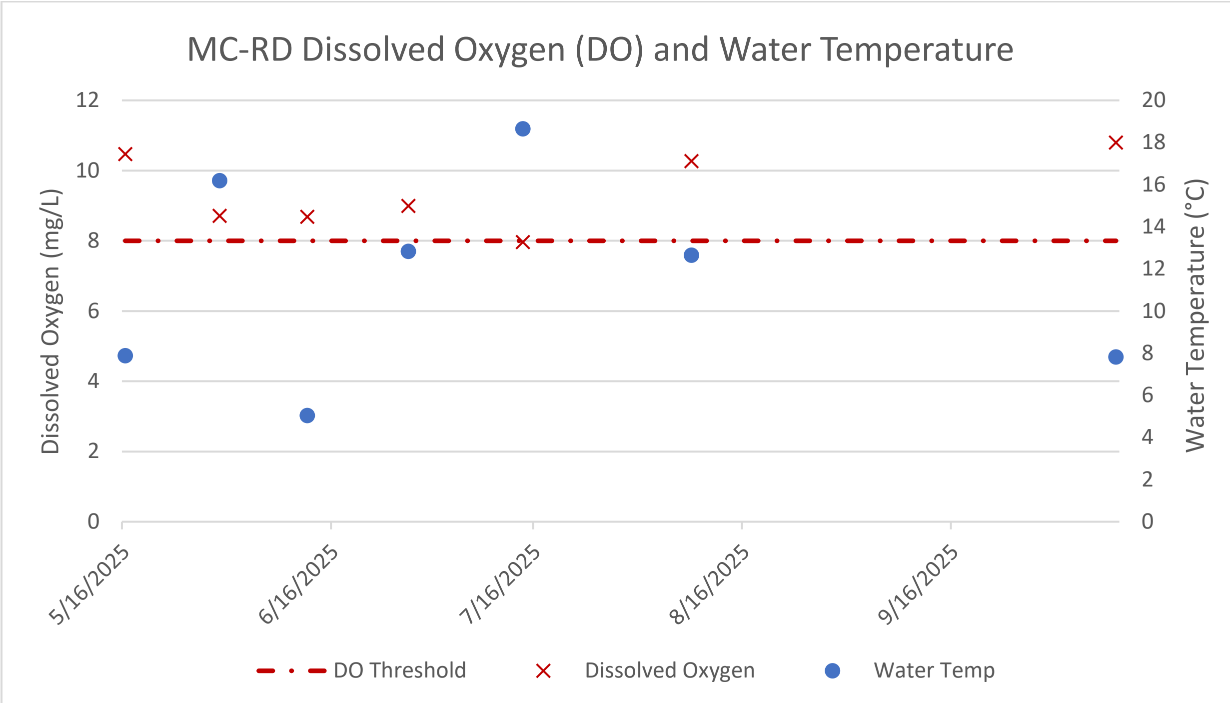


*Figure 20: Relationship between Dissolved Oxygen (mg/L) and Water Temperature (*C) at MC-RD for 2025*

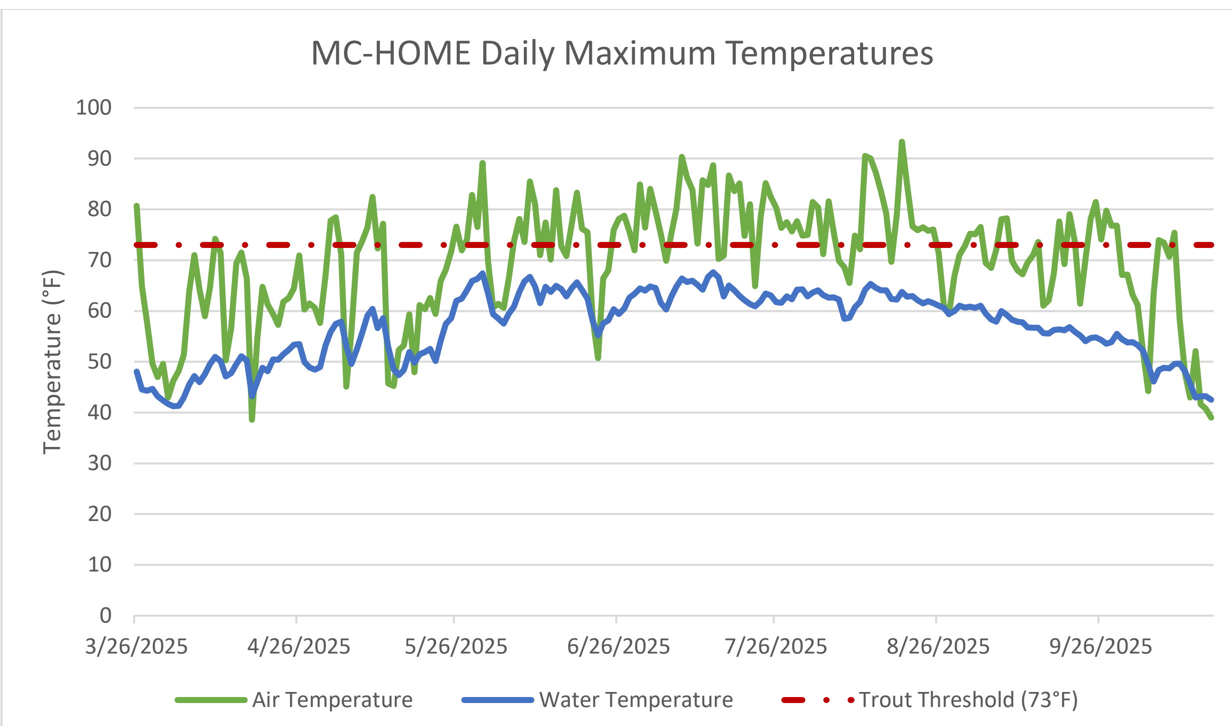


*Figure 21: MC-HOME Daily Maximum Air and Water Temperature (*C) for 2025*

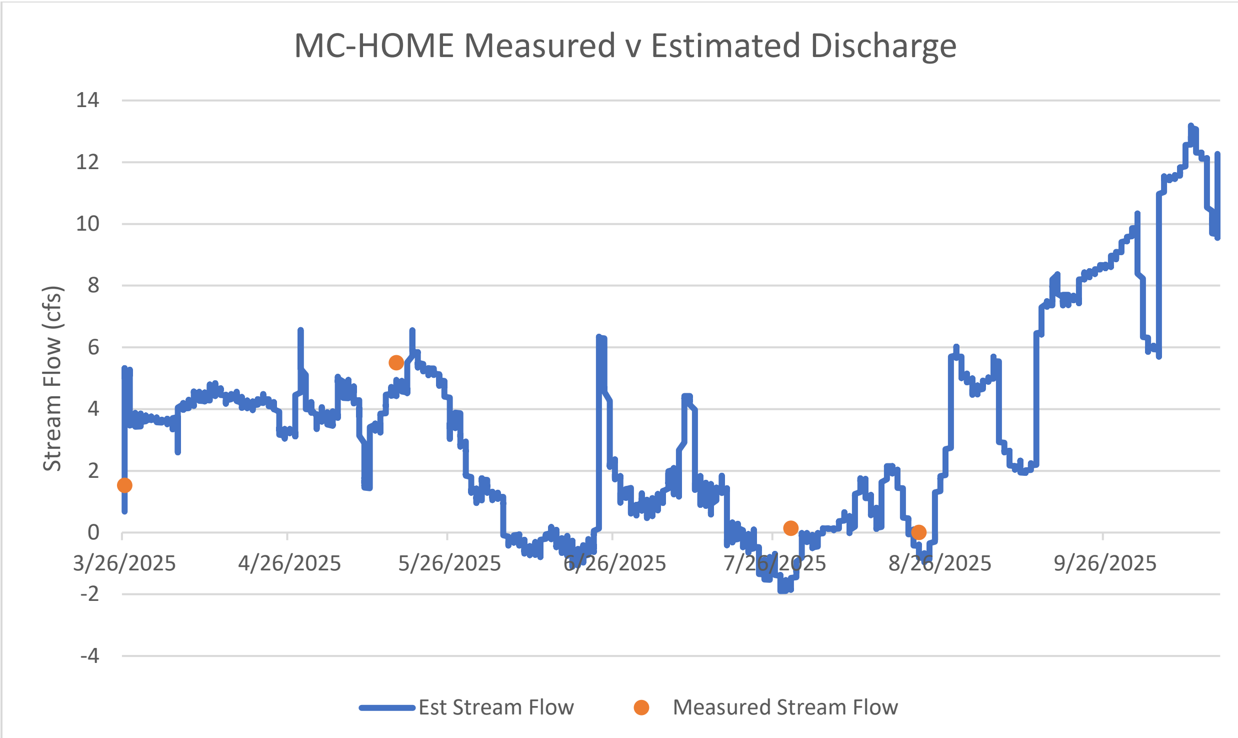


Figure 22: MC-HOME Estimated and Measured Discharge for 2025

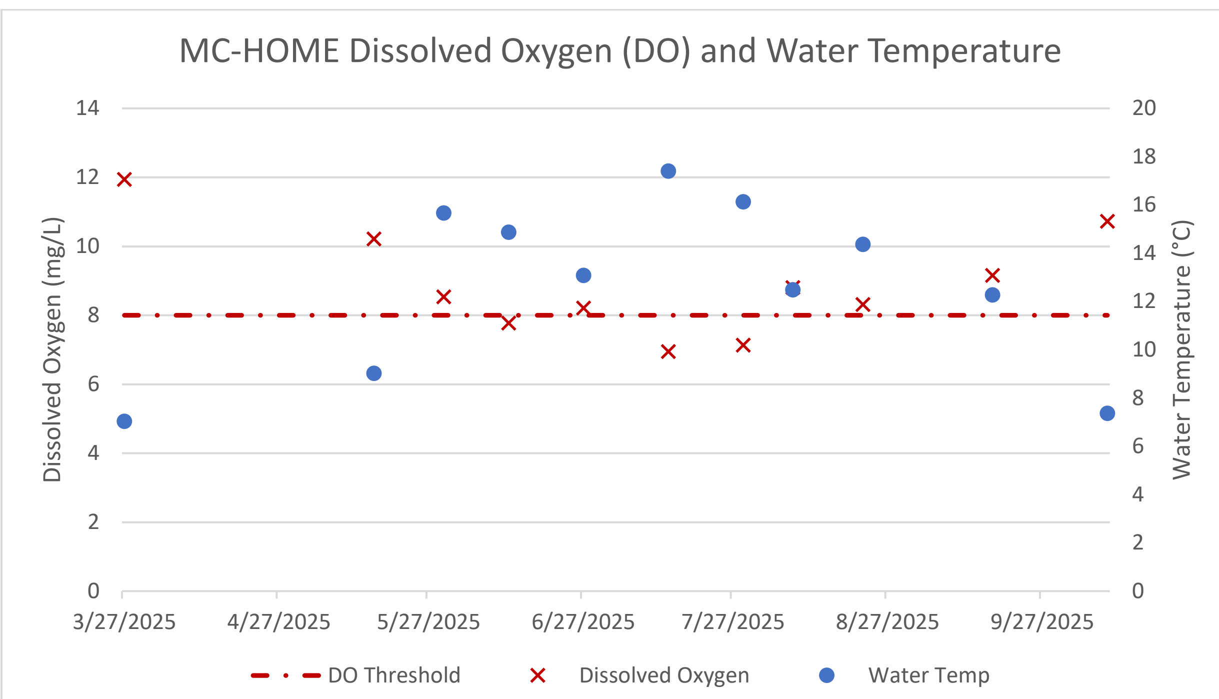


*Figure 23: Relationship between Dissolved Oxygen (mg/L) and Water Temperature (*C) at MC-HOME for 2025*

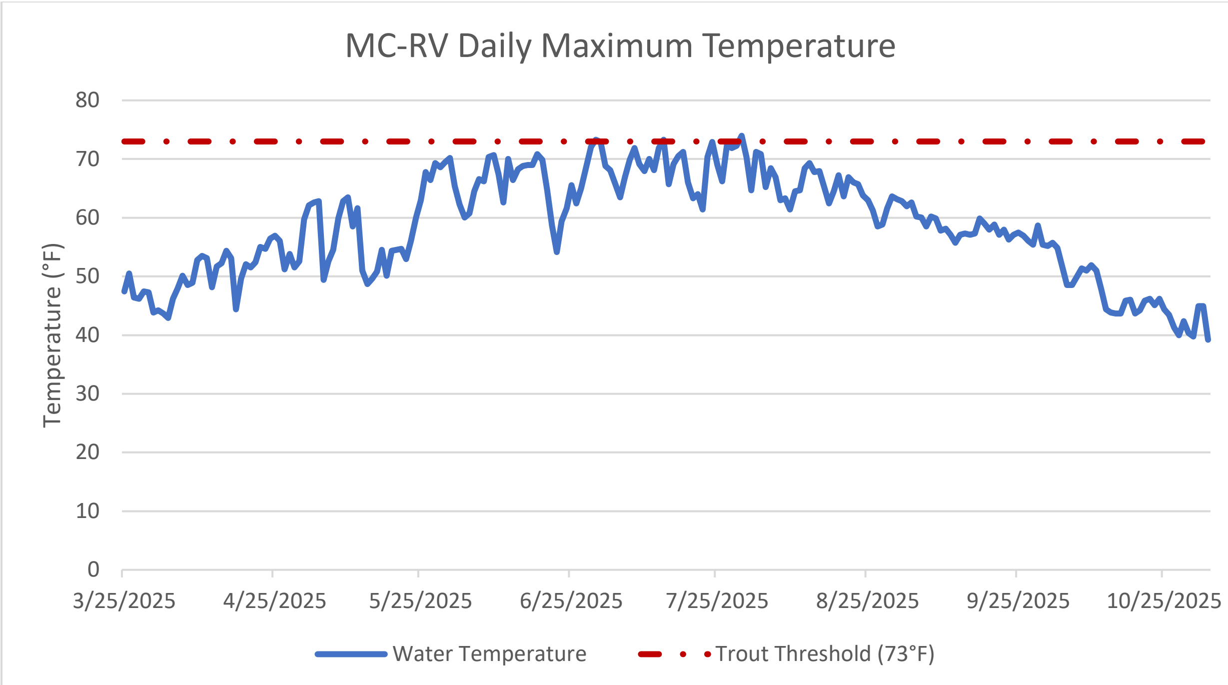


*Figure 24: MC-RV Daily Maximum Water Temperature (*C) for 2025*

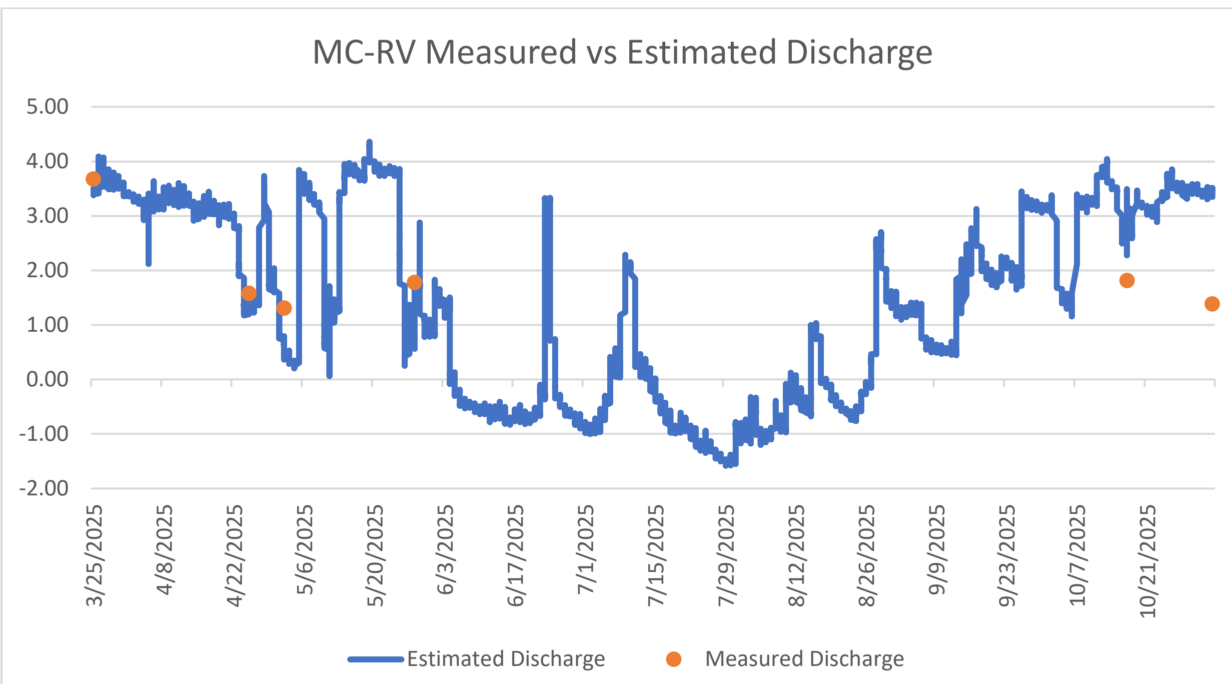


Figure 25: MC-RV Estimated and Measured Discharge for 2025

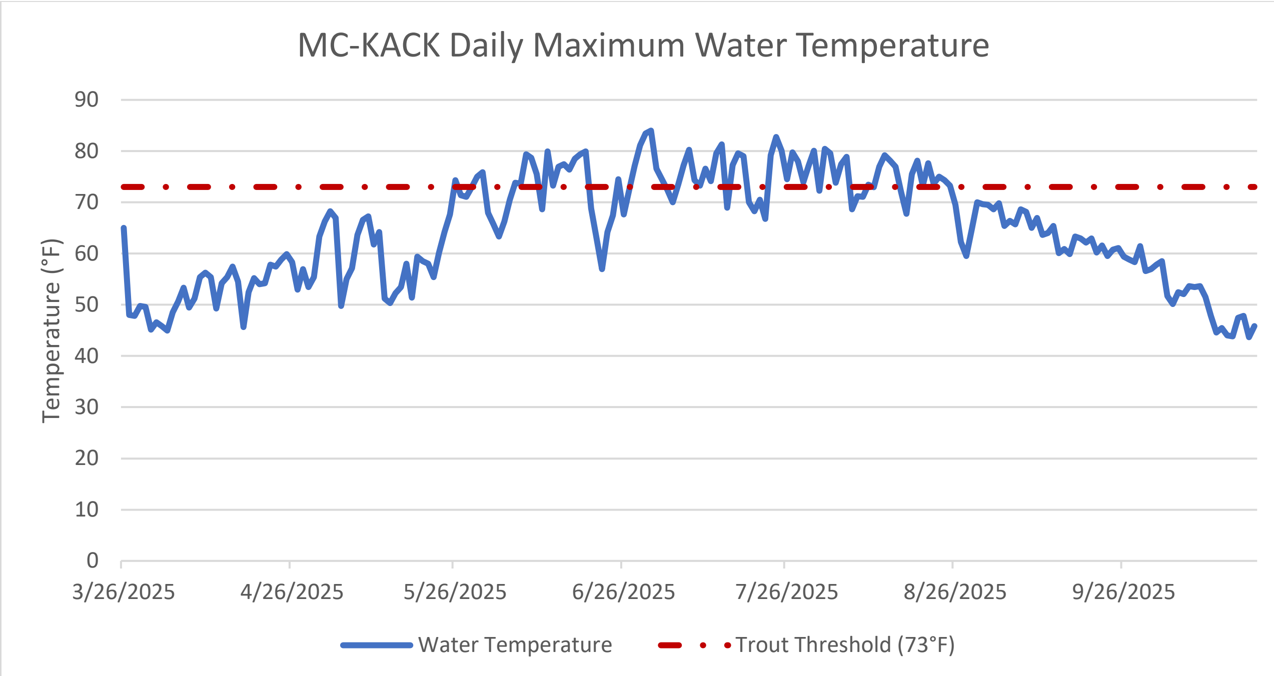


*Figure 26: MC-KACK Daily Maximum Water Temperature (*C) for 2025*

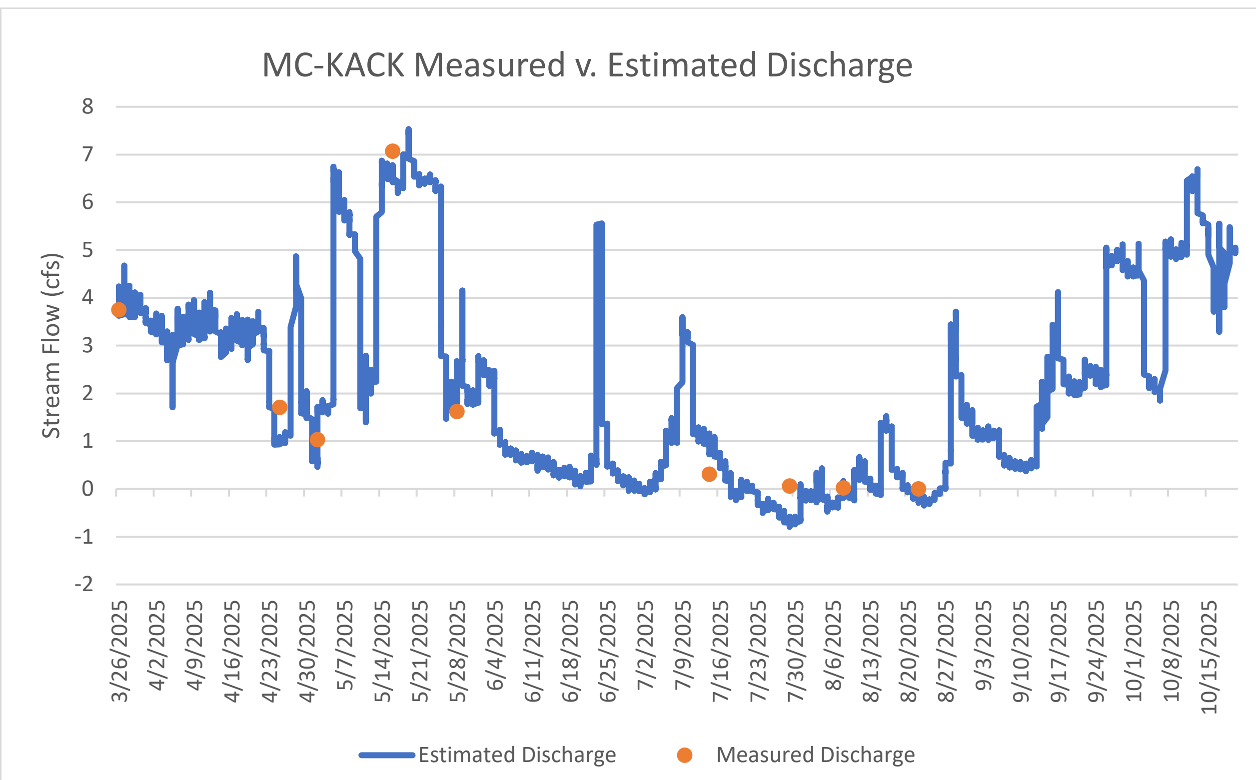


Figure 27: MC-KACK Estimated and Measured Discharge for 2025

Jack Creek

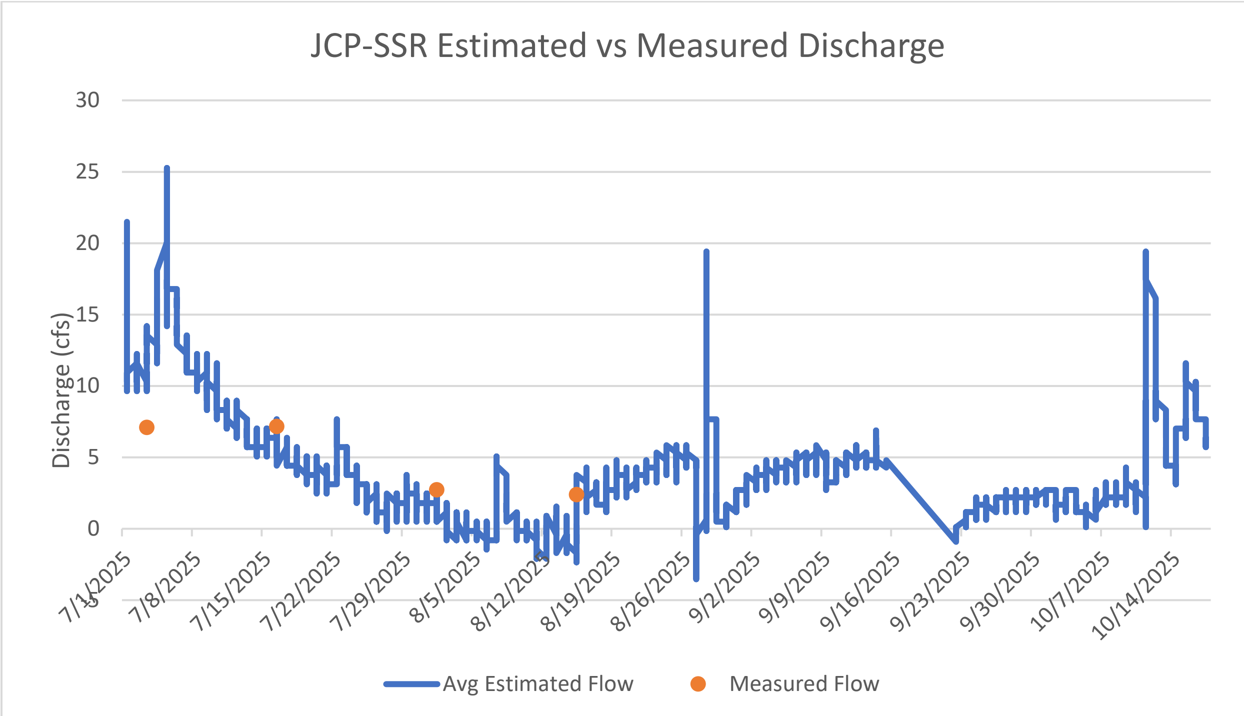


Figure 28: JCP-SSR Estimated and Measured discharge (cfs) for 2025

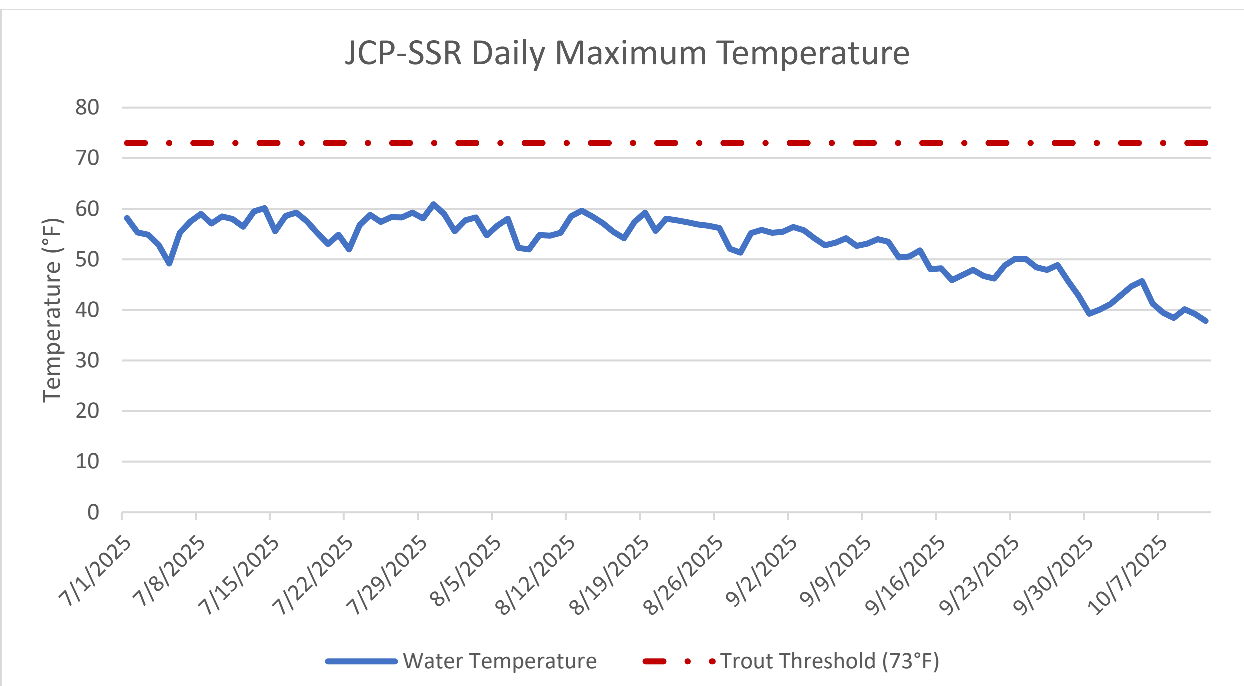


*Figure 29: Daily Maximum Water Temperature (*C) for 2025*

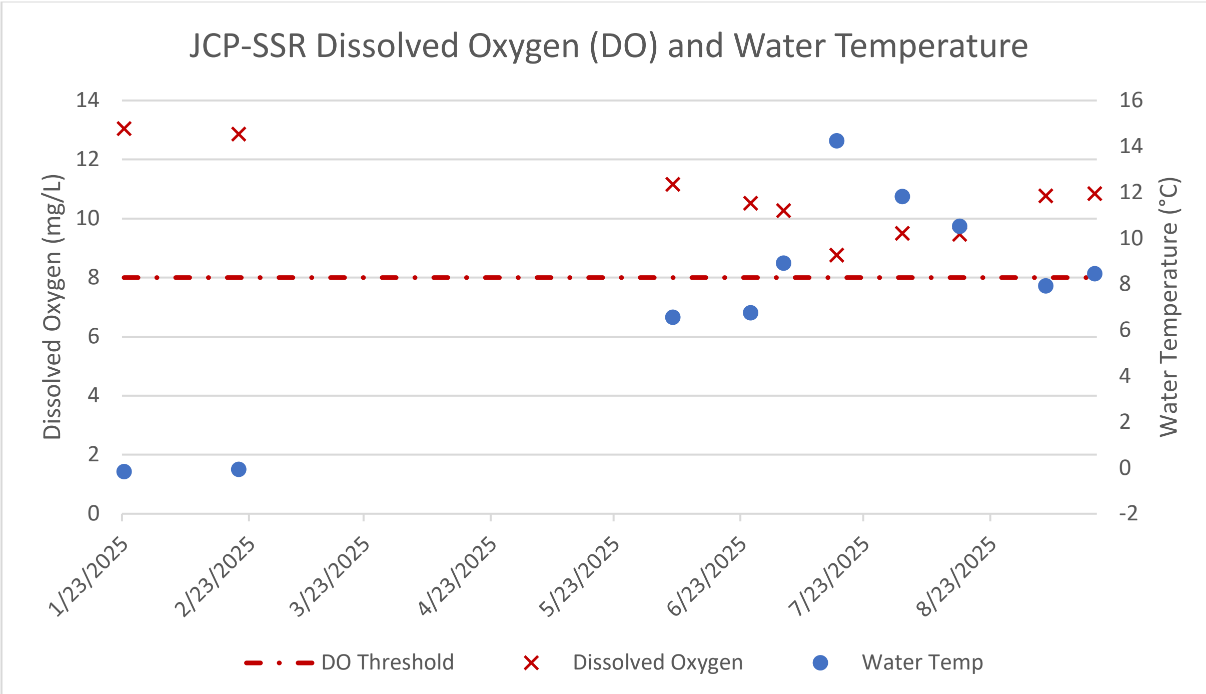


*Figure 30: Relationship between Dissolved Oxygen (mg/L) and Water Temperature (*C) at JCP-SSR for 2025*

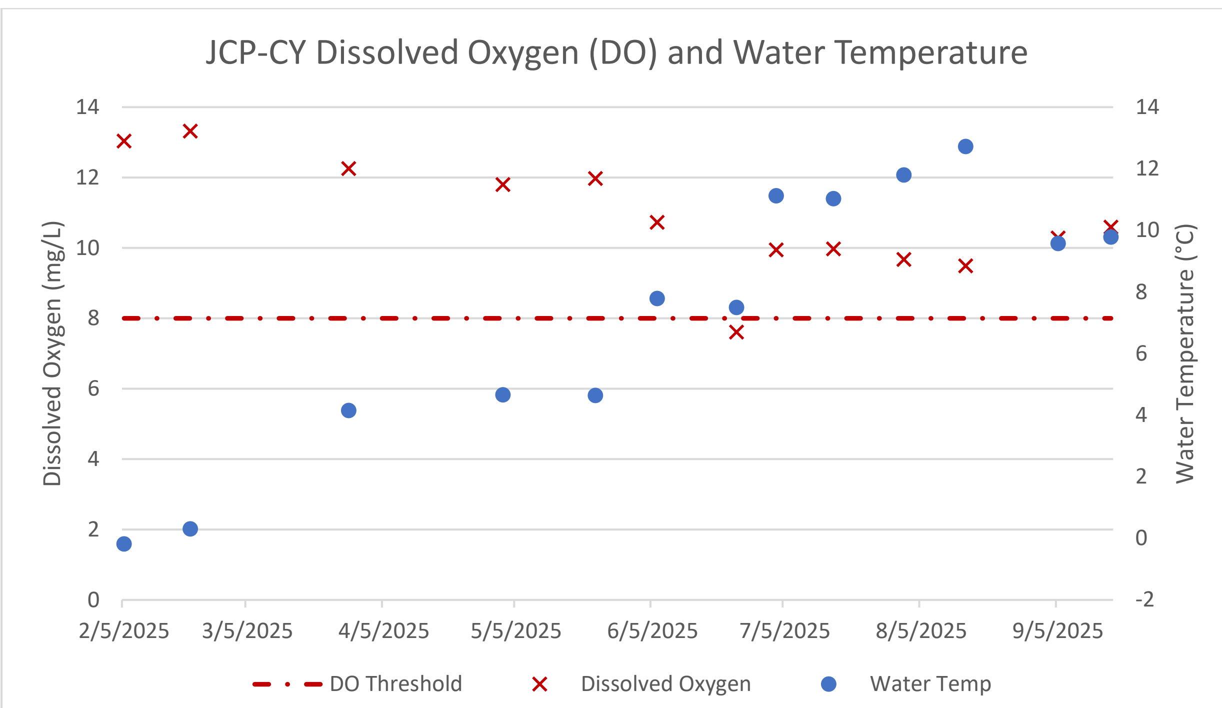


*Figure 31: Relationship between Dissolved Oxygen (mg/L) and Water Temperature (*C) at JCP-CY for 2025*

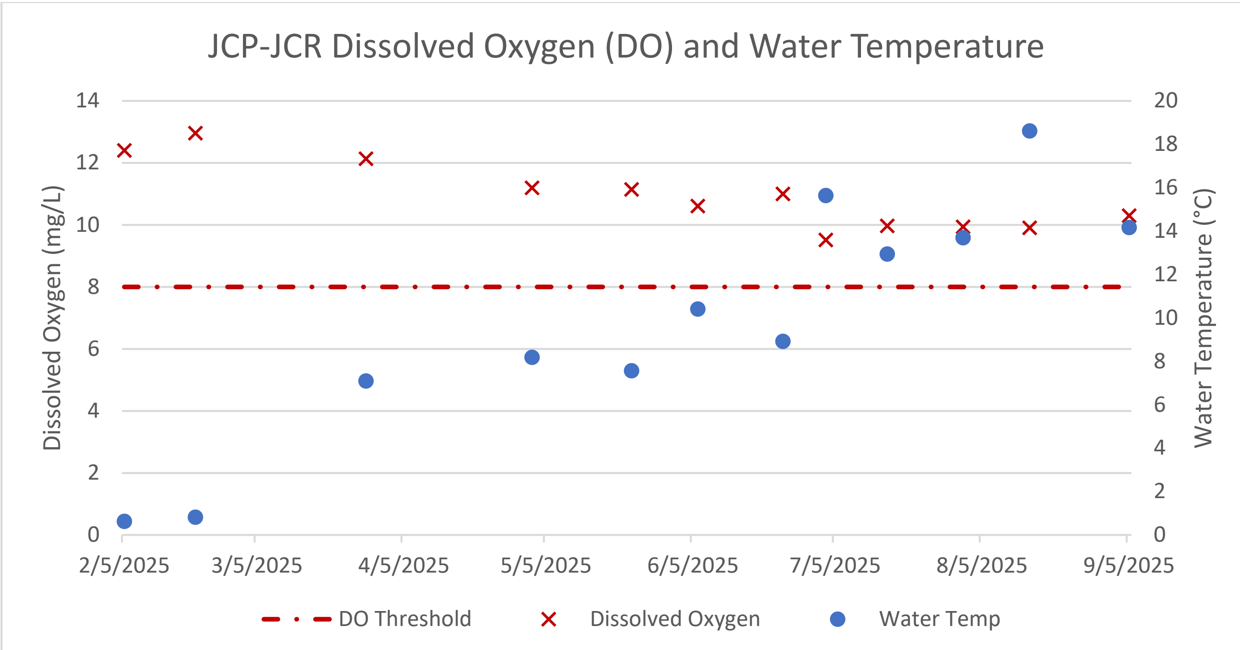


*Figure 32: Relationship between Dissolved Oxygen (mg/L) and Water Temperature (*C) at JCP-JCR for 2025*