

# POUDRE RIVER TEMPERATURE MONITORING PROGRAM

## Water Year 2020

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Northern Water began collecting temperature data in the Poudre River in 2014 to establish a baseline dataset representative of conditions prior to the construction of the Northern Integrated Supply Project (NISP).

The objectives of this program are to:

- Provide a consistent, high-quality dataset
- Track long-term changes in temperature before and after NISP components are built and implemented
- Provide information to support NISP-related water quality mitigation measures and adaptive management efforts
- Comply with monitoring conditions required in the [Rationale for Conditional 401 Certification of the Northern Integrated Supply Project \(NISP 401 Certification\)](#)
- Assess compliance with state temperature standards for protection of aquatic life

The following describes Northern Water's 2020 Poudre River Temperature Monitoring Program.

### Monitoring Locations

The 2020 Poudre River Temperature Monitoring Program includes 14 monitoring locations.

Geographically, monitoring covers approximately 30 miles of river starting upstream of the North Fork of the Poudre River and ending east of Interstate 25, downstream of the confluence with the Fossil Creek and the New Cache Canal diversion. Most sites are located in the mainstem of the Poudre River with two monitoring sites in Poudre River tributaries: the North Fork and Fossil Creek. The locations in the mainstem are upstream and/or downstream of major inflows or at locations that are important from a regulatory standpoint. The site locations are shown in Table 1.



*Poudre River near the CLAFTO temperature location*

**Table 1 - Poudre River Temperature Monitoring Locations**

Station	Description	New Site	401 Cert	Latitude	Longitude
<b>PR-NFU</b>	Poudre River upstream of the North Fork			40.70322	-105.2425
<b>NF-PRU</b>	North Fork upstream of the Poudre River			40.70154	-105.2404
<b>PR-NFD</b>	Poudre River downstream of the North Fork			40.6973	-105.2448
<b>CLAFTCO</b>	Poudre River at Canyon mouth near state gage	X	X	TBD	TBD
<b>PR-HSCU</b>	Poudre River upstream of Hansen Supply Canal		X	40.6601	-105.2094
<b>PR-HSCD</b>	Poudre River downstream of Hansen Supply Canal		X	40.6606	-105.2032
<b>PR-LION</b>	Poudre River at Lions Park		X	40.6239	-105.1420
<b>PR-SHI</b>	Poudre River at Shields Street in Fort Collins		X	40.6033	-105.0962
<b>PR-MWWU</b>	Poudre River at Lincoln Ave upstream Mulberry WWTP	X	X	TBD	TBD
<b>PR-NAT</b>	Poudre River at Nature Center	X	X	TBD	TBD
<b>PR-BCU</b>	Poudre River upstream of Boxelder Creek		X	40.55201	-105.0112
<b>PR-BCD</b>	Poudre River downstream of Boxelder Creek			40.53784	-104.9998
<b>FC-PRU</b>	Fossil Creek upstream of Poudre River			40.4976	-104.9853
<b>PR-FCD</b>	Poudre River downstream of Fossil Creek and New Cache Ditch diversion			40.5013	-104.9673

### *Changes to the Sampling Locations*

There were several changes made to the sampling locations in 2020 in order to incorporate required monitoring conditions that are part of the NIPS 401 Certification. The following is a summary of the changes that were made:

- CLAFTCO** – This site has historic temperature data that was collected as part of Northern Water’s Salinity Monitoring Program. Data collected for the Salinity Program are reported real-time to Northern Water’s database; real-time data collection at this site will continue as it is required in the NISP 401 Certification. Since this monitoring location has not historically been a part of Northern Water’s Temperature Monitoring Program, the installation of the temperature sensor did not follow Northern Water’s Standard Operation Procedure (SOP), “Protocols for Representative Temperature Monitoring of Rivers and Streams.” Therefore, in late summer of 2020, this site will be reinstalled following the SOP, which will require it to be placed in a slightly different section of the river than where existing data are collected. The existing salinity site will remain operational to support the Salinity Program data collection efforts. This will allow for comparison of temperature data at the new and existing monitoring location.
- PR-HSCU and PR-HSCD** – Northern Water has been collecting data at these locations since 2007 as part of the C-BT Temperature Monitoring Program. The NISP 401 requires that data collection continue at these locations; therefore, they are now included as part

of the Poudre River Temperature Monitoring Program. There will be no changes to operation or locations of these sites.

- PR-LION – Northern Water has been collecting data at this location since 2016 as part of the Poudre River Temperature Transition Zone Monitoring Program. The NISP 401 requires that data collection continue at this location; therefore, it is now included as part of the Poudre River Temperature Monitoring Program. There will be no changes to operation or location of this site.
- PR-MWWU and PR-NAT – These are two new monitoring locations that are required in the NISP 401 Certification. Data collection will need to begin at these locations by January 2021. It is anticipated that these sites will be installed per Northern Water’s SOP and operating by late summer/early fall of 2020.

### Station Operation and Maintenance

Northern Water maintains all the temperature stations. A HOBO ProV2 temperature logger is used at all sites. The logger records temperature at one-minute intervals and averages the one-minute data every 15 minutes, 24 hours a day while deployed. Each station is equipped with two HOBO data loggers: a primary and a secondary logger. This provides validation of the recorded temperature data and guards against gaps in the data set in case of sensor malfunction. Real-time data collection is required at the CLAFTCO location which will require a different logger that can be connected to telemetry.



*HOBO PRO V2 WATER TEMPERATURE LOGGER*

At all sites, except FC-PRU, the logger is placed in the thalweg of the stream per Northern Water’s Standard Operation Procedure (SOP), “Protocols for Representative Temperature Monitoring of Rivers and Streams.” At FC-PRU access to the water is limited, therefore the logger is attached to a bridge from which it hangs into the water.

Station visits are conducted monthly (or as conditions allow) to download the data, take manual water temperature measurement for comparison, and to clean and inspect the equipment. Data are collected year-round at all sites except FC-PRU where data are collected beginning in early spring (the earliest conditions that allow for equipment installation) through late fall.

The data are processed, uploaded and validated in Northern Water’s Aquarius/WISKI databases. All the data are finalized during the winter following the sampling season. The final data are available on Northern Water’s website at: [East Slope Temperature Data](#).