**Water Quality Monitoring**

As of 2017, this program includes 18 sites that span the Cache La Poudre River from just upstream of the North Fork of the Cache La Poudre River to the South Platte River near Kersey, downstream of the confluence with the Cache La Poudre River. Monitoring sites are located in the mainstem and major tributaries, as well as agricultural ditches that contribute significant return flows to the river. Sites are monitored biweekly between April and September and monthly the rest of the year. Samples are analyzed for nutrients, metals, general chemistry, and physical parameters.

Northern Water collects approximately 286 samples annually with an annual cost of approximately $450,000. This program has been in place since 2015.

**Temperature Monitoring**

Water temperature exerts a significant influence on aquatic systems. Aquatic organisms all have a preferred temperature range. Growth, reproduction, and survival can be adversely affected when water temperature deviates from their preferred range.

Water management and hydrological modifications have the potential to affect water temperature both positively and negatively: reduced flow during warm periods can lead to high water temperature; conversely, cold water releases from the bottom of a reservoir can beneficially cool water temperature during critical times.

A segment of the Cache la Poudre River that stretches from the Munroe Canal to the Larimer County Ditch diversion is currently listed by the state as impaired for temperature.

As of 2017, Northern Water collects continuous temperature data at 15 sites in the Cache La Poudre River and one site in the South Platte River. This program has been in place since 2014.
About Northern Water

Northern Water is a public agency created in 1937 to contract with the federal government to build the Colorado-Big Thompson Project, which collects water west of the Continental Divide and delivers it to Northeastern Colorado. Northern Water and the U.S. Bureau of Reclamation jointly operate the project.

About 925,000 people live within Northern Water’s boundaries, which encompasses 1.6 million acres in portions of eight counties: Boulder, Broomfield, Larimer, Logan, Morgan, Sedgwick, Washington and Weld.

Between April and October, the primary growing season, Northern Water also delivers water to more than 120 ditch, reservoir and irrigation companies serving thousands of farms and more than 640,000 acres.

Why Monitor Water Quality

Understanding water quality in our lakes, reservoirs and rivers is critically important. Degraded water quality can affect aquatic habitat that can become unfit to support healthy fish and macroinvertebrate populations. Monitoring the quality of source water supplies is also essential to ensure that our drinking water is safe to use. In Colorado, we also rely heavily on our lakes, reservoirs, and rivers to recreate. Contamination of waters can pose serious public health hazards (such as E. Coli contamination).

Water management and hydrological modifications, along with many other natural processes and anthropogenic activities can affect water quality. With the prospect of new water supplies being developed in the watershed, including the Northern Integrated Supply Project and the potential enlargements of Halligan and Seaman reservoirs, it is imperative to characterize current water quality in the Cache La Poudre River.

Long-term and on-going water quality monitoring allows for the identification of changes in water quality spatially and over time. Data are used to assess compliance with federal and state regulations and identify water quality impairments. Additionally, data provide context in the event of natural disasters like wildfires and floods that can drastically impact watersheds and alter water quality, or in the event of a catastrophic spill or failures that would affect the river system. The data also helps to evaluate possible changes in water quality associated with new water projects such as NISP:

- Existing data are used to support modeling efforts and detailed assessments to understand what affects water quality in the river and to what extent future projects might change water quality
- Data will also serve in the future to evaluate the effectiveness of enhancement and mitigation measures that may be required once new water supply projects are built

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