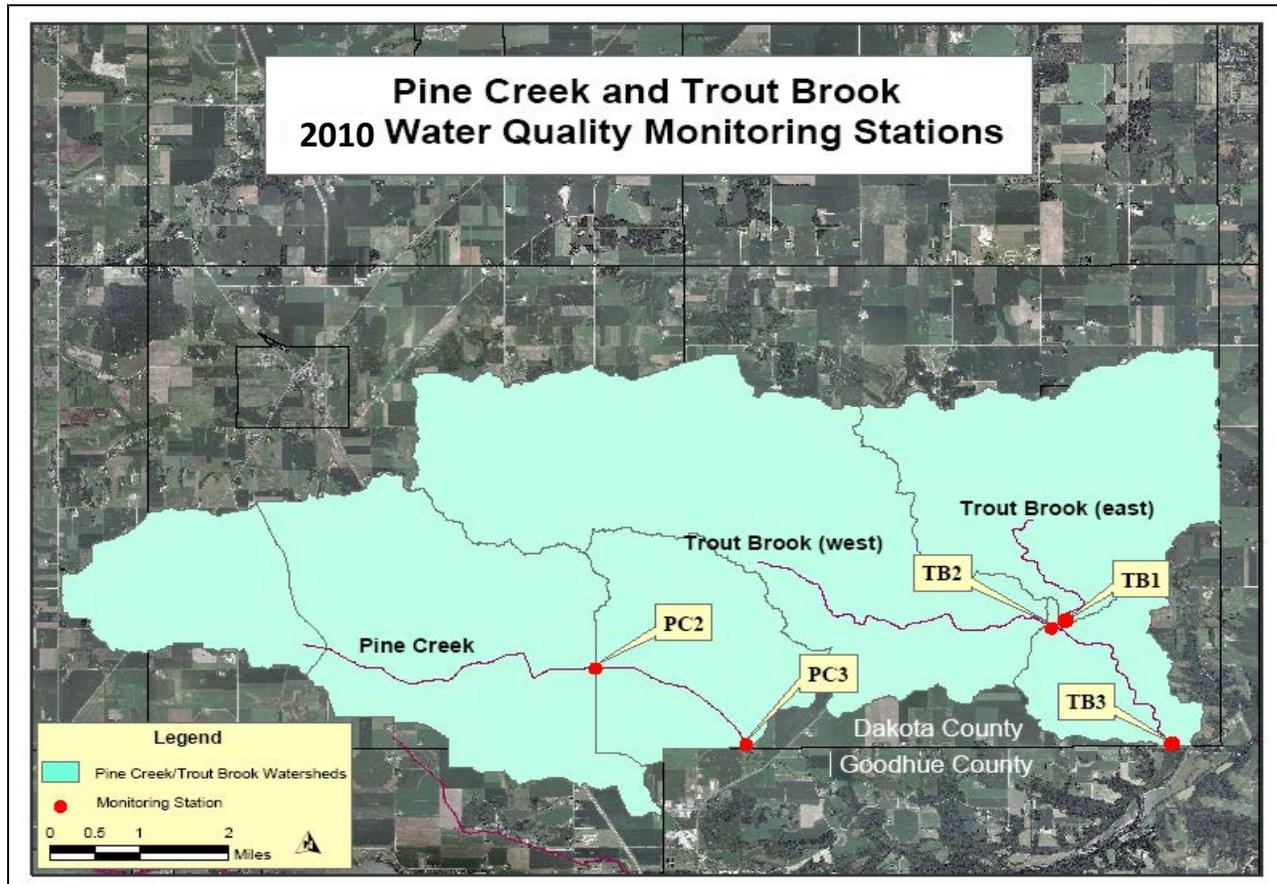


2010 North Cannon River Watershed Management Organization Mid-Season Water Quality Monitoring Report

1. 2010 Water Quality Monitoring Activities:

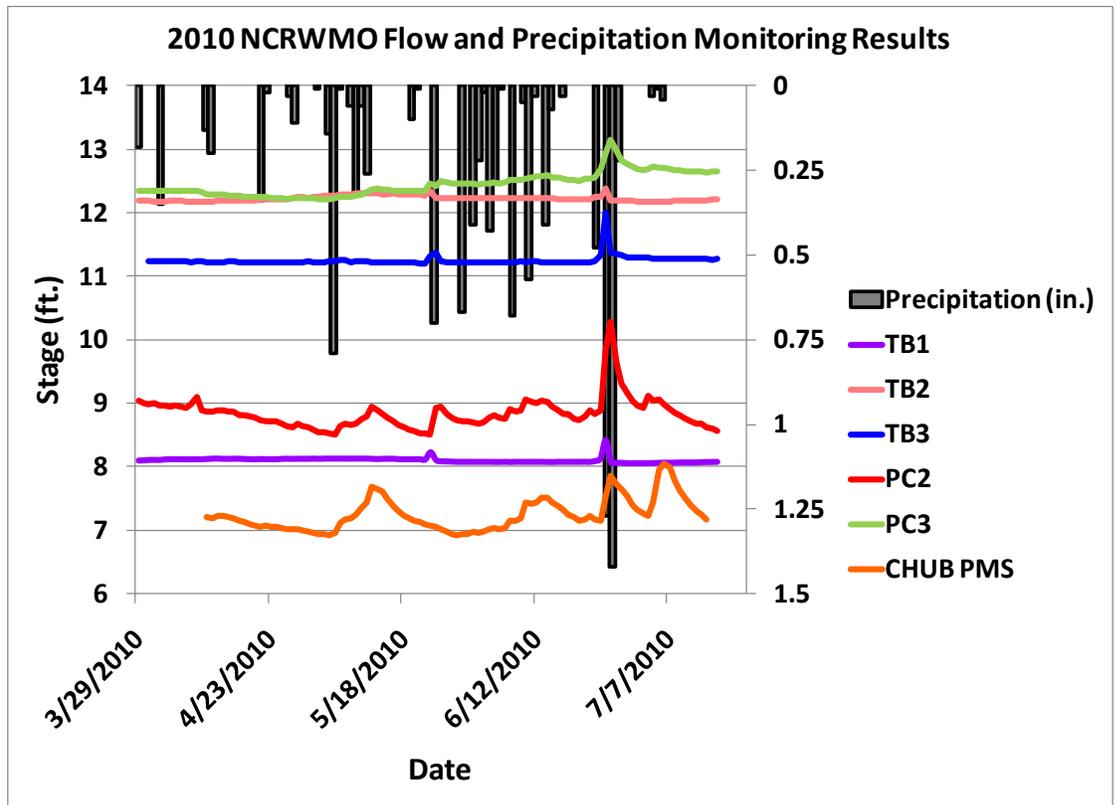
- SWCD staff installed automated stage (depth) monitoring equipment at the Chub Creek Permanent Monitoring Station and historical Pine Creek and Trout Brook monitoring locations.
- Staff replaced stage monitoring equipment at the Chub Creek Permanent Monitoring Station.
- Staff continue to measure flow at all monitoring sites to allow for the conversion of stage data to flow data.
- Staff began collecting monthly base flow and event flow grab samples from all monitoring sites on Pine Creek and Trout Brook.
- Staff continue to recruit citizen volunteers for the Minnesota Pollution Control Agency's Citizen Stream Monitoring Program.
- Staff maintained staff gauges to assist citizen volunteers on Pine Creek and Trout Brook

2. Sample Locations:

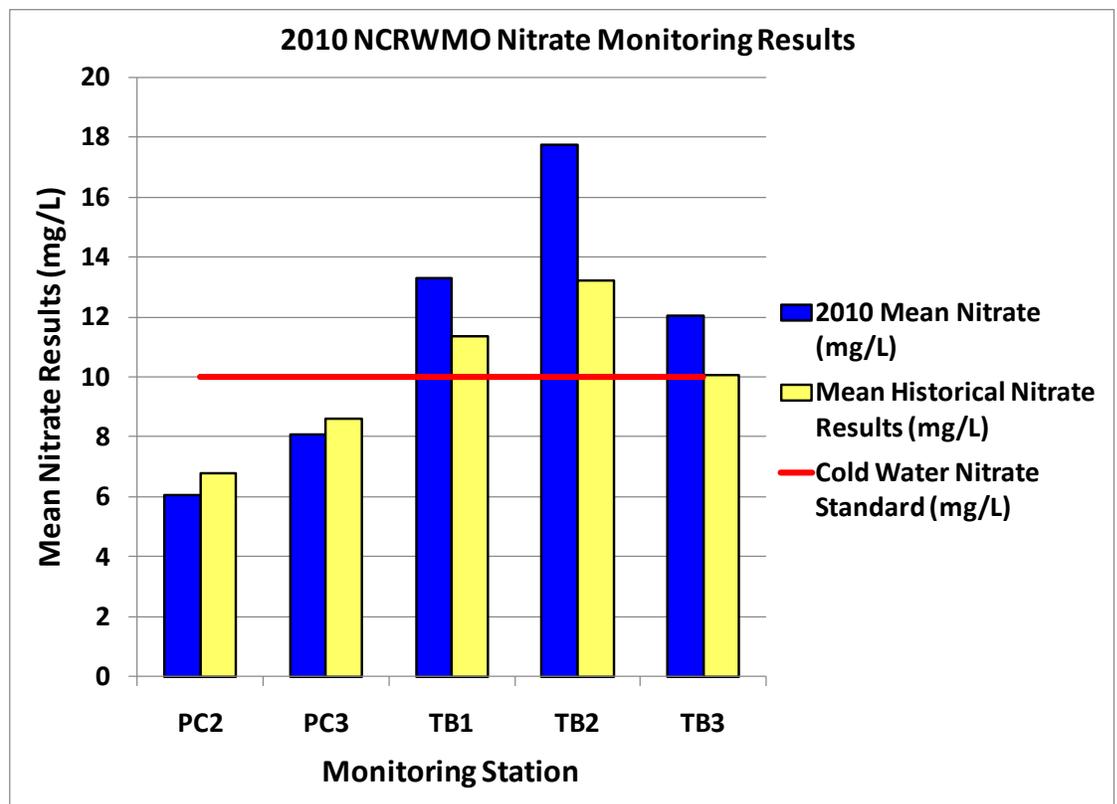


3. Water Quality/Quantity Monitoring Results:

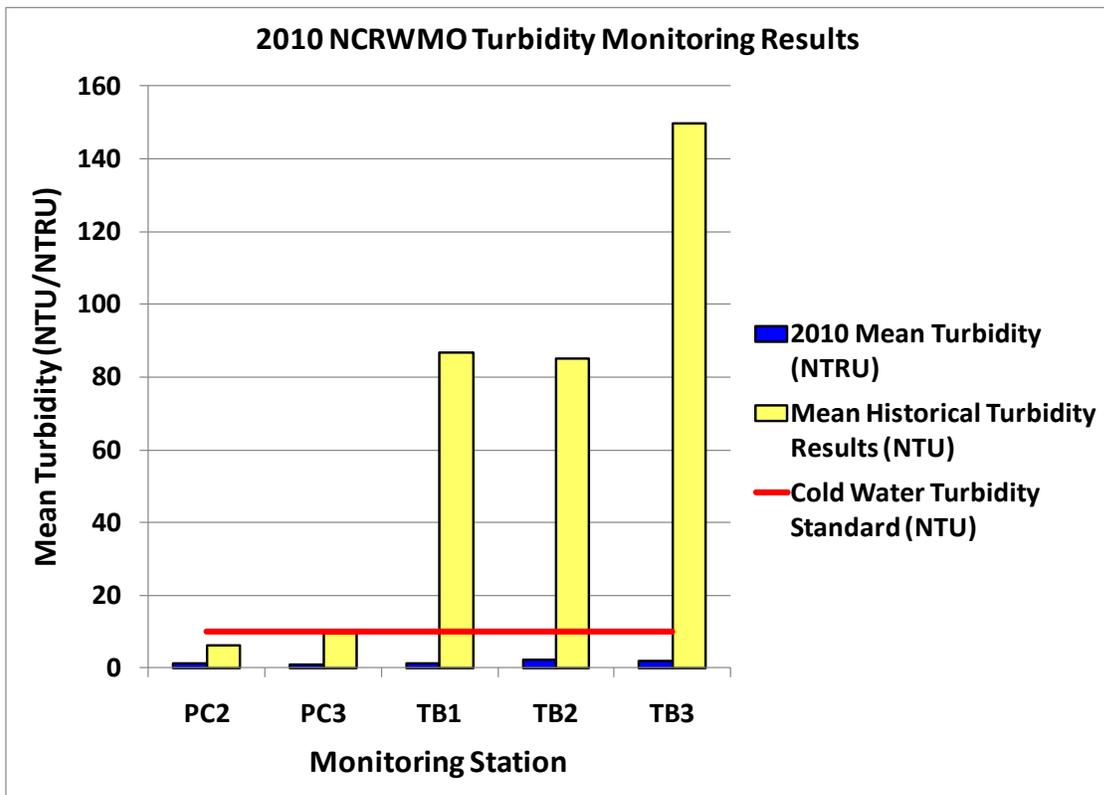
- Continuous stage (water level) data were collected, without interruption, at all 2010 monitoring stations.
- Event flow conditions were very short lived, making event sampling difficult.
- Stage on Trout Brook is surprisingly stable, suggesting large groundwater inputs.



- The 2010 mean nitrate concentrations were elevated at all sites, and exceed state water quality standards at all Trout Brook sites.
- The 2010 mean nitrate concentrations are exceeding mean historical nitrate concentrations at all Trout Brook sites. This is likely the result of few event flow samples collected at each site.



- 2010 mean turbidity results are far less than historical mean turbidity results for all sites. Again, this is likely due to few event flow grab samples collected in 2010.



4. Conclusions:

The 2010 water quality monitoring results for all Trout Brook and Pine Creek monitoring sites should be considered good, with most sample results falling well below state water quality standards or Minnesota Pollution Control Agency recommended eco-region mean concentrations. However, several issues can be observed in these preliminary findings.

Nitrate concentrations, at all sites, exceed eco-region means and frequently exceed state nitrate water quality standards. These results appear to corroborate historical monitoring results, which previously resulted in a nitrate impairment for both Trout Brook and Pine Creek.

Although Trout Brook has been listed as impaired for turbidity, the 2010 turbidity results appear to be far less problematic than those observed in the historical record. Although precipitation has been relatively frequent in 2010, there have been few large scale rain events. Since turbidity results are often driven by heavy precipitation, it is not surprising that 2010 turbidity results appear lower than historical means.

Dissolved oxygen levels have occasionally been observed to be below state water quality standards at site PC2 (Pine Creek and Hogan Ave.), during the 2010 monitoring season. The channel at this location is relatively wide and stagnant and may be functioning more as a wetland than as a small trout stream. As velocity decreases, organic material may be breaking down by microbial activity, which tends to consume large amounts of dissolved oxygen. Regardless, 2010 dissolved oxygen monitoring results may result in an impairment for this reach of Pine Creek.