
Restoration and protection strategies

Restoration strategies throughout the KUSC Watersheds will include addressing culverts/dams and other fish passage barriers, restoring ditched wetlands and altered stream hydrology, livestock and manure management, addressing failing septic systems in shoreland areas, and investigating and managing internal loading in certain lakes.

Protection strategies will include promoting shoreland protection, implementing programs for forest protection, aquatic invasive species (AIS) prevention and management, managing in-lake plant and fish communities, and expanded monitoring to better assess priority resources and track potential changes and trends over time.

Priorities identified in the KUSC Watersheds include:

- Protecting and restoring water quality of high recreational use lakes.
- Maximizing existing protected lands and working to expand protection on private land in the Moose River Subwatershed through programs such as Sustainable Forest Incentive Act (SFIA) and conservation easements, and integrating stormwater BMPs whenever possible.
- Protecting and restoring resources in the Grindstone River Subwatershed, which has the largest percentage of rangeland land use and the lowest percentage of wetland land use in the Kettle River Watershed.
- Protecting resources with rare/sensitive species and high biological integrity, including lake sturgeon, cisco (Hanging Horn and Little Hanging Horn Lakes), and coldwater fish species such as brook, brown, and rainbow trout.
- Protecting water quality and water levels in lakes that support wild rice.

Key conclusions of first cycle

- The main water quality issues are bacteria in streams and nutrients in lakes.
- Bacteria impairments were found in 10 stream reaches in the Kettle River watershed, particularly in the Pine River and Grindstone River HUC-10 subwatersheds.
- Sources of bacteria in streams include livestock/pastures near streams, septic systems (SSTS), cropland/manure, and for one reach (Grindstone River -501), urban sources and contributions from upstream sources.
- Livestock and manure management and addressing failing septic systems in shoreland areas were identified as the best strategies for reducing bacteria loads.
- Nutrient impairments were found in some lakes throughout both watersheds (overall a relatively small number). These watersheds do not have a lot of large lakes (only 126 >10 acres) and the majority of the lakes (18 of 31) that were assessed meet water quality standards.
- Agriculture was a primary source of nutrients for most lakes, along with SSTS, and developed shoreline.
- Internal loads (sediment release and to a lesser extent rough fish and aquatic vegetation) were significant portions of nutrients for Rhine, Twentynine, Pine, Grace, Fox, Pine Big, and Merwin lakes.
- Addressing failing septic systems in shoreland areas and investigating and managing internal loading in certain lakes were the primary strategies for addressing these nutrient impairments.
- Additionally, increasing protection of upstream forest lands was a key identified strategy, across both watersheds for all resources.
- Tillage/residue management, improving riparian vegetation, improve livestock and manure management, and AIS management were also identified as strategies necessary to restore waters.



Full report

Full reports as well as supporting documents can be found at: <https://www.pca.state.mn.us/water/watersheds/kettle-river>, or <https://www.pca.state.mn.us/water/watersheds/upper-st-croix-river>. You can also search “Kettle River Watershed”, or “Upper St. Croix River Watershed” on MPCA’s website.

Contact

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