MINNESOTA POLLUTION CONTROL AGENCY

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April 26, 2022

Paul Swanson
District Manager
Pine County Soil and Water Conservation District
1610 Hwy 23N
Sandstone, MN 55072

RE: Kettle River/Upper St. Croix River Watersheds One Watershed, One Plan Priority Scoping Issues

Dear Paul Swanson:

The Minnesota Pollution Control Agency (MPCA) has received the invitation to submit water management issues pertinent to the One Watershed, One Plan (1W1P) for the Kettle Upper Saint Croix (KUSC) Rivers watersheds.

The MPCA appreciates the opportunity to provide input throughout the Comprehensive Watershed Management Plan (Plan) development process. As part of the agency's review, we provide the following comments to address in the 1W1P, as part of the official 60-day Review and Comment Period.

The local partners worked effectively with the MPCA staff and other state agency resource managers to gather useful information for the Watershed Restoration and Protection Strategies (WRAPS) process. The following pages of this letter contain a brief summary of the highlights of both HUC-8 watershed WRAPS that are included in the 1W1P planning area. The MPCA requests you consider these comments during development of the 1W1P for this area. Comments have been divided into two topic categories including: A) Water Resource Conditions with the subtopics of watershed stressors, nonpoint pollutant sources and Total Maximum Daily Load (TMDL) report findings and B) Watershed Restoration and Protection Priority Areas and Concerns. Topic category B has several subtopics including Wild Rice Lakes, Groundwater and Drinking water, Streams and Lakes in need of Protection, Watershed-wide Management Strategies, (e.g., shoreland best management practices (BMPs) and Feedlot issues) and finally, some comments on specific HUC-10 level subwatersheds. Maps and data tables are also provided for more detailed information.

A. Water Resource Conditions

From 2016 to 2018, Intensive Watershed Monitoring (IWM) was conducted by the MPCA and a host of partners to collect data across both watersheds for the purpose of assessing the quality of its natural water resources. Overall, the KUSC River watersheds have much healthier streams and lakes in comparison to most other watersheds in the state.

The density of residential and urban land use is quite low in the Kettle River Watershed (KRW), with most being within the string of towns found in the I-35 corridor. The Upper St. Croix is even less

developed. None of the biologically-impaired streams have a town near the channel, and so stressors related to developed lands (e.g., impervious surfaces, stormwater runoff, wastewater facility discharges, etc.) are not expected to be a significant issue here. The other somewhat dense, localized developments are the shoreline properties around several of the KRW's lakes. There are no wastewater treatment plant or permitted industrial effluent discharges associated with any of the biologically-impaired reaches. All culverts in the KRW were assessed for fish passage by the Minnesota Department of Natural Resources (DNR) in 2016, and 78.9% were found to be problematic for passage to some degree, with 24.8% being significant or complete barriers.

Special features and ownerships provide opportunities for partnership protection of water resources. Parts of the Fond du Lac Reservation and the Mille Lacs Band trust lands are within the KRW. Also contributing to the unique natural condition of parts of the watershed are the large peatlands, particularly along the north and northwest portions of the KRW. The KRW also contains numerous public/protected lands. Protection strategies will be an important part of future management efforts.

Fifty-seven of the 78 stream/river reaches that were assessed were found to fully support aquatic life, and 8 streams fully support aquatic recreation. Twenty streams do not support aquatic life and/or recreation, a majority of which (16 reaches) are in the KRW. The streams that do not support recreation are all located in the KRW and show chronically elevated bacteria concentrations.

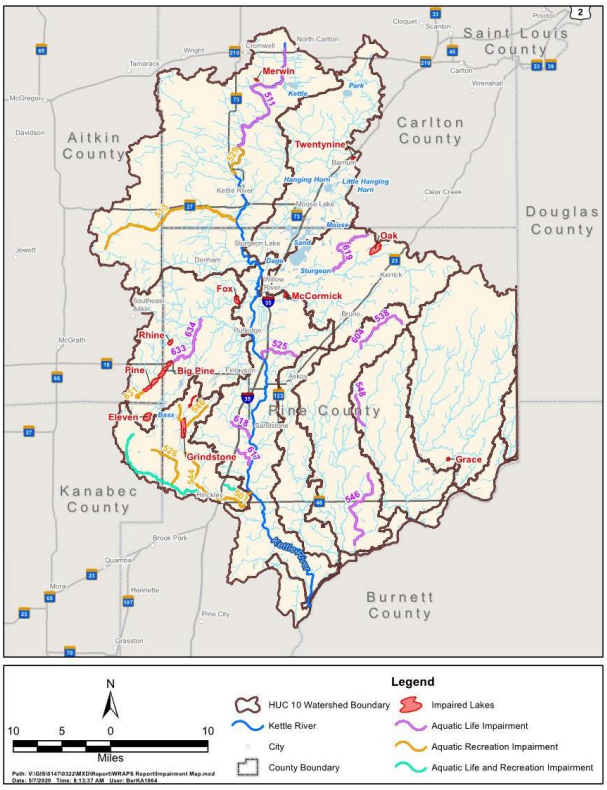
Thirty-one lakes across both watersheds were assessed as part of the WRAPS effort. Of the assessed lakes, 18 fully supported aquatic recreation and 13 did not support aquatic recreation. The aquatic recreation impairment on one lake (Rock Lake) was determined to be due to natural conditions. In addition, of the nine lakes assessed in the KRW using the DNR lake Fish based Index of Biological Integrity (FIBI) method, only one lake (Oak Lake) failed to meet the aquatic life standards. The FIBI incorporates multiple measurements of the fish community. When the measurements are added together, they produce a score that reflects the lake's biological health. A complete list of assessments and findings can be found in the Watershed Monitoring and Assessment Reports (MPCA 2019a and MPCA 2019b). A map is provided below.

Mercury and PCB concerns:

The main stem Kettle and St. Croix Rivers and several lakes in the Kettle River and Upper St. Croix River watersheds have aquatic consumption impairments due to high levels of mercury. See Table 1 of the WRAPS report. Of the waters identified as impaired by mercury in fish tissue, 11—including the main stem St. Croix River—were included in the *Minnesota Statewide Mercury TMDL* in 2020 (MPCA 2007, MPCA 2019c). KRW contains ditched peatlands, which are believed to be a large source of mercury and methylmercury loading. BMPs to reduce soil erosion or total suspended solids (TSS) would likely also reduce total mercury releases to receiving waters because most inorganic mercury is bound to soils.

In addition to mercury in fish tissue, the main stem St. Croix River also has an aquatic consumption impairment for PCBs in fish tissue. PCBs are not addressed directly through the restoration and protection strategies identified in the Kettle River and Upper St. Croix WRAPS Report. Testing of fish tissues for PCBs has been completed for eight lakes within the Kettle River and Upper St. Croix River

watersheds, with none of these samples resulting in detectable levels of PCBs. this suggests that contamination from PCBs is an isolated issue in these watersheds. Generally, contamination from PCBs is confined to major rivers with a history of wastewater discharge and a few lakes affected by legacy industrial wastes.



Kettle River Subwatershed stream impairments summarized:

FS = fully supporting, i.e., found to meet the water quality standard; NS = not supporting, i.e., does not meet the water quality standard, and therefore, is impaired; IF = insufficient data, i.e., the data collected was insufficient to make a finding; NA = not assessed.

HUC-10 Subwatershed	# Total WIDs	# Assessed WIDs	Aquatic Life Use		Aquatic Recreation Use		IF
			FS	NS	FS	NS	
Upper Kettle River	36	11	10	1	0	2	1
Moose River	14	7	7	0	1	0	0
Willow River	9	5	9	1	1	0	0
Pine River	22	7	22	0	1	0	3
Grindstone River	19	6	19	1	0	6	4
Lower Kettle River	23	7	3	3	3	0	1

Upper St. Croix Subwatershed stream impairments summarized:

HUC-10 Subwatershed	# Total WIDs	# Assessed WIDs	Aquatic Life Use		Aquatic Recreation Use		IF
			FS	NS	FS	NS	
Bear Creek	12	2	2	0	0	0	1
Sand Creek	36	11	7	3	0	0	2
Crooked Creek	32	9	6	1	0	0	3
Lower Tamarack River	14	9	7	0	0	0	5
Upper Tamarack River	3	2	2	0	0	0	1
Chases Brook – St. Croix River	5	1	1	0	0	0	0

KUSC Lake Impairments Summarized:

FS = fully supporting, i.e., found to meet the water quality standard; NS = not supporting, i.e., does not meet the water quality standard, and therefore, is impaired; IF = insufficient data, i.e., the data collected was insufficient to make a finding; NA = not assessed.

HUC-10 Subwatershed	Lakes >10 Acres	Aquatic Life Use		Aquatic Recreation Use		IF
		FS	NS	FS	NS	
Upper Kettle River	9	-	-	-	1	3
Moose River	27	3	-	9	1	14
Willow River	22	1	1	3	1	3
Pine River	23	3	-	3	5	5
Grindstone River	16	1	-	1	2	3
Lower Kettle River	22	-	-	-	1	4

A.1 Watershed Stressors

Stressor Identification (SID) reports were completed for the stream aquatic life impairments (fish and macroinvertebrate communities) and a TMDL Study was completed to address the stream and lake aquatic recreation impairments (*E. coli* and lake nutrients) in both watersheds. The SID reports identified connectivity and altered hydrology as the most common stressors to biologic communities. Connectivity stressors include both natural (beaver activity) and anthropogenic (dams, undersized/perched culverts) barriers that disrupt fish passage and connectivity. The primary altered hydrology stressor in these watersheds relates to historical ditching of peatlands, which was fairly common throughout this area, particularly the northwestern portion of the KRW. This ditching has caused and is causing subsequent stressors, including low dissolved oxygen (DO), water highly-stained with dissolved organic compounds, physical damage to the channel via increased erosion, and degradation of habitat by sedimentation and instability of channel features.

Primary stressors to aquatic life in biologically impaired reaches in the Kettle River and Upper St. Croix River watersheds.

HUC-10 Subwatershed	AUID (Last 3 digits)	River or Stream	Biological impairment	Primary stressor								
				Dissolved oxygen	Phosphorus	TSS	Connectivity	Altered Hydrology	Channel Alteration	Habitat	Water Temp.	Toxic chemicals
Upper Kettle River	511	Kettle River	Fish	•					•	•		
Willow River	619	Hay Creek	Fish					♦	•	•		
Pine River	633	Pine River	MI	•								
	634	Pine River	MI	•								
Grindstone River	516	S. Branch Grindstone River	Fish	•			•					
	550	Spring Creek	Fish				•					
Lower Kettle River	525	Cane Creek	Fish, MI				•	◊		•		
	617	Friesland Ditch	Fish					♦	•	?		
	618	Skunk Creek	Fish				•					?
Sand Creek	501	Hay Creek	Fish, MI	•	?	?	•	•			?	
	503	Sand Creek	Fish	•	?	?		•				
Crooked Creek	502	Wolf Creek	MI	•	?	?		•				

MI = Macroinvertebrate

♦ A "root cause" stressor, which leads to consequences that become the direct stressors.

◊ Possible contributing root cause.

• Determined to be a direct stressor.

? Inconclusive

Note: due to rounding, sums may not equal 100%.

A.2 Watershed Nonpoint Pollution Sources

Nonpoint sources of pollution, unlike pollution from industrial and municipal sewage treatment plants, come from many diffuse sources. Nonpoint source pollution is accumulated by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries natural and human-made pollutants, finally depositing them into lakes and streams. Common nonpoint pollutant sources in the Kettle River and Upper St. Croix River watersheds include:

- **Watershed runoff**: Erosion from agricultural fields and forests can deliver sediment to waterbodies that contains nutrients when soil is disturbed or exposed to wind and rain. Runoff from roads, parking lots and other impervious surfaces can also carry pollutants to lakes and streams. The HSPF model was used to estimate watershed runoff volumes and pollutant loads

for all subwatersheds in the Kettle River and Upper St. Croix River watersheds. The HSPF model is based on land cover and soil type, and was calibrated using meteorological data from 1996 through 2009. See table below.

- **Wetlands**: Phosphorus export from wetlands is a well-known phenomenon in northern Minnesota wetlands (O'Brien et al. 2013; Fristedt 2004; Dillon and Molot 1997; Banaszuk et al. 2005). Several of the impaired lakes in the watershed are located in watersheds with wetland-dominated tributaries. At this time, it is not known if these wetlands are major contributors to downstream impairments. Monitoring of these wetland tributaries would help determine if they are exporting elevated levels of phosphorus and/or other pollutants.
- **Upstream lakes and streams**: A few of the impaired lakes receive a significant amount of their phosphorus load from upstream lakes and major stream reaches. For these lakes, restoration and protection efforts should focus on improving the water quality of the upstream lakes and streams.
- **Runoff from feedlots**: Fertilizer and manure contain high concentrations of phosphorus, nitrogen, and bacteria that can run off into lakes and streams when not properly managed.
- **Failing septic systems**: Septic systems that are not maintained or are failing near a lake or stream can contribute excess phosphorus, nitrogen, and bacteria.
- **Atmospheric deposition**: Atmospheric deposition represents the phosphorus that is bound to particulates in the atmosphere and is deposited directly onto surface waters.
- **Lake internal loading**: Lake sediments and macrophytes contain large amounts of phosphorus that can be released into the lake water through physical mixing or under certain chemical conditions or during the senescence of macrophytes. Internal loading of phosphorus can also occur through sediment resuspension by rough fish such as common carp and black bullheads.
- **Artificial drainage and stream morphometry**: An increase in artificial drainage combined with stream channelization can lead to streambank instability, reduced base flow, and longer periods of intermittent flow.
- **Timber harvesting**: Forest harvest has been and currently is a major activity within the Kettle River and Upper St. Croix River watersheds. Historical large-scale forest removal occurred in the watershed, which may have created legacy effects still being experienced by streams and lakes today.

The table below provides insight to sources and locations of one pollutant load by land use.

HSPF model estimated source contributions (percent of total) of total phosphorus for each major HUC-10 subwatershed in the Kettle River and Upper St. Croix River watersheds

HUC-10 Subwatershed	Nonpoint Sources					Point Sources
	Forest and Wetland	Pasture and Grassland	Cropland	Developed	Stream Bed/ Bank	
Upper Kettle River	29%	48%	12%	7%	1%	2%
Moose River	18%	33%	10%	13%	2%	24%
Willow River	27%	35%	9%	12%	17%	0%
Pine River	20%	31%	21%	6%	2%	21%
Grindstone River	10%	31%	29%	7%	6%	18%
Lower Kettle River	20%	37%	30%	11%	2%	0%
Kettle River Watershed Total	**21%**	**37%**	**19%**	**9%**	**4%**	**10%**
Bear Creek	22%	45%	19%	7%	1%	7%
Sand Creek	24%	32%	38%	6%	1%	0%
Crooked Creek	27%	31%	37%	4%	1%	0%
Lower Tamarack River	64%	24%	2%	7%	3%	0%
Upper Tamarack River	52%	33%	5%	8%	2%	0%
Chases Brook	40%	34%	8%	13%	4%	0%
Upper St. Croix River Watershed Total	**34%**	**32%**	**24%**	**7%**	**2%**	**1%**

A.3 TMDL Report Findings

A majority of the impairments addressed in the TMDL study are located in the Pine River and Grindstone River HUC-10 subwatersheds. For more details, refer to the TMDL document. See Appendix B for the existing pollutant loading, load/wasteload allocations, and the load reduction goals needed to meet water quality standards.

Summary of impaired lakes and streams with completed TMDLs in the Kettle River and Upper St. Croix River watersheds.

HUC-10 Subwatershed	Stream or Lake Name	Reach AUID or Lake ID	Pollutant(s)
Upper Kettle River	Kettle River	07030003-529	*E. coli*
	Split Rock River	07030003-513	*E. coli*
	Merwin Lake	09005800	Excess Nutrients
Moose River	Twentynine Lake	09002200	Excess Nutrients
Willow River	Oak Lake	58004800	Excess Nutrients
Pine River	Pine River	07030003-631	*E. coli*
	Pine Lake	01000100	Excess Nutrients
	Big Pine Lake	58013800	Excess Nutrients
	Eleven Lake	33000100	Excess Nutrients
	Fox Lake	58010200	Excess Nutrients
	Rhine Lake	58013600	Excess Nutrients
Grindstone River	N. Branch Grindstone River	07030003-541	*E. coli*

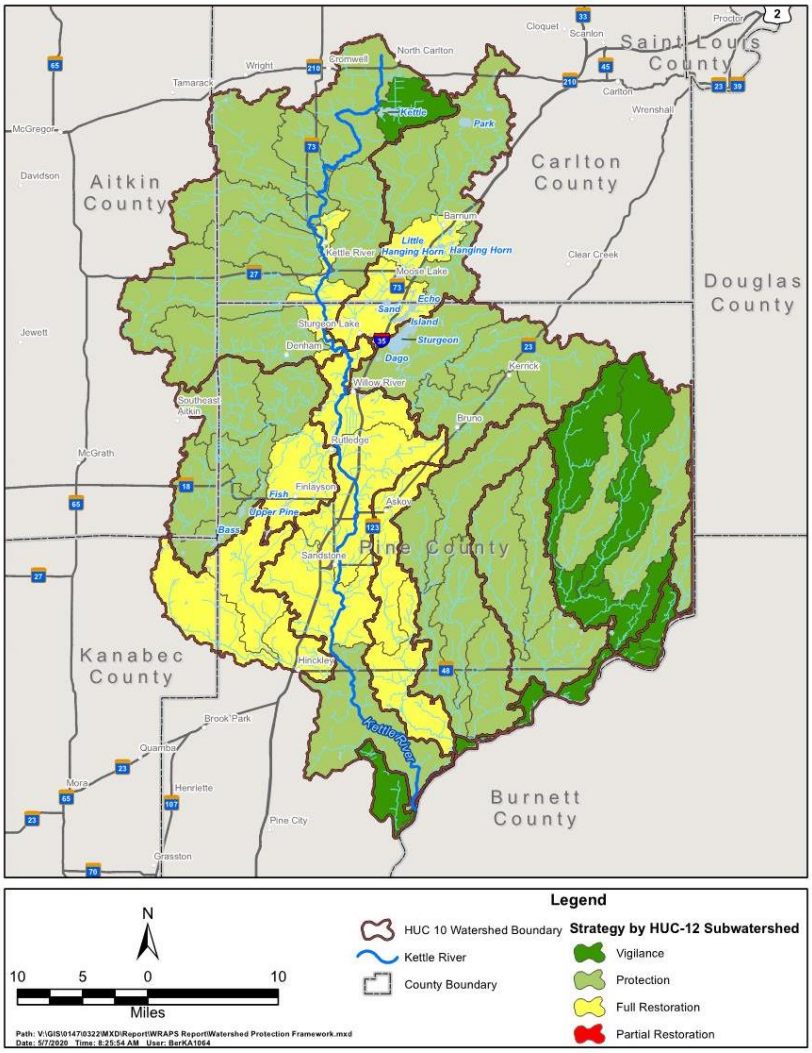
HUC-10 Subwatershed	Stream or Lake Name	Reach AUID or Lake ID	Pollutant(s)
	Unnamed Creek	07030003-546	*E. coli*
	S. Branch Grindstone River	07030003-516	*E. coli*
	Judicial Ditch 1	07030003-526	*E. coli*
	N. Branch Grindstone River	07030003-544	*E. coli*
	Spring Creek	07030003-550	*E. coli*
	Grindstone River	07030003-501	*E. coli*
	Elbow Lake	58012600	Excess Nutrients
	Grindstone Lake	58012300	Excess Nutrients
Lower Kettle River	McCormick Lake	58005800	Excess Nutrients
Lower Tamarack River	Grace Lake	58002900	Excess Nutrients

B. Watershed Restoration and Protection Priorities and Concerns

Priority areas for this watershed were determined based on input and professional judgement from local partners and other professionals, previous planning work completed around forest stewardship in the watershed, recreational use priorities, and comparing analytical tool and model outputs with existing priorities outlined in county water plans. Some of the top priorities that were identified for both 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 KRW;
- 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; and
- Protecting water quality and water levels in lakes that support wild rice.

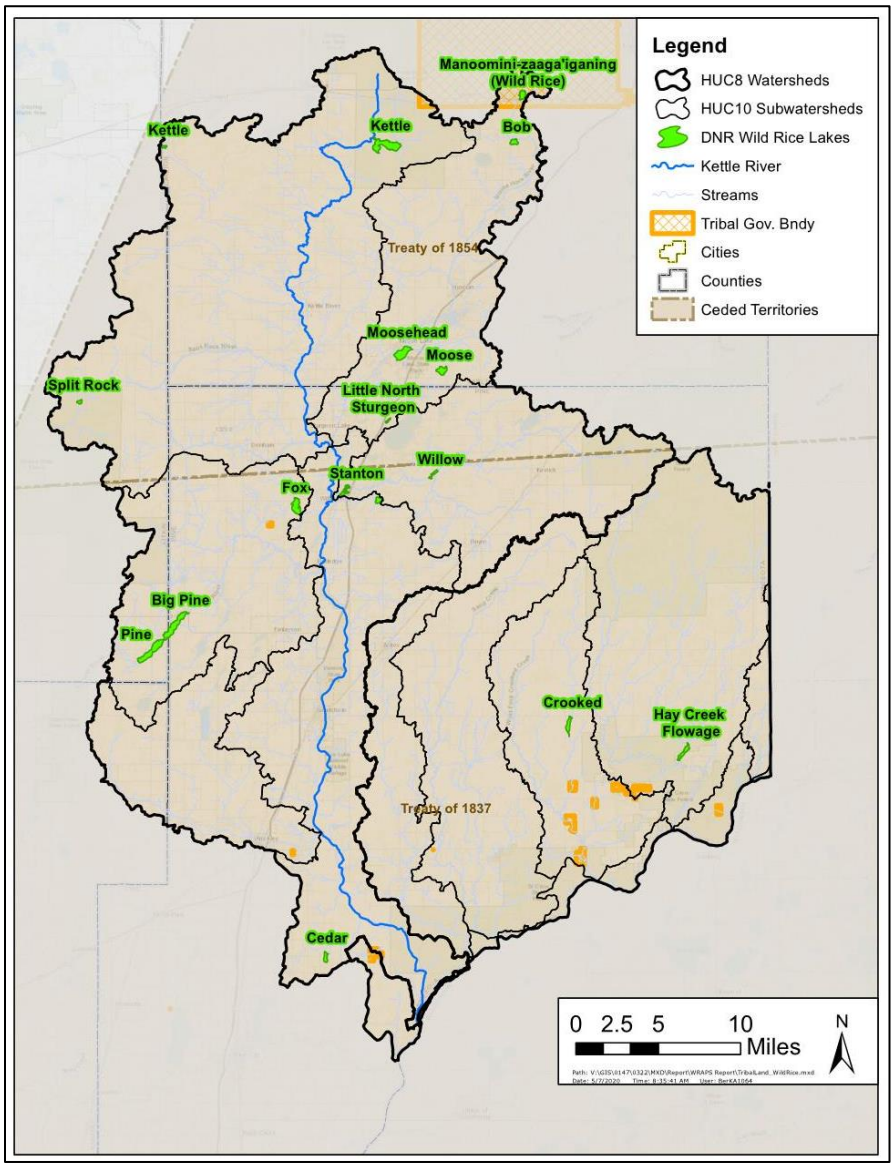
The map below depicts subwatershed restoration and protection targets for the Kettle River and Upper St. Croix River watersheds. See Appendix C of the WRAPS report for this data in tabular form.



B.1 Watershed Resources of Concern

Wild Rice Lakes decline

Strategies to address the decline of wild rice in Manoomini-zaaga'iganing/Wild Rice Lake identified in discussion with tribal staff include improving hydrologic connectivity and potential water level management and are described in further detail in the WRAPS strategy table for the Moose River Subwatershed (see Table 18 WRAPS report). Water level concerns have been commented upon in permit public reviews. Discussions should continue regarding potential impacts to wild rice lakes. Other wild rice lakes are identified on the map below.



Groundwater and Drinking Water

Portions of the Kettle River and Upper St. Croix River watersheds are important for recharge of regional aquifers, including those serving the towns and small communities throughout the watershed. It is important to keep water on the land in these areas, and certain areas sensitive to groundwater pollution should not host pollutant-generating facilities without appropriate BMPs and mitigation strategies in place.

In addition, karst areas and vulnerable groundwater areas are located within these watersheds. Protection strategies to consider include:

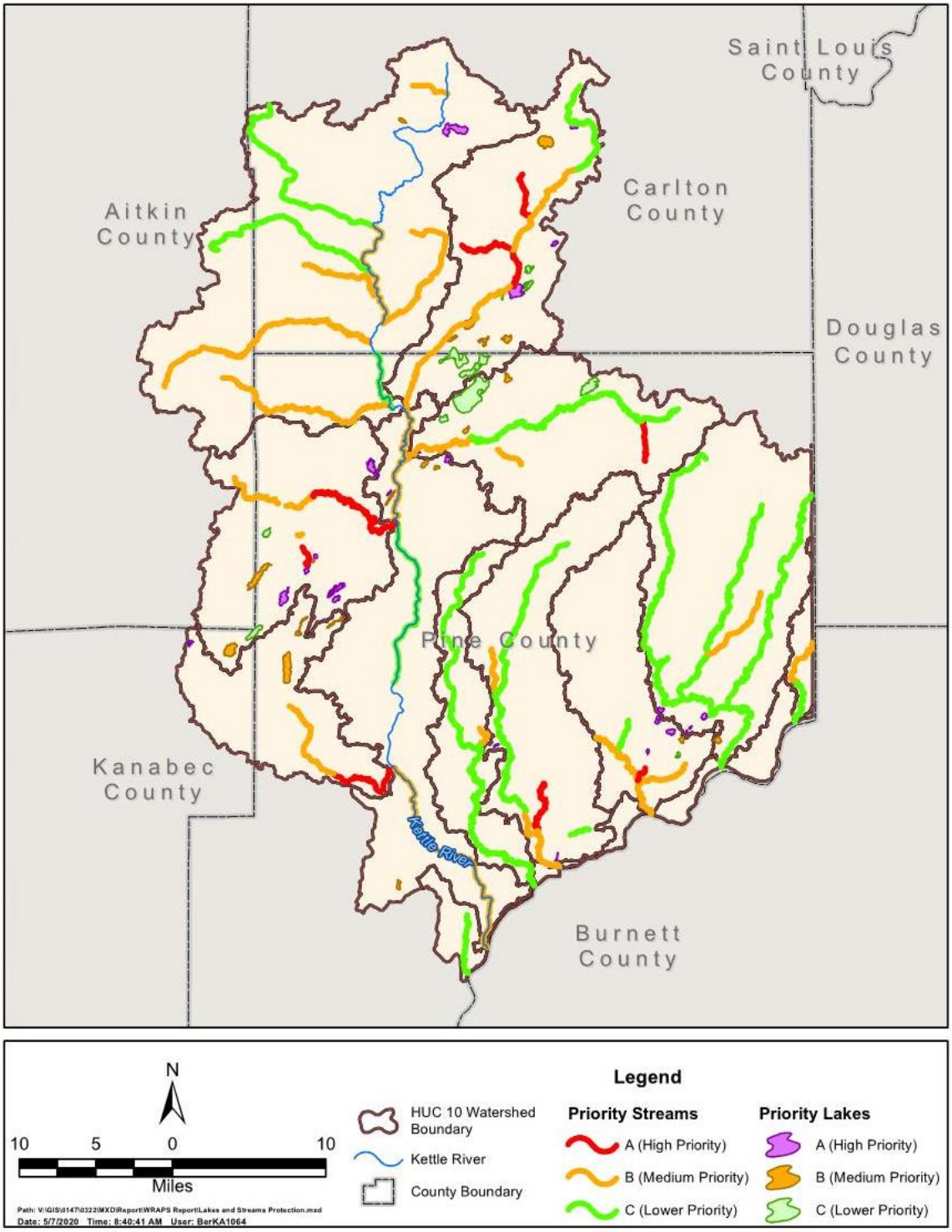
- Further identifying karst features by expanding the existing inventory;
- Increasing monitoring or targeting existing local monitoring in karst areas;

- Increasing vegetative buffers around sinkholes, stream-sinks, karst outcroppings;
- Promoting subsurface sewage treatment systems (SSTS) compliance through education, maintenance, and inspection; and
- Education and outreach to farmers and feedlot operators regarding nutrient management in karst areas and areas with vulnerable groundwater; Minn. R. ch. 7020 contains requirements for manure and process wastewater application near karst features (Minn. R. 7020.2225 - Land Application of Manure).

Prioritized streams and lakes for protection

- Stream reaches in each watershed were ranked and prioritized using interagency established tools and procedures. Thirty-two stream reaches in the KRW had the required data and information for assessment. The Priority A streams include four Exceptional Use streams: Little Pine Creek (560), the west branch of the Moose Horn River (628), Pine River (624) and Kettle River (505). Three General Use streams, the Grindstone River (501), the Moose Horn River (521), and Larson's Creek (548), also scored as high priority for protection efforts
- Twenty-five stream reaches in the Upper St. Croix River Watershed had the required data and information for assessment. The higher priority stream reaches include five Exceptional Use streams: Little Sand Creek, Bangs Brook, Sand Creek, Crooked Creek, and the Upper Tamarack River. In addition, one General Use stream, Kenney Brook, scored as high priority for protection efforts.
- Forty-three lakes in the KRW had the required data and information for assessment using the Lake Protection and Prioritization Tool. Priority lakes in the KRW include: Bear, Little Hanging Horn, Eddy, Island, Sturgeon, Dago, Sand, and Bass Lakes. Thirteen lakes in the Upper St. Croix River Watershed had the required data and information for assessment. Of these lakes, Lena Lake was the only lake identified as top priority.

The map below depicts locations of these water resources and priority status.


Saint Louis County
Carlton County
Aitkin County
Douglas County
Pine County
Kanabec County
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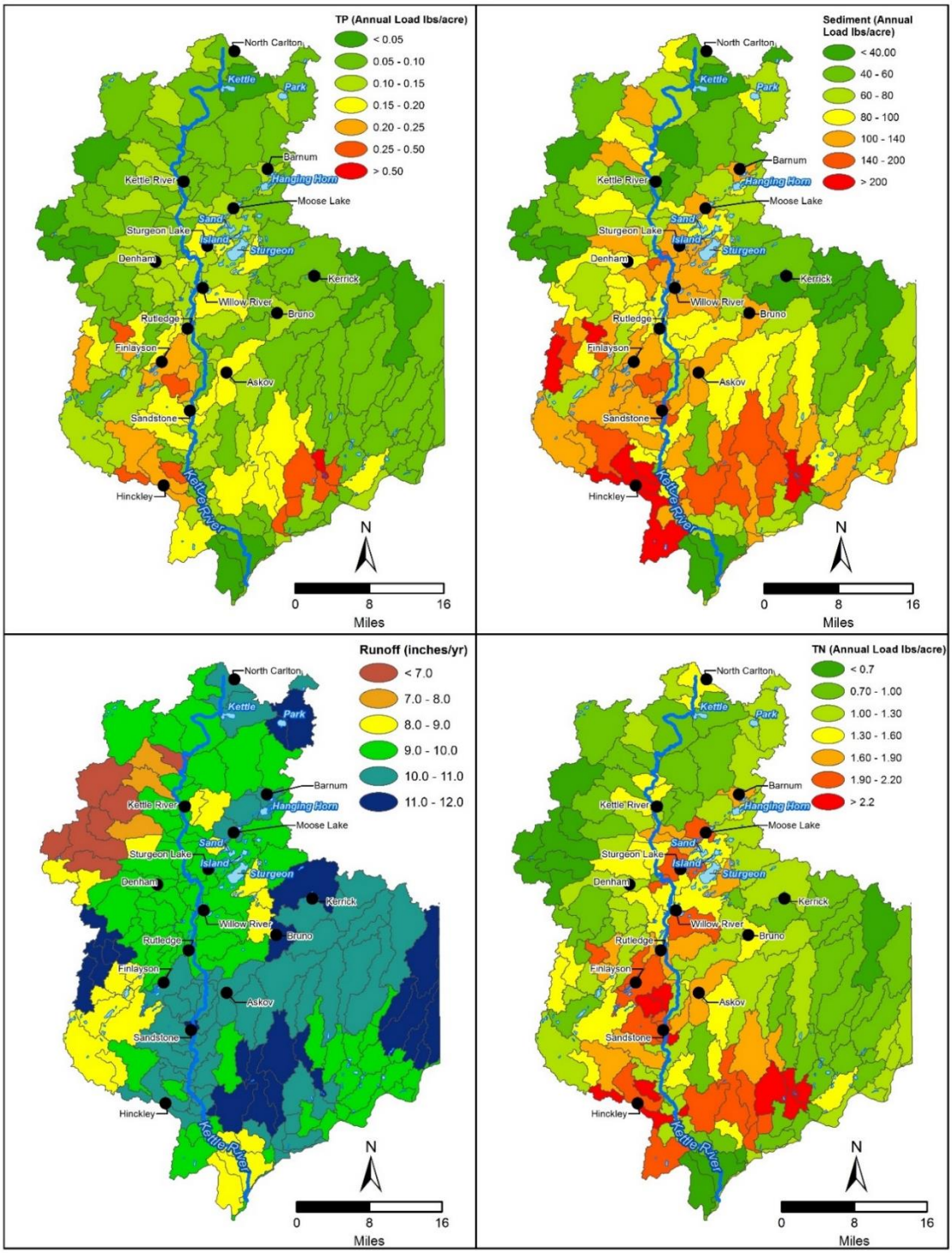
Date: 5/7/2020 Time: 8:40:41 AM User: BerKA1064
Legend
HUC 10 Watershed Boundary
Kettle River
County Boundary
Priority Streams
A (High Priority)
B (Medium Priority)
C (Lower Priority)
Priority Lakes
A (High Priority)
B (Medium Priority)
C (Lower Priority)

The map below indicates pollutant loads ranked by subwatersheds for potential BMP discussions.

Kettle River and Upper St. Croix River watersheds HSPF-predicted runoff and pollutant loading by HUC-12 subwatershed



B.2 Watershed-Wide Restoration and Protection Strategies

Restoration strategies for addressing the identified issues in the Kettle and Upper St. Croix River SID and TMDL reports 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.

Strategies were also identified for lakes and streams that are currently meeting water quality to maintain and improve current conditions and protect these resources from becoming degraded or impaired. Some of the protection strategies presented in this report 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.

Specific locations of resource vulnerability are identified in the WRAPS report strategy table and should be used to guide the 1W1P process. Comments by general issue are described below.

Shoreland Protection

Minnesota's buffer law requires perennial vegetative buffers along public ditches, and DNR designated shoreland of lakes, rivers, and streams. Buffers along lakes, rivers, and streams must be at least 50 feet in width on each bank, and buffers along public ditches must be at least 16.5 feet wide on each bank as well.

Forest Protection

Water quality in these watersheds is overall good, with its quality derived from well-managed forestlands, grasslands, and agricultural lands. Forestland ranks among the best land cover in providing clean water by absorbing rainfall and snow melt, slowing storm runoff, recharging aquifers, sustaining stream flows, filtering pollutants from the air and runoff before they enter the waterways, and providing critical habitat for fish and wildlife.

SSTS Improvements

Failing SSTS (also referred to as septic systems) can export high levels of bacteria, nutrients, and other pollutants to both surface and groundwater. Straight pipe systems and cesspools pose a greater

pollution threat and are considered imminent threats to public health (ITPH) because they can cause significant harm to both people and the environment. Failing SSTS were identified in the lake (nutrients) and stream (bacteria) TMDLs for the watersheds as potential sources of bacteria and phosphorus to surface waters. Several cities and towns report SSTS within their jurisdictions. A map of these areas is provided in the WRAPS report.

Feedlots

As of January 2020, there are approximately 77 feedlots requiring MPCA registration located in the Kettle River and Upper St. Croix River watersheds. These operations house approximately 26,500 animal units (AUs). In addition to the feedlots that require MPCA registration, an unknown number of smaller operations operate throughout the watershed.

Stakeholders and local staff identified several priorities for feedlot and manure management in the watershed. One of the preliminary steps foundational for further implementation is a feedlot inventory throughout the watershed to inform prioritization of projects. Another feedlots focus area identified in the Kettle River and Upper St. Croix River watersheds is manure management, particularly at smaller feedlot operations (i.e., less than 300 AUs). Management is particularly of relevance for feedlot operations located within karst areas of the watersheds. Education and outreach about land application requirements can be valuable tools to ensure rule compliance.

Peatland Altered Hydrology

The channelized wetlands/peatlands are likely a major contributor to low DO levels in downstream streams due to the wetland-sourced water they convey to the streams. Efforts to restore natural hydrology to stream channels by restoring upstream peatland hydrology should be done in consultation with experienced hydrologists. Several opportunity areas for drainage restoration are located in the watershed, some on public lands. Downstream lakes may be vulnerable to increased phosphorus loading from ditched wetland fluxes. Peatland hydrology is still being researched and may yield additional concerns such as mercury mobilization and significant disruption to carbon sequestration.

Culvert Replacement and other Barriers

Problem culverts and dams were identified as primary stressors for several of the biotic impaired reaches in the Kettle and Upper St. Croix Watershed SID reports. In 2019, the DNR completed Stream Crossing Inventory and Prioritization Reports for the Kettle River and Upper St. Croix River watersheds. For these reports, a total of 398 stream crossings (245 in Kettle; 153 in Upper St. Croix) were identified and assessed for fish passage. Results of the assessments indicate there are 72 total barriers (45 in Kettle; 27 in Upper St. Croix) throughout both watersheds, which includes: 8 dams, 2 Level 1 (complete) barriers, and 62 Level 2 (significant) barriers. Maps found in the WRAP reports indicate locations of these barriers.

B.3 Specific Subwatershed Restoration and Protection Concerns

In addition to the Issues/Concerns commented on in the Watershed-Wide context, the WRAPS calls out HUC-10 subwatershed concerns; these are handy summary pages that will be useful during 1W1P

implementation discussions. A risk score is given to the watershed and highlights are called out like miles of Exceptional Use Stream, number of impairments, and some key locations for project work with greater details. The summary pages are followed by strategic actions tables with other useful detail. Examples below give some very brief highlights by the HUC-10 watershed.

Upper Kettle River Opportunities exist for riparian protection, forest protection and drainage ditch rehabilitation on state lands (state forest). Planting or improving riparian buffer strips along drainage ditches and protecting forests from parcelization or fragmentation is important. Using natural stream designs for re-meandering ditches would improve water resources.

Moose River Several lake protection opportunities and wild rice protection. This includes shoreland restoration with lakeshore owners, improving urban forestry in City of Moose Lake, stream riparian improvements, and forest protection in the upstream watersheds of cisco lakes (Hanging Horn and Little Hanging Horn).

Willow River Lake projects and forest protection projects may include riparian buffer improvements around Surgeon Lake and streams entering Big Slough Lake. Forest projects may include improvements to the upland watershed east of Sturgeon Lake and forests east of General C. C. Andrews State Forest.

Pine River Riparian buffer protections and forest improvements may include areas around Pine River from Big Pine Lake to Bass Lake. Improving forests in the Big Pine Lake and Medicine Creek watersheds could be priorities as well as extending forest protection around the Solana State Forest. A large percent of forest is in private ownership which may allow for forest stewardship plan opportunities and significant stewardship messaging to landowners.

Grindstone River Very high risk subwatershed, areas of concern Grindstone Lake and all tributaries, South Branch Grindstone River (Hinckley area to Kroschel Township). Opportunities for lake and stream riparian zones restoration and improvements, stormwater management, urban forestry work in Hinckley, opportunity to partner around public lands to improve and protect forest are all significant areas of work. Designated trout stream projects are potential considerations, possible willing partners include Spring Creek landowners and the Audubon Center at Grindstone Lake. Fish barriers identified along Spring Creek.

Lower Kettle River Opportunities for riparian stream improvements and also forest improvements associated with public land ownership locations are priorities. Opportunity areas suggested include Pelkey Creek (trout stream), City of Sandstone areas adjacent parks to manage stormwater, urban forestry improvements, Kettle River stream bank erosion within Banning State Park, East Central High School education and outreach and Cane Creek Watershed, and numerous public land locations that may help improve/protect the stream. Pelkey and Cane Creeks called out as “of concern” in the WRAPS. Pelkey Creek is a designated trout stream with varied public ownerships which may provide long term protection. County lands should be identified as to future long term management. Cane Creek has an impaired area and similar patchwork of land ownerships, most of it in large forest tracts, some adjoining a state park. May be a good combination restoration and protection project area.

Bear Creek Continued protection. Water resources in good condition. 74% private ownership. Good opportunities for stewardship messaging and interaction with landowners. Forest protection important for future water quality.

Hay Creek Some impairments but other streams in good condition. Culvert fish barriers are an opportunity for projects. High % private land ownership again provides opportunities for stewardship education and outreach.

Sand Creek Culvert assessments and stream channel improvements would be good projects. Forest protection important for future water quality.

Crooked Creek Lakes of high value and wild rice lakes. Opportunities to maintain high quality resources. Lake phosphorus is low to well within expected ranges. Protection projects and lake management planning could be very valuable work for long term sustainability of these lakes. Four potential stream barriers were identified by DNR staff.

Lower Tamarack River High % public ownership (over half the acres) may allow for opportunities of public/public land partnerships. Culvert barrier may be a high value potential project. Five miles of designated trout stream is located in the watershed and may be a high interest protection project area. Hay Creek flowage is a wild rice area of interest.

Chases Brook-St. Croix River Very **h**igh % public ownership (85%) and 10 miles of streams with exceptional use designation. Watersheds have significant property in Wisconsin, may be an inter-state opportunity with various agencies. Opportunities for landowner discussion around long term or permanent protections, easements, land transferals etc.

Upper Tamarack River Similar to Chases Brook for opportunities to pursue with landowners, 85% private ownership, no impairments. Low % developed. Low % agriculture, forest significant in this watershed. Continue good practices and discuss future stewardship management, protection long term.

And finally, within the context of providing healthy water resources to all Minnesotans, and our responsibilities to our downstream neighbors, MPCA guidance reflect these policies: nutrient reduction strategies to benefit downstream pollutant reduction needs and environmental justice awareness to benefit underserved populations.

Nutrient Reduction Strategies

Minnesota has agreed with other states to do its part to help reduce nutrient loads downstream of Minnesota, such as the nutrients causing the large hypoxic zone in the Gulf of Mexico and the highly eutrophic Lake Winnipeg. To achieve downstream nutrient reduction, Minnesota's Nutrient Reduction Strategy (NRS) calls for each HUC-8 watershed to voluntarily do its part to cumulatively achieve goals for the Mississippi River, Red River, and Lake Superior. If each watershed reduces a fraction of its reducible nutrient loads, then downstream big river nutrient goals can be met and local waters within watersheds will be markedly improved.

The NRS report provides limited guidance on the magnitude of target load reductions needed from each HUC8 watershed to achieve milestone targets. For the Kettle and Upper St. Croix watersheds, total

nitrogen reductions of 50 and 19 tons are needed, and for the Total Phosphorus goal 9 and 2 tons reduction are needed. The final target year for reductions is 2040. Thus, local resource targets and larger downstream efforts can be attempted simultaneously with BMP strategies. Emphasizing the multiple benefits in developing implementation frameworks, defining clear objectives and milestones to gradually work toward a larger watershed improvement will produce results. The NRS also provides per load rates from each smaller subwatershed which can help prioritize BMP locations.

MPCA Environmental Justice Priorities in the Kettle River/Upper St. Croix River Watersheds

The MPCA is committed to making sure that pollution does not have a disproportionate impact on any group of people — the principle of environmental justice. This means that all people — regardless of their race, color, national origin or income — benefit from equal levels of environmental protection and have opportunities to participate in decisions that may affect their environment or health.

There are a number of tools available to determine where underserved communities could receive the most benefit from watershed work in the Kettle River/Upper St. Croix River Watersheds, and the MPCA staff is equipped to assist in locating areas of the watershed where low income, linguistically isolated, or minority people are most likely to benefit from the work done in the 1W1P process. Please consider engaging our assistance in identifying and prioritizing these areas.

See the MPCA website (https://www.pca.state.mn.us/about-mpca/mpca-and-environmental-justice) for more information regarding environmental justice.

We value the opportunity to provide a summary of issues. If we may be of further assistance, please contact Karen Evens at 218-302-6633 or at Karen.Evens@state.mn.us. Also, please see the watershed web page at https://www.pca.state.mn.us/water/watersheds/kettle-river and https://www.pca.state.mn.us/water/watersheds/upper-st-croix-river for access to reports and more detailed information.

Sincerely,

Amy Adrihan

This document has been electronically signed.

Amy Adrihan
Supervisor
Northeast Watershed Unit
Watershed Division

AA/KE:jdf