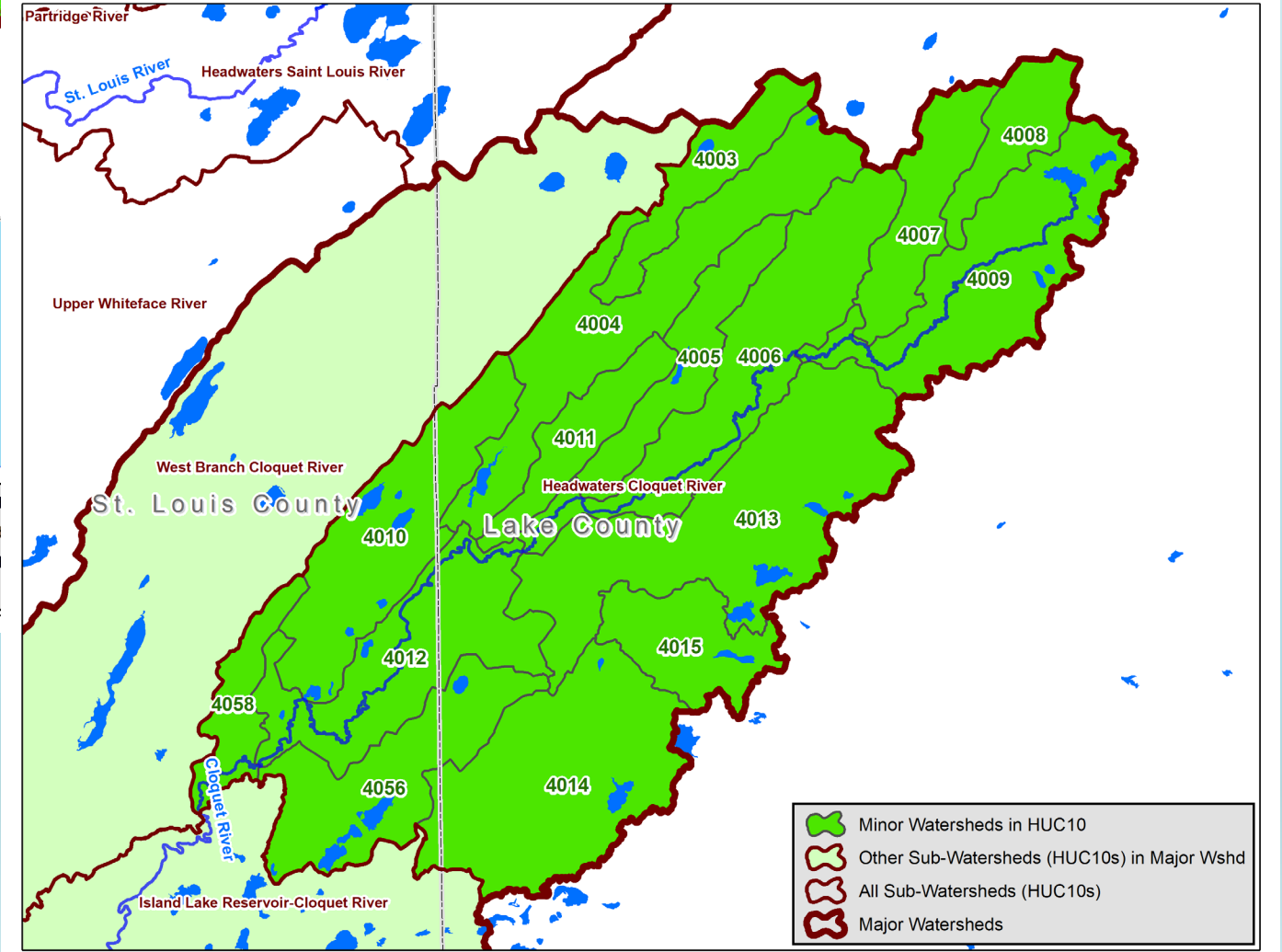
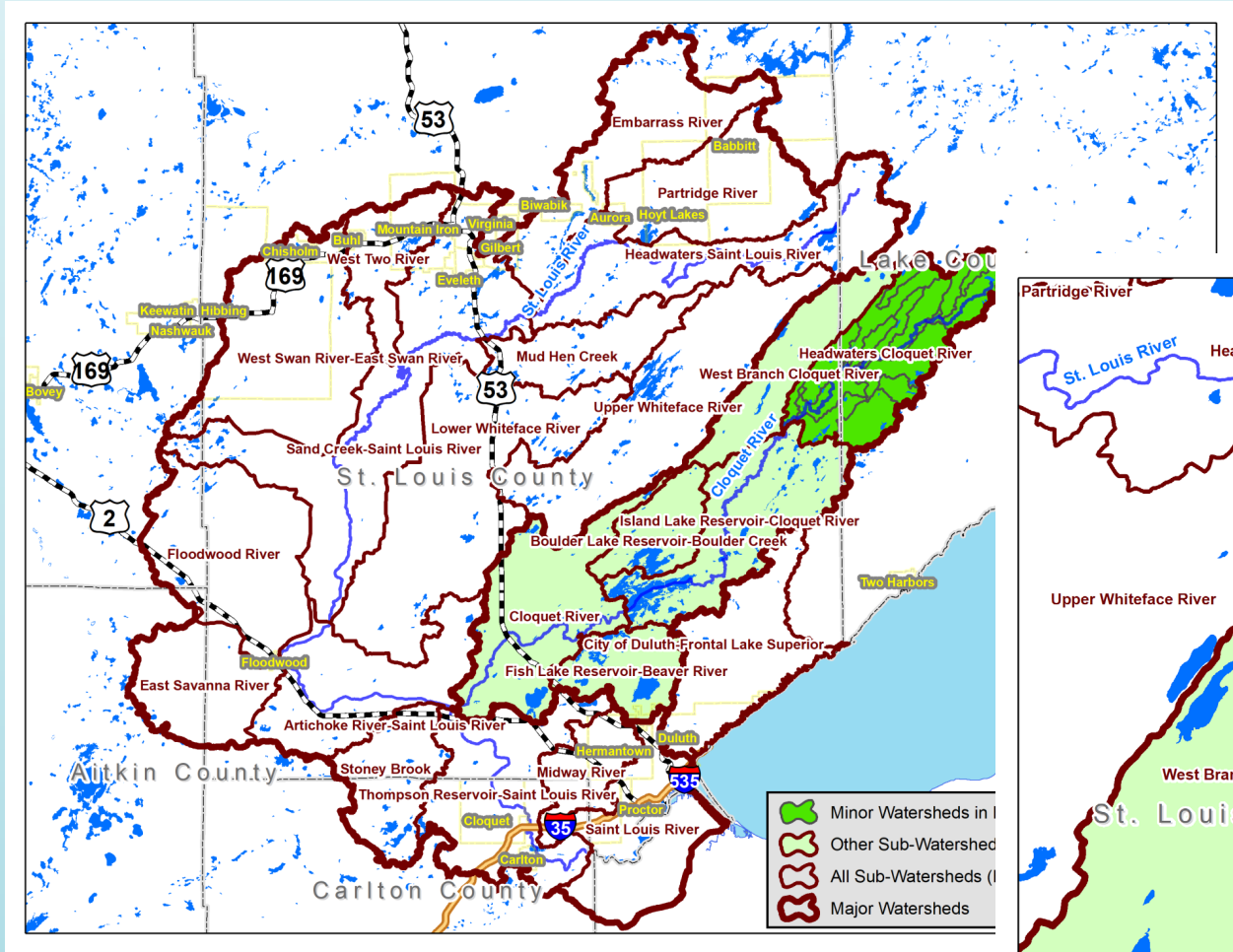




# Cloquet Headwaters Draft Goals



# Cloquet Headwaters

## USGS HUC10 0401020201

- 183 square miles drainage area
- Forested and wetlands
- Contains small towns of Brimson and multiple townships
- Cloquet River - exceptional use stream from Headwaters (cold) to watershed boundary (warm)
- Numerous Cold-Water Trout Streams
  - Pine Creek, Langley River, Indian Creek, Pine Creek, Murphy Creek – MPCA WRAPS protection
- 31 Lakes and shallow lakes
  - 9 considered phosphorous sensitive
  - 15 are wild rice lakes
  - Indian Lake has elevated Phosphorous levels (flagged in WRAPS process) however flushes through because of Cloquet River
  - Kane and Salo are considered at risk from a statewide perspective
- Pristine, no water quality/biological impairments, protection

# Land Use #1

- Where are the recreational areas
- Who are the recreational users
- What natural resources are being impacted
- How many lakeshore property owners are there
- Where are the priority areas

Educate and increase stewardship of landowners and recreational land users on their impact to natural resources in X% of high use and high priority areas



# Recreational Users and Areas

## ➤ State and National Forest

- Cloquet Valley State Forest
- Finland State Forest
- Superior National Forest

## ➤ ATV and Snowmobile trails

- Two Harbors Corridor Trail
  - Voyageurs snowmobile club
- East Range Multi-Use Trail
  - Ranger Snowmobile and ATV Club
- Pequaywan/Brimson Trails
  - Pequaywan Area Trailblazers

## ➤ Ski and Snowshoe Trails

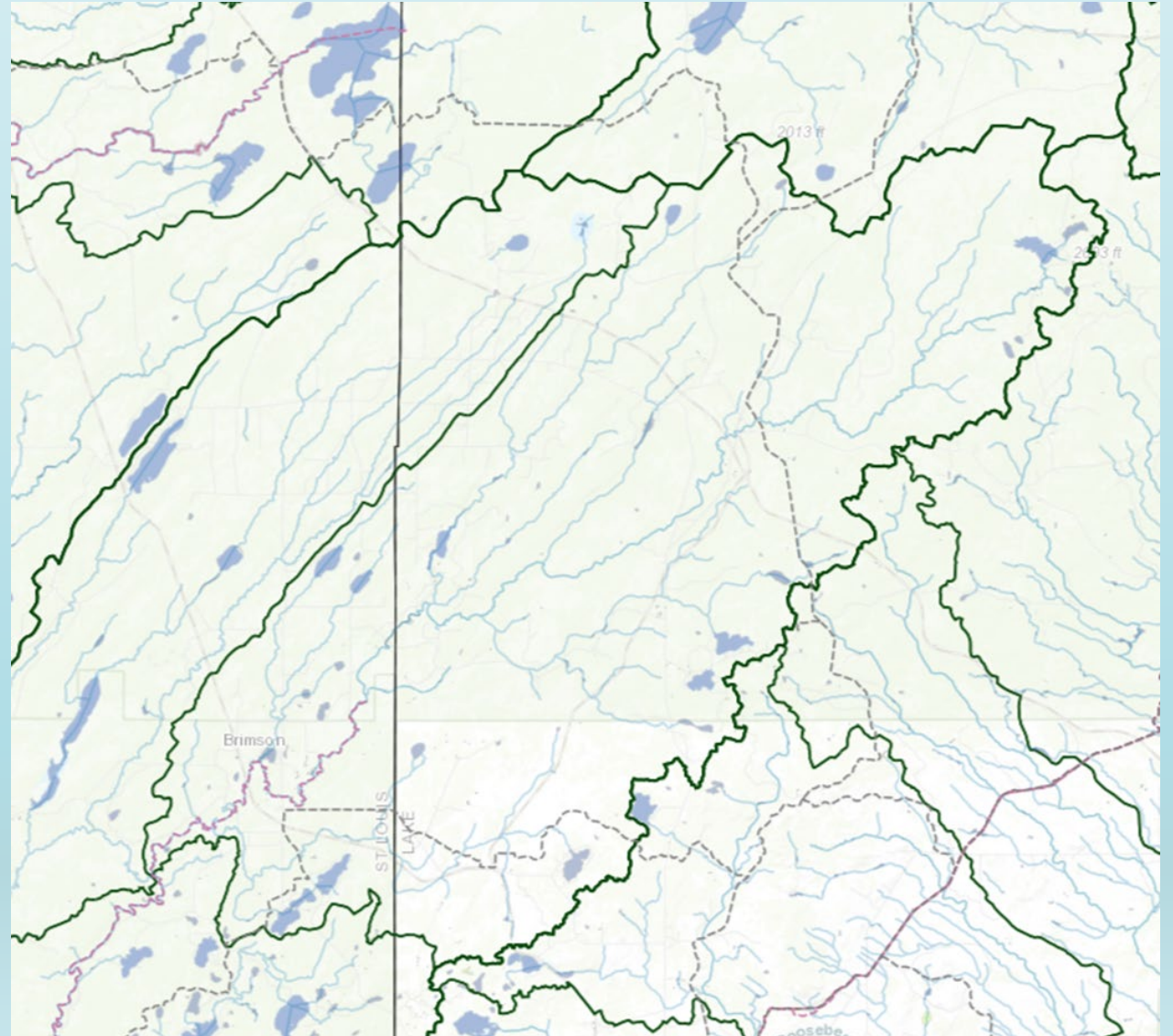
- Mother Bear Ski Trail

## ➤ Cloquet River State Water Trail

- Access points- Indian Lake Campground and South Loop Road Access

## ➤ Camping

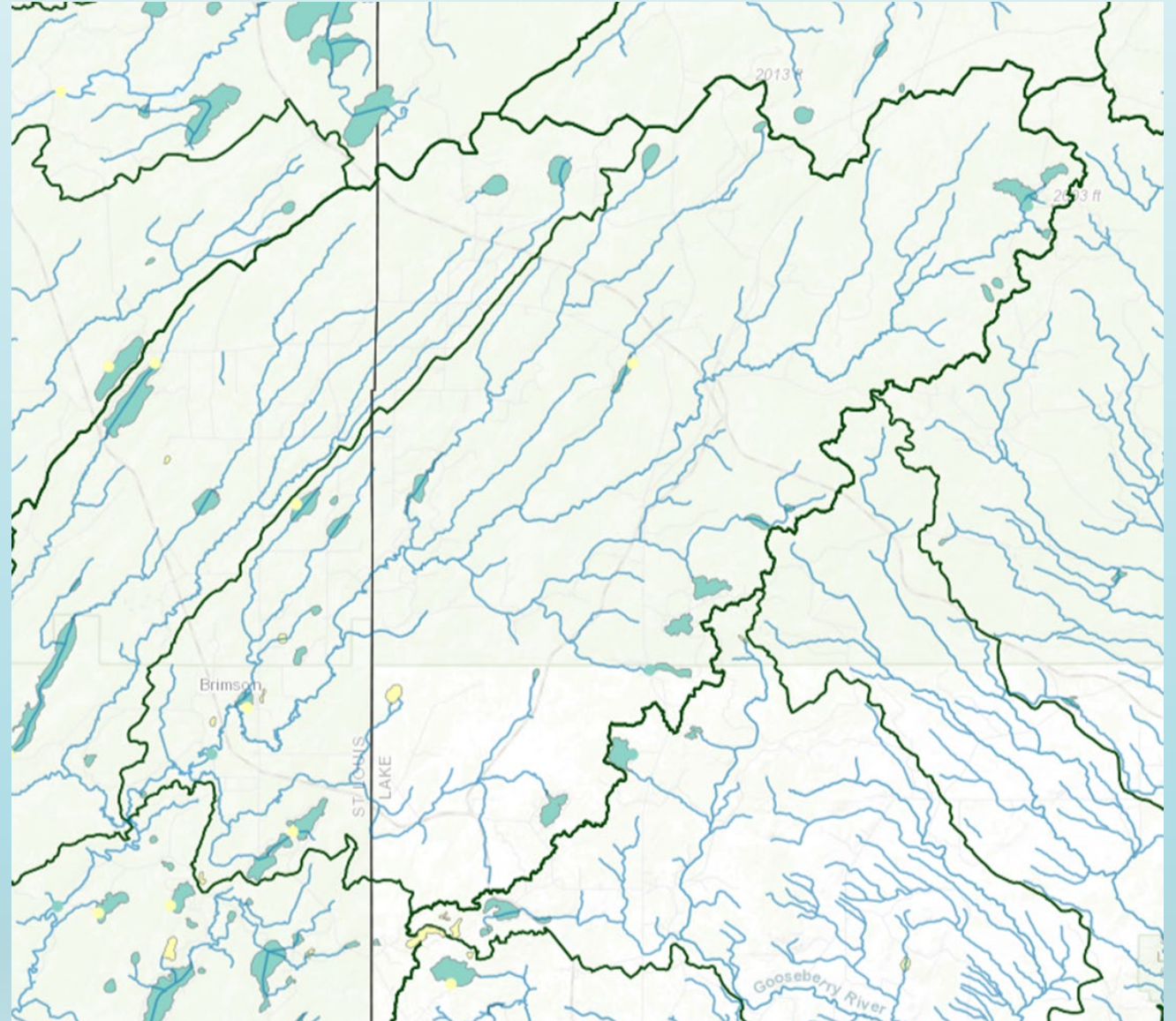
- Indian Lake Campground
- Sullivan Lake Campground
- Cloquet River Water Trail Campsites



# Lake Recreation

## ➤ 31 Lakes

- 15 wild rice lakes
- 9 phosphorous sensitive
  - 18 lakes are either wild rice or phosphorous sensitive
  - 3 lakes are both (Indian, Sullivan, Cloquet)
  - Kane and Salo are both considered at risk (phosphorous, proximity to standard, percent disturbed land use, size, declining trends)
- 150 landowners in St. Louis Co and 209 in Lake Co have land adjacent to lakes (359)
- 7 water access points (6 lake, 1 river carry-in)



# Resource Concerns from Recreational Use

- Erosion
- Shoreline and Riparian Buffer Degredation
- Aquatic Invasive Species (AIS)
- Terrestrial Invasive Species
- Wetland and Stream Habitat Degradation
- Solid Waste



# Land Use Goal #1

Educate and increase stewardship of recreational land users and landowners on their impact to natural resources in 50% of high use and high priority areas.



- Who are the recreational users
- What are the water quality impacts
- Where are the water quality impacts occurring

# Land Use #2

Mitigate the water quality impacts of recreational use at X% of impacted water resources at high-use and high priority areas

# Recreational Uses that impact water quality

## ➤ Recreational Trails

- *Trail Crossings*
- *Trail Erosion*
- *Buffer Damage or Removal*

## ➤ Cloquet River State Water Trail

- *Access points erosion*

## ➤ Camping

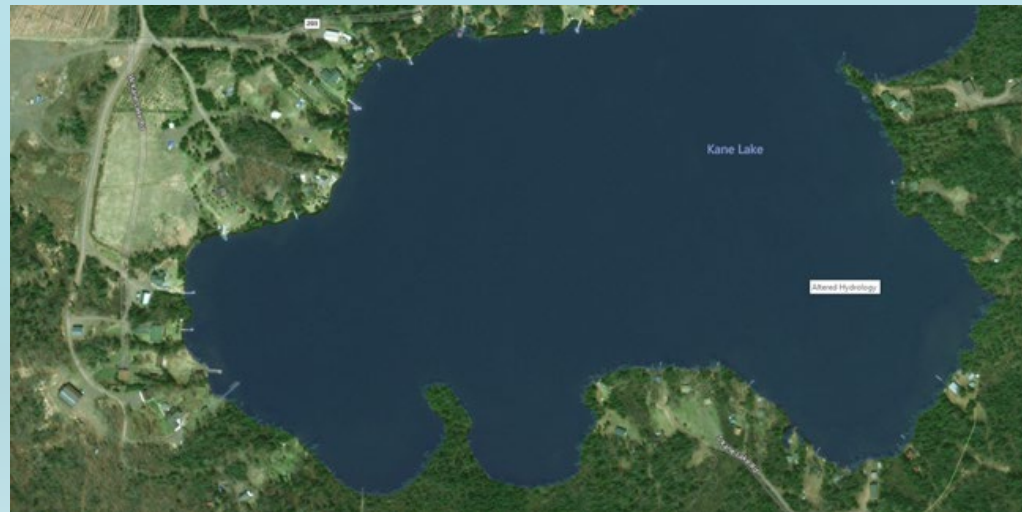
- *Erosion*
- *Buffer Damage or Removal*

## ➤ Boat Access Points

- *Boat Launch Erosion*
- *AIS*

## ➤ Development

- *Wetland Impacts*
- *Shoreline*
- *SSTS*



# Revised Land Use Goal #2

Inventory the water quality impacts of recreational use and implement projects on 5 locations of identified impacted water resources at high-use and high priority areas

## Land Use #2

Mitigate the water quality impacts of recreational use at X% of impacted water resources at high-use and high priority areas

- Where are the dams and culverts located
- Where are the priority streams and tributaries
- What are the hydrological concerns
- How feasible are these projects

# Altered Hydrology

## Goal #1

Reconnect X miles of priority streams and tributaries to benefit aquatic life and improve water quality.



# Cloquet River Watershed: An Assessment of Restoration Opportunities: Culverts

Table 2: List of top tier culvert replacements in the Cloquet River watershed

Stream Name	Street Name	Total Span	Bankfull Width	Culvert Width Ratio	Limiting Factor for Fish Passage
Pine Creek	Wales Rd	5'	11'	0.45	Outlet Drop
Beartrap Tributary #1	Private drive off CR 7	1'	4'	0.30	Outlet Drop, Velocity, Depth, Substrate
Hellwig Creek	Swan Lake Rd	15'	36'	0.42	Velocity, Substrate
Spring Creek	Drummond Rd	6'	7'	0.86	Outlet Drop, Velocity, Depth, Substrate
Ahlenius Creek	Abandoned Rd	15'	12'	1.25	Inlet Drop
Berry Creek	Berry Creek Rd	16'	21'	0.77	Substrate
Unnamed Trib to Pine Creek	Drummond Rd	3'	6'	0.55	Outlet Drop, Velocity, Depth, Substrate
Pine Creek	Abandoned Rd	4'	14'	0.29	Velocity, Substrate
Humphrey Creek	Unnamed Forest Rd	3'	8'	0.41	Outlet Drop, Velocity, Substrate
Marshall Creek	Bear Island Rd	5'	12'	0.38	Outlet Drop, Velocity, Depth, Substrate

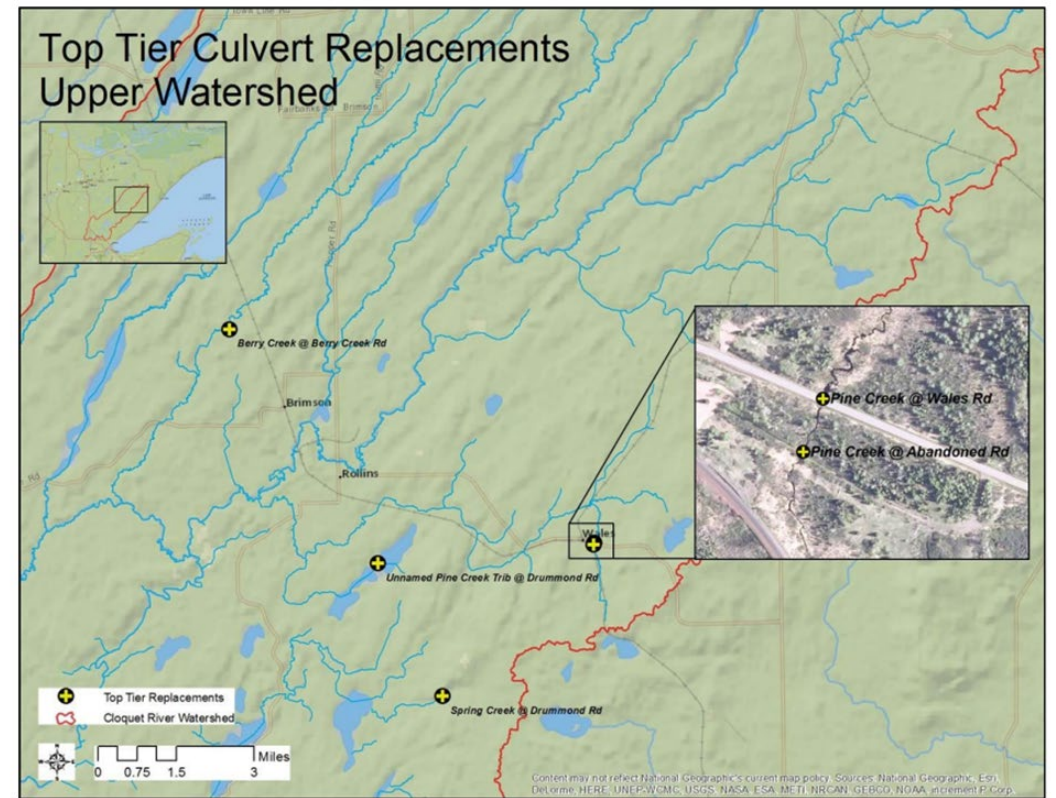


Figure 4-3: Locations of top tier culvert replacements in the upper Cloquet River watershed

- Pine Creek @ Wales 1.71 reconnected stream miles
- Pine Creek abandoned needs to be verified
- Unnamed Trib to Pine Creek @ Drummond needs to be verified



# Cloquet River Watershed: An Assessment of Restoration Opportunities: Dams

3 criteria for dams to be considered in report:

1. Public Ownership
2. At least 50 years old
3. At least 1 mile of upstream habitat

## ➤ Sullivan Lake Dam

**Miles of Upstream River:** 4.81 miles

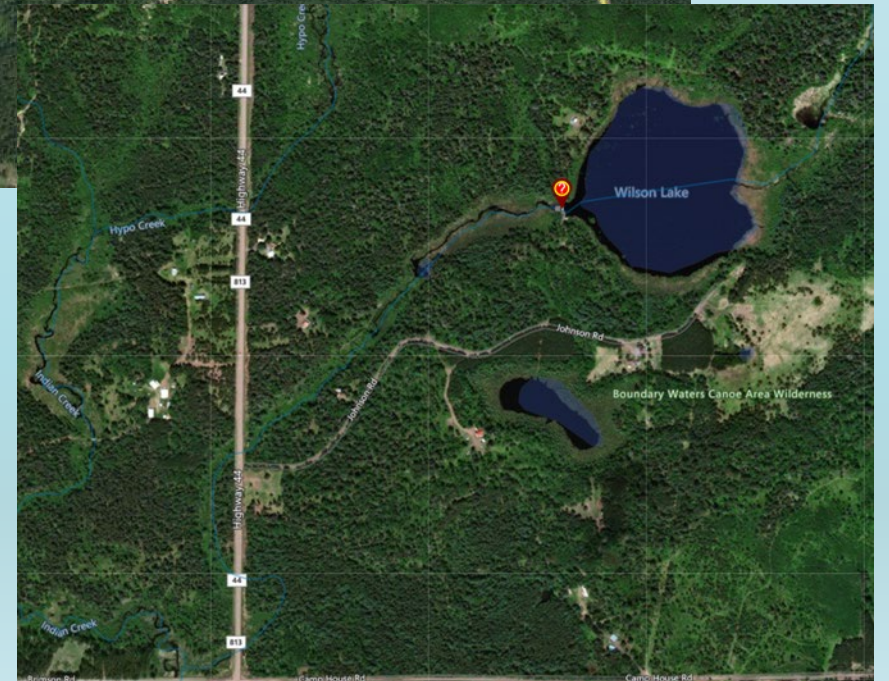
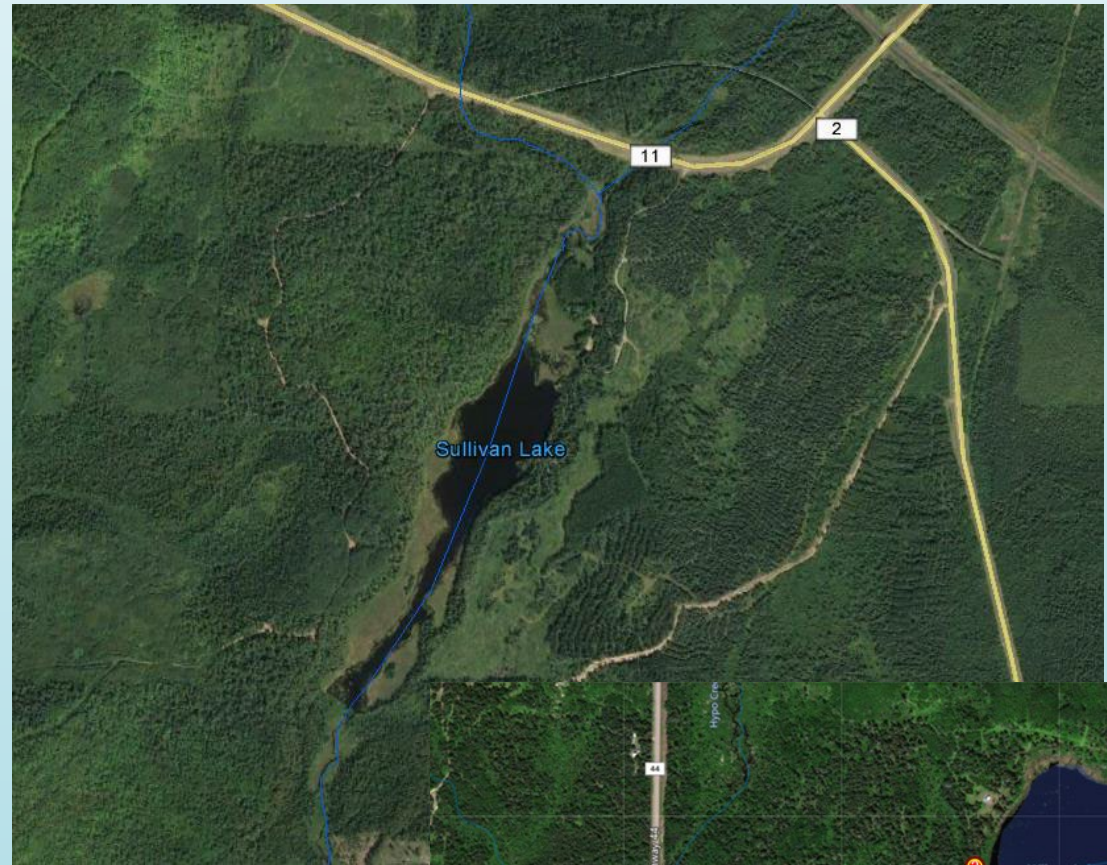
**Dam Height:** 6 feet

**Year Built:** 1900

**Latitude/Longitude:** 47.371704°, -91.678555°

**Owner:** Federal – USDA Forest Service

## ➤ Wilson Lake Dam – not in report and more information needed



# Altered Hydrology Goal #1

Reconnect 6.5 miles of priority streams and tributaries to benefit aquatic life and improve water quality.

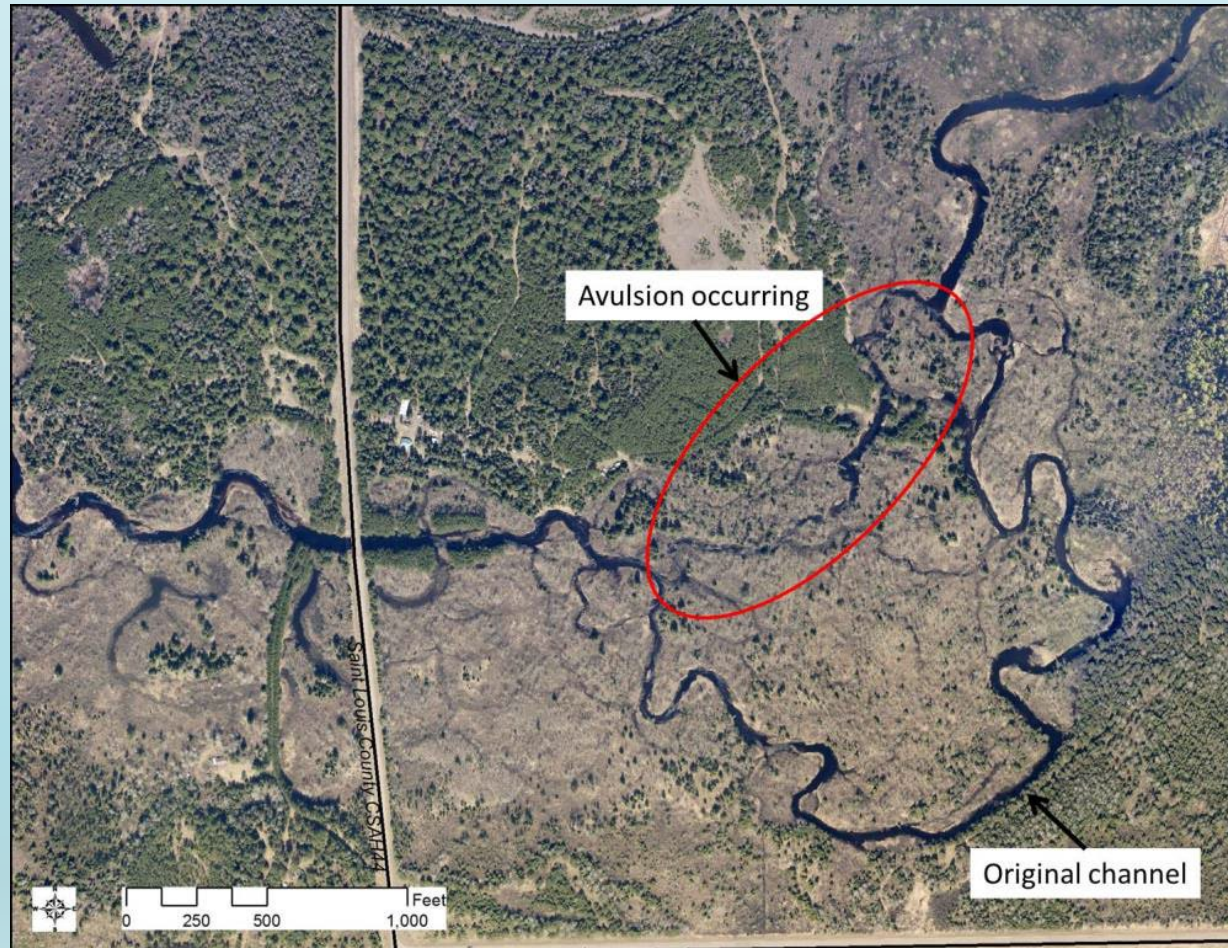
# Altered Hydrology Goal #2

- Where are the priority streams and tributaries
- What areas of stream reaches have been altered by human activity
- How will we gather more information

Restore x feet of stream reaches that have been altered by human activity, including impounded, straightened, and incised stream reaches.



# Cloquet River Potential River Restoration



-Avulsion is a sudden abandonment of a river channel and creation of a new channel. Avulsions usually occur during high flow events when the slope of the original channel is significantly less than the potential slope of the avulsion

- 6,000 foot loss of stream length



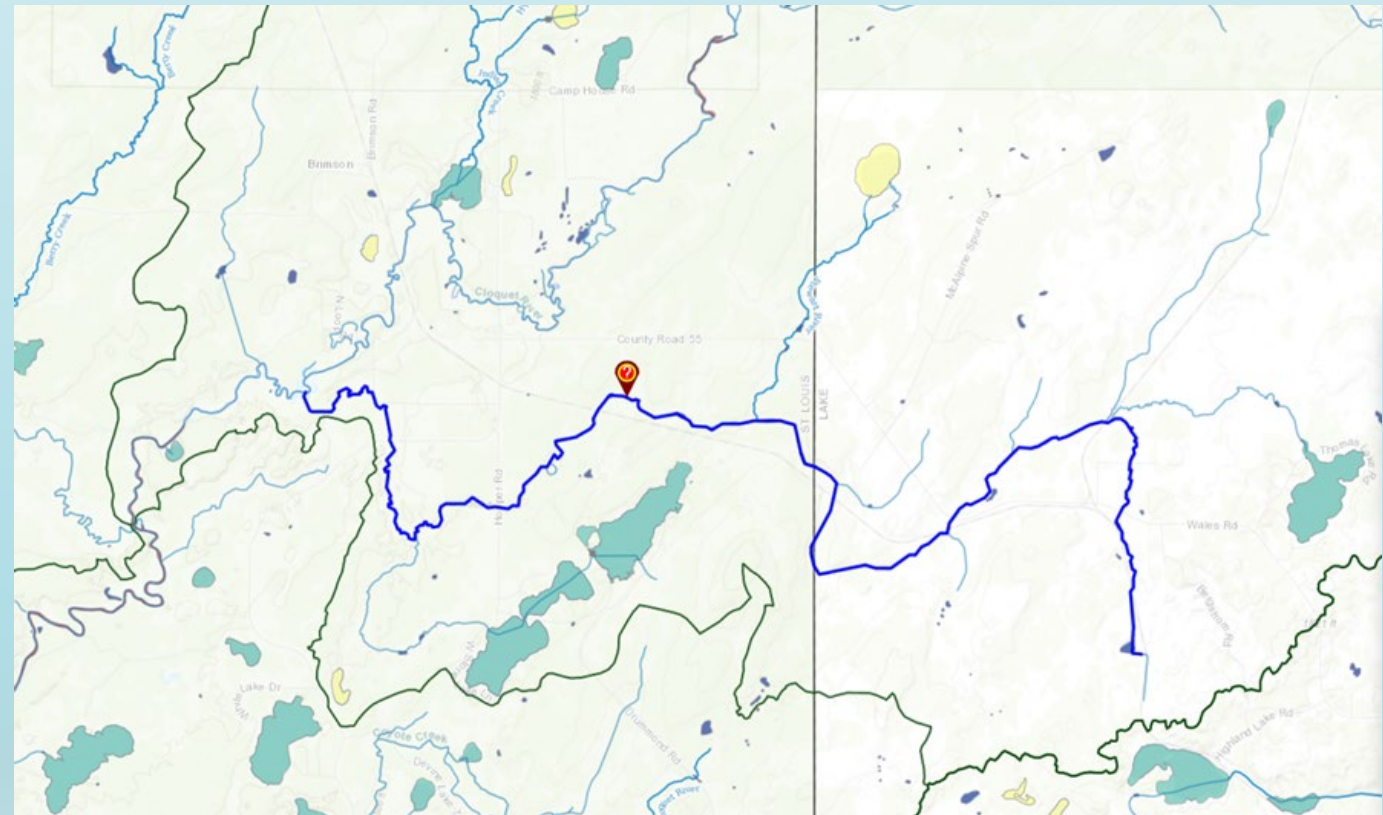
# Cloquet River Potential River Restoration



# MPCA WRAPS Report

## Pine Creek

- Headwaters Coldwater stream
- Headwaters WRAPS Protection Category
- Minnesota Stream Habitat Assessment ranked poor habitat
  - Substrate and channel morphology were low scores



# Altered Hydrology Goal #2

Restore 1,000 feet of stream reaches that have been altered by human activity, including impounded, straightened, and incised stream reaches.



- How many acres of private owned forested property
- Where are forested areas needing to be targeted
- What areas are prioritized for protection

# Habitat Goal #1

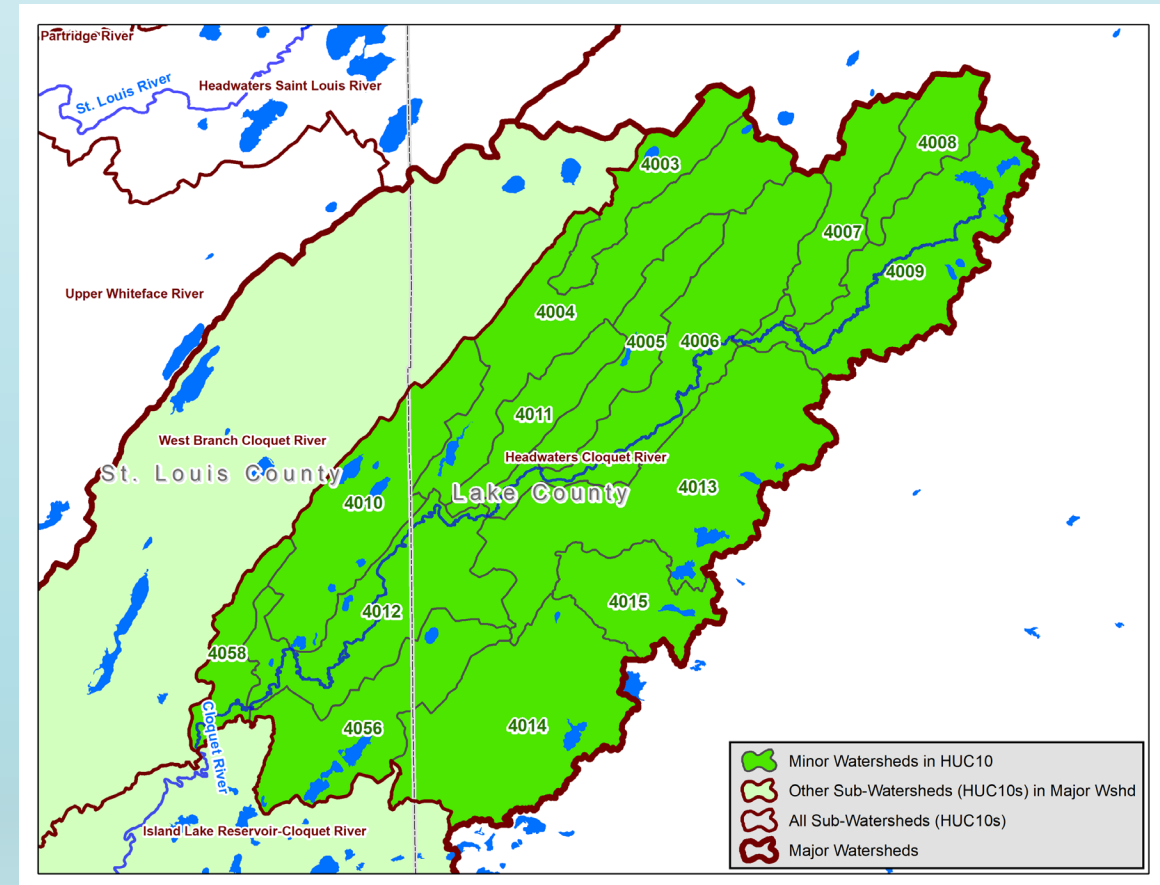
Protect and manage x acres of private owned forested property in areas that protect surface water, drinking water quality, and riparian/shoreline habitat.

# Riparian Adjacency Quality RAQ Scoring

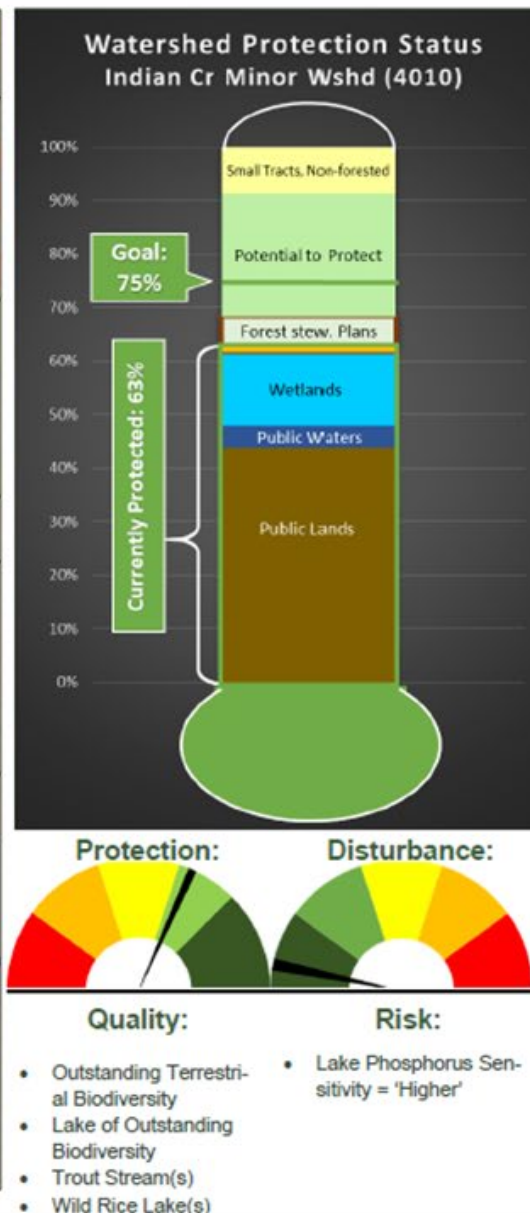
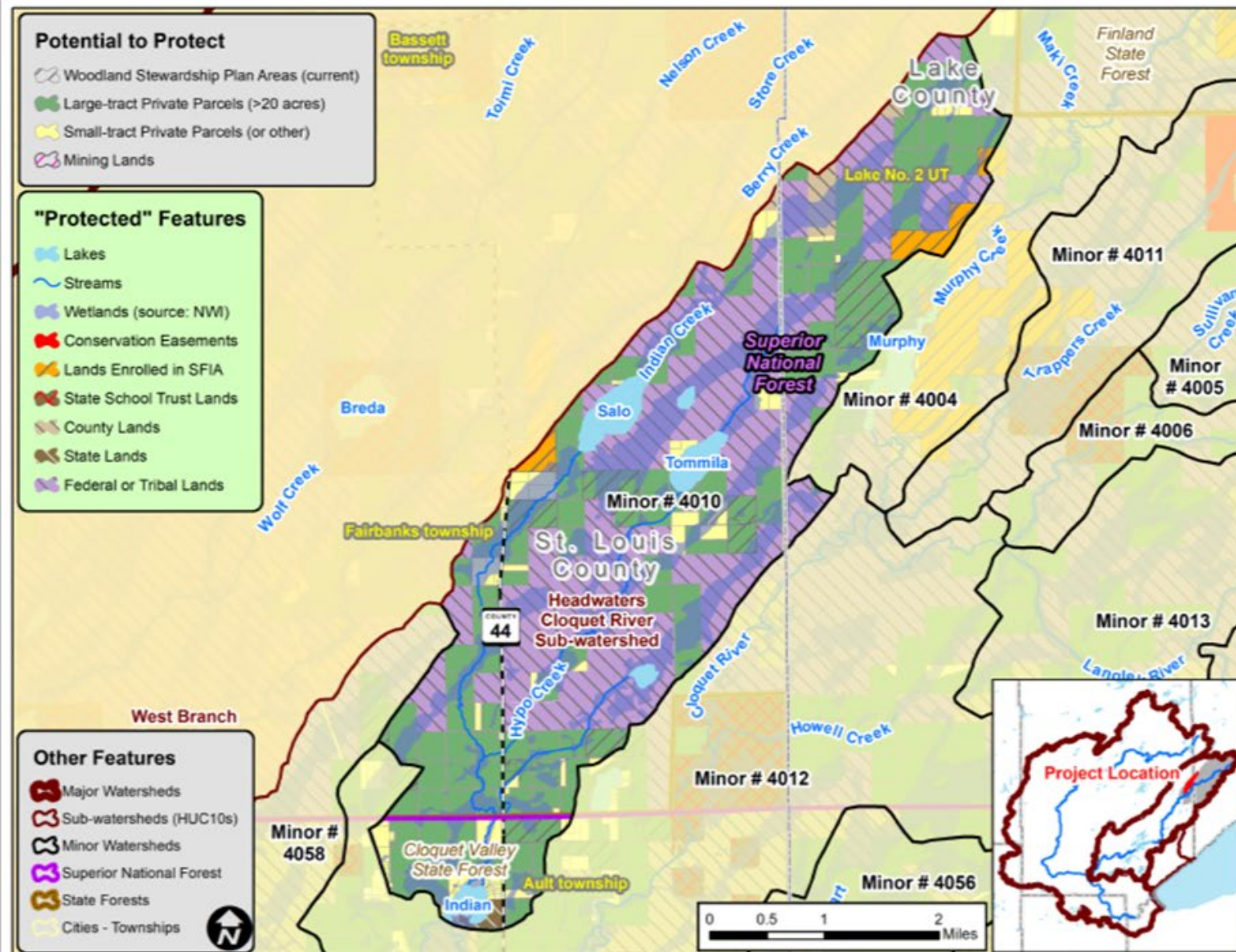
75% of land forested and protected is considered good for water quality

4 subwatersheds are less than 75% protected

- Indian Creek 4010 (63%)  
- 1,130 acres needed for 75% protected
- Cloquet River 4012 (68%)
- Lower Pine Creek/Stone Lakes 4056 (68%)
- Lower Cloquet 4058 (68%)  
- 700 acres needed for 75% protection

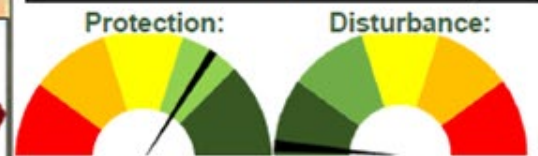
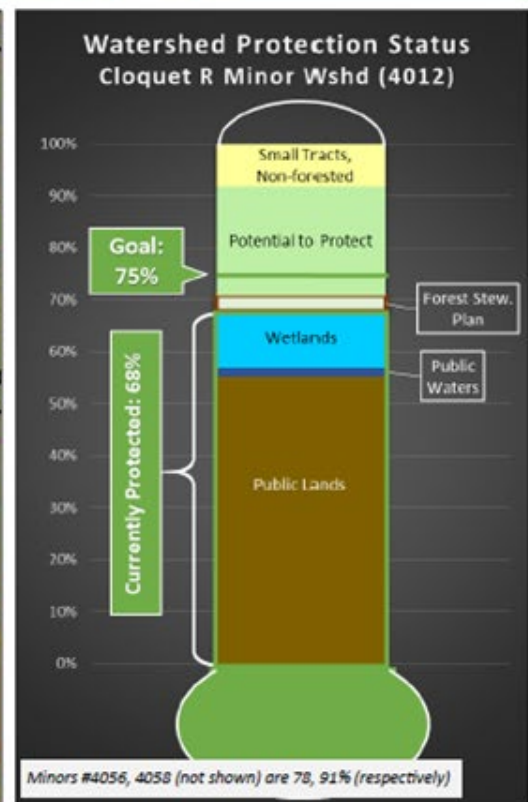
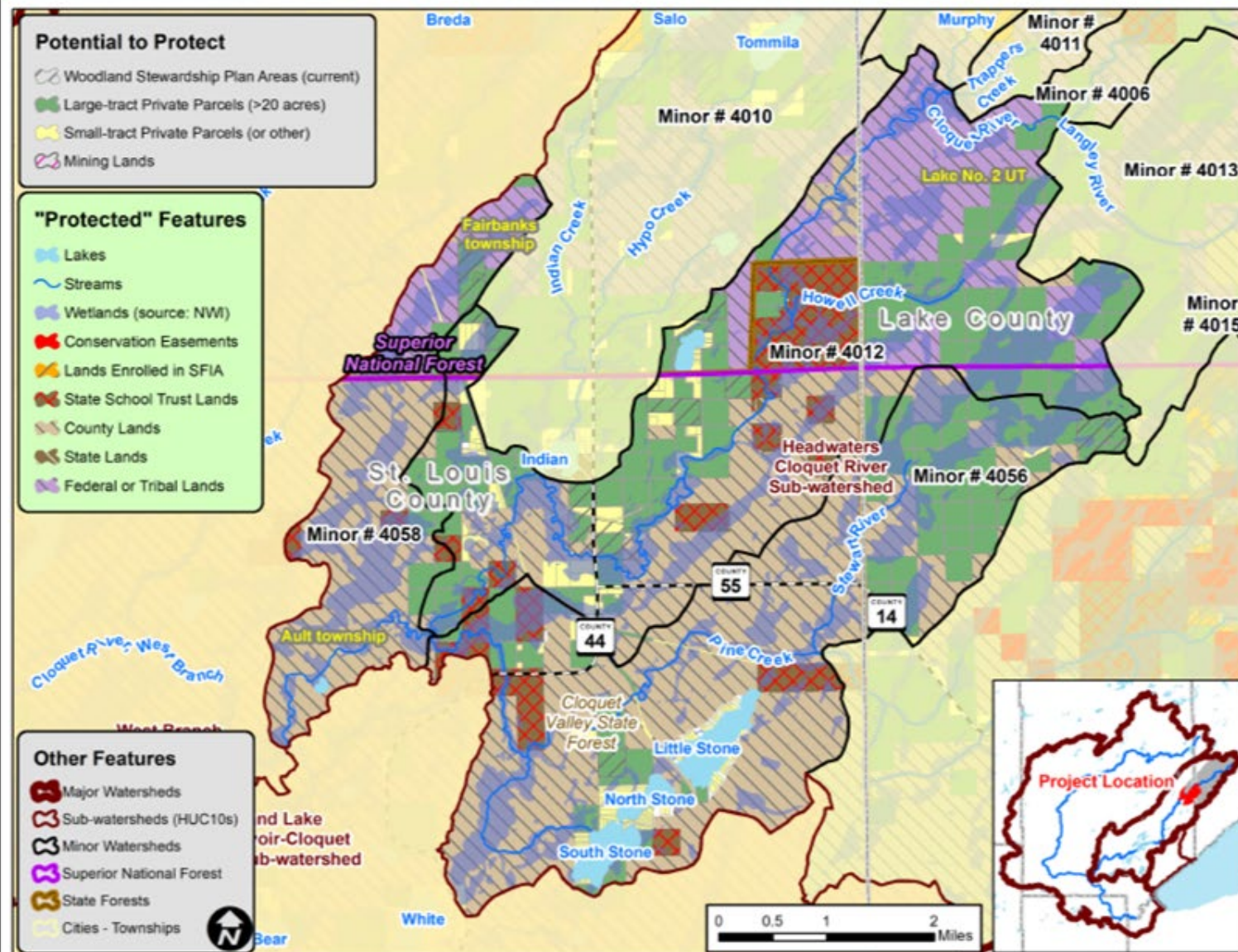


# Protection Summary Sheet: Indian Creek Minor Watershed #: 4010





# Protection Summary Sheet: Minor Watershed #s: 4012, 4056, 4058



**Quality:**

**Risk:**

- High Ter. Biodiversity
- Lake of Outstanding Biodiversity
- Priority Shallow Lake(s)
- Trout Stream(s)
- Wild Rice Lake(s)



# WRAPS HSPF Forest Modeling

## 10% Forest Loss Sediment Loading

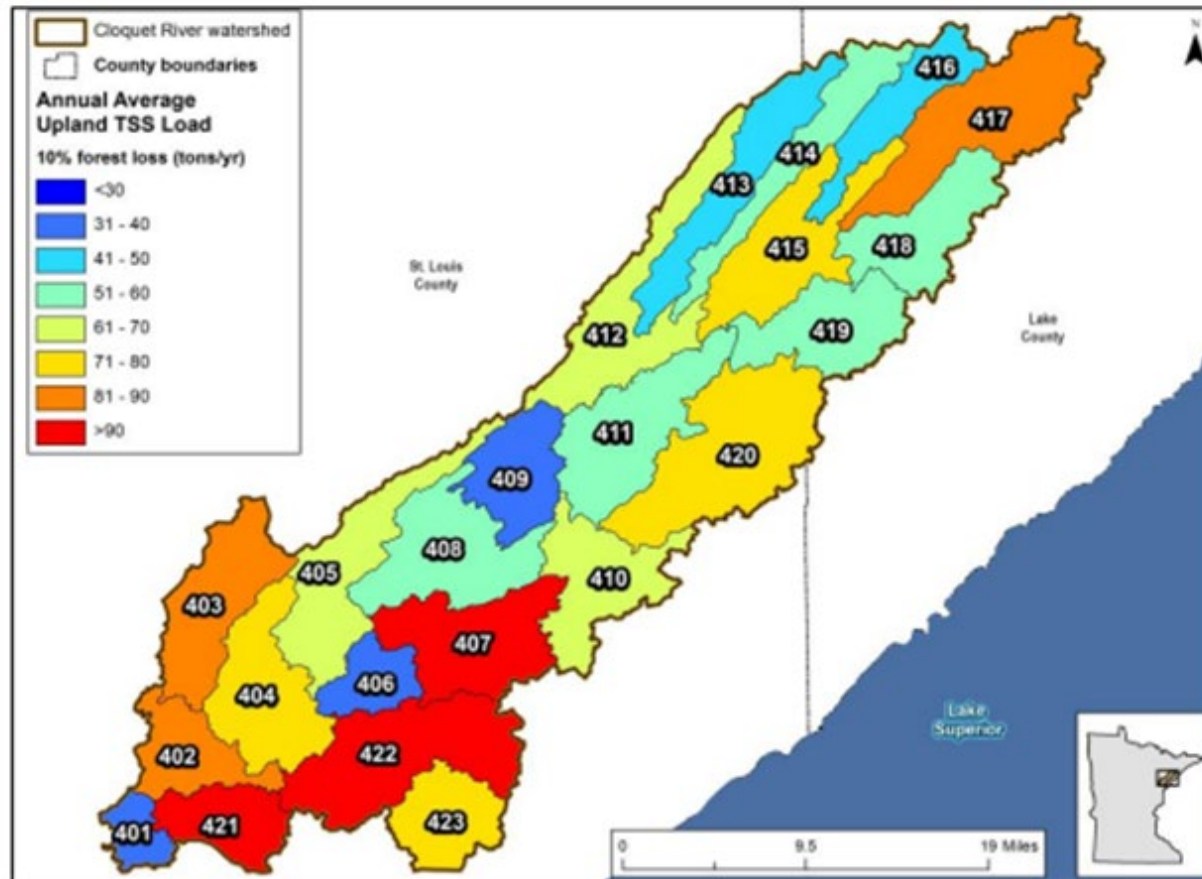


Figure 14. Annual average upland sediment loads by HSPF catchment – 10% forest change.

# Habitat Goal #1

Protect and manage 1830 acres of privately owned forested property in areas that protect surface water, drinking water quality, and habitat.

# Habitat Goal #2

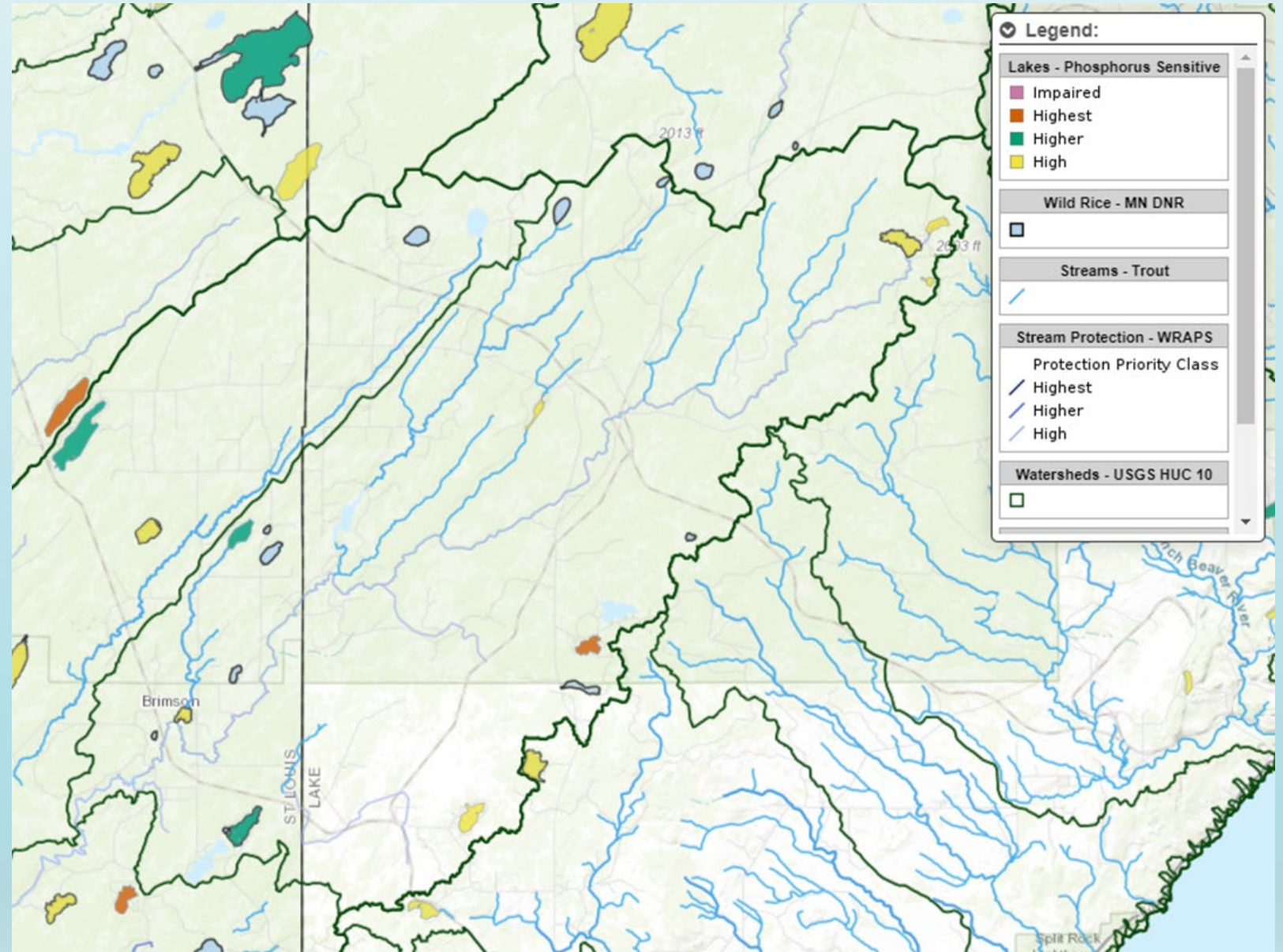
- How many lakeshore and riparian landowners
  - What lakes are most developed
  - What areas are riparian buffers degraded
- What areas are prioritized for protection

Establish x linear feet of vegetated riparian/lakeshore buffers in areas that protect surface water, drinking water quality, and habitat.

# Targeting Vegetative Buffers

## Potential Parameters:

- Willing landowners
- Trout streams
- Wild Rice Lakes
- Development pressures
- Phosphorous Sensitivity
- High Biodiversity
- WRAPS Protection





# WRAPS HSPF Modeling

High Biodiversity:  
Lower Cloquet, Trappers, Sullivan

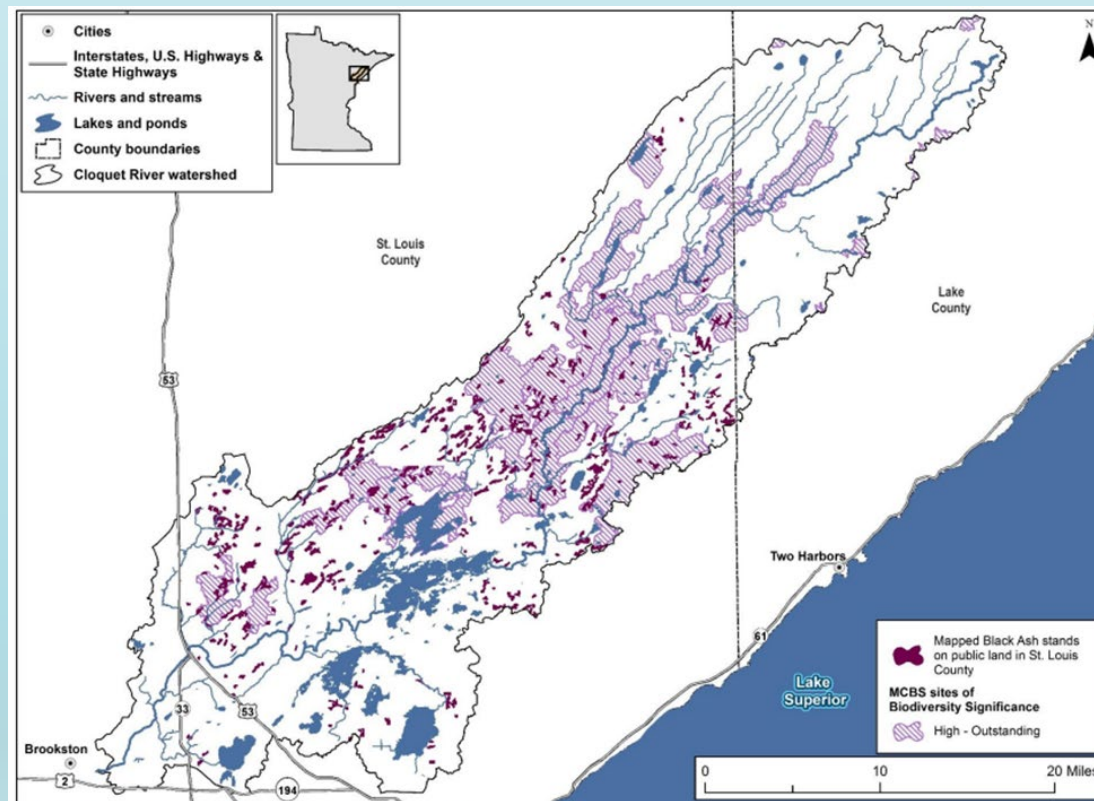


Figure 23. Targeted geographic areas for forestry management.

Steep Slopes Near Streams

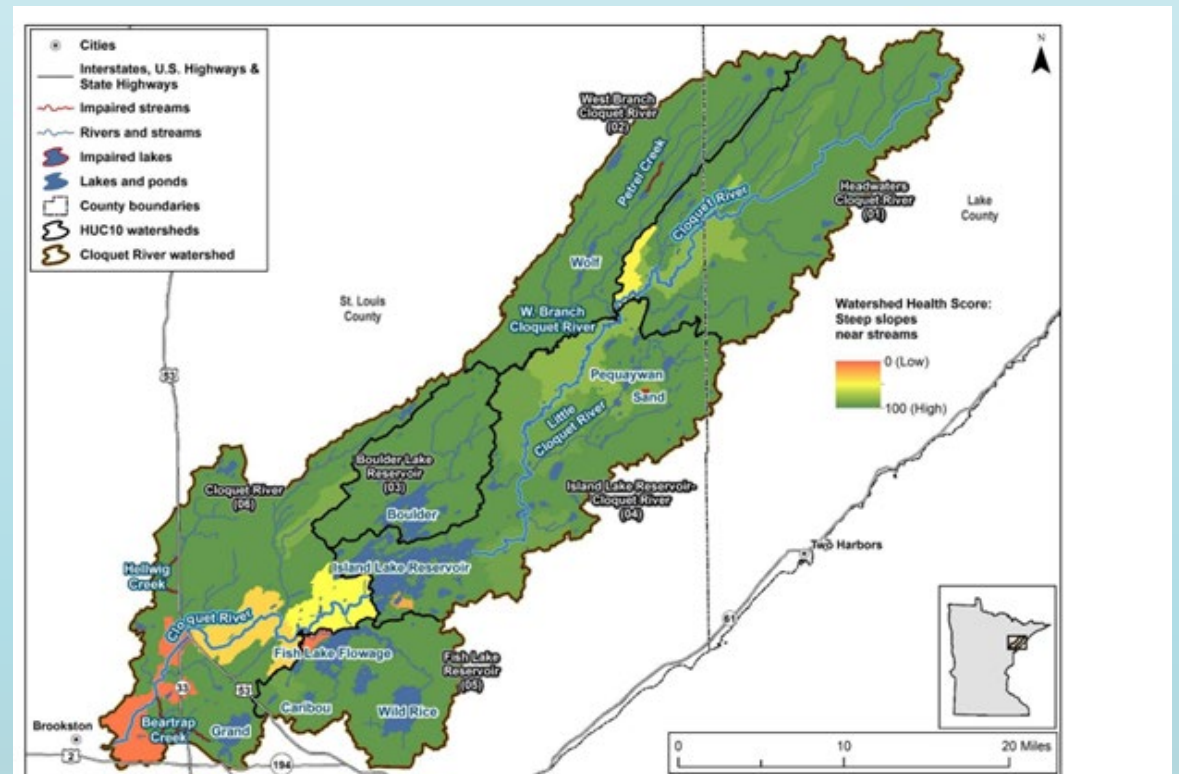


Figure 37. Watershed Health Scores: steep slopes near streams.

# Habitat Goal #2

Establish 2,000 linear feet of vegetated riparian/lakeshore buffers in areas that protect surface water, drinking water quality, and habitat.

## AC Meeting Notes 12/21

- Cloquet Headwaters
  - Agreed that Lakes tend to shift with increased land use, so agree that education of landowners is a high priority as well as land users.
  - Reach out to Kevin Johnson DNR Trails & Waterways to discuss recreational user needs. Conflicts between canoe trail campsites and ATV users could be mitigated.
  - Double check road closures. If culvert/bridge structures are removed, make sure the road is closed permanently.
  - In the bigger picture of dams, if in the Superior National Forest, reach out to Marty Rye. He has an old report on dams in the forest and restoration potential of them. A number of years ago they removed a dam on Langley River.
  - Cloquet Valley and Finland is a limited access state forest which will make it easier to close roads: [https://www.dnr.state.mn.us/regulations/ohv/stateforests\\_limited.html](https://www.dnr.state.mn.us/regulations/ohv/stateforests_limited.html)
  - Coordination between state and fed lands would be a good action to address issues in this planning area.
  - There is Debate on stream restoration in some places. Are some changes a natural occurrence? First step would be a study to determine this.
  - The Forest HSPF model for forest change throughout the watershed, and we know that it's not a super accurate model based on assumptions the model made. Leave it in but focus on the RAQ.
  - May want to think about what our definition a buffer is. We should Standardize this for the watershed.
  - Consider pulling together a working group of land and water managers to determine where we get the best bang for the buck on buffers.