

# ***Mississippi Headwaters Watershed Landscape Stewardship Plan***

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***Beltrami Co Environmental Services/SWCD***

***Cass Co Environmental Services***

***Clearwater SWCD***

***Hubbard SWCD***

***Itasca SWCD***

***Natural Resources Conservation Service***

***Technical Service Area 8***



# What is Landscape Stewardship?

Effective landscape conservation is a compelling challenge across the United States. Declining water quality, climate change, forestland conversions, wildfires, and invasive species are among many threats to our Nation's forests and the ecosystem services they provide. Forestlands cover roughly 42 percent of the Midwest and Northeast states, with 77 percent of those forests in private ownership. There are nearly 5 million private forest landowners in these 20 states. With over one-quarter of the Nation's forests, and nearly half (43%) of the Nation's population in this region, conserving our forests is not a luxury, it is a necessity. Landscape stewardship is the process established by the US Congress through policy directives in the 2008 Farm Bill to face these challenges.

Leadership from the USDA Forest Service and the Northeastern Area Association of State Foresters (NAASF) developed a vision for landscape scale conservation to address these threats. They recognized the public and private benefits that planning and managing forestlands across boundaries are best addressed through integrated local based partnerships with supporting resources. In 2011, they published the document, "*Landscape Stewardship Guide*" to help state and local partners establish their landscape stewardship programs.

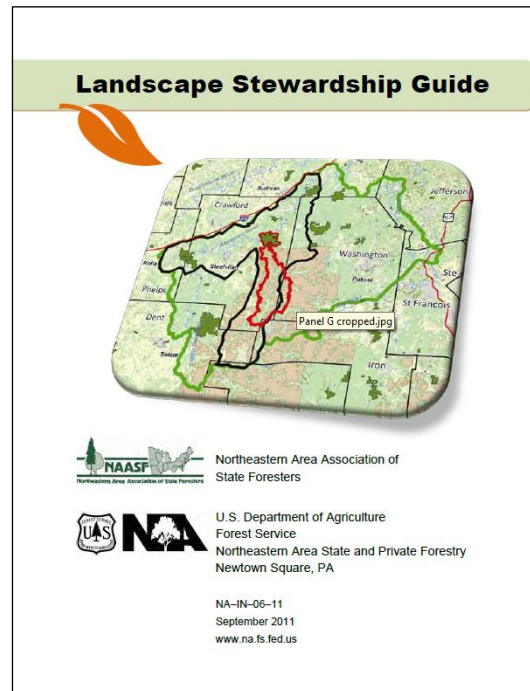
Recognizing the critical linkages between forests and water quality, the Minnesota Department of Natural Resources (DNR) and the Minnesota Board of Water and Soil Resources (BWSR), together with local partners and private landowners, have teamed up to develop watershed-based landscape stewardship plans across the forested regions of the state.

## Credits

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**Cover photo:** "[Mississippi River Headwaters - Itasca State Park, Minnesota](#)" by [Tony Webster](#) is licensed under [CC BY-NC-SA 2.0](#). Cover photo is cropped from the original image.

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# Table of Contents

<b>Introduction.....</b>	<b>1</b>
Purpose and Scope.....	1
Forest and Water Resources Context.....	1
Linking Landscape Stewardship and Local Water Planning.....	2
Partners and Process.....	2
<b>Part 1: Analysis of Forest and Water Resources .....</b>	<b>3</b>
Introduction .....	3
Resource Context.....	3
Risk/Quality Assessment .....	10
Forest Conservation Opportunity Areas .....	11
Key Observations and Conclusions .....	12
Forest Land Protection – Current Status.....	13
Private Forest Stewardship – Current Status .....	13
<b>Part 2: The Vision.....</b>	<b>15</b>
Mission.....	15
Vision .....	15
Major Watershed Forestry Goals .....	15
Coordinated Roles to Increase Forest Land Protection and Stewardship .....	15
Goal 1: Forest Land Protection .....	17
Goal 2: Promote Private Forest Stewardship .....	18
Vision Summary.....	19
Subwatershed Guidance .....	19
Minor Watershed Methodology and RAQ Scoring .....	29
<b>Part 3: Making it Happen .....</b>	<b>31</b>
Coordination Strategies.....	31
Demonstration Projects .....	40
 <b>Appendix</b>	
Project Partners	
Bibliography	
Mississippi Headwaters Resource Inventory (HUC 8)	
Subwatershed Analyses (HUC 10)	
Ecological Pathway to Sustainable Forest Management	



Minnesota Department of Natural Resources  
Division of Forestry  
500 Lafayette Road  
St. Paul, Minnesota 55155

June 2020

Dear Citizens of the Mississippi Headwaters Major Watershed:

We are pleased to present you the approved Mississippi Headwaters Watershed Landscape Stewardship Plan. This plan was developed by a group of conservation professionals working in your watershed that deliver natural resource services.

The primary purpose of this plan is to empower your team of service providers to work together with private landowners and land managers to protect working forest lands and promote private forest stewardship. This plan identifies and prioritizes opportunities for private landowners to engage in forest land protection and sustainable forest management, including timber harvesting. It is your choice as to which level of forest land protection and management works for you and your family.

This plan also provides an array of forest resource recommendations on a watershed basis to support the implementation of the Mississippi Headwaters Watershed One Watershed One Plan (1W1P). It provides useful information and recommendations on sustainable forest management that will help protect water quality, enhance wildlife habitat, promote healthy forests and address climate change issues while supporting the forest-based economies of tourism and timber.

This plan was developed with federal funding through the Landscape Stewardship Program established by the 2008 Farm Bill. As envisioned by the USDA Forest Service and the National Association of State Foresters (NASF), landscape stewardship plans are “living” documents and should be enhanced as new information becomes available. At a minimum, this plan should be revised every ten years. If you have any suggestions for improving this effort or corrections to information that has been presented, please be sure to contact members of the Local Forestry Technical Team. Please consult your soil and water conservation district website for their contact information.

Thank you for your continued efforts in managing the forests of the Mississippi Headwaters Major Watershed. We look forward to working together with you.

Sincerely,

A handwritten signature in black ink that reads 'Gary Michael'. The signature is fluid and cursive, with the first name 'Gary' and last name 'Michael' clearly distinguishable.

Gary Michael  
Cooperative Forest Management Unit Supervisor  
Minnesota Department of Natural Resources – Division of Forestry

## Introduction

Forests play a critical role in keeping water clean by absorbing and filtering water, preventing erosion through soil stabilization, and allowing for groundwater recharge. The National Association of State Foresters recognized the connection of healthy forests to clean water with its policy statement: *“Water, in all its uses and permutations, is by far the most valuable commodity that comes from the forest land that we manage, assist others to manage, and/or regulate.”*

## Purpose and Scope

Recognizing the critical linkages between forests and water quality, the Minnesota Department of Natural Resources (DNR) and the Minnesota Board of Water and Soil Resources (BWSR), together with local partners and private landowners, are teaming up to develop watershed-based landscape stewardship plans across the forested regions of the state.

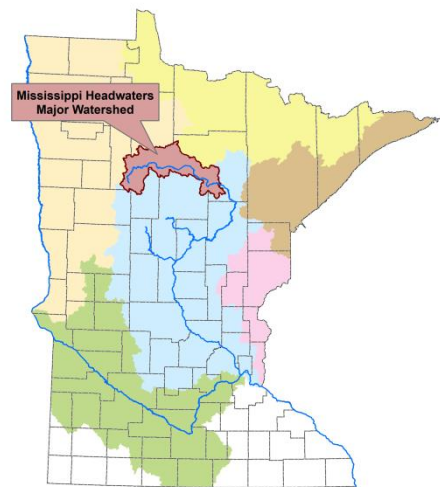
The Mississippi Headwaters Major Watershed in North Central Minnesota is home to the true source of the nation’s premier river. It is also a lake rich watershed including some of the state’s largest lakes. Research of over 1,300 lakes by DNR Fisheries revealed impacts of land use disturbance in a watershed and importance of protecting private lands. There is perhaps no better place in this country to advance the protection and management of working forest lands on a landscape level than this watershed.

The Mississippi Headwaters Watershed Landscape Stewardship Plan (LSP) is a 10-year tactical plan focused on guiding the protection and management of working forests on private lands on a watershed basis. The goal of this plan is to empower teams of service providers to work together with private landowners and land managers to strategically protect working forest lands and promote private forest stewardship to enhance both private and public benefits that forests provide. Investing resources for private forest management in the parts of the watershed where the public benefits can be stacked (e.g., tourism, timber, habitat, etc.) provides the greatest return on investment for the citizens of Minnesota.

## Forest and Water Resources Context

The Mississippi Headwaters Major Watershed is in the heart of Minnesota’s lake country. An assessment of the resources in the watershed described in the first part of this plan found that:

- Public land ownership dominates the watershed. Private lands are concentrated on the western and eastern sides around the cities - Bemidji, Grand Rapids and Deer River.
- Forests and wetlands are largely intact, especially in the center of the watershed. Land conversions include agricultural uses moving in from the west and urban development around the cities and shoreland areas.
- Management activities over many years have converted forests from conifer-dominated to deciduous-dominated cover types.
- High-quality water resources provide abundant recreation opportunities and source water for major populations centers downstream (St. Cloud and the Twin Cities). Water quality is dependent on maintaining significant levels of forest land cover across the watershed.





## Linking Landscape Stewardship and Local Water Planning

Landscape stewardship is an “all lands” approach to forest management. Created by the US Forest Service, it addresses multiple conservation challenges through the practical application of science and collaboration. It is based on five working principles: 1) Invest in priority areas, 2) Build a collaborative network of service providers that effectively work together to serve more landowners, 3) Appeal to interests of both landowner and service providers, 4) Manage for results, and 5) Encourage flexibility at all levels to be more adaptive and cooperative in serving customers. Watershed based landscape stewardship plans analyze the critical contexts between land cover and water quality in ways useful to local water planning.

The One Watershed One Plan (1W1P) Program administered by BWSR in partnership with local units of government across the state develop plans at the major watershed (HUC 8) scale. As described in Minnesota Statutes §103B, these plans must address: 1) surface water and ground water; 2) storage and retention systems; 3) groundwater recharge; 4) flooding and water quality problems; 5) wetlands; 6) riparian zone management and buffers; and 7) fish and wildlife habitat and water recreational facilities.

Setting priorities is the first step in BWSR’s strategic “Prioritize-Target-Measure” (PTM) approach to water resource planning and conservation. In managing watersheds, it is essential to recognize that not all valued resources and issues can be addressed at the same time. Prioritizing public and private investments through forest land protection down to the minor watershed level is a critical function in the LSP process. The second step is to target action towards more specific areas and issues within the priority watersheds. Through landscape stewardship plans, targeting is done down at the specific parcel level within priority minor watersheds. To measure is the ability to demonstrate progress towards the achievement of management goals over time. After landowners decide what actions to take and implementation occurs, landscape stewardship plans provide guidance on monitoring.

## Partners and Process

This plan was developed by a team of resource professionals working in the watershed. The list of project partners is provided in the [Appendix](#). Data, maps, and reports detailing land cover, hydrology, and an array of natural resource topics developed by the project staff were provided to the LSP planning team. The team reviewed and discussed this material at three meetings as a basis to help shape this plan. This planning process was funded by a grant from the US Forest Service.

## Plan Content – Using this Plan

The primary audience of this plan are the service providers who work with the thousands of private forest landowners in the Mississippi Headwaters Major Watershed. Service providers include soil and water conservation districts, consulting foresters, DNR, NRCS and conservation organizations. This Plan is generally organized into three parts including: 1) analysis of forest and water resources, 2) vision and goals, and 3) guidance for implementing the plan. The [Appendix](#) provides additional background information designed to be actively used by the team of service providers to help them work more effectively together to serve greater numbers of landowners on a consistent basis.

Ultimately it is the landowner’s choice as to which level of forest protection works for them and how active they want to manage their woods. This plan seeks to help service providers increase their intentionality together to increase the strategic delivery of services to landowners and provide a full suite of forest management options to them.

# Part 1: Analysis of Forest and Water Resources

## Introduction

The first part of this plan provides background information on the setting of the Mississippi Headwaters Major Watershed and the conditions of its forest and water resources. It also introduces concepts to help increase the ability of service providers to deliver private forest management services.

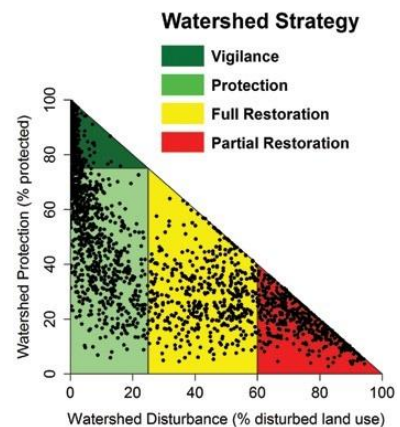
## Resource Context

The Mississippi Headwaters Major Watershed is in the far northern part of the Upper Mississippi Basin and directly underneath the Laurentian Divide, beyond which all water flows north to the Hudson Bay. The Basin starts in Lake Itasca and ends at Lock and Dam Number 2 near Hastings. It covers about 20,100 square miles and is the only major drainage basin located entirely in Minnesota. The Upper Mississippi Basin is the most important source water in Minnesota – supplying both St. Cloud and the Twin Cities – as well as a contributor of source water for every major population center along the Mississippi River.

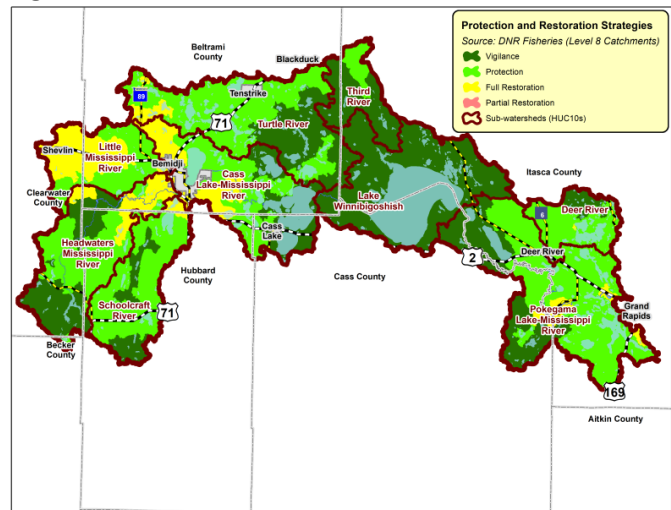
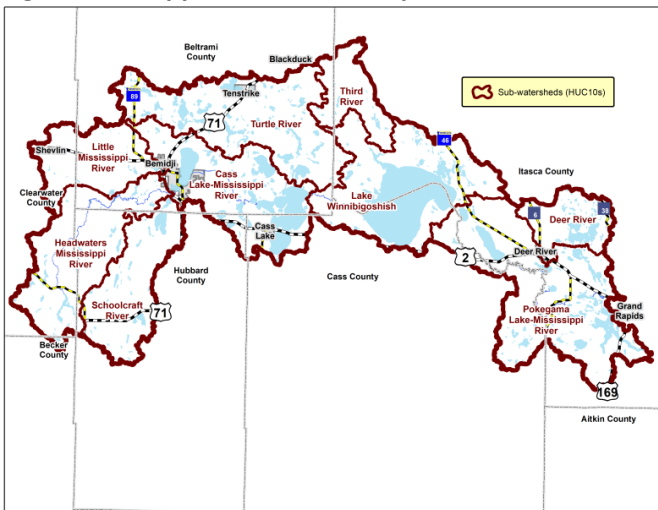
As its name implies, the Mississippi Headwaters Major Watershed forms the headwaters to both the Upper Mississippi Basin and the entire Mississippi River. The Mississippi Headwaters Major Watershed drains about 1,961 square miles and is composed of nine HUC 10 subwatersheds (Fig 2) which correspond to major streams and lakes in the region. The subwatersheds are further subdivided into 121 minor watersheds (HUC 14), each averaging 15.9 square miles.

Smaller than minor watersheds are catchments, which is the area between pour points, and it is also the level at which watersheds can be classified to a protection or restoration strategy as defined by the [MN DNR Fisheries Lake Habitat Framework](#) – see Fig 1 and Fig 3. Most of the catchments in the Mississippi Headwaters Major Watershed fall into either the “Vigilance” or “Protection” categories, with “Full Restoration” catchments around Bemidji and Grand Rapids.

**Fig 1. Watershed categorization framework.**



**Fig 2. Mississippi Headwaters major and subwatersheds. Fig 3. Protection/Restoration classifications.**

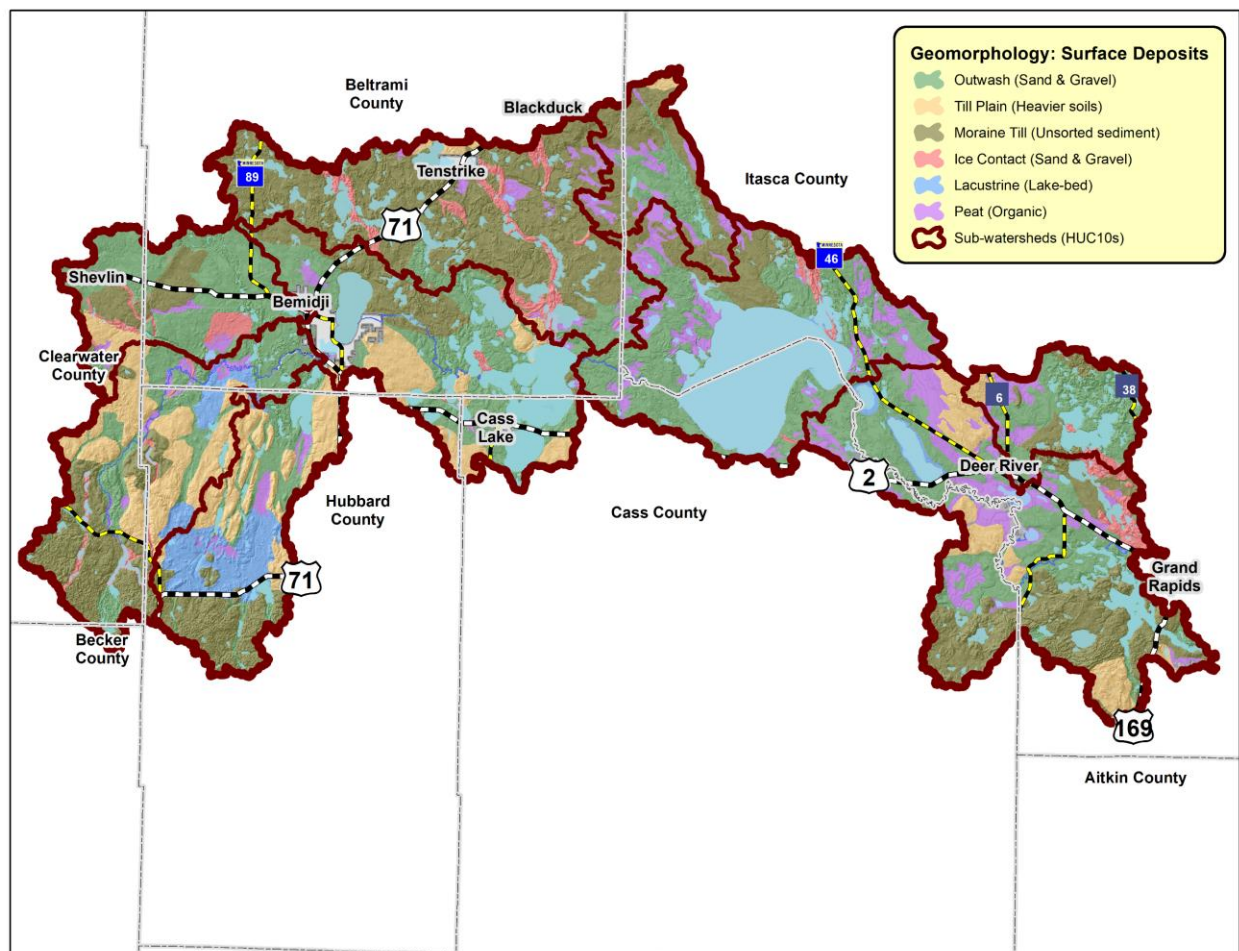


## Geomorphology

The Mississippi Headwaters Major Watershed is largely characterized as level to gently rolling lake plains and outwash plains through which the Mississippi River flows. Areas of hummocky and steep terrain do occur near the watershed's southwest, southeast, and north central borders. These areas are typically end moraines or stagnation moraines. Till plain (ground moraine) deposits also are present and are most concentrated in the southwestern portion of the watershed in association with the Itasca Moraine.

Surface deposits have a strong impact on vegetation development. In general, fire-dependent communities are present on the coarse sand and gravel soils of outwash plains or localized deposits of sand and gravel within moraines and till plans. In contrast, mesic hardwood forests are usually found on heavier soils with impermeable layers that can perch snow melt or rainfall. These soils are often associated with moraines and till plains, or occasionally glacial lake sediments. The peatlands forests developed on level, poorly drained areas - such as glacial lake beds - while wet forests systems are found in areas with periodically saturated soil.

**Fig 4. Geomorphology of the Mississippi Headwaters Major Watershed.**





## Land Cover

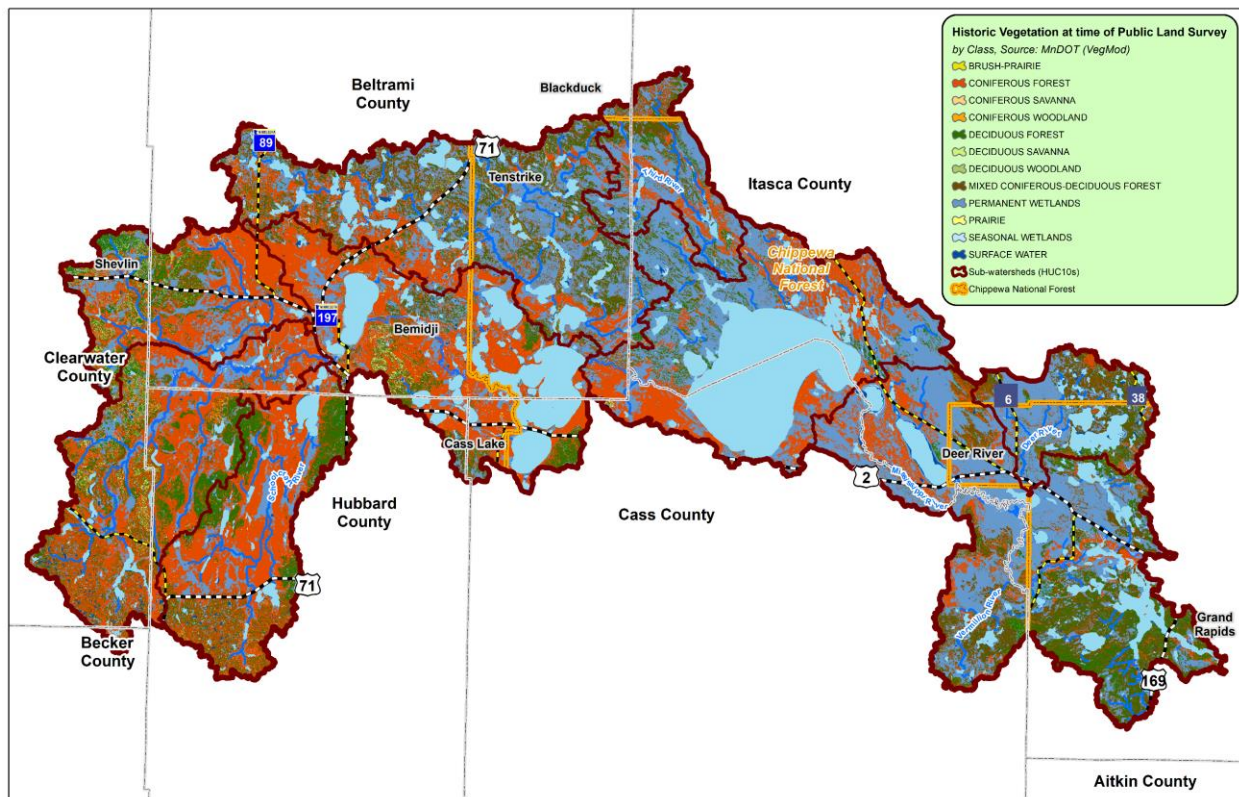
Prior to European settlement, the Mississippi Headwaters Major Watershed was covered by forests, wetlands, lakes, and small pockets of prairie (Table 1 and Fig 5). Today, the landscape remains 65% forested with moderate amounts of wetlands, open water, agriculture, and small amounts of development. Overall, the land cover has been most modified around the western half of the watershed, where much of the forest has been converted to agriculture (Fig 6). This is particularly noticeable in the Little Mississippi Subwatershed to the west of Bemidji, and to a lesser extent in other subwatersheds near Bemidji. Conversely, the portion of the watershed in and near the Lake Winnibigoshish Subwatershed remains largely intact and has abundant forest, wetland, and water resources.

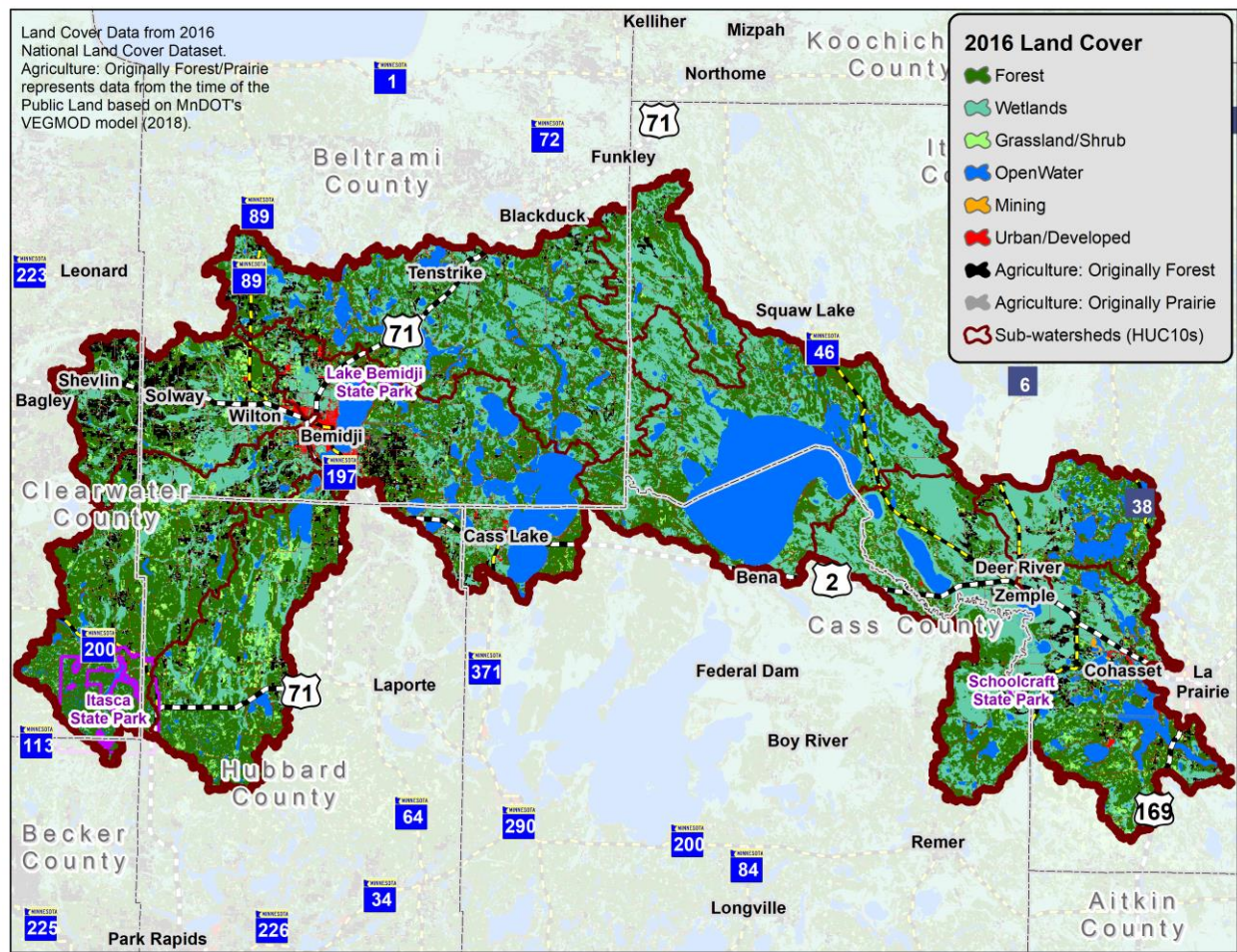
**Table 1. Historic and current land cover comparison.**

Land cover description	Pre-European settlement		2016	
	Acres	%	Acres	%
Urban and rural development	0	0%	43,703	4%
Cultivated land	0	0%	30,411	2%
Prairie – Hay/pasture/grassland	8,769	1%	76,184	6%
Forest	1,006,710	82%	797,169	65%
Upland shrub	0	0%	24,073	2%
Water	173,741	14%	174,729	14%
Bog/marsh/fen	39,695	3%	81,265	7%
Mining	0	0%	1,363	0%

Source: MnModel Historical Vegetation Model and National Land Cover Database.

**Fig 5. Historic vegetation in the Mississippi Headwaters Major Watershed.**



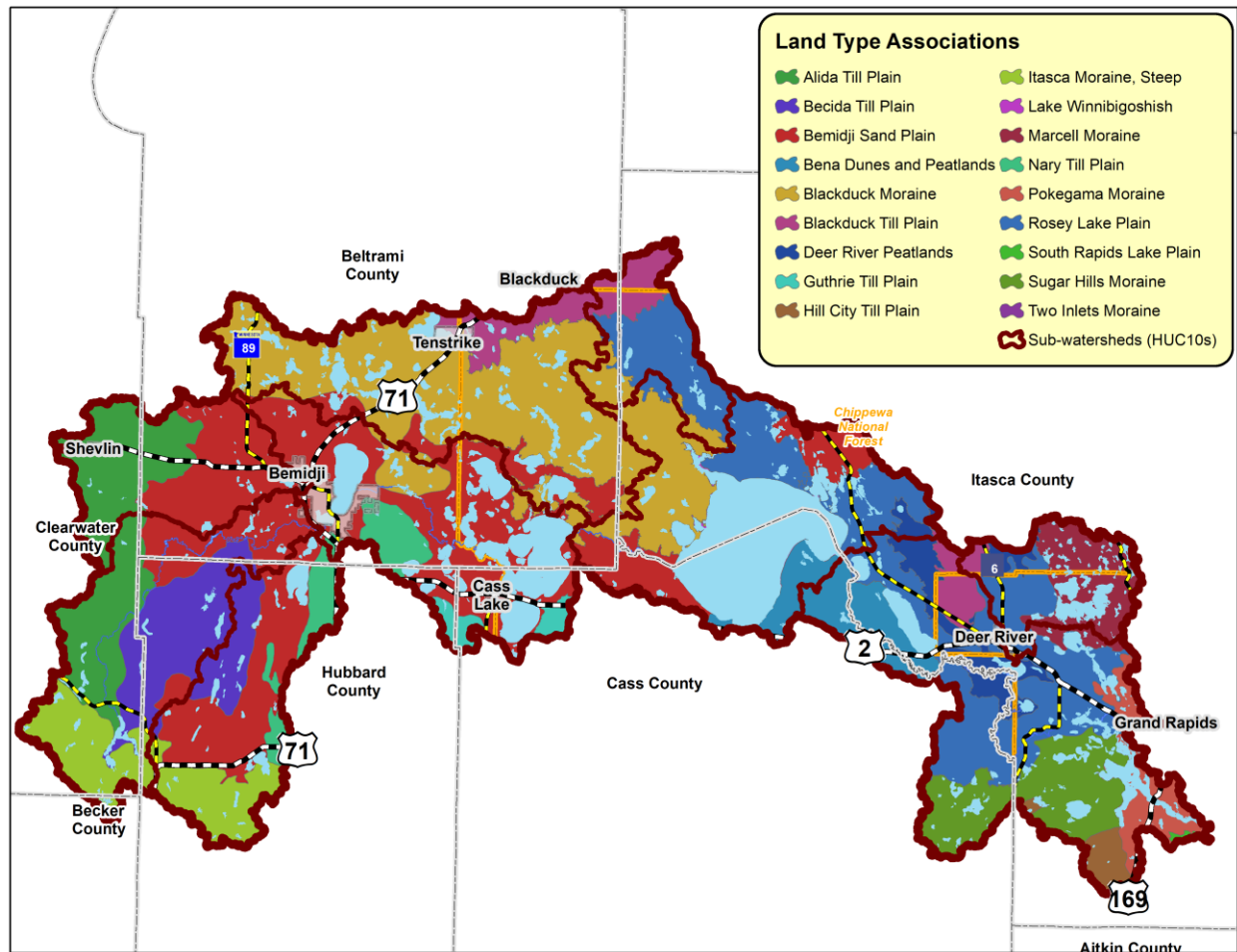
**Fig 6. Current vegetation and areas of historic forest loss.**

## Ecological Setting

The Mississippi Headwaters Major Watershed is uniquely situated at the western edge of the Laurentian Mixed Forest Province and the historical extent of the great white pine forest that stretched from eastern Maine to western Minnesota. This region is located entirely in the Minnesota Drift & Lake Plains ECS Section and largely in the Chippewa Plains ECS Subsection, with small portions intersecting the Pine Moraines & Outwash Plains and the St. Louis Moraines Subsections.

The next level below the ECS Subsection is the Land Type Association (LTA). LTA's are units within Subsections that are defined using glacial landforms, bedrock types, topographic roughness, lake and stream distributions, wetland patterns, depth to ground water table, soil parent material, and pre-European settlement vegetation. The Mississippi Headwaters Major Watershed has portions of 18 LTAs (Fig 7), although over half of the area is covered by only three of them: the Bemidji Sand Plain (24% of watershed), Blackduck Moraine (17%), and Rosey Lake Plain (14%).



**Fig 7. Land Type Associations (LTAs) of the Mississippi Headwaters Major Watershed.**

Prior to European settlement of the region, forests represented a mosaic of fire-dependent, and mesic hardwood forests. Fire dominated forests dominated on coarse and well drained soils associated with glacial outwash features and developed into various mixtures of red, white and jack pine. Mesic hardwoods systems dominate in fire protected areas, and areas with heavier soils generally associated with morainal features. Lowland forest types are common and include both conifer-dominated peatlands, as well as black ash-dominated wetlands.

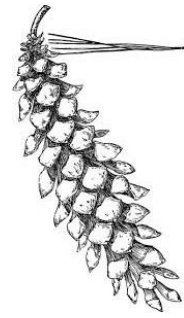
As a result of the logging of northern Minnesota's forests in the late 1800's and early 1900's, along with subsequent forest management practices, the composition of the forest has changed dramatically. In the area around the Mississippi Headwaters Major Watershed the forest shifted away from conifers and towards deciduous species (Table 2). Aspen is now the most common trees species and is found in both pure and mixed stands throughout the watershed.

**Table 2. Change in tree species composition in since presettlement.**

Species	Change	Species	Change
White pine	Decline, 5 to 10-fold	Aspen	Increase, 2 to 3-fold
Tamarack	Decline, 3 to 5-fold	Red maple	Rare as bearing tree
White spruce	Decline, 3 to 5-fold	Red oak	Rare as bearing tree
Jack pine	Some decline	Bur oak	Rare as bearing tree
Red pine	Some decline	Elm	Rare as bearing tree
White cedar	Some decline	Sugar maple	Rare as bearing tree
Black spruce	Some decline	Basswood	Rare as bearing tree
Paper birch	Some increase	Balm-of-Gilead	Rare as bearing tree
Balsam fir	Some increase	Black ash	Rare as bearing tree

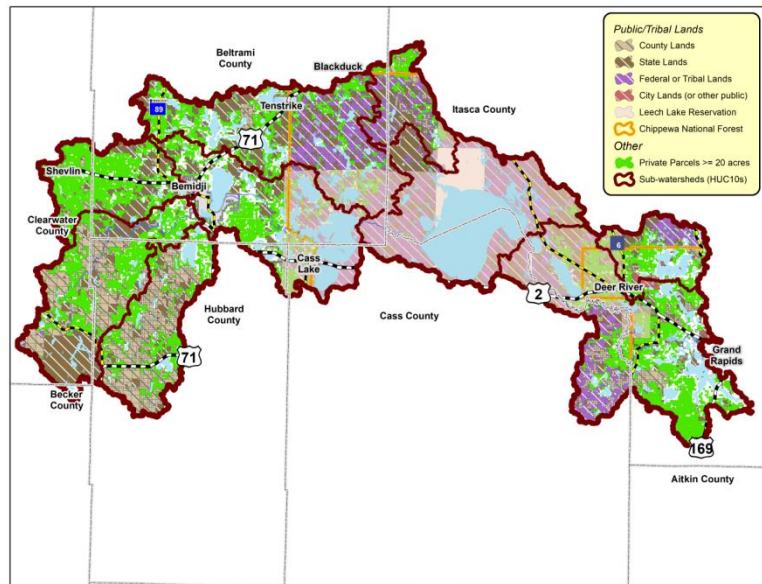
Source: DNR Division of Forestry, Resource Assessment.

Note: Results are summarized from Land Type Association (LTA)-level data that only includes LTAs that intersect with the Mississippi Headwaters Major Watershed.



## Land Ownership

Land ownership in the Mississippi Headwaters Major Watershed is split between many different public and private entities, but for the most part it is a public landscape with 61% of the area under federal, state, or county management. In general, public ownership is highest in the center of the watershed where the Chippewa National Forest has large holdings, particularly in the Lake Winnibigoshish and Third River subwatersheds. State lands are mostly in the center and western half of the watershed in the form of school trust lands, state forests, wildlife management areas, and state parks. Lastly, county land departments manage the tax-forfeited lands, of which there is a large amount in the Schoolcraft River and Headwaters – Mississippi River subwatersheds.

**Fig 8. Private and public land ownership.**

Private land is unevenly distributed across the landscape, often in blocks and pockets between public lands. Most of the private land occurs in the western third of the watershed and is especially high in the Little Mississippi River Subwatershed, which is 73% privately owned. There is also a sizeable density of private parcels in the southeast portion of the watershed, particularly around Pokegama Lake in the Pokegama Lake – Mississippi Subwatershed. However, much of this private land on the western side of this subwatershed has conservation easements in place (Blandin and Rajala) and is therefore already protected.



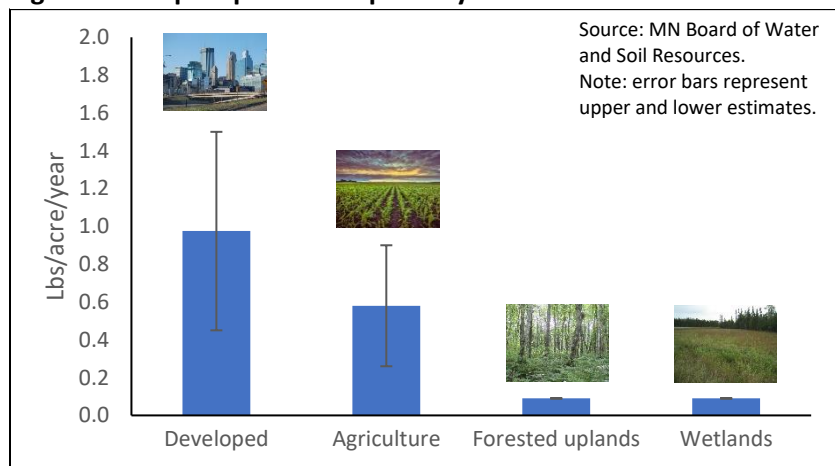
## Social and Economic Context

Census data from 2010 estimates that the population of all minor civil divisions in the Mississippi Headwaters Major Watershed is 72,539, or 1.4% of Minnesota's population. The two major regional centers are Bemidji and Grand Rapids, which hold 33% of the estimated population in the watershed.

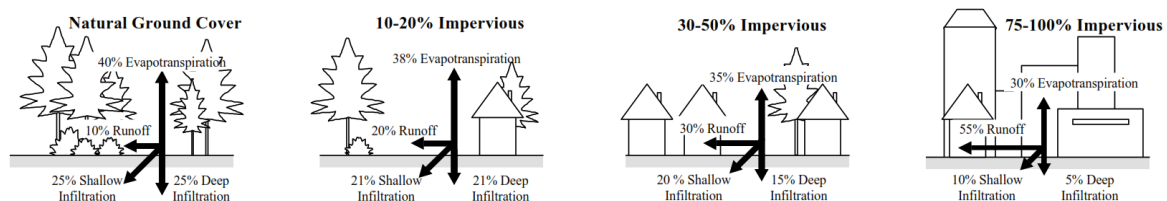
Despite its relatively low population, the Mississippi Headwaters Major Watershed provides outsized social and economic services. The Headwaters is a popular recreation destination in the heart of Minnesota's lake country, and tourists come from across the nation to visit its 1000+ lakes and 885 miles of streams. The most famous of these are Lake Winnibigoshish, Cass Lake, and of course the Mississippi River. The Headwaters is also unique in that it receives input only from precipitation, which is first filtered by the forests and wetlands, and then goes on to supply drinking water for major population centers in the rest of the state. In fact, in the [Forests, Water, and People](#) study by the Forest Service, the Mississippi Headwaters Major Watershed was ranked as the fourth most important major watershed in all of Minnesota for providing drinking water.

To continue producing high quality drinking water, the forests and wetlands in the Mississippi Headwaters must be protected. In general, forests and wetlands export much less phosphorous – which is a key determinant of water quality – than development or agriculture (Fig 9). Furthermore, natural cover greatly promotes infiltration and reduces runoff of sediment and potentially pollution-laden runoff (Fig 10).

**Fig 9. Annual phosphorous exports by land use.**



**Fig 10. Effects of imperviousness on runoff and infiltration.**



Source: Adapted from Arnold and Gibbons, 1996.

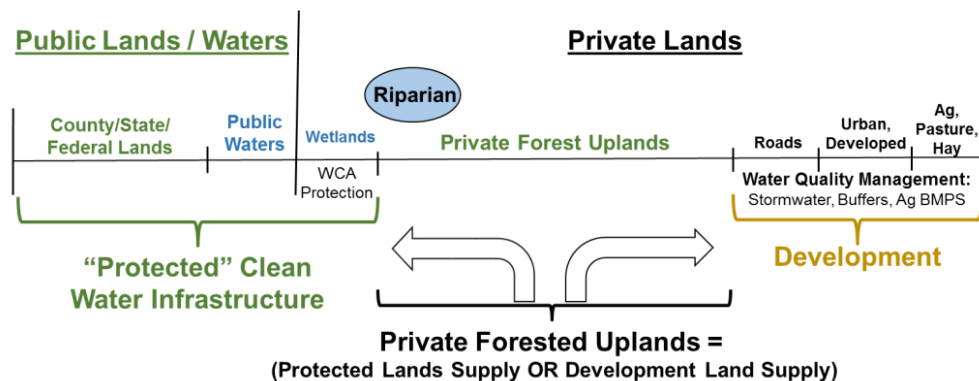
## Risk/Quality Assessment

*“Priority is at the intersection of risk and quality”*

*- Pete Jacobson, MNDNR Fisheries*

### What is Protection?

One of the most important concepts in landscape stewardship is that of ‘protection’. In the context of this plan, the parts of a landscape that are protected are those areas that are not likely to be converted from an intact natural ecosystem (e.g., forest, wetland, lakes, etc.) to an open or disturbed state (e.g., agriculture, development, or mining). Protected land is commonly defined as public lands (local, state, federal), public waters (lands & streams), wetlands on private lands, and perpetual conservation easements on private lands. The *Generalized Land Protection Model*, shown below, illustrates the details of what in the landscape is protected and what is at risk.



**Fig 11. Generalized Land Protection Model.**

### What is Priority?

The view that protection efforts should focus on areas that have high quality habitat but are at risk of being lost is one of the guiding principles of landscape stewardship in Minnesota. Generally, the greatest risk occurs on private lands because that is where conversion of natural ecosystems to agriculture and development is the most likely to occur. Other potential indicators of risk include lake water quality trends, lake phosphorous sensitivity, point source pollution, land disturbance, slope, and road development. Conversely, measures of quality include prioritized lakes (e.g., wild rice, tullibee, trout), lakes of biodiversity significance, forest cover, Forests for the Future score, terrestrial biodiversity ranking (Minnesota Biological Survey), Wildlife Action Network score, and others. At the first meeting of the Mississippi Headwaters LSP Planning Team, participants reviewed these indicators for each minor watershed and determined the drivers of quality and risk in each. A summary of these drivers for each subwatershed is provided in the table below.

**Table 3. Drivers of quality and risk in the Mississippi Headwaters Major Watershed.**

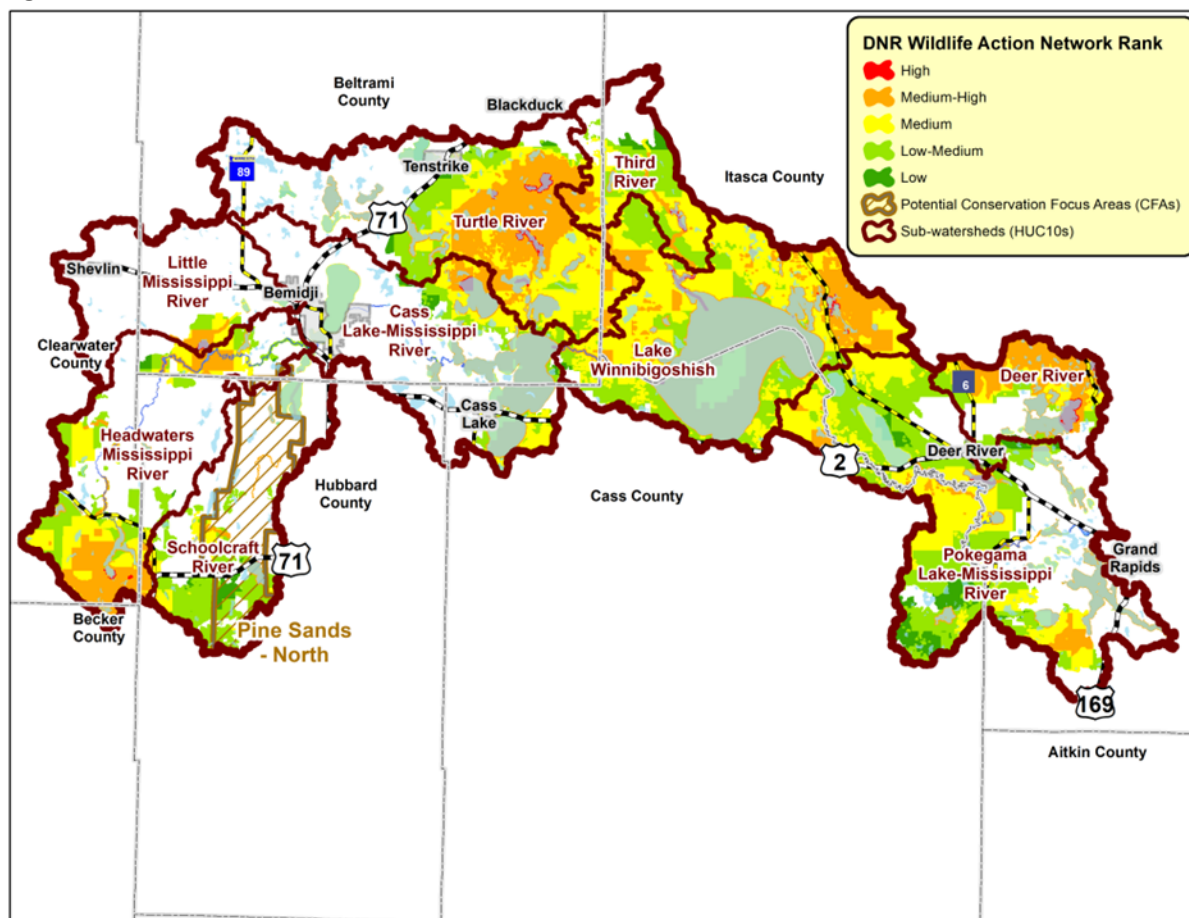
Subwatershed name	Drivers of quality	Drivers of risk
Headwaters - Miss River	Forests, lakes/streams	Development near Bemidji, some ag
Little Mississippi River	Forests, lakes/streams	Agriculture
Schoolcraft River	Forests, lakes/streams	Development near Bemidji, some ag
Cass Lake - Mississippi River	Forests, lakes/streams	Development
Turtle River	Forests, lakes	Development
Lake Winnibigoshish	Forests, lakes/streams	Low risk (> 75% protection)
Third River	Forests, lakes/streams	Low risk (> 75% protection)
Deer River	Forests, large lakes	Development
Pokegama Lake - Mississippi River	Forests, lakes	Development (lower part)

## Forest Conservation Opportunity Areas

The following list of existing conservation priorities in the Mississippi Headwaters Major Watershed have been identified by various state agencies and environmental organizations. As noted previously, these resources were consulted by the Mississippi Headwaters LSP Planning Team in helping to determine private forest land protection priorities. As this plan is implemented, project partners are encouraged to consult these priority efforts and seek to support their concurrent implementation. For more information on these priorities, please refer to the [Appendix](#).

- Minnesota DNR Wildlife Action Network – DNR EWR (shown below)
- Important Forest Resource Areas (IFRA) – DNR PFM Program, US Forest Service.
- Forests for the Future Analysis – DNR Forestry Forest Legacy Program, US Forest Service.
- Minnesota Biological Survey – DNR EWR.
- Mississippi River Headwaters Watershed Restoration and Protection Strategies – MPCA.
- 25-Year Lessard-Sams Outdoor Heritage Council (LSOHC) Forest Habitat Vision – MFRC and MFRP.
- Zonation Model – DNR and TNC.

**Fig 12. MN DNR Wildlife Action Network.**



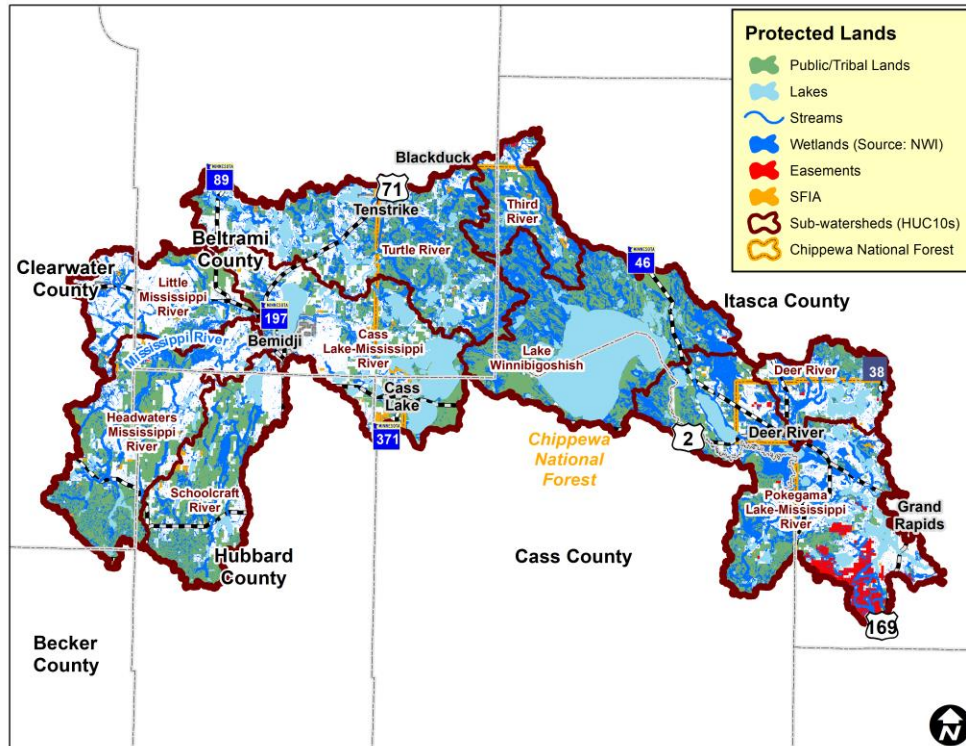
## Key Observations and Conclusions

The following key observations and conclusions are based on the information gathered during the planning process for this landscape stewardship plan:

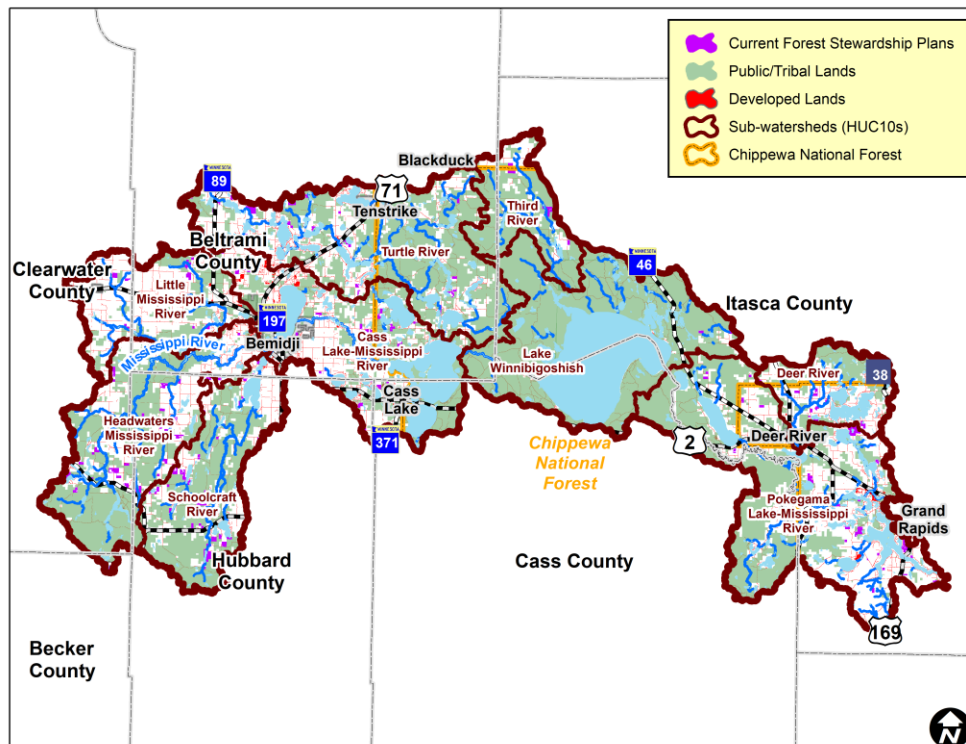
- The Mississippi Headwaters Major Watershed has some of the finest freshwater lakes in the country with good water quality thanks to an abundance of well drained soils, high forest cover, intact wetlands, flat slopes, and mostly natural (not channelized) streams.
- There is significant potential for loss of private forest lands and an increase in landscape disturbance adjacent to Bemidji and Grand Rapids. Both cities are growing regional centers located on opposite ends of the watershed.
- Many excellent conservation tools and programs are already in place, and PFM is the key program through which we can reach out to and serve private landowners. Outreach should be conducted through public/private partnerships with state, local government, and private forest consultants.
- Outreach efforts should be focused on parcels and properties with high RAQ scores, particularly in priority minor watersheds. This gives the best return on investment for available time and money.
- PFM is key in many minor watersheds, although some minors and lakes will be BMP orientated – e.g., reducing nutrient and sediment runoff with practices such as riparian buffers.
- There are several major forest industries (Potlatch, Norboard, Cass Forest Products, Rajala, Lonza, Nelson Wood Shims, and Blandin Paper Company) located within this watershed. These industries use a mix of conifer and deciduous species. Forest industries like these provide key markets to utilize forest resources creating jobs and economic growth while supporting opportunities to increase the sustainable management of the forest lands.
- Well managed forests are important carbon sequestration. Utilizing ecosystem-based forest management will improve carbon sequestration and storage.
- This watershed supports the move towards managing for ECS / NPC based forest management including long lived conifers while at the same time supports an array of upland and lowland deciduous species. Managing for native plant communities and healthier forests benefits the hydrologic functions of the watersheds. In addition, the mix of forest industries creates opportunities to support the sustainable management of all forest cover types in the watershed.
- The North Central Landscape Plan approved by the Minnesota Forest Resources Council (MFRC) provides useful guidance for forest vegetation management based on native plant communities across the 10-county region including this watershed. The Council's site level guidelines provide detailed guidance for forest management activities on a site level. Combined, the landscape and site level guidance provide excellent foundations for service providers in advising private landowners on ways to sustainably manage their woodlands.
- Because of the high-quality water and forest resources and the risk of forest loss, the Mississippi Headwaters Major Watershed is possibly the best place in the lower 48 states for PFM-based water quality and lake protection efforts through the protection of working private forest lands and increased forest stewardship.



## Forest Land Protection – Current Status



## Private Forest Stewardship – Current Status



For more information – see the [Appendix](#) and the LFT Workbook.

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## Part 2: The Vision

### Mission

To empower teams of service providers to work together with private landowners and land managers in the Mississippi Headwaters Major Watershed to protect and manage working forest lands to increase both the private and public benefits that forests provide.

### Vision

In ten years, the Mississippi Headwaters Major Watershed will have:

- Protected Water Resources – landowners and project partners that recognize together healthy working forests are key to protecting good water quality and quantity.
- Healthy and Sustained Forests – forests in the major watershed will be healthy and managed in an ecologically appropriate manner.
- Multiple Uses of Forest Resources – a full range of public and private benefits from timber to tourism will be produced by forests in the watershed.
- Collaborative Management – service providers and partners will work together to achieve the goals set forth in this plan.

### Major Watershed Forestry Goals

#### Goal 1: Increase Forest Land Protection Levels

- Major watershed level (HUC 8): Current level – 71%. Goal – 75%.
- Subwatershed levels (HUC 10): Current levels range from 39% to 94%. Goal – all subwatersheds 75%, except for Little Mississippi (Subwd No. 2) – 45%.
- Minor watershed levels (HUC 14): Protection goals recommended by the LSP Planning Team. See [Appendix](#) and the LFT Workbook.

#### Goal 2: Promote Private Forest Stewardship

- Coordinate the work of service providers.
- Target outreach to private landowners.
- Increase number/acres of stewardship plans.
- Promote integration of NPC based forest management goals and strategies developed in the North Central Landscape Plan (MFRC).
- Increase number/acres of practice plans and implementation projects.
- Increase targeted investment of NRCS, DNR and Legacy funding based on MWA/RAQ.

### Coordinated Roles to Increase Forest Land Protection and Stewardship

#### Goal 1: Increase Forest Land Protection Levels

- DNR + BWSR: administrative lead.
- SWCDs: local lead, outreach, implement.
- DNR CFM: project coordination, reporting.
- DNR FL: target larger tracts.
- NGOs: bring partner resources, advocate.
- Landowners: they choose.

#### Goal 2: Promote Private Forest Stewardship

- DNR + BWSR: administrative lead.
- DNR CFM: PFM program coordination.
- SWCDs: local lead, outreach, plans, 1W1P.
- Consulting foresters: plans, timber sales.
- Loggers/vendors: forest management.
- Landowners: Its their land.

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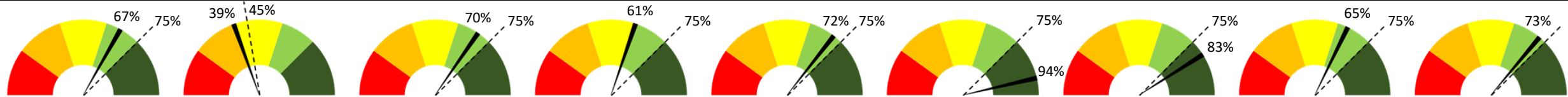


Goal 1: Forest Land Protection

To draw some conclusions for management priorities and to help compare each subwatershed with the others on each given resource issue, the resulting calculations of the key assessments were placed into a table format. The table below summarizes the results of the calculations made for each subwatershed through the subwatershed assessment process.

	Subwd. No 1 (HUC 701010102)	Subwd. No 2 (HUC 701010101)	Subwd. No 3 (HUC 701010103)	Subwd. No 4 (HUC 701010105)	Subwd. No 5 (HUC 701010104)	Subwd. No 6 (HUC 701010107)	Subwd. No 7 (HUC 701010106)	Subwd. No 8 (HUC 701010108)	Subwd. No 9 (HUC 701010109)
	Headwaters – Mississippi River	Little Mississippi River	Schoolcraft River	Cass Lake – Mississippi River	Turtle River	Lake Winnibigoshish	Third River	Deer River	Pokegama Lake – Mississippi River
Area	148,213 ac	88,654 ac	109,631 ac	158,269 ac	188,297 ac	190,894 ac	56,811 ac	55,853 ac	232,267 ac
Natural Factors									
Presettlement forest cover	91%	95%	91%	70%	82%	67%	95%	81%	84%
Current forest cover	50%	24%	45%	27%	42%	30%	42%	49%	46%
Lakes	39 lakes; 4%	20 lakes; 2%	31 lakes; 6%	62 lakes; 27%	95 lakes; 13%	54 lakes; 35%	14 lakes; 3%	44 lakes; 16%	89 lakes; 11%
Wetlands	19%	19%	18%	12%	29%	26%	42%	27%	32%
Forest Land Protection Assessment									
Public waters	6,320 ac; 4%	1,764 ac; 2%	7,169 ac; 7%	42,913 ac; 27%	24,033 ac; 13%	67,113 ac; 35%	1,758 ac; 3%	8,919 ac; 16%	28,278 ac; 12%
Public lands	81,333 ac; 55%	22,111 ac; 25%	61,849 ac; 56%	42,599 ac; 27%	93,779 ac; 50%	104,154 ac; 55%	39,053 ac; 69%	20,286 ac; 36%	100,191 ac; 43%
Private wetlands	9,698 ac; 7%	10,072 ac; 11%	5,634 ac; 5%	8,977 ac; 6%	15,392 ac; 8%	7,531 ac; 4%	4,665 ac; 8%	6,664 ac; 12%	24,598 ac; 11%
SFIA	1,429 ac; 1%	430 ac; 0%	1,043 ac; 1%	1,967 ac; 1%	1,580 ac; 1%	59 ac; 0%	1,182 ac; 2%	363 ac; 1%	1,510 ac; 1%
Easements	41 ac; 0%	1 ac; 0%	301 ac; 0%	307 ac; 0%	440 ac; 0%	60 ac; 0%	524 ac; 1%	276 ac; 0%	15,702 ac; 7%
Total protected area	98,821 ac; 67%	34,377 ac; 39%	76,321 ac; 70%	96,763 ac; 61%	135,224 ac; 72%	178,917 ac; 94%	47,182 ac; 83%	36,507 ac; 65%	170,279 ac; 73%
Protection priority	High	Low	High	Medium	High	Low	Low	Medium	High
Forest Land Protection Cost Analysis									
Protection goal	75%; 12,339 ac to goal	45%; 5,517 ac to goal	75%; 5,902 ac to goal	75%; 21,939 ac to goal	75%; 5,999 ac to goal	75%; 0 ac to goal	75%; 0 ac to goal	75%; 5,383 ac to goal	75%; 3,921 ac to goal
Potential to protect	32,848 ac; 22%	26,800 ac; 30%	21,273 ac; 19%	21,612 ac; 14%	32,637 ac; 17%	2,015 ac; 1%	6,521 ac; 11%	11,630 ac; 21%	35,993 ac; 15%
Average land value	\$1,361/ac	\$1,274/ac	\$1,854/ac	\$2,143/ac	\$1,536/ac	\$1,864/ac	\$1,021/ac	\$1,806/ac	\$1,287/ac
Protection cost*	\$12,835,991	\$5,595,175	\$7,012,893	\$27,970,225	\$6,556,182	\$0	\$0	\$6,318,176	\$3,992,335
Forest Land Protection Priorities									
Quality Protection Factors									
Cisco lakes	2 lakes; 541 ac	1 lake; 214 ac	1 lake; 189 ac	1 lake; 412 ac	0 lakes; 0 ac	0 lakes; 0 ac	0 lakes; 0 ac	1 lake; 211 ac	5 lakes; 1,993 ac
Trout lakes	1 lake; 160 ac	0 lakes; 0 ac	2 lakes; 84 ac	0 lakes; 0 ac	1 lake; 33 ac	0 lakes; 0 ac	0 lakes; 0 ac	1 lake; 14 ac	3 lakes; 6,807 ac
Lakes of biodiversity significance (outstanding & high)	9 lakes; 2,291 ac	2 lakes; 458 ac	5 lakes; 4,200 ac	10 lakes; 35,040 ac	16 lakes; 11,047 ac	8 lakes; 60,885 ac	2 lakes; 947 ac	6 lakes; 6,017 ac	9 lakes; 14,161 ac
Priority shallow lakes	6 lakes; 1,244 ac	2 lakes; 435 ac	9 lakes; 1,024 ac	11 lakes; 1,196 ac	14 lakes; 2,158 ac	9 lakes; 3,572 ac	3 lakes; 218 ac	0 lakes; 0 ac	7 lakes; 2,422 ac
Priority wild rice lakes	4 lakes; 937 ac	4 lakes; 562 ac	0 lakes; 0 ac	8 lakes; 20,780 ac	23 lakes; 7,733 ac	2 lakes; 1,764 ac	4 lakes; 1,062 ac	3 lakes; 745 ac	8 lakes; 5,538 ac
Trout steams	15 mi	0 mi	5 mi	0 mi	0 mi	0 mi	0 mi	0 mi	20 mi
FFF mean composite score	97.1	80.5	97.6	89.3	97.4	96.3	101.7	85.3	93.5
Terrestrial biodiversity (MBS) (outstanding and high)	21,892 ac; 15%	4,653 ac; 5%	5,000 ac; 5%	14,803 ac; 9%	51,170 ac; 27%	81,738 ac; 43%	10,180 ac; 18%	17,930 ac; 32%	49,949 ac; 22%
Wildlife Action Network (high & medium-high)	22,426 ac; 15%	2,381 ac; 3%	2,539 ac; 2%	28,675 ac; 18%	50,892 ac; 27%	82,211 ac; 43%	6,083 ac; 11%	24,578 ac; 44%	22,502 ac; 10%
Risk Management Factors									
Lake phosphorous sensitivity (highest & higher)	6 lakes; 2,080 ac	3 lakes; 503 ac	5 lakes; 3,850 ac	19 lakes; 35,428 ac	18 lakes; 11,524 ac	7 lakes; 61,982 ac	0 lakes; 0 ac	13 lakes; 7,465 ac	16 lakes; 19,371 ac
Water quality trend (declining)	0 lakes; 0 ac	0 lakes; 0 ac	1 lake; 553 ac	1 lake; 3,887 ac	3 lakes; 2,878 ac	0 lakes; 0 ac	0 lakes; 0 ac	1 lake; 1,266 ac	0 lakes; 0 ac
Land use disturbance	28,919 ac; 20%	38,445 ac; 43%	20,918 ac; 19%	37,134 ac; 23%	29,598 ac; 16%	12,699 ac; 7%	6,539 ac; 12%	6,640 ac; 12%	31,252 ac; 13%

Protection Levels  
and Goals†



\*Protection cost assumes 50% conservation easement and 50% SFIA.  
†Solid lines represent current level of protection, dashed line is the goal.

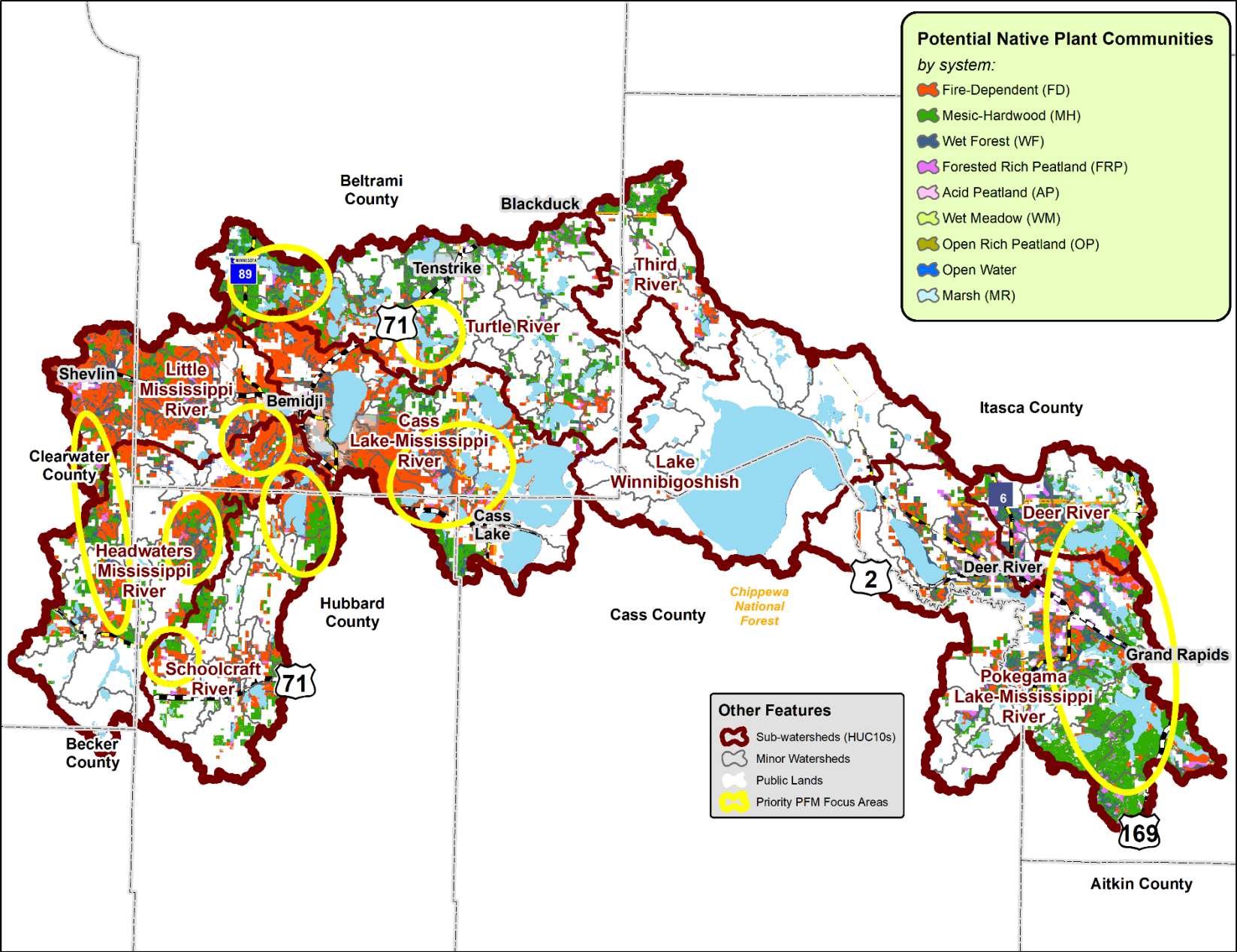
Goal 2: Promote Private Forest Stewardship

The second major goal of this Landscape Stewardship Plan is to promote private forest stewardship and consideration of native plant communities (NPCs) in management activities. The map on the right displays the potential NPC system for private lands in the Mississippi Headwaters Major Watershed. The yellow circles indicate priorities for forest land management identified by the Mississippi Headwaters Forestry Technical Committee.

It is important to note that this map displays the potential NPC of private lands only, and it includes lands that are not currently forested. This map is a vision for all private lands, including nonforested lands, because it reflects what the private landscape can potentially be if the land is managed in accordance with its biological potential.

The tables on the right side of this page compares Public Land Survey (PLS; ca. 1846-1908 AD) and Forest Inventory and Analysis (FIA; ca. 1990 AD) growth-stage data for common NPC classes in the Mississippi Headwaters. These tables are from the Silviculture Interpretations developed by MN DNR Division of Forestry, Ecological Land Classification. Additional information on NPCs and their management can be found in the [Appendix](#) and the [North Central Landscape Ecological Pathway](#).

The goals listed below for each subwatershed are for increased forest management through stewardship plans and acres as well as for cost share practices over the next ten years.



Growth Stage and Composition for Common Private Land NPCs

FDn33: Northern Dry-Mesic Mixed Woodland

Dominant Trees	Forest Growth Stages in Years					
	0 - 35		35 - 55	55 - 125	~ 125	> 125
	Young	T1	Mature	T2	Old	
Quaking (Big-toothed) Aspen	40%	79%		9%	48%	7%
Jack Pine	15%	-		7%	-	2%
Red Pine	17%	1%		27%	1%	16%
Paper Birch	16%	5%		19%	26%	14%
Balsam Fir	1%	7%		4%	11%	5%
White (Black) Spruce	-	1%		5%	1%	13%
White Pine	-	0%		19%	1%	30%
Red Maple	-	4%		1%	9%	2%
White Cedar	-	0%		2%	1%	2%
Miscellaneous	11%	3%		7%	2%	9%
Percent of Community in Growth Stage in Presettlement and Modern Landscapes	14%	30%	27%	30%	44%	39%

Natural growth-stage analysis and landscape summary of historic conditions is based upon the analysis of 6,807 Public Land Survey records for section and quarter-section corners. Comparable modern conditions were summarized from 2,615 FIA subplots that were modeled to be FDn33 sites.

MHn35: Northern Mesic Hardwood Forest

Dominant Trees	Forest Growth Stages in Years					
	0 - 55		55 - 95	95 - 205	205 - 295	> 295
	Young	T1	Mature	T2	Old	
Paper Birch	38%	9%		28%	7%	12%
Quaking Aspen	20%	22%		6%	4%	4%
Red Oak	10%	6%		5%	11%	1%
Balsam Fir	5%	4%		3%	2%	1%
Basswood	6%	9%		9%	19%	6%
White Spruce	1%	1%		13%	0%	-
Sugar Maple	11%	24%		14%	32%	29%
White Pine	1%	0%		7%	1%	31%
American Elm	3%	2%		2%	3%	0%
Red Maple	-	9%		-	4%	0%
Ironwood	1%	7%		1%	7%	1%
Bur Oak	1%	1%		2%	3%	0%
Miscellaneous	3%	6%		10%	7%	15%
Percent of Community in Growth Stage in Presettlement and Modern Landscapes	39%	29%	51%	52%	8%	18%

Natural growth-stage analysis and landscape summary of historic conditions is based upon the analysis of 5,887 Public Land Survey records for section and quarter-section corners. Comparable modern conditions were summarized from 3,470 FIA subplots that were modeled to be MHn35 sites.

1. Important historically, white spruce is no longer a significant component of MHn35 forests and is not covered in the accounts of potential crop species.

2. Just 4 FIA trees contributed to the old growth-stage and the results are unreliable.

Forest Management Goals

<b>Subwd 1 – Miss HW</b> 41% private, 59% public 946 parcels >20 ac 52,128 ac > 20 ac 35 fsps; 3,459 ac  <b>10 Yr PFM Goals:</b> 105 fsps; 14,197 ac	<b>Subwd 2 – Little Miss</b> 73% private, 27% public 986 parcels >20 ac 56,053 ac > 20 ac 8 fsps; 823 ac  <b>10 Yr PFM Goals:</b> 46 fsps; 6,142 ac	<b>Subwd 3 – Schoolcraft</b> 37% private, 63% public 662 parcels >20 ac 33,207 ac > 20 ac 37 fsps; 3,795 ac  <b>10 Yr PFM Goals:</b> 57 fsps; 7,639 ac	<b>Subwd 4 – Cass Lake</b> 46% private, 54% public 1,030 parcels >20 ac 44,593 ac > 20 ac 22 fsps; 3,066 ac  <b>10 Yr PFM Goals:</b> 182 fsps; 24,597 ac	<b>Subwd 5 – Turtle River</b> 37% private, 63% public 1,261 parcels >20 ac 53,650 ac > 20 ac 21 fsps; 2,703 ac  <b>10 Yr PFM Goals:</b> 68 fsps; 9,125 ac	<b>Subwd 6 – Winnie</b> 10% private, 90% public 83 parcels >20 ac 3,175 ac > 20 ac 1 fsps; 40 ac  <b>10 Yr PFM Goals:</b> 1 fsp; 172 ac	<b>Subwd 7 – Third River</b> 28% private, 72% public 303 parcels >20 ac 12,760 ac > 20 ac 8 fsps; 1,744 ac  <b>10 Yr PFM Goals:</b> 18 fsps; 2,371 ac	<b>Subwd 8 – Deer River</b> 48% private, 52% public 523 parcels >20 ac 18,866 ac > 20 ac 13 fsps; 1,749 ac  <b>10 Yr PFM Goals:</b> 49 fsps; 6,547 ac	<b>Subwd 9 – Pokegama</b> 45% private, 55% public 2,167 parcels >20 ac 78,065 ac > 20 ac 32 fsps; 6,487 ac  <b>10 Yr PFM Goals:</b> 192 fsps; 25,951 ac
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## Vision Summary

The following points summarize the vision and the two major goals for the Mississippi Headwaters Major Watershed.

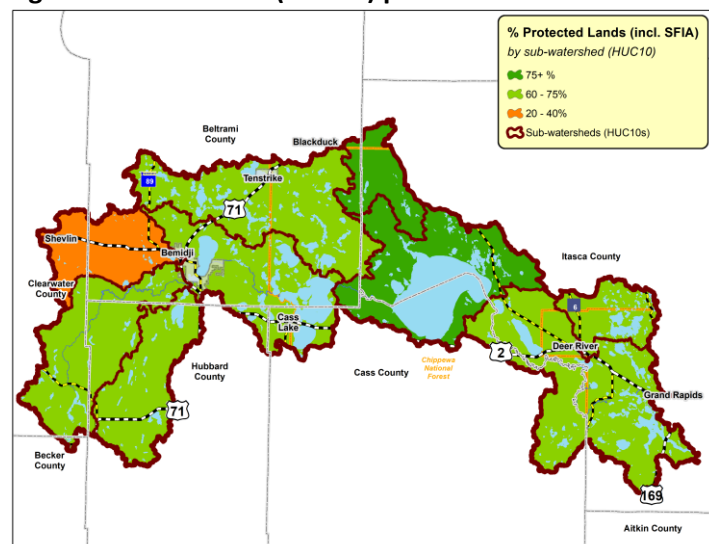
- Most of the private land occurs in the western third and southeastern portion of the Mississippi Headwaters Major Watershed. The planning team selected priority minor watersheds in these two areas (see map with Goal 2 narrative and lists in the following Subwatershed Action Plans) to focus forest land protection / forest stewardship efforts and identified specific minor watersheds to concentrate landowner outreach efforts.
- Public lands dominate the center of the Mississippi Headwaters Major Watershed, where the primary landowner is the Chippewa National Forest. These subwatersheds (Lake Winnibigoshish and Third River) have very high levels of public lands and are beyond the 75% forest protection goal as stated in Goal 1. These subwatersheds are also not priority for private forest management because few private forest acres are available. In addition to protecting the adjacent waters such as Winnibigoshish and Cass Lakes, these federal lands are also managed under a sustainable, ecologically based management regime.
- One of the aims of Goal 2 (Promote Private Forest Stewardship) is to at a minimum have an updated forest stewardship plan (FSP) on every acre that is or will be protected by a conservation easement or SFIA. Consequently, larger areas of existing conservation easements or SFIA and higher forest land protection goals equate to higher FSP goals in this plan.
- The watershed has significantly fewer conifers than it had under natural conditions. Long-lived conifers, including white pine and white spruce, made up a much larger components of both fire-dependent and mesic-hardwood forests across the major watershed historically.
- Contemporary forest management strategies tend to favor shade intolerant hardwoods such as aspen. This combined with high populations of deer, fire suppression, and reliance on winter harvests have increased the amount of aspen over time. NPC based silvicultural actions could help to restore conifer components in many of these stands.
- Private forest lands can help restore the upland native plant communities to older growth stages across the landscape if private landowners choose to manage for longer live conifers as a component in their forest stewardship plans.

## Subwatershed Guidance

The purpose of the following nine narratives is to provide service providers and resource managers with a detailed description of subwatershed-level conditions and recommendations.

These ‘subwatershed action plans’ are intended to help service providers and managers identify and prioritize specific areas in the Mississippi Headwaters Major Watershed so they can more effectively work together to implement activities that are likely to improve water quality, increase forest management, and achieve other public and private benefits.

**Fig 13. Subwatershed (HUC10) protection levels.**





## Subwatershed No. 1 Headwaters-Mississippi River (HUC 701010102)

### Goal 1: Forest Land Protection Guidance

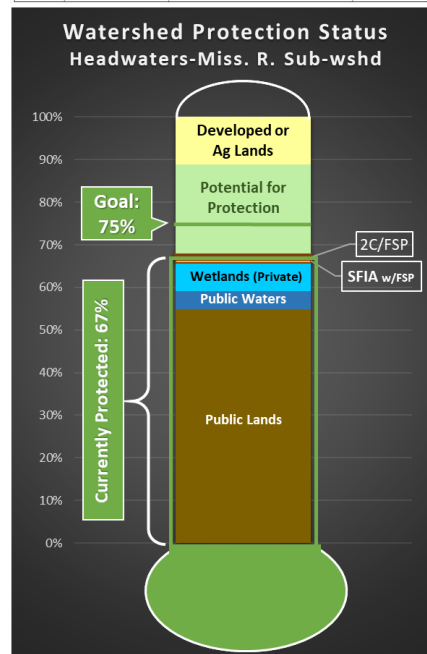
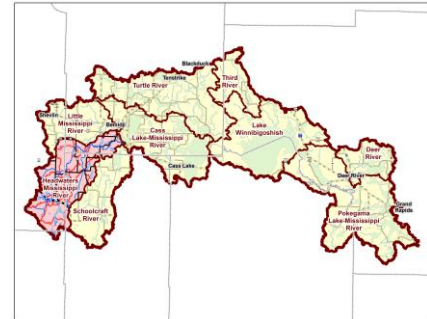
- Headwaters of the headwaters to the entire Mississippi River.
- Tributary to Lake Bemidji, which is very important to City of Bemidji and Beltrami County.
- One of the most heavily forested watersheds in the region, although it has lost over 10% of its forests since 2001.
- Main risks are small lake development and outward growth of Bemidji.
- Popular forest recreation use area and home to the most popular state park in Minnesota – Itasca State Park.
- High priority for forest land protection.
- Forest land protection goal is 75%, current protection is 67%.

### Goal 2: Forest Stewardship Guidance

- The Mississippi River arises in the Itasca Moraine at the southern end of the subwatershed, flows out of the hills and dissects the till plain, then flows into an outwash plain and former lakebed near Bemidji.
- Fire-dependent forest are associated with the outwash and glacial lacustrine deposits in the central and northeastern areas while mesic hardwoods are more abundant in the hummocky moraine till deposits at the southern end of the watershed and the till plain to either side of the Mississippi River towards the middle of the subwatershed.
- The forested portions of this subwatershed is dominated by deciduous species, but management for long-lived conifers may be suitable for much of the landscape, particularly on Fire-Dependent sites.
- Promote long-lived conifers on outwash and Fire-Dependent sites, especially near the Potlatch sawmill.
- Encourage the development of conifer regeneration strategies including summer harvest, scarification, and slash control.
- See Fire-Dependent vegetation management goals #1-4 from the 2nd Generation North Central Landscape Plan.
- Forest stewardship goal – 105 plans, 14,197 acres.

### Priority Minor Watersheds

- Priority minor watersheds for protection are 7050, 7052, 7053, 7061, 7062, 7083, and 7084.



**Table 4. Minor watershed info.**

Minor wshd #	Acres	Current % protected	Protection goal %
7048	4,531	38.9%	45%
7049	15,185	84.3%	75%
<b>7050</b>	<b>10,603</b>	<b>53.2%</b>	<b>65%</b>
7051	6,594	74.7%	75%
<b>7052</b>	<b>13,042</b>	<b>62.3%</b>	<b>70%</b>
<b>7053</b>	<b>4,592</b>	<b>38.2%</b>	<b>60%</b>
7054	8,363	74.8%	75%
7055	14,893	97.2%	75%
7056	7,328	100.0%	75%
7057	8,759	100.0%	75%
<b>7061</b>	<b>8,325</b>	<b>44.6%</b>	<b>50%</b>
<b>7062</b>	<b>20,892</b>	<b>36.0%</b>	<b>50%</b>
7064	4,354	90.5%	75%
<b>7083</b>	<b>7,135</b>	<b>44.7%</b>	<b>60%</b>
<b>7084</b>	<b>12,853</b>	<b>62.1%</b>	<b>75%</b>
7130	763	91.6%	75%



## Subwatershed No. 2 Little Mississippi River (HUC 701010101)

### Goal 1: Forest Land Protection Guidance

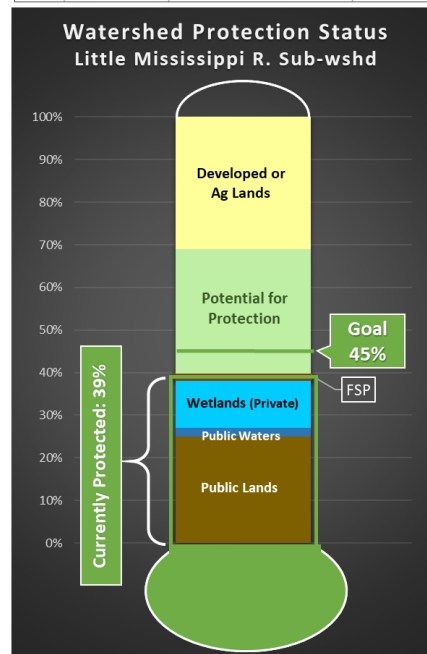
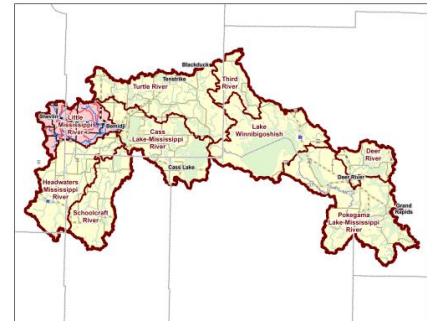
- Tributary to Lake Bemidji, which is very important to City of Bemidji and Beltrami County.
- Largely stream-based subwatershed with relatively few lakes.
- Has the most land use disturbance (i.e., agriculture and development) of any subwatershed in the major watershed.
- Main risks are agriculture and outward growth of Bemidji.
- The primary focus for water quality in this subwatershed is BMPs to reduce phosphorous runoff.
- Low priority for forest land protection.
- Forest land protection goal is 45%, current protection is 39%.

### Goal 2: Forest Stewardship Guidance

- The majority of the subwatershed is covered by outwash plain, although a portion of the Itasca Moraine is located near its center.
- Most of the upland area can potentially support fire-dependent forests, but much of the area has already been converted to agriculture.
- Large scale restoration of forest land is likely unfeasible in this subwatershed, but passive restoration of marginal agricultural lands (i.e., allowing natural succession of fields to young forest) may be possible in some instances. Encourage the regeneration of conifers in these situations.
- See Ecological goal #2 from the 2nd Generation North Central Landscape Plan.
- Forest stewardship goal – 46 plans, 6,142 acres.

### Priority Minor Watersheds

- Priority minor watersheds for protection are 7045-7047.



**Table 5. Minor watershed info.**

Minor wshd #	Acres	Current % protected	Protection goal %
7039	3,337	9.9%	15%
7040	7,885	19.9%	25%
7041	6,729	28.1%	30%
7042	5,118	27.9%	30%
7043	12,406	19.6%	25%
7044	4,562	31.0%	35%
7045	7,604	53.9%	60%
7046	4,183	23.8%	40%
7047	7,845	38.7%	60%
7111	20,194	52.7%	60%
7112	8,790	61.6%	65%

### Subwatershed No. 3 Schoolcraft River (HUC 701010103)

#### Goal 1: Forest Land Protection Guidance

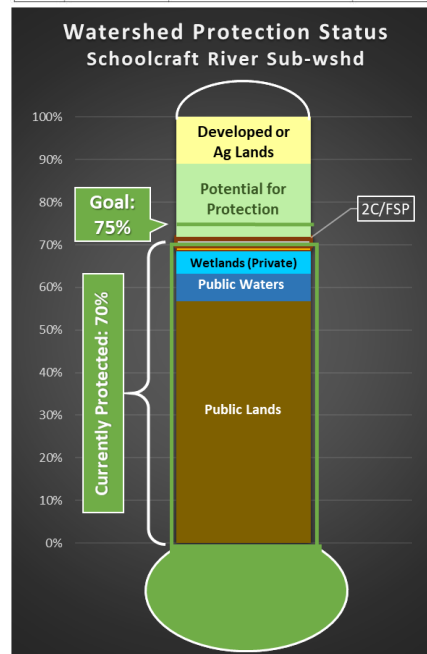
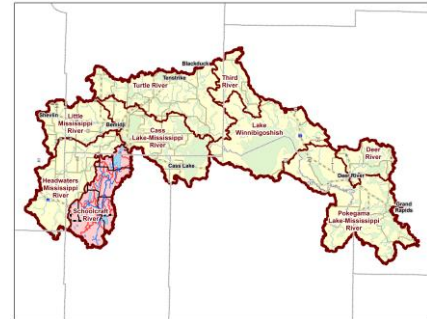
- Tributary to Lake Bemidji, which is very important to City of Bemidji and Beltrami County.
- One of the most heavily forested watersheds in the region, although it has lost about 15% of its forests since 2001.
- Main risks are small lake development and outward growth of Bemidji.
- High priority for forest land protection.
- Forest land protection goal is 75%, current protection is 70%.

#### Goal 2: Forest Stewardship Guidance

- The Schoolcraft River has its headwaters in the Itasca Moraine at the southern end of the watershed, flows out of the hills and passes north through lacustrine and outwash deposits that bisect a till plain before meeting with the Mississippi River near Bemidji.
- Mesic hardwood forests in this watershed are more likely to occur moraine till and till plain in this subwatershed, whereas the outwash and lacustrine deposits generally support fire-dependent forests.
- The current forest cover is dominated by deciduous species, especially on sites that are predicted to be in the mesic hardwood NPC system. Some patches of conifers are present in areas of the subwatershed where the predicted NPC system is fire-dependent, although the proportion of conifers is less than would be expected in a landscape with unaltered native plant communities.
- Promote the regeneration of conifers and maintain conifers as a stand component whenever possible.
- Forest stewardship goal – 57 plans, 7,639 acres.

#### Priority Minor Watersheds

- Priority minor watersheds for protection are 7063, 7065, 7070, 7072, and 7079.



**Table 6. Minor watershed info.**

Minor wshd #	Acres	Current % Protected	Protection goal %
7063	5,163	70.4%	75%
7065	4,410	29.5%	35%
7070	7,157	44.9%	55%
7072	5,683	39.7%	55%
7073	12,664	79.4%	75%
7074	4,283	59.0%	75%
7075	6,816	56.3%	75%
7076	15,591	87.5%	75%
7077	4,962	83.1%	75%
7078	11,868	81.5%	75%
7079	4,791	59.0%	75%
7080	7,501	72.0%	75%
7081	4,495	94.7%	75%
7082	4,284	63.3%	75%
7087	3,670	92.2%	75%
7088	3,614	63.2%	75%
7131	2,680	94.2%	75%

## Subwatershed No. 4 Cass Lake-Mississippi River (HUC 701010105)

### Goal 1: Forest Land Protection Guidance

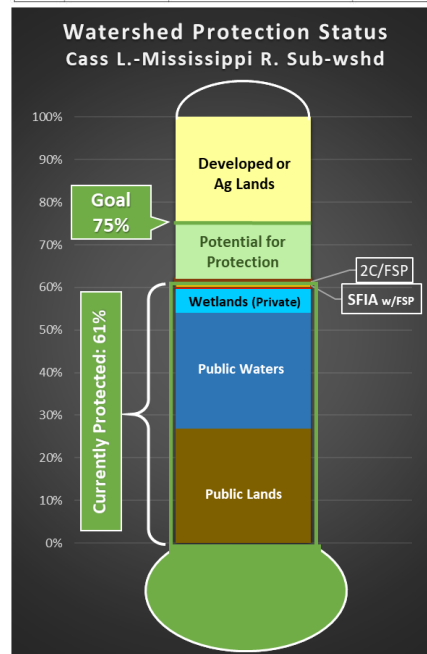
- Moderately forested, but rich in water resources - lakes cover 27% of the subwatershed.
- Characterized by large and regionally important lakes such as Lake Bemidji and Cass Lake.
- Home to the City of Bemidji, which known as ‘The First City on the Mississippi’ and one of the two major regional centers in the entire major watershed – the other being Grand Rapids.
- Home to Lake Bemidji State Park.
- Public land is concentrated on the eastern side and is mostly Chippewa National Forest. Unprotected private land is more prevalent on the subwatershed’s western side.
- Risk for conversion is high around Bemidji.
- Medium priority for forest land protection. Focus efforts on large tracts to meet the subwatershed protection goal.
- Forest land protection goal is 75%, current protection is 61%.

### Goal 2: Forest Stewardship Guidance

- Has moderate amounts of till plains, moraine till, and outwash deposits. Moraine till is more prevalent near its northern end while till plains occur more frequently near the south and eastern part.
- Most of the upland area in this watershed has the potential to support fire-dependent forests, but much of it has been converted to agricultural land uses, particularly on the high plateau-like area to the south and east of Lake Bemidji.
- Promote long-lived conifers on outwash and Fire-Dependent sites, especially near the Potlatch sawmill.
- Encourage the development of conifer regeneration strategies including summer harvest, scarification, and slash control.
- See Fire-Dependent vegetation management goals #1-4 from the 2nd Generation North Central Landscape Plan.
- Forest stewardship goal – 182 plans, 24,597 acres.

### Priority Minor Watersheds

- Priority minor watersheds for protection are 7085, 7086, 7089, and 7115.



**Table 7. Minor watershed info**

Minor wshd #	Acres	Current % protected	Protection goal %
7071	15,735	54.2%	60%
<b>7085</b>	<b>18,284</b>	<b>50.9%</b>	<b>75%</b>
<b>7086</b>	<b>5,822</b>	<b>22.6%</b>	<b>60%</b>
<b>7089</b>	<b>7,503</b>	<b>52.9%</b>	<b>75%</b>
7090	36,090	78.9%	75%
7101	15,961	78.0%	75%
7110	13,193	38.8%	45%
7113	3,141	39.5%	40%
7114	8,744	24.1%	25%
<b>7115</b>	<b>16,160</b>	<b>35.4%</b>	<b>50%</b>
7116	6,138	57.8%	65%
7122	11,499	85.2%	60%

## Subwatershed No. 5 Turtle River (HUC 701010104)

### Goal 1: Forest Land Protection Guidance

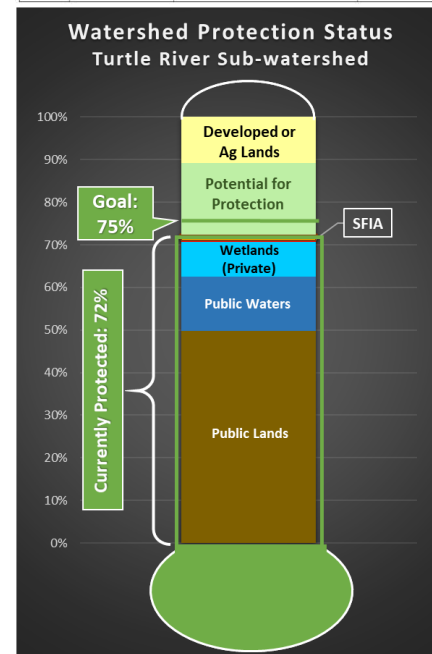
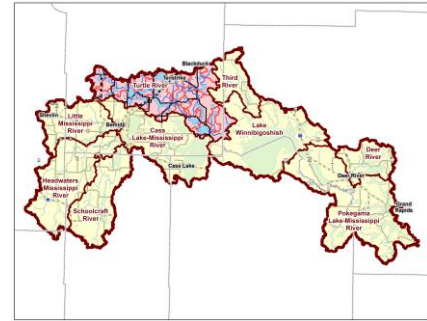
- Tributary to Cass Lake, which is a premier fishing and recreation destination in north-central Minnesota.
- Loaded with lots of small lakes, many of which are lakes of biological significance, wild rice lakes, and priority shallow lakes.
- Somewhat heavily forested.
- Public land is concentrated on the eastern side and is mostly Chippewa National Forest. Unprotected private land is more prevalent on the subwatershed's western side.
- High priority for forest land protection.
- Forest land protection goal is 75%, current protection is 72%.

### Goal 2: Forest Stewardship Guidance

- Largely covered by moraine till from the Big Stone Moraine.
- Mesic hardwoods dominate the native plant communities in this subwatershed, but Fire-Dependent forests are distributed along the southern edge of the region.
- There is less concern of depredation of tree seedlings by deer because restoring conifers is not a priority in this subwatershed.
- Increase diversity of deciduous species in mesic hardwood stands.
- Forest stewardship goal – 68 plans, 9,125 acres.

### Priority Minor Watersheds

- Priority minor watersheds for protection are 7102, 7107, and 7108.



**Table 8. Minor watershed info.**

Minor wshd #	Acres	Current % protected	Protection goal %
7036	14,261	95.4%	75%
7091	6,803	73.6%	75%
7092	5,909	69.6%	75%
7093	16,405	90.4%	75%
7094	5,603	94.1%	75%
7095	14,883	79.0%	75%
7096	6,223	77.7%	75%
7097	4,671	67.9%	75%
7098	8,798	73.8%	75%
7099	4,292	98.4%	75%
7100	2,775	98.4%	75%
<b>7102</b>	<b>18,283</b>	<b>60.3%</b>	<b>75%</b>
7103	6,976	59.2%	60%
7104	8,610	76.2%	75%
7106	15,512	51.2%	70%
<b>7107</b>	<b>12,514</b>	<b>41.1%</b>	<b>75%</b>
<b>7108</b>	<b>5,177</b>	<b>46.9%</b>	<b>75%</b>
7109	8,596	56.6%	75%
7117	5,125	63.6%	75%
7118	5,561	92.1%	75%
7119	4,091	70.9%	75%
7120	7,231	76.1%	75%

## Subwatershed No. 6 Lake Winnibigoshish (HUC 701010107)

### Goal 1: Forest Land Protection Guidance

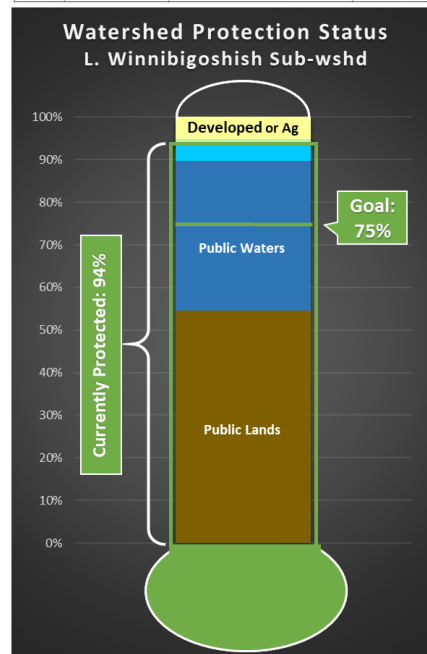
- Home to Lake Winnibigoshish, which is the largest waterbody in the entire Mississippi Headwaters Major Watershed.
- Land cover is approximately 1/3 water, 1/3 upland forest, and 1/3 lowland forests and wetlands.
- This subwatershed includes both the Sand Plain Pines Project Area and the Avenue of Pines.
- Low risk because it is already heavily protected. It is a 'Vigilance' watershed according to the DNR Lakes Protection and Restoration Framework.
- Low priority for forest land protection.
- Forest land protection goal is 75%, current protection is 94% - goal met!

### Goal 2: Forest Stewardship Guidance

- Largely covered by outwash but there are patches of peat and an area of moraine till near the northern border.
- Most of the upland area is fire-dependent forest and is being managed by the Chippewa National Forest and Leech Lake Band of Ojibwe, primarily for long-lived conifers.
- This subwatershed also likely supports moderate amounts of mesic hardwoods, forested rich peatlands, and wet forest NPC systems.
- Promote the regeneration of white cedar on appropriate sites.
- See Forested Rich Peatland vegetation management goal #4 and Wet Forest vegetation management goal #4 from the 2<sup>nd</sup> Generation North Central Landscape Plan.
- Forest stewardship goal – 1 plan, 172 acres.

### Priority Minor Watersheds

- Forest land protection and stewardship plan goals are met! Work with interested landowners with current PFM program services.



**Table 9. Minor watershed info.**

Minor wshd #	Acres	Current % protected	Protection goal %
7021	10,325	87.6%	75%
7022	24,176	98.0%	75%
7024	98,544	90.2%	75%
7025	11,488	76.5%	75%
7026	4,803	100.0%	75%
7034	8,256	97.6%	75%
7035	6,099	99.9%	75%
7037	8,534	99.3%	75%
7038	12,673	90.7%	75%
7129	5,996	98.7%	75%

## Subwatershed No. 7 Third River (HUC 701010106)

### Goal 1: Forest Land Protection Guidance

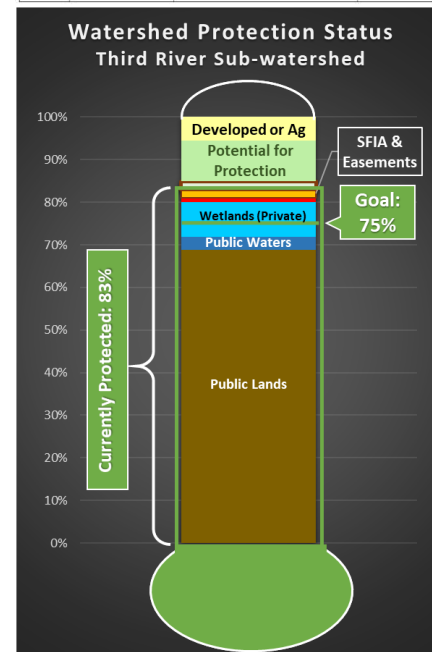
- Tributary to Lake Winnibigoshish, which is one of the most famous fishing lakes in the country.
- Strongly stream-based watershed with few lakes.
- Somewhat heavily forested with abundant wetlands.
- Low risk because it is already heavily protected, mostly by public land. It is a 'Vigilance' watershed according to the DNR Lakes Protection and Restoration Framework.
- Low priority for forest land protection.
- Forest land protection goal is 75%, current protection is 83% - goal met!

### Goal 2: Forest Stewardship Guidance

- Mostly covered by moraine till deposits but there is a core area of outwash near the subwatershed's center.
- Mesic hardwood forests are abundant on the moraine till around the edges of this subwatershed, while fire-dependent forests are more common on the outwash plain in its center.
- Promote the regeneration of white cedar on appropriate sites.
- See Forested Rich Peatland vegetation management goal #4 and Wet Forest vegetation management goal #4 from the 2<sup>nd</sup> Generation North Central Landscape Plan.
- Forest stewardship goal – 18 plans, 2,371 acres.

### Priority Minor Watersheds

- Forest land protection and stewardship plan goals are met! Work with interested landowners with current PFM program services.



**Table 10. Minor watershed info.**

Minor wshd #	Acres	Current % protected	Protection goal %
7027	4,090	92.9%	75%
7028	11,729	82.2%	75%
7029	5,247	92.1%	75%
7030	12,023	74.7%	75%
7031	8,481	83.9%	75%
7032	3,969	91.0%	75%
7033	11,272	97.5%	75%



## Subwatershed No. 8 Deer River (HUC 701010108)

### Goal 1: Forest Land Protection Guidance

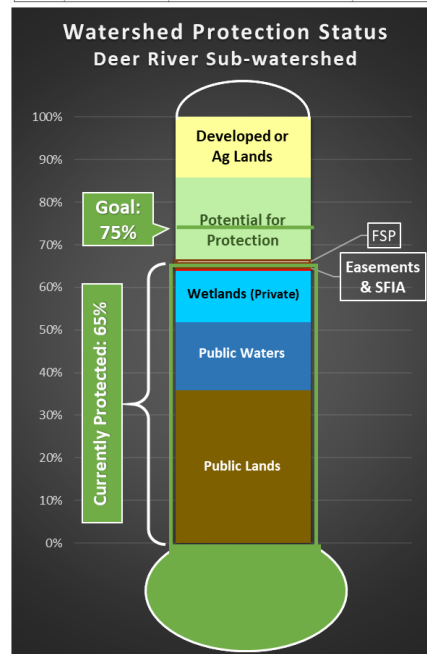
- Tributary to the Pokegama Lake – Mississippi River Subwatershed.
- High concentration of lakes in its eastern half.
- Heavily forested with a good number of wetlands.
- 44% of the subwatershed area has a Wildlife Action Network score of High or Medium-High, that is higher than any other subwatershed in the Mississippi Headwaters Major Watershed.
- Much of the subwatershed’s protected area is in the north end and comes from The Chippewa National forest, a few large wetland complexes, and large lakes such as Moose Lake and Deer Lake.
- Medium priority for forest land protection.
- Forest land protection goal is 75%, current protection is 73%.

### Goal 2: Forest Stewardship Guidance

- This subwatershed is split between the Chippewa Plains ECS Subsection in its western half, and the St. Louis Moraines ECS Subsection in its eastern half. The western half has low and relatively flat terrain while the eastern half is higher in elevation with rugged topography.
- Lowland NPC systems are more likely to have developed in the portion of the subwatershed in the Chippewa Plains, while upland NPC systems are more common in the St. Louis Moraines.
- In minors #7014-7016 focus vegetation management on maintaining/restoring hydrology in lowland forests, as well as diversifying stand structure and composition.
- In minors #7010, 7013, and 7132 focus vegetation management on increasing diversity of deciduous species in mesic hardwood stands.
- Forest stewardship goal – 49 plans, 6,547 acres.

### Priority Minor Watersheds

- Priority minor watershed for protection is 7010.



**Table 11. Minor watershed info.**

Minor wshd #	Acres	Current % protected	Protection goal %
7010	16,754	61.1%	75%
7013	5,599	67.7%	75%
7014	7,256	56.5%	60%
7015	5,747	55.3%	75%
7016	8,833	58.0%	75%
7132	11,664	83.3%	75%

## Subwatershed No. 9 Pokegama Lake-Mississippi River (HUC 701010109)

### Goal 1: Forest Land Protection Guidance

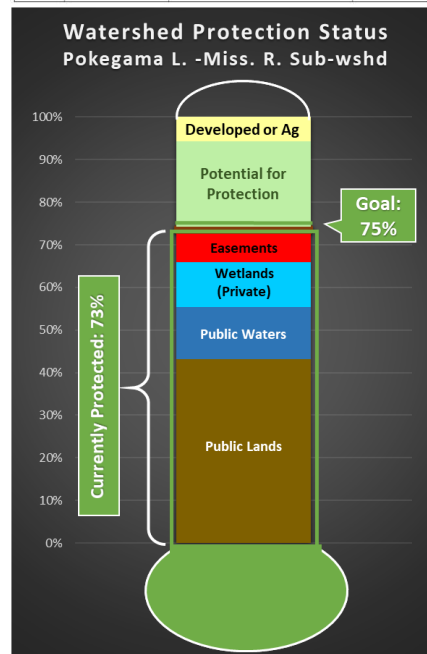
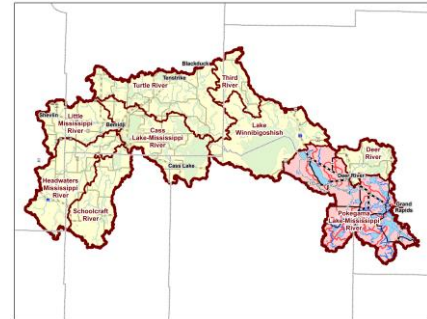
- This subwatershed is the most complicated subwatershed in the Mississippi Headwaters Major Watershed. It contains both highly protected watersheds in some portions and lightly protected in other areas.
- Overall watershed is 73% protected, largely due to the Blandin conservation easements to the south and west of Pokegama Lake.
- The tax base of the shoreland around Pokegama Lake is \$572 million. This is a major source of revenue for Itasca County and Grand Rapids.
- High biodiversity and quality factors in Pokegama Lake, e.g., wild rice, cisco, etc.
- Residential development risk around is high around Pokegama Lake.
- High priority but high cost forest protection opportunities exist on the east side of Pokegama Lake.
- Primary focus for water quality in the bottom quarter of the subwatershed will be on urban BMPs.

### Goal 2: Forest Stewardship Guidance

- Blandin Paper is a major market for forest products in the region and is based out of nearby Grand Rapids.
- The northeast or top part of the subwatershed is mostly covered by flat outwash deposits while the southern end is hummocky and part of the Sugar Hills Moraine.
- Mesic hardwoods are more likely to occur on the moraine till at the southern end of the watershed, whereas fire-dependent forests are more common on the outwash, and acid & forested rich peatlands forests are present on the scattered peat basins in the northwestern portion of the subwatershed.
- Encourage white cedar regeneration on the forested rich peatland and wet forest sites.
- Forest stewardship goal – 192 plans, 25,951 acres.

### Priority Minor Watersheds

- Priority minor watersheds for protection are 7002, 7005, 7006, 7009, and 7125.



**Table 12. Minor watershed info.**

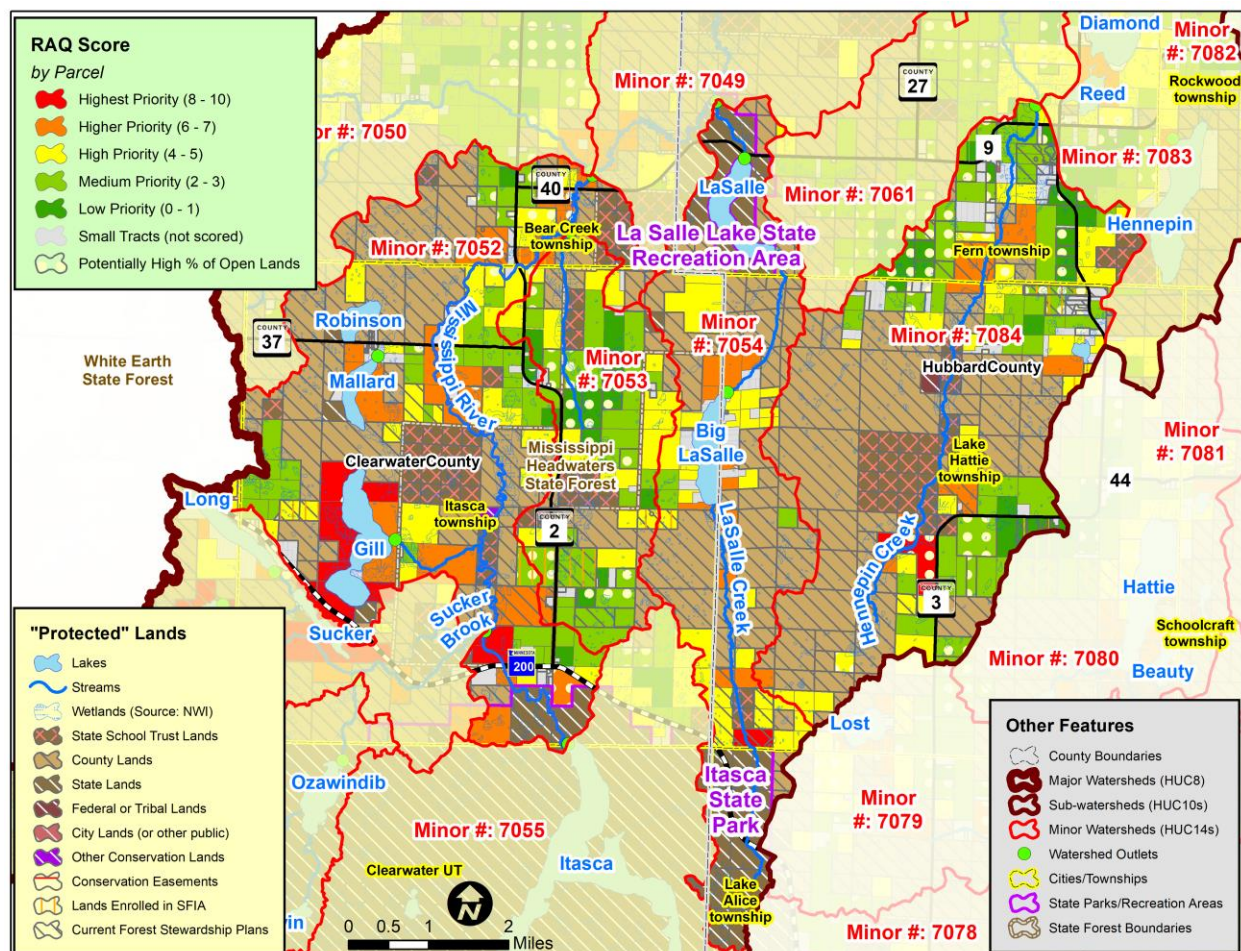
Minor wshd #	Acres	Current % protected	Protection goal %
7001	8,437	85.7%	75%
<b>7002</b>	<b>29,520</b>	<b>55.0%</b>	<b>75%</b>
7003	11,094	83.1%	75%
7004	6,645	82.2%	75%
<b>7005</b>	<b>7,913</b>	<b>68.9%</b>	<b>75%</b>
<b>7006</b>	<b>16,343</b>	<b>51.9%</b>	<b>65%</b>
7007	6,087	37.5%	55%
7008	34,563	73.6%	75%
<b>7009</b>	<b>18,959</b>	<b>59.4%</b>	<b>65%</b>
7017	5,089	64.1%	65%
7018	6,300	62.0%	65%
7019	15,454	81.9%	75%
7020	12,304	71.0%	75%
7023	24,666	92.9%	75%
7123	5,345	89.8%	75%
7124	4,435	87.9%	75%
<b>7125</b>	<b>4,697</b>	<b>61.4%</b>	<b>70%</b>
7126	4,215	84.3%	75%
7127	3,963	98.4%	75%
7128	6,237	98.6%	75%

## Minor Watershed Methodology and RAQ Scoring

The overall Mississippi Headwaters Major Watershed has a protection goal of 75%. Each of its nine subwatersheds have their own protection goals, which range from 45% in the Little Mississippi Subwatershed to 75% in all the others. The subwatersheds have 6 to 22 minor watersheds, and each minor also has a protection goal that was determined by the Mississippi Headwaters LSP Planning Team based on their best professional judgement on what is achievable for that minor.

To meet these goals local service providers will need to identify and target individual parcels and landowners. To assist in this effort, a Minor Watershed Assessment (MWA) was developed for every minor watershed in the Mississippi Headwaters Major Watershed. As a part of this assessment every minor watershed has a map showing its potential for protection, parcel and landowner RAQ scores (Riparian – Adjacency – Quality), and tables of information about individual parcels and landowners. An example of one of these resources is Fig 14, which shows the RAQ scores for parcels across a group of minor watersheds in the Headwaters-Mississippi River Subwatershed. We can see on this map that the parcels with the highest RAQ scores are clustered around Gill Lake. Protecting these parcels would provide the greatest return on investment. MWA maps and tables are provided in the LFT Workbook. The MWA priorities and RAQ scoring can also useful information to support local land use officials when developing their comprehensive plans and guidance on land use and public infrastructure decisions.

**Fig 14. RAQ scores for parcels in minor watersheds #7052, 7053, 7054, 7084.**



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## Part 3: Making it Happen

The key to successfully implementing any plan is coordination. Coordination is the critical, yet far too often, invisible process of organizing the ongoing work to be done in landscape management. Successful implementation requires proactive and purposeful coordination. This part of the plan focuses outlines how funding and staff resources will be coordinated to implement the vision and goals in this Plan.

### Coordination Strategies

This plan calls for protecting 61,000 acres of private forest land and the preparation of 96,740 acres of forest stewardship plans across the 1.2 million-acre Mississippi Headwaters Major Watershed over the next ten years. Implementing these goals will require significant collaborative efforts over this timeframe.

To be certain, these are “push” goals. But they are doable, especially given growing funding levels for protection from state Legacy funds through Clean Water and Outdoor Heritage Funds. In addition, there are growing capacity funds for private forest management that service providers are securing including funding from the US Forest Service S&PF through the LSR grants, DNR cost share and SFIA programs, and local capacity funds to soil and water conservation districts through the BWSR. These funds are foundational to supporting this dynamic private forest management paradigm.

The team of service providers working in this watershed need to pre-think through and commit to a series of coordination strategies. The following outline provides partners in the Mississippi Headwaters Major Watershed an initial pathway to greater success implementation through better coordination:

- Coordination Strategy # 1 – Reconvene, Support and Sustain the Local Forestry Technical Team.
- Coordination Strategy # 2 – Confirm the Project Coordinator.
- Coordination Strategy # 3 – Clarify Partner Roles in Serving Private Landowners.
- Coordination Strategy # 4 – Coordinate Resources for Implementation.
- Coordination Strategy # 5 – Support Accomplishment Reporting.
- Coordination Strategy # 6 – Recommendations to Local and State Agencies and Programs.



## Coordination Strategy # 1 – Reconvene the Local Forestry Technical Team (LFT)

The primary coordination strategy for this plan is to periodically convene a core group of partners – resource professionals, service providers, local and state officials, environmental groups, tribal representatives, and landowners – into a local team to oversee the coordination and implementation efforts over the next ten years. The team should meet on a regular basis to 1) review and determine service delivery priorities and workloads, 2) collaborate on developing proposals for funding opportunities, 3) coordinate training and landowner outreach efforts, 4) support accomplishment reporting, and 5) ensure clear communications on the status of the project. The LFT Workbook (to be distributed to the LFT when it reconvenes) provides additional guidance to support the team’s coordination efforts.

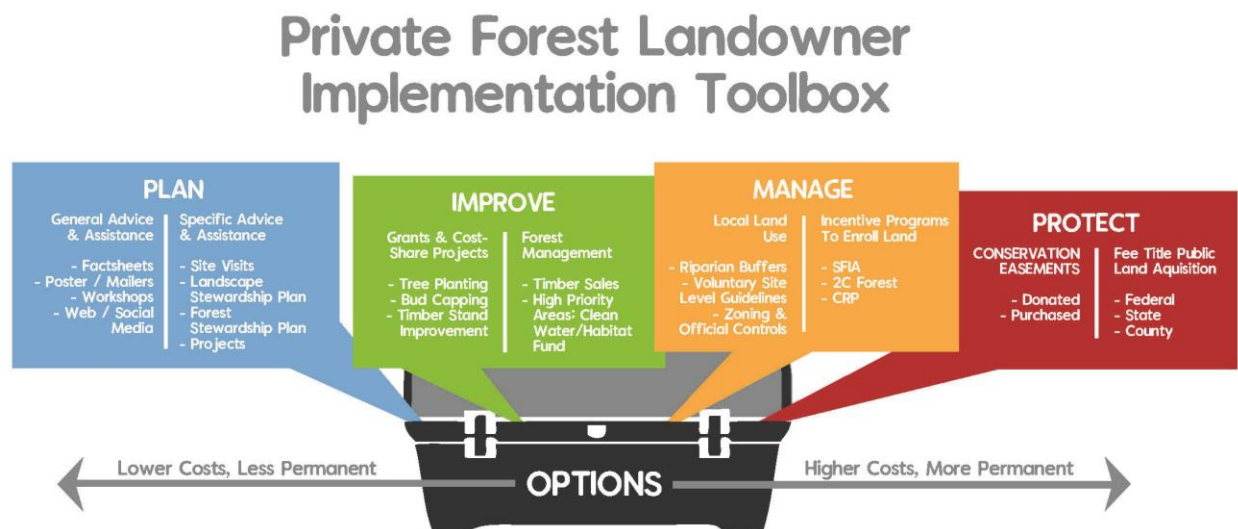
## Coordination Strategy # 2 – Confirm the Project Coordinator

To support the ongoing coordination work by the Local Forestry Technical Team, it is essential that one person serve as the point of contact to manage the overall coordination process. This should be a paid position and could be administered by one of the three SWCDs. Seed moneys and capacity funding are available to support this position.

## Coordination Strategy # 3 – Clarify Partner Roles in Serving Private Landowners

### PFM Implementation Toolbox

There are four primary approaches to delivering services to private landowners. The “PFM implementation toolbox” shown below illustrates these approaches and the full suite of options available to serving private landowners. Promoting the full range of options to private landowners helps to improve the economic, ecological, and social benefits they can receive from their woodlands. As the diagram below suggests, services provided to landowners on the left tend to be less costly but are also less permanent and generally have less societal benefits. In contrast, tools further to the right involve options that are more costly (to the public) but have a greater degree of permanence and produce more recognizable benefits to society. Local forestry technical teams are encouraged to define roles and organize their implementation efforts through these four approaches and corresponding array of tools.





Forestry professionals including approved Minnesota Forest Stewardship Plan writers are available to help private forest landowners obtain forest stewardship plans for their property and implement parts of the toolbox. These professionals are typically from the DNR, local SWCD and NRCS offices, forest industries, or are private consultants. An estimated 26 approved forestry professionals/plan writers have service areas in and near the Mississippi Headwaters Major Watershed. Their contact information can be found at <http://www.myminnisotawoods.umn.edu/minnesota-stewardship-plan-preparers/>.

### Clarifying Roles, Growing Commitment

Partners and stakeholders working in the watershed are all encouraged to serve on the Forestry Technical Team. The team should include DNR Forestry, SWCDs, consulting foresters, tribal representatives, environmental organizations, industry foresters, loggers and vendors, landowners, local officials, and other local groups.

The PFM implementation toolbox displays many of the choices that can be used to promote private forest stewardship. However, not all service providers in this watershed have the resources to implement all the options. To efficiently implement the full toolbox, partners on the forestry technical teams are encouraged to define the roles and responsibilities of each partner using the diagram below.

	#1 General advice & <u>assistance</u>	#2 Specific advice & <u>assistance</u>	#3 Grants / cost-share <u>project</u>	#4 Forest <u>management</u>	#5 Land use <u>controls</u>	#6 Incentive <u>programs</u>	#7 Conservation <u>easements</u>	#8 Fee title public land <u>acquisition</u>
<u>Mission and roles</u>								
<ul style="list-style-type: none"> <li>• Primary</li> <li>• Supporting</li> </ul>								
<u>Programs/projects</u>								
<ul style="list-style-type: none"> <li>• Geographic areas of interest</li> <li>• Topical interests</li> </ul>								
<u>Staffing/equipment</u>								
<ul style="list-style-type: none"> <li>• FTE's, expertise</li> <li>• Equipment</li> <li>• Other resources</li> </ul>								

By working together to define each partners roles and responsibilities will help to ensure seamless, effective, and efficient PFM service delivery. The more commitment that partners and stakeholders bring to the table in sharing resources and information increases the successful implementation of this plan. Actively participating on an ongoing basis is the core to developing and expanding partnership and stakeholder capacity to reach the shared goals and objectives of this Plan.

Moving from a paradigm of serving one landowner at a time to a landscape team approach that concurrently serves landowners and their communities will require the project coordinator and forestry technical team to encourage all partners to significantly expand the sharing of their limited resources for landscape stewardship. The sharing of resources—staff, funding, equipment, information, and know-how—in far more robust and active ways—is fundamental to partnership capacity development.

### Collaborate Outreach Efforts to Engage Landowners, Community Leaders and Local Decision Makers

To gain the support of decision makers in the community, resource managers need to provide a convincing answer to the fundamental marketing question: “What is in it for them?” Broader community support is likely to depend on being able to demonstrate that conservation programs are effectively and efficiently

addressing issues of importance in terms that residents and their decision makers easily understand. Increasing support for forest conservation that protects and enhances water quality will be based primarily on the off-site benefits that accrue to community residents, rather than on the on-site benefits that accrue to forest landowners.

Tools for Engaging Landowners Effectively (TELE) was developed by the Sustaining Family Forests Initiative (SFFI) to engage landowners effectively. The SFFI is a collaboration of government agencies, NGOs, certification systems, landowner groups, businesses, and universities organized to gain comprehensive knowledge about family forest owners (10-999 acres) in the United States. The SFFI has taken advantage of the wealth of information from the National Woodland Owner Survey database and linked this resource with demographic and behavior information to develop the TELE marketing approach to help natural resource professionals and others engage more effectively with family forest owners about their woods and woodland management. More information about the SFFI and TELE can be found at [www.engaginglandowners.org](http://www.engaginglandowners.org) and in the [Appendix](#).

## **Coordination Strategy # 4 – Coordinating Resources for Implementation**

### **Prioritizing PFM Service Delivery Through MWA and RAQ**

DNR Forestry and BWSR have developed the minor watershed assessment/RAQ methodology that connects forest land cover and water quality based on research developed by MN DNR Fisheries. The process works as follows: 1) Prioritize lakes that can meet at least 3 of 5 risk and quality factors, and have less than 75% protected watersheds, 2) Target specific parcels with high scores for proximity to riparian “R”, adjacency to public land “A”, and habitat quality “Q” (RAQ) scores (5 or greater) and focused proactive outreach efforts to these landowners that promote increased forest management and forest land protection (SFIA, conservation easements, public land acquisitions), and 3) over time, measure progress toward 75% protection goal on watershed basis.

We periodically measure the percent of the watersheds with permanent forest protection to illustrate this transformation on graphic dial like a speedometer. We call this measurement and assessment, moving the needle towards watershed protection. Through the implementation and monitoring of this plan over time, we can document and assess forest land protection levels at the major watershed, subwatershed and minor watershed levels.

This plan is intended to help support the PTM thinking by all service providers in a collaborative manner. This intentional and measurable planning process enhances opportunities for the collaborative implementation of the plans over time. To support this effective cross boundary approach, increased coordination capacity provided by this federal grant is essential.

### **Linking Landscape Stewardship Plans and 1W1Ps through PTM**

By coordinating forest and water resource planning and implementation through the development of this plan, we are setting the watershed/land cover context for developing the Mississippi Headwaters 1W 1P. These interconnected public planning processes promote more active and cross boundary management of not only forest resources, but water resources along with fish and wildlife. This collaborative work is helping to strengthen working relationships with agency fish and wildlife managers as well as outdoor and sportsmen groups. Through the LSP and 1W1P, MN DNR Forestry and partners are shaping approaches to working more proactively with landowners and providing them with more options to:

- Provide conservation-minded landowners with 3 protection options.
- Promote SFIA, the state’s incentives program for maintaining forest lands.

- Conservation easements acquired by either Forests for the Future (FFF) or Reinvest in Minnesota (RIM) programs. FFF focusing more on larger tracts and shoreland, RIM focusing on smaller tracts and backlots.
- For landowners choosing fee title, proposals go to the county via the land commissioner for review and comment—first. Work with conservation organizations on fee title projects. Transfer land to either county or state.

The Subwatershed Action Plans, Minor Watershed Assessments and RAQ scoring (provided in the LFT Workbook) provide a useful evaluation of the land cover/watershed relationships and initial risk assessment. These tools provide the Local Forestry Technical Team with resource management strategies at the subwatershed and minor watershed scales to more effectively implement the two goals in this plan.

### 10-Year Investment Plan

The table below summarizes acreage goals and estimated costs for implementing Goal 1 – Increase Forest Land Protection and Goal 2 – Promote Forest Stewardship. This information should be reviewed and integrated into the Mississippi Headwaters 1W1P and used to help secure funding needed to implement the goals in this plan. It should be noted that the table below indicates 0 acres for forest land protection given the 75% metric at the subwatershed level. Although the Lake Winnibigoshish and Third River subwatershed are over 75% protected, several of the minors are not. When conservation easements are desired and appropriate (higher RAQ scores) the Local Forestry Technical Team should review these with the Advisory Committee for the investing of RIM funds. Other PFM services should be made available to Interested landowners in these subwatersheds.

**Table 13. 10-year forestry investment plan summary.**

No.	Subwatershed name	Goal 1 – Increase Forest Land Protection		Goal 2 – Promote Forest Stewardship	
		Acres	Public investment <sup>A</sup>	Plans / acres	Public investment <sup>B</sup>
1	Headwaters – Mississippi River	12,339	\$12,835,991	105 / 14,197	\$84,000
2	Little Mississippi River	5,517	\$5,595,175	46 / 6,142	\$36,800
3	Schoolcraft River	5,902	\$7,012,893	57 / 7,639	\$45,600
4	Cass Lake – Mississippi River	21,939	\$27,970,225	182 / 24,597	\$145,600
5	Turtle River	5,999	\$6,556,182	68 / 9,125	\$54,400
6	Lake Winnibigoshish	0	\$0	1 / 172	\$800
7	Third River	0	\$0	18 / 2,371	\$14,400
8	Deer River	5,383	\$6,318,176	49 / 6,547	\$39,200
9	Pokegama Lake – Mississippi River	3,921	\$3,992,335	192 / 25,951	\$153,600
	<b>Totals</b>	61,000	\$70,280,977	718 / 96,740	\$574,400

<sup>A</sup>Cost assumes 50% of area in conservation easement and 50% in SFIA for 100 years.

<sup>B</sup>Cost assumes \$800 / stewardship plan plus - \$600 for the plan plus \$200 for outreach and administration costs. Public funds to be used to help underwrite costs of preparing forest stewardship plans. Assumes average parcel size of 135 acres. 50% of the plan writing cost to be cost shared.

## **Funding Sources**

How will the implementation of this plan be funded? Experience has shown that landscape approaches to natural resource conservation tend to have a synergistic effect on funding. Partners that get involved in a landscape-scale project area do so because it meets some of their own resource or public relations goals. Because of this they can support efforts in the project area.

Landscape-scale, multi-partner, coordinated efforts often carry increased weight with foundations, trusts, and government agencies when it comes to applying for grants. Federal and state funding agencies as well as private foundations tend to look favorably on multi-partner project applications. There is a considerable amount of money available through grants and other programs that landscape stewardship approaches can facilitate.

The following is a list of potential resources available to the Forestry Technical Team to pursue in the project and funding development. The Team should maintain and grow this inventory to foster increased success in implementation of this Plan.

- BWSR capacity funds.
- DNR PFM Program – cost share and SFIA.
- Watershed based implementation funding (WBIF).
- Clean Water Legacy funding through BWSR, MPCA and DNR.
- LSOHC – big and small grants.
- LCCMR.
- US Endowment.

## **Private Sector Partnerships**

As envisioned by the US Forest Service and state foresters, landscape stewardship projects seek to encourage and promote greater levels of private investments in ways to leverage public investments. Private woodland owners make significant investments in their own lands. These investments may not end up on the balance sheets of service provider agencies (although they sometimes do), but the investments private landowners make on their lands are no less important. The bottom line is that there will likely be more money and resources for coordination and implementation available in a more coordinated way for on-the-ground resource management work.

An untapped reservoir of funding may come from local businesses that will benefit from the results of the resource management activities taking place. For example, a local canoe outfitter may see benefit in financially aiding efforts that will result in maintenance or improvement in water quality in a local river. Family resorts, campgrounds and other businesses that benefit from clean water and healthy forests can promote and support the watershed-based landscape stewardship plans. By doing so, they can help promote opportunities for financial support at the community level through lake associations and chambers of commerce to encourage more businesses decide to project a “high quality forest and water – sustainable green” image where we can all benefit through win-win-win approaches.

## **Coordination Strategy # 5 – Support Accomplishment Reporting**

Accomplishment reporting will be critical to evaluating the success of implementation efforts of this Plan over the next ten years. The table below provides a starting point for monitoring progress made by all partners. It should be maintained on an annual basis. The Forestry Technical Team will be responsible for organizing this information and sharing it with their local boards, DNR, and BWSR.

**Table 14. Annual PFM accomplishment report summary table - template.**

	Headwaters – Mississippi River	Little Mississippi River	Schoolcraft River	Cass Lake – Mississippi River	Turtle River	Lake Winnibigoshish	Third River	Deer River	Pokegama Lake – Mississippi River
<b>Baseline</b>									
Total land area (acres)	148,213	88,654	109,631	158,269	188,297	190,894	56,811	55,853	232,267
Area of private ownership (acres; % of subwshd)	60,561; 41%	64,78; 73%	40,613; 37%	72,757; 46%	70,485; 37%	19,627; 10%	16,000; 28%	26,648; 48%	103,799; 45%
Private parcels <5 acres	1,342	1,653	1,411	12,335	5,986	220	172	2,477	7,241
Private parcels 5-20 acres	685	633	635	1,627	1,260	59	110	539	1,807
Private parcels >20 acres	946	986	662	1,030	1,261	83	303	523	2,167
Forest stewardship plans (#; acres)	35; 3,459	8; 823	37; 3,795	22; 3,066	21; 2,703	1; 40	8; 1,744	13; 1,749	32; 6,487
<b>General advice &amp; assistance</b>									
Mailings									
Workshops									
<b>Specific advice &amp; assistance</b>									
Site visits									
Forest stewardship plans									
<b>Grants/ cost-share projects</b>									
Forest restoration									
Forest stand improvement									
<b>Forest management</b>									
Timber harvests									
Biomass harvests									
<b>Land use controls</b>									
Riparian buffer plantings									
Site-level guideline compliance									
<b>Incentive programs</b>									
SFIA									
2C									
<b>Conservation easements</b>									
Public									
Private/nonprofit NGO									
<b>Fee title public land acquisition</b>									
Public land acquisitions									
Land trades/ exchanges									

*Template table to be completed annually by the Local Forestry Technical Team and distributed to DNR Forestry, local SWCD board and county boards, US FS, and the MFRC North Central Landscape Committee.*



## **Coordination Strategy # 6 – Recommendations to Local and State Agencies**

### **Recommendations to BWSR and SWCDs for the Mississippi Headwaters 1W1P**

1. MOUs. Complete the memorandum of understanding between DNR Forestry and BWSR on the new paradigm for PFM including landscape stewardship and comprehensive local water planning.
2. Reference Document. Adopt the Mississippi Headwaters Watershed Landscape Stewardship Plan by reference for addressing forest land protection and forest stewardship topics in the Mississippi Headwaters 1W1P. Attached the LSP as an appendix to the 1W1P.
3. Policy Integration. Incorporate the two forestry goals into the policy framework in the 1W1P.
4. Funding Coordination. Integrate the overall funding needs listed in the 10-Year Forestry Investment Plan – Summary Table into the 1W1P Implementation Schedule.

### **Recommendations to Mississippi Headwaters Counties**

1. Reference Document. Local land use officials are strongly encouraged to use this Plan as a reference document when developing their comprehensive plans to guide land use and public infrastructure decisions. They are further encouraged to adopt this landscape stewardship plan as an appendix to their plans to provide more detailed guidance on sustainable forest resource management and support more proactive and collaborative funding development.
2. Consider Forests in Local Land Use Decisions. Local officials are encouraged to consider the values and benefits that forests can bring to their communities. Healthy and sustainable forests promote a high quality of life for citizens and can support increased economic opportunities as well. Forests should be included in the land use decision making process.
3. Alternative Land Development Options. Local officials are encouraged to use forestry as a design tool to help them work more effectively with landowners and developers. There are alternative ways that land can be developed to provide for both economic growth and the protection of forest and water resources. Large lot developments are not always desirable or cost effective from the public sector or taxpayers perspectives.
4. Guide Growth to Existing Infrastructure. Use the maps from the minor watershed assessment / RAQ scoring and related tools to help inform local land use decisions. Guide growth and development towards existing roads and infrastructure and protection of larger blocks of working forest lands into interiors areas away from roads.

### **Recommendations to Lake Association Based Sustainability Committees**

1. Convene meeting with lake associations to explore creating sustainable committees for larger recreational lakes in the watershed. The lake associations can serve as local leaders to grow landowner buy-in for forest land protection.
2. Explore setting up a trust fund to use as match for forest land protection on key properties.

### **Recommendations to Mississippi Headwaters County Land Departments**

1. Land Asset Management Programs. Continue to develop county land asset management programs that support guiding of growth and forest land protection areas. Use the maps from the minor watershed assessment / RAQ scoring and relevant PFM implementation tools for land protection to help protect working private forest lands adjacent to county forest lands.
2. Timber Sale Coordination. Continue to support active communications with adjacent private landowners on coordinating timbers sales and other forest management activities.
3. Forest Roads. Continue to support active communications with adjacent private landowners on the maintenance and improvement of forest roads and access issues.

### **Recommendations to state and federal programs for PFM policy changes and funding needed**

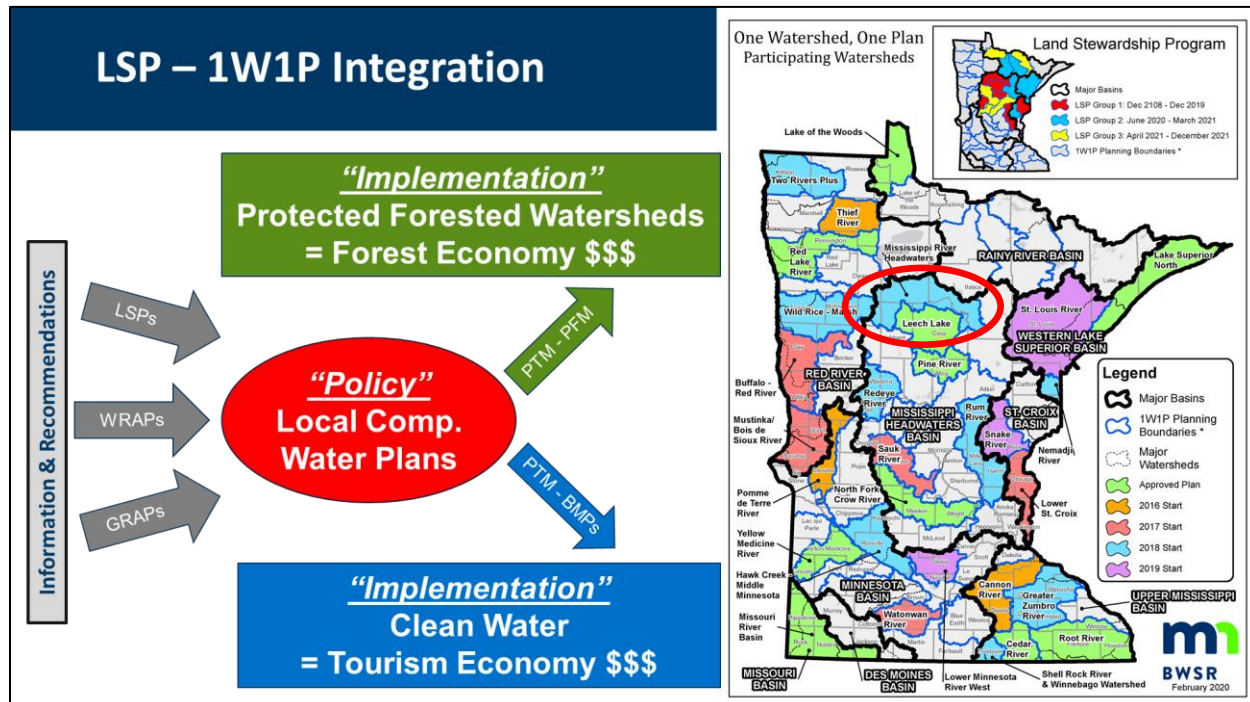
1. Integrate Landscape Stewardship Approaches into the PFM Program. Overall, encourage integrated service delivery between the broad range of agencies and organizations that serve private woodland owners to make delivery of their programs better coordinated, simpler and less costly in processing, and less time consuming.
2. Base PFM Program Funding. Increase and sustain funding for the private forest management program including support for SWCDs, consulting foresters, industry foresters and loggers.
3. Coordinated Landowner Outreach. Support efforts by local partners to focus, coordinate and increase landowner outreach efforts to promote forest land protection, forest stewardship plans, and increased forest management in priority areas identified in this LSP through the PTM/MWA/RAQ methodologies to meet the directive set forth by Governor Dayton in his November 2, 2016 letter to Minnesota Forest Industries – “accelerate outreach efforts with family forest landowners to increase harvest from private lands”.
4. Forest Habitat Priority Areas Planning. Support the updating of the 25-Year LSOHC Forest Habitat Vision developed by the MFRP and MFRC and the regional landscape committees. Support the collaborative development and integration of other conservation priority efforts that complement priorities identified in the watershed-based landscape stewardship plans.
5. ECS / NPC. Continue to promote the Ecological Classification System (ECS) and Native Plant Community modeling (NPC) from the MFRC landscape plans as guides to developing forest vegetation and land management strategies when working with landowners and local officials.
6. Ash Management. Prioritize funding towards proactively managing ash resources on private lands and increasing resilience of wet forest ecosystems to address emerald ash borer.
7. Source Water. Continued support from the Minnesota Department of Health to work with the LFT on projects through this the implementation of this plan that support and protect source water resources.
8. Climate Change and Carbon Sequestration. Support efforts by the LFT to address climate change and carbon sequestration through the implementation of this LSP including: 1) protect existing forestlands in the watershed from being converted to non-forested land uses, 2) improve forest management activities to increase carbon storage in the forest and associated wood products that come from the forests, and 3) support efforts by the LFT to assist interested landowners in the reforestation of their open lands.
9. Fire Management. Actively promote the implementation of the National Cohesive Wildland Fire Management Strategy including the three national goals: 1) Restore and Maintain Resilient Landscapes, 2) Fire Adapted Communities, and 3) Wildfire Response through the implementation of this plan. Provide resources to the LFT that support the integrated delivery of fire prevention and management efforts including the Firewise Program through delivery of PFM services to private landowners in this watershed.

## Demonstration Projects

Demonstration projects can provide valuable insights to resource professionals and landowners. They can serve as starting points for the implementation of this Plan. The table below is a template for developing a 10-year demonstration project list on a subwatershed basis. This list summarizes potential projects with partners, initial priorities, and suggested timelines. One of the benefits and uses of project lists is they can help partners work together to develop shared priorities when pursuing additional funding. The Local Forestry Technical Team will be responsible for developing this list. The Team should periodically review and refine the 10-year project list.

Map no.	Project name and brief description	Subwd / project priority	Lead entity / support entities	Proposed timeline
	<b>Headwaters Miss River Subwatershed</b>			
	<b>Little Mississippi River Subwatershed</b>			
	<b>Schoolcraft River Subwatershed</b>			
	<b>Turtle River Subwatershed</b>			
	<b>Cass Lake – Miss River Subwatershed</b>			
	<b>Third River Subwatershed</b>			
	<b>Lake Winnibigoshish Subwatershed</b>			
	<b>Deer River Subwatershed</b>			
	<b>Pokegama Lake – Miss River Subwatershed</b>			

## Linking Forest & Water Planning and Implementation through LSPs and 1W1Ps



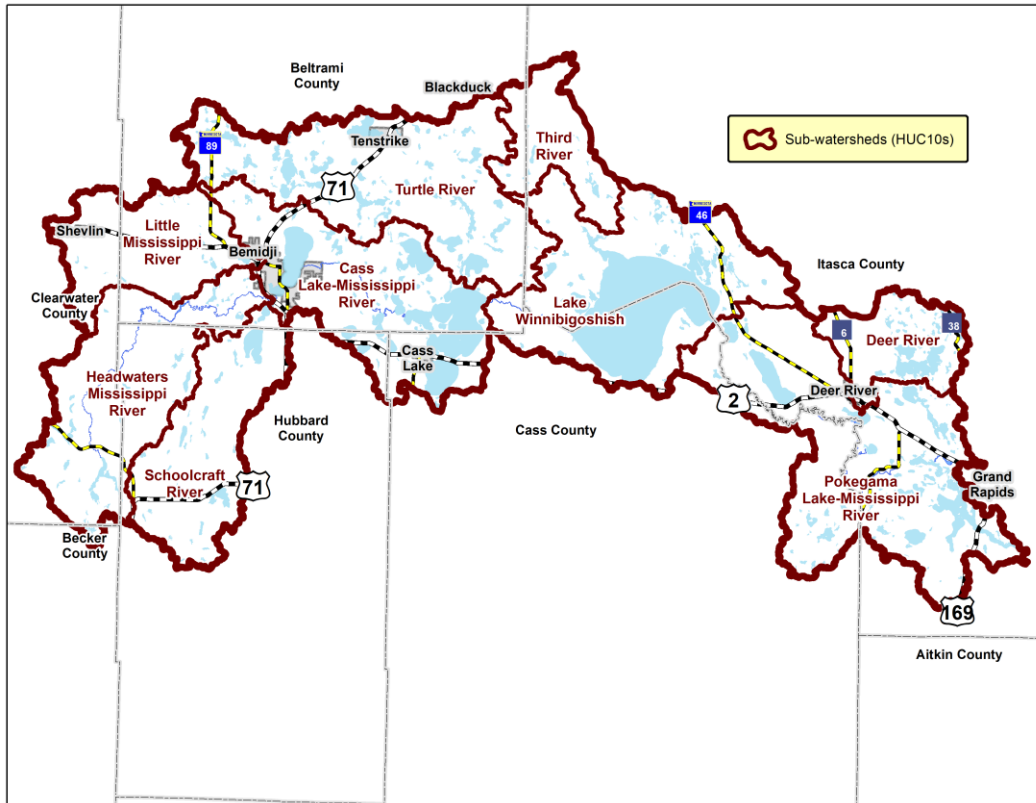
**Note:** Landscape stewardship plans (LSPs) like the MPCA Watershed Restoration and Protection Strategies (WRAPs) and the MDH Groundwater Restoration and Protection Strategies (GRAPs) provide important information and relevant context from state water and forest resource programs to inform comprehensive local water management (1W1Ps) processes. Members of the 1W1P committees are encouraged to consider the recommendations in this document for incorporation into their plans. Through the integration of landscape stewardship plans and 1W1Ps, conservation professionals and landowners are working together to address the following national priorities from the USDA Forest Service:

- Conserve Working Forest Lands.
- Protect Forests from Harm.
- Enhance Public Benefits from Trees and Forests.

*“A lake is the landscape’s most beautiful and expressive feature.  
It is Earth’s eye;  
looking into which the beholder measures the depth of his own nature.”*  
- Henry David Thoreau



## Index Information – Mississippi Headwaters Major Watershed



Subwd no.	Subwatershed name	HUC no.	Acres	No. of minors
1	Headwaters Mississippi River	701010102	148,213	16
2	Little Mississippi River	701010101	88,654	11
3	Schoolcraft River	701010103	109,631	17
4	Cass Lake-Mississippi River	701010105	158,269	12
5	Turtle River	701010104	188,297	22
6	Lake Winnibigoshish	701010107	190,894	10
7	Third River	701010106	56,811	7
8	Deer River	701010108	55,852.	6
9	Pokegama Lake-Mississippi River	701010109	232,267	20
	<b>Totals</b>		<b>1,228,889</b>	<b>121</b>

