Urban Stormwater & Drainage

Introduction

Situated in Northern Minnesota, the Big Fork River Watershed (BFRW; HUC 8 – 09030003) is a pristine watershed with picturesque landscapes and water resources. The southern portion of the watershed is dotted with lakes and covered by forest, while the northern portion of the watershed is dominated by woody wetlands and peatlands. The BFRW is in the Rainy River Basin and drains into the Rainy River at the Canadian boarder approximately 15 miles west of International Falls. The BFRW drains over 1.3 million acres and is divided almost evenly between Koochiching County (51%) and Itasca County (49%). The BFRW has a low population density; the biggest areas of development are the cities Big Fork (Itasca County) and Big Falls (Koochiching County), although neither city has a population above 500 people (United States Census Bureau, 2020a, 2020b).

The BFRW One Watershed, One Plan (1W1P) is a planning partnership between Koochiching County, Itasca County, Koochiching SWCD, Itasca SWCD and Leech Lake Band of Ojibwe. Over the next year, the planning partners, with guidance from local experts and stakeholders, will develop a comprehensive watershed management plan that identifies key issues in the watershed, creates measurable goals to help address those issues, and develop targeted implementation actions that help work towards achieving those goals.

The 1W1P process is outlined in the figure below in Figure 1. The first steps of the 1W1P process are a series of topic meetings that will be held to gather local input and kick-off the planning process by gathering issues, prioritizing issues, and targeting resources. These meetings will bring together the stakeholders and local experts to provide a strong background in each topic to ensure that the 1W1P adequately addresses the most important local concerns. The resources that will be covered in these meetings are Lakes & Streams, Forests & Wetlands/Peatlands, Urban Stormwater & Drainage, and Farms & Groundwater. This packet is for the Urban Stormwater & Drainage meeting and the following pages will provide some background information on the topic in the BFRW for discussion.

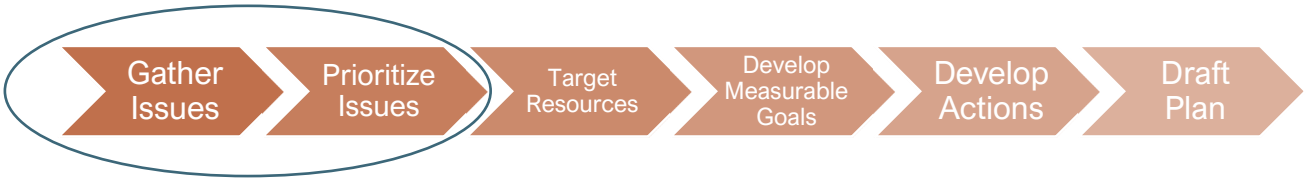

Figure 1 Planning process for the BFRW 1W1P.

Big Fork Urban Stormwater and Drainage Overview

Only 1.7% of the BFRWD watershed is developed, with little classified as high intensity (0.02%). Most of the development occurs around the cities of Big Fork and Big Falls. Water quality in the watershed is generally good with few pollutants due to low development and large amounts of protected lands. The state and federal government own around 75% of the land. Private ownership is small: individuals own 19.3% of land and industry owns 5.9%. A significant percentage of this private land is around the small-sized cities in the watershed.

The BFRW has a low population density; Figure 6 shows the density of E911 addresses in the watershed. The concentrated areas are in Big Fork, Big Falls, although neither city has a population above 500 people (United States Census Bureau, 2020a, 2020b). There is also concentrated development around the lakes north of Marcell.

Fertilizer and urban and rural stormwater runoff, in-lake sediment phosphorus release (internal loading), and upstream lake loading were identified as common nonpoint pollutant sources to impaired or threatened lakes and streams in the Big Fork River Watershed. Things such as impervious surfaces (roads and urban areas) and farmland are however less significant than in some other Minnesota watersheds due to the relatively small population in northern Itasca and Koochiching Counties.

Water Quality Issues

The Urban Stormwater and Drainage Advisory Committee Topic meeting was held October 1, 2025, in Marcell, MN. To gather the diverse viewpoints about water quality of stakeholders and experts in the watershed, we began the meeting by asking each member of the Advisory Committee to describe what comes to mind when they think of urban stormwater and drainage. Their responses are shown below (Figure 1Figure 2) in a word cloud.

Figure 2. Word cloud about urban stormwater and drainage in the Big Fork River Watershed.

Prior to the meeting, previous plans, reports, and public input were reviewed and gathered to better understand the issues and opportunities in the watershed (Figure 3). These were compiled into common themes, which were then used at the forest and wetland topic meeting for facilitation.

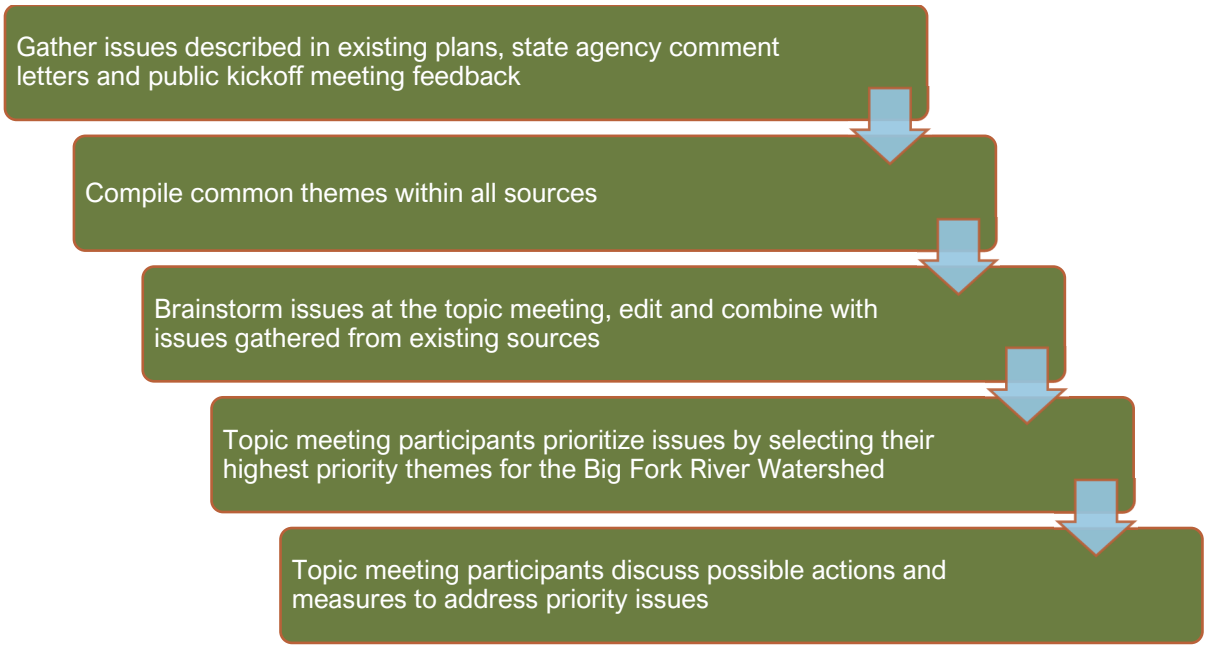

Figure 3. Issues statement development for the Big Fork River 1W1P.

At the meeting attendees were asked to brainstorm city stormwater needs. No cities were in attendance, so cities will be individually contacted for more information about their current and/or future stormwater plans and funding possibilities.

Matt from MNDOT talked about the mapping system that shows about their 10 year plan: https://www.dot.state.mn.us/planning/10yearplan. There are no new realignments planed in the near future, they're mostly in preservation mode for current roads and doing resurfacing, etc. Their engineering and design plans for projects are set 3-5 years before the project, so it is best to look for project coordination opportunities further ahead than that. They have partnered with local partners in the past for water quality components of projects. They have also completed a full culvert inventory for state highways, with over 5,000 culverts located.

James from Koochiching SWCD talked about pervious roadbeds that allow for peatland flow through. Past studies have shown that roads that cut through peatlands can kill one side of it due to the lack of flow through.

Lindsay from the MPCA talked about culvert projects in the WRAPS. Sam worked with Big Falls and decided two culverts were a priority for fish passage along the Sturgeon River. Island Lake and Shallow Pond have a culvert assessment.

Rural forest roads in the watershed are mainly managed by the DNR and Koochicing Lands and Forests Department. There are no townships in Koochiching County but there are in Itasca County.

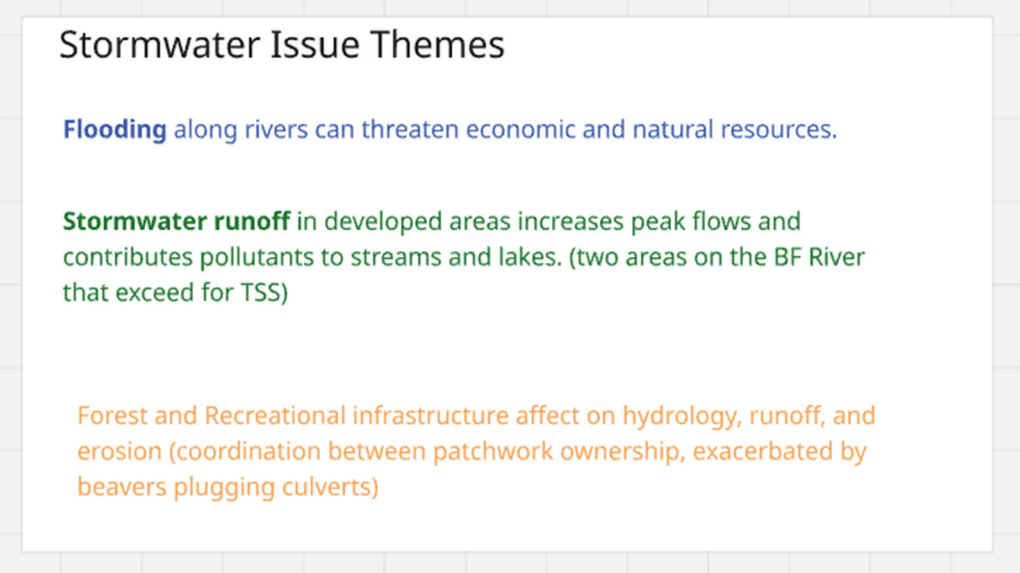

Figure 4. Stormwater issue themes developed from brainstormed issues.

Attendees were then asked to list issues and opportunities related to urban stormwater and drainage. These were then clustered into themes (Figure 4) to determine if the Advisory Committee priorities align with the themes gathered from the plans, reports, comment letters, and public input. Themes were then adjusted, regrouped, or new themes were created based on feedback and advice from the committee (Table 1). The group then finalized a list of themes related to urban stormwater and drainage.

Attendees were then asked to share ideas for possible actions (Figure 5) within the Big Fork Watershed. All ideas will be used to formulate actions and measures, but the actions and measures are not restricted to the list below.

Table 1. Draft issue statements related to urban stormwater and drainage.

DRAFT ISSUE THEMES	DRAFT ISSUE STATEMENT	REFERENCES
Stormwater runoff	**Stormwater runoff** in developed areas contributes pollutants to streams and lakes.	Koochiching Local Water Plan, BWSR Comment Letter, MPCA WRAPS, Big Fork River Plan
Forest & Recreational Infrastructure	**Forest and recreational infrastructure** impacts hydrology, erosion, and runoff if not managed properly.	BWSR Letter, Itasca County Water Plan, Big Fork SID Report, Koochiching County Comprehensive Land Use Plan

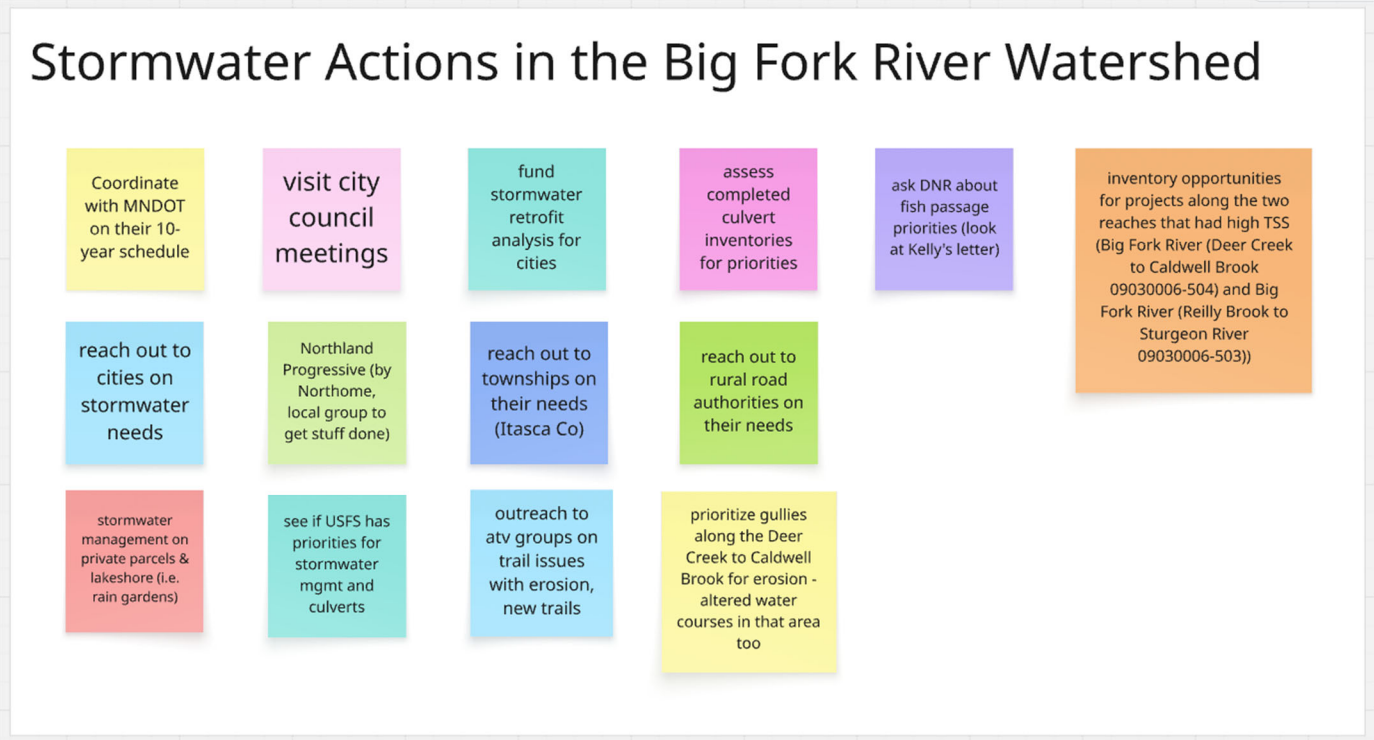

Figure 5. List of stormwater and drainage actions for the Big Fork River Watershed.

Meeting Attendees

- Matt Gutmann (Itasca SWCD)
- Jolen Simon (Koochiching SWCD)
- James Aasen (Koochiching SWCD)
- Matt Meyer (MNDOT)
- Chad Severts (BWSR)
- Lindsey Krumrie (MPCA)
- Mitch Brinks (TSA8)
- Andy Arens (Itasca SWCD)
- Cal Saari, Itasca SWCD
- Austin Steere (Itasca SWCD)
- Moriya Rufer (HEI)
- Christina Traner (HEI)

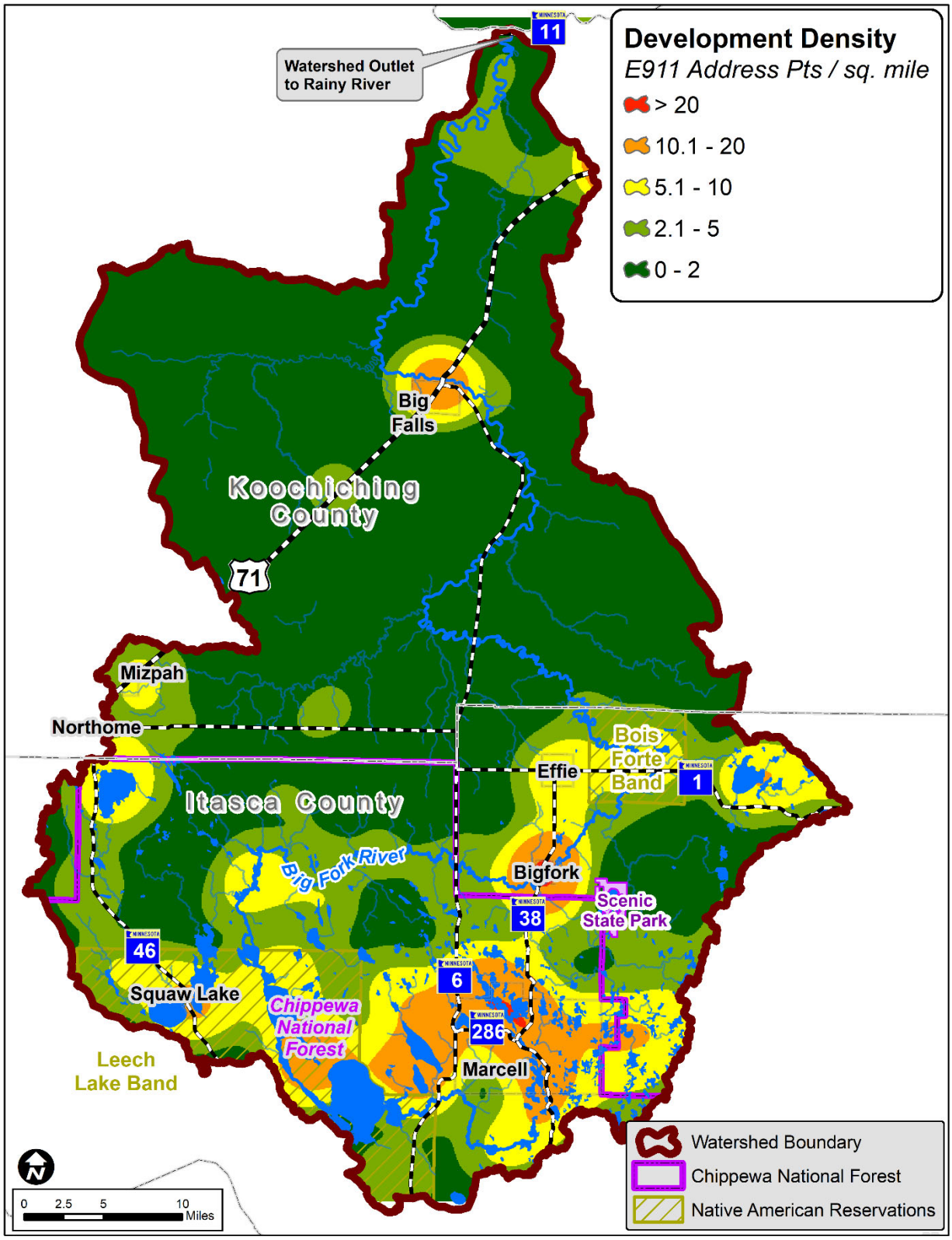

Figure 6. Development Density within the BFRW

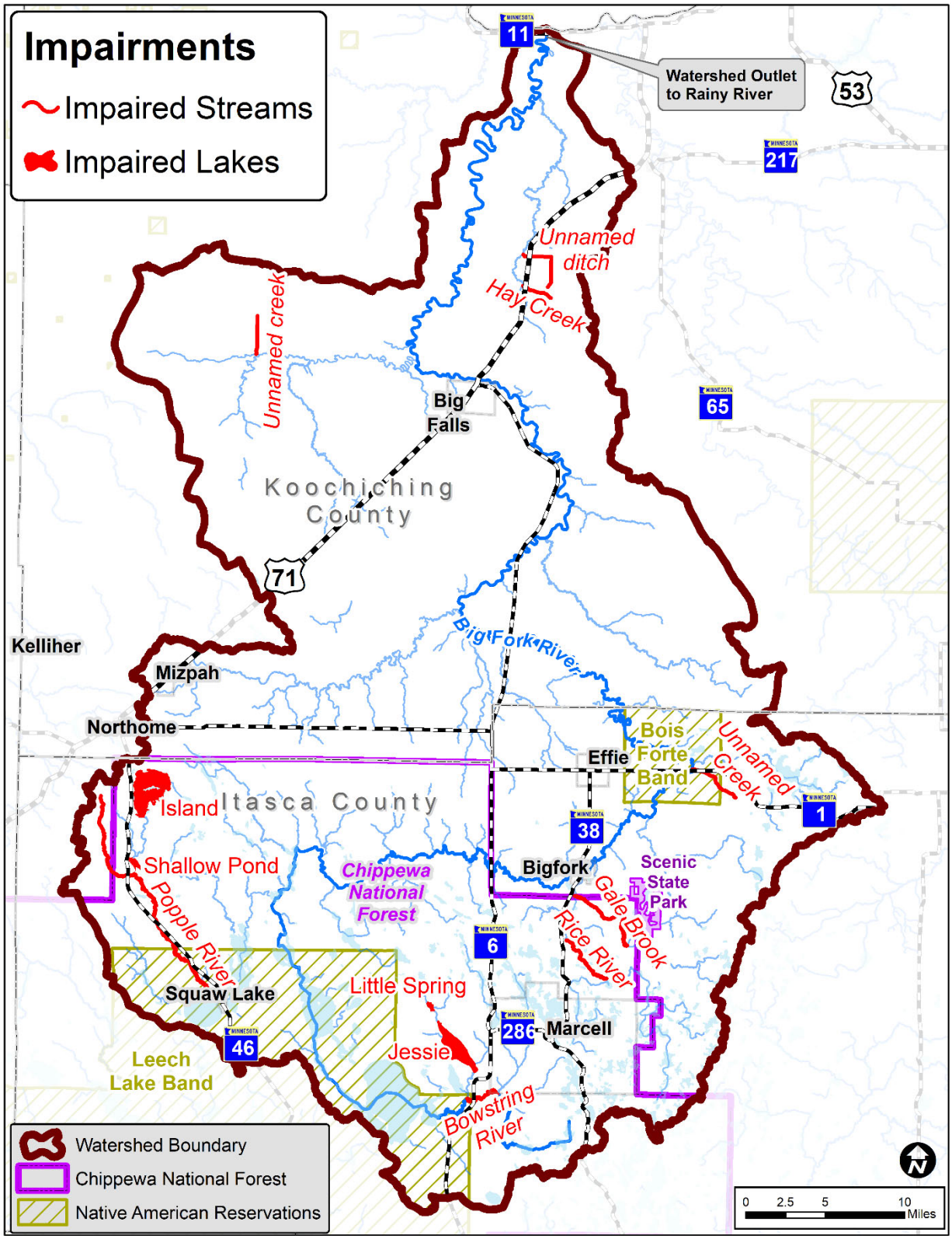

Figure 7. Impaired streams and lakes within the BFRW.

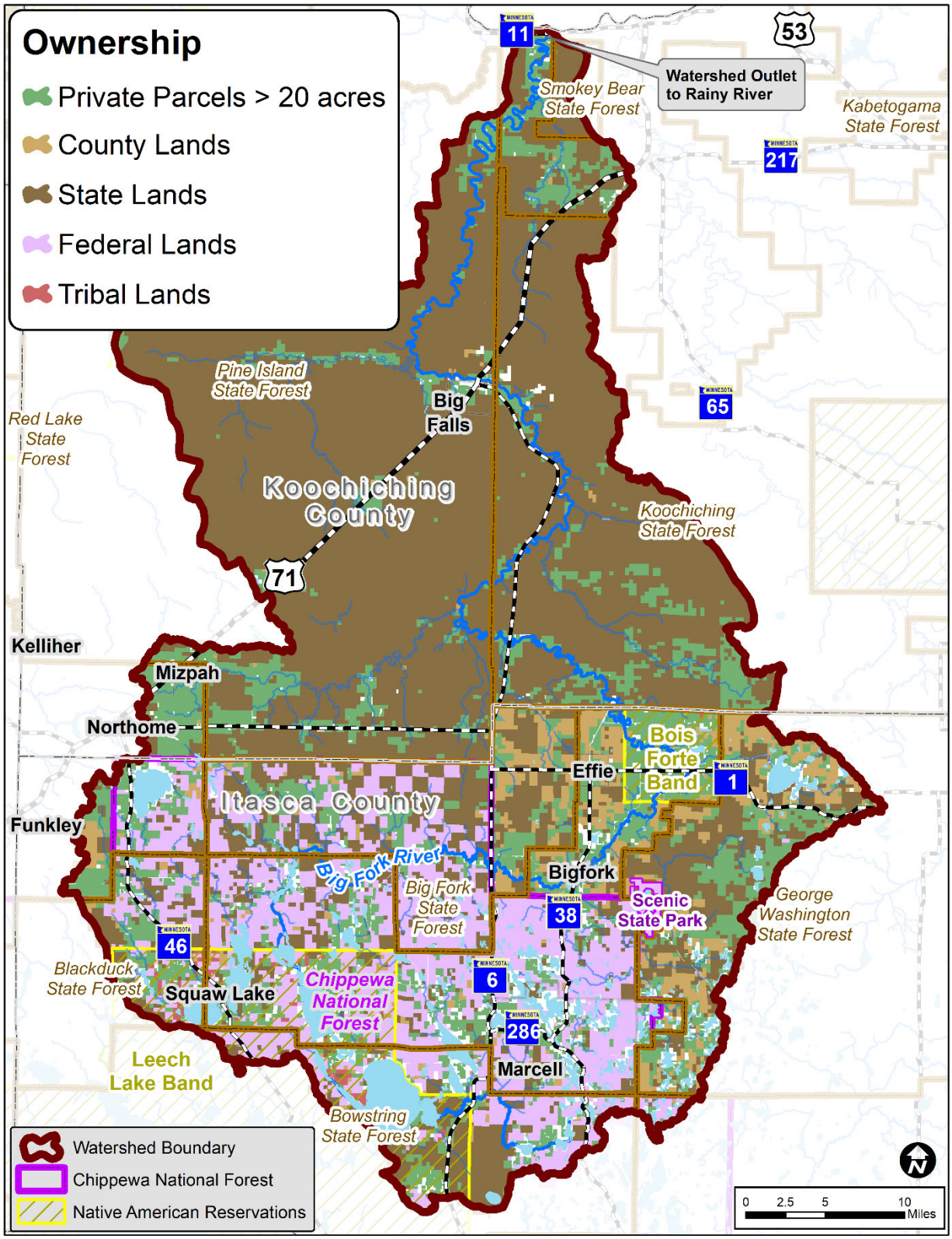

Figure 8. Ownership of land within BFRW.

References

Krause, L., McCullough, K. J., Kane, E. S., Kolka, R. K., Chimner, R. A., & Lilleskov, E. A. (2021). Impacts of historical ditching on peat volume and carbon in northern Minnesota USA peatlands. *Journal of Environmental Management*, *296*, 113090

United States Census Bureau, 2020a. Itasca County, Minnesota. https://data.census.gov/profile/Itasca_County,_Minnesota. Accessed May 2025.

United States Census Bureau, 2020b. Koochiching County, Minnesota. https://data.census.gov/profile/Koochiching_County,_Minnesota. Accessed May 2025.