Pierce County
Land Conservation Department & Committee

In Cooperation With

Pierce County Land Conservation Department
Pierce County Department of Land Management
Pierce County Nugget Lake County Park
University of Wisconsin Extension
Wisconsin Department of Natural Resources
USDA - Farm Service Agency
USDA - Natural Resources Conservation Service

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Executive Summary

The Pierce County Land and Water Resource Management Plan has been an effective document to guide conservation work since it was first developed back in 1999. This plan was revised in 2005, 2011, 2016 and is now receiving a fourth update in 2021, which will guide resource conservation work in Pierce County for the next ten years. The natural resource issues of Pierce County have seen minor fluctuations over time but, for the most part, remain consistent: nutrient and sediment delivery to our surface waters, contamination of groundwater, reduction of soil productivity and loss of prime farmland to housing and business development are still the main threats. Changes in weather cycles over the last decade are forcing everyone involved with resource protection to reexamine the most important factors contributing to runoff and nutrient loading. Improving infiltration is one of the keys to success; ground and surface water quality, agriculture productivity, recreation opportunities, public infrastructure and property values are all protected by reducing the intensity of runoff events.

There are many businesses and organizations within Pierce County that can have a positive impact on resource protection efforts since they increase our "boots on the ground". The South Kinni Farmer-Led Watershed Council, as an example, has been working since 2013 to promote conservation practices along with building relationships between farmers and the non-farm residents of their project area. Several non-governmental organizations are working in Pierce County to promote fish and wildlife habitat improvements along with expanding outdoor recreation opportunities for residents and visitors to our county. Agribusinesses and farm organizations are highly influential, valuable partners in our resource protection efforts. Based on this evidence, it is clear that building relationships and citizen engagement are other keys to successful resource protection.

Pierce County will continue to use a combination of targeted watershed efforts along with a county-wide voluntary conservation program. In order to ensure that we best use our available financial resources, conservation staff will continue to identify conservation practices that have the highest potential to provide the greatest benefit to our natural resources in sub-watersheds. Various private, local, state and federal funding sources will be leveraged to conduct the land and water conservation efforts detailed in the plan. Ongoing communication and interagency cooperation are essential if we are going to successfully implement this plan.

Our plan is organized into five major sections.

Plan Development:
Describes the plan development process and requirements, and related plans and ordinances

Resource Assessment:
Provides information about topography, and soils, agricultural land, groundwater, surface water, woodlands, wildlife and population. It also reports natural resource concerns that were identified and prioritized during the planning process.

Goals, Objectives, and Actions:
Provides a detailed implementation strategy for each of five major plan goals. For each goal, objectives and actions are identified. A separate chapter details the implementation approach for the agricultural performance standards.

Plan Implementation:
Describes how the Land Conservation Department will work with various conservation partners to implement the plan. A work plan lists partner agencies, potential financial partners, and evaluation measures for each objective.

Evaluation and Monitoring:
Describes how plan accomplishments will be tracked.

Chapter 1. Plan Development

The County Land and Water Resource Management Planning Program was created through amendments to Chapter 92.10 of the Wisconsin Statutes in Wisconsin Act 27 (the 1997-1999 Biennial Budget Bill). The Pierce County Land and Water Resource Management was initially developed in 1999, this is the fourth revision of the original plan. The plan guides the Land Conservation Department in its efforts to conserve and protect natural resources. Information and guidance are also provided for citizens, county government and state and federal agencies.

Goals are developed for individual resource concerns that were identified in the planning process. Although the resources are treated separately in the plan--they are inter-related, as are the activities designed to protect them. For example, methods used to manage forest resources affect water quality and wildlife habitat. In addition, an activity like cropland conservation planning protects both soil resources along with groundwater and surface water quality.

Plan Development Process
The purposes of the Land and Water Resource Management Planning Program are to conserve long-term soil productivity, protect the quality of related natural resources, enhance water quality, and focus on severe soil erosion problems (Chapter 92.10(2)). The Pierce County Land Conservation Committee has interpreted this purpose broadly to include priority natural resource concerns identified by the citizens advisory committee and the technical work group along with a countywide public opinion survey. The plan was not intended to include an exhaustive inventory of land and water resources in Pierce County. Most importantly the plan must address the following;

- Rely on a locally led process for plan development and implementation.
- Allow for maximum flexibility with various program grants and funding sources.

- Encourage comprehensive watershed-based efforts without excessive planning.
- Reward innovation and cost effectiveness.
- Enable integration of programs and funding sources.
- Make use of a wide variety of implementation tools
- Ensure meaningful program evaluation and accountability

Public input is critical to the plan development process. A survey of Pierce County residents and landowners was conducted in the fall of 2020 regarding natural resources issues and concerns. Respondents ranked water quality concerns, cropland soil erosion and loss of wildlife habitat as their most important concerns. When asked what services should be provided, interaction with conservation staff for conservation planning and technical assistance, financial assistance for conservation practices and opportunities to learn from peer groups were the top responses. Full results of the public input survey can be found in Appendix A.

Due to Covid-19 pandemic precautions, the citizen's advisory group did not meet face to face. Instead an on-line survey was created to solicit input from this diverse group of farmers, rural landowners, agribusiness professionals, local government officials and non-government organizations. Fifty-eight individuals received invitations to participate in the citizen's advisory group, twenty-seven people chose to assist with the resource needs survey.

Soil health, cropland erosion and rainfall intensity were identified as the issues that respondents were most concerned with. Loss of productive farmland and threats to groundwater were also high priority issues. Conservation planning, education, water quality monitoring, financial assistance for conservation practices, and farm walkovers were the top ranked services that citizens felt should be provided by Land Conservation staff. Over 70% of respondents agreed with using critical source area designations to prioritize allocations of cost sharing. A complete summary of the input received from members of the citizen's advisory group is in Appendix B.

Members of the technical advisory committee met to review the survey results, surface water and groundwater quality data, as well as conservation accomplishments from 2011 through 2020. Work plan goals were discussed, and associated objectives were established.

Landowner Notification

Landowners were notified of the Pierce County Land and Water Resource Management Plan contents in the notice for the public hearing. Landowners may receive individual determinations involving conditions on their property through a) conservation plans, b) compliance status reports, c) compliance status letters authorized under the NR 151 implementation strategy, and d) notices issued under NR 151.09 or NR 151.095.

A public hearing will be held for the Pierce County Land and Water Resource Management Plan May 27, 2021. The plan will be brought before the Pierce County Board of Supervisors following the public hearing. The plan will be submitted to the Department of Agriculture, Trade, and Consumer Protection for review and will be presented to the Wisconsin Land and

Water Conservation Board in August 2021. Upon approval from DATCP, the plan will be presented to Pierce County Board of Supervisors for their approval.

Related Plans

There are several existing plans that address specific issues or programs. The following are some plans that have been developed that also provide direction for land & water resource management.

Pierce County Farmland Preservation Plan

This plan was originally created in July of 1982 and outlines criteria for lands eligible for participation in the Wisconsin Farmland Preservation Program. Conservation standards were revised according to the state NR151 agricultural performance standards in June 2005. In 2012, Pierce County revised their plan and in 2015 the first Agricultural Enterprise Area (Pierce County Northwest AEA) was formed in Clifton, River Falls and Martell Towns. The Pierce County Farmland Preservation Standards are found in Appendix C.

There are currently 23 Farmland Preservation Program participants, mostly in the North-West Pierce County AEA, with a total of 5256 acres of farmland receiving credits in 2019. One Pierce County Township--River Falls, has a Farmland Preservation zoning ordinance.

Pierce County Comprehensive Plan

This plan was completed in 2009 as a general guide to the regulation of land use in the 17 townships of Pierce County. Its policies and plan maps are the basis for county zoning ordinances and zoning maps. All townships within Pierce County have completed their comprehensive planning process.

St. Croix River Basin Plan

The St. Croix River, its tributary streams and rivers, and Lake St. Croix are highly valued resources that provide exceptional recreational opportunities and support diverse wildlife in and out of the water. However, over the years, eutrophication, or nutrient enrichment, has occurred in Lake St. Croix due to increasing amounts of phosphorus entering the lake from the watershed. The elevated level of phosphorus in Lake St. Croix results in algae blooms which diminish the enjoyment and use of the lake and impact the ecologic integrity. Elevated phosphorus levels not only impact Lake St. Croix, but also impact tributary streams, rivers, and lakes throughout the watershed. While progress has been made in recent years to understand and reduce the amount of phosphorus finding its way into streams and lakes, much work remains. The St. Croix River Total Maximum Daily Load (TMDL) was completed in October 2012 and revised in February 2013. The Kinnickinnic River Watershed is the Pierce County's only contributing watershed to the St. Croix River Basin.

Figure 1: St. Croix Watershed

Lower Chippewa River Basin Plan

The Lower Chippewa River Water Quality Management Plan, written in 1996 (WDNR 1996), has been the basis for water resources management priorities and activities for the past five years. It focuses on water quality issues of the Lower Chippewa River basin, evaluates the controls needed for polluted runoff, and provides management and monitoring recommendations for lakes and streams. The Water Quality Management Plan includes detailed discussions of each of the 23 watersheds within the Lower Chippewa River basin, as well as 30 basin-wide, 10 groundwater and over 250 watershed-specific management recommendations. These components of the 1996 Water Quality Management Plan will continue to be used as a basis for management decisions. As updated watershed discussions and recommendations are completed, they will supersede the existing ones in the 1996 Water Quality Management Plan. The State of the Basin Report contains the most up-to-date lake and stream tables, and these supersede the tables found in the 1996 Water Quality Management Plan.

Figure 2: Wisconsin River Basins

The State of the Chippewa River Basin includes a list of concerns that very closely mirrors the concerns identified by the Pierce County Land and Water Resource Management Plan advisory groups. These include loss of habitat, excessive sediment and nutrient loading to water bodies, impacts of development, drinking and groundwater quality and education.

Basin plan objectives and activities related to these concerns also fit closely with objectives and activities in the Pierce County Land and Water Resource Management Plan.

Trimbelle River Watershed Assessment Plan

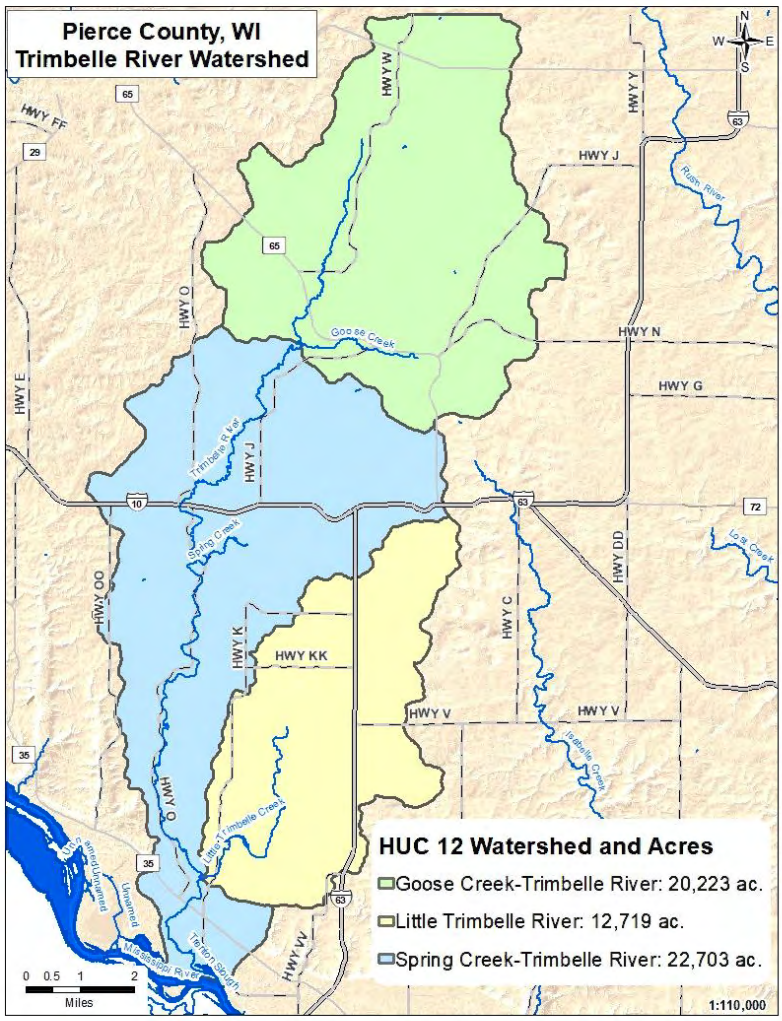


Figure 3: Trimbelle River Watershed

This watershed plan was developed in 2020 by Pierce County Land Conservation Department (LCD), in collaboration with United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) to more effectively implement conservation work on agricultural lands in the Trimbelle River Watershed. A focused effort by all conservation partners will be necessary to effectively protect this high-quality stream and its tributaries.

Dissolved nutrient levels in the waters of the Trimbelle River are elevated but fortunately have not reached levels that would cause severe impairment and jeopardize its Exceptional Resource Water (ERW) designation. Protection of this current condition will be the focus for conservation activities in the three sub-watersheds.

Healthy, well-managed cropland soils are the key to protecting and improving the water quality of the Trimbelle and Mississippi Rivers. With approximately 62% of the three sub-watersheds' (Goose Creek, Spring Creek and Little Trimbelle River) acres being cropland, farmer adoption of practices that reduce erosion, increase infiltration, and manage nutrient applications will ultimately determine the future condition of the Trimbelle River.

Rush River Watershed Assessment Plan

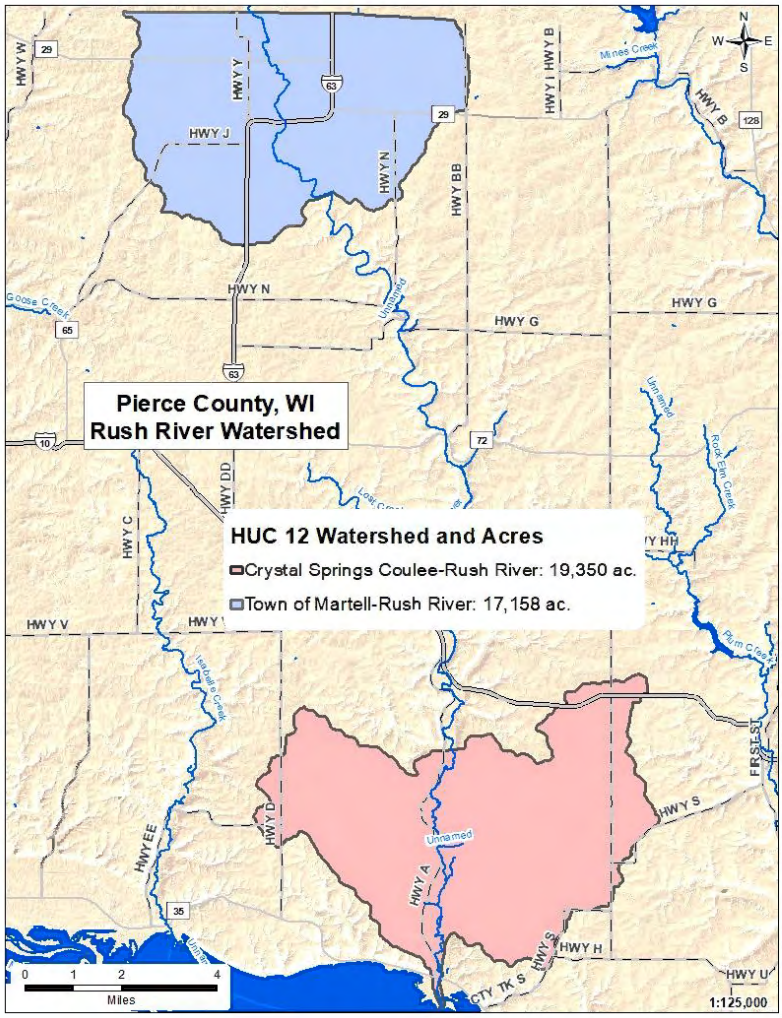


Figure 4: Rush River Watershed

This watershed plan was developed by Pierce County Land Conservation Department (LCD) in 2020, in collaboration with United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) to more effectively implement conservation work on agricultural lands in the Rush River Watershed. A focused effort by all conservation partners will be necessary to effectively protect this high-quality stream and its tributaries.

The Rush River Watershed comprises 186 square miles in the central portion of Pierce County. Agriculture is the major land use affecting surface waters in this watershed. The comparison of current land use to original vegetation shows a significant conversion of prairie and forests to cropland and pasture. This land use conversion has led to a larger volume of runoff and less infiltration of precipitation.

The Pierce County portion of the Rush River Watershed is considered a Class I trout stream and is designated an Exceptional Resource Water (ERW). The headwaters located in St. Croix County are listed as a Class II trout stream. The storm runoff to Rush River tends to be high due to the tight clay soils responsible for reducing infiltration rates. The lower section of the watershed has much steeper terrain, which also leads to rapid runoff during intense rain events. This river is not considered impaired, protection of the current conditions along with targets to improve water quality and habitat is the focus.

To improve the Class II portion of the Rush River, the stream's average temperature needs to be decreased. This can be accomplished by increasing the amount of groundwater discharging to the river. To improve groundwater discharge, best management practices should target

increasing infiltration to replenish groundwater supplies. These measures would also reduce sedimentation and turbidity in the stream. Cropland management practices to increase infiltration will greatly reduce overall volume of runoff throughout the watershed.

Pierce County Ordinances

Zoning (Chapter 240)

The zoning ordinance regulates the use of land and water in Pierce County. The ordinance applies to all unincorporated areas except for the Town of River Falls that has its own ordinance. Shoreland regulations apply in all unincorporated areas. Details of Pierce County Zoning Code can be found at https://www.ecode360.com/9819274; The ordinance establishes zoning districts, describes provisions for district maps and lists appropriate uses for each district.

Subdivision (Chapter 237)

Pierce County's subdivision ordinance regulates lot dimensions and requires appropriate roads and access for divisions and combinations of land. https://www.ecode360.com/9818180 The Land Management Committee refers erosion control provisions in preliminary plats to the Land Conservation Department and Committee.[1] The committee may condition and accept or reject the preliminary plan based upon written comments from the Land Conservation Department staff.

St. Croix Scenic Riverway (Chapter 239)

St. Croix Scenic Riverway district areas and permitting requirements for land within these areas are described. https://www.ecode360.com/9818779 Structures may not be constructed on slopes greater than 12 percent. Removal of trees and shrubs is not permitted within 200 feet of the ordinary high-water mark on the bluff face and 40 feet landward of the bluff line. Structures must be set back 200 feet from the ordinary high-water mark and 100 feet from the bluff line.

Manure Storage (Chapter 101)

The Pierce County Board of Supervisors updated the Manure Storage Ordinance in January 2011 https://www.ecode360.com/9816781. The Land Conservation Department is responsible for implementation of the manure storage ordinance. The ordinance regulates the location, design, construction, installation, alteration and use of manure storage facilities. A permit is required to construct, install, reconstruct, enlarge, or substantially alter a manure storage facility or to dispose of manure from the facility. Natural Resource Conservation Service technical standards are used to guide the construction and abandonment of facilities and the application of manure from facilities. Compliance with NR 151 Runoff Rules is required by all permitted facilities.

[1] Chapter 237-17 (C) (4).

Nonmetallic mining reclamation (Chapter 241)
The Department of Land Management administers the nonmetallic mining ordinance in Pierce County. The Land Conservation Department reviews the storm water, sediment and erosion control plans for the ordinance. https://www.ecode360.com/9820600

Shoreland Zoning (Chapter 242)
The Department of Land Management administers the shoreland zoning ordinance in Pierce County. https://www.ecode360.com/32798367

Chapter 2. Resource Assessment

Pierce County is in West Central Wisconsin. It is bordered on the west by the St. Croix River and on the south by the Mississippi River. Pierce County is bordered to the east by Dunn and Pepin Counties and to the north by St. Croix County. The total land area of Pierce County is 378,240 acres. Figure 6 illustrates land cover in Pierce County.

Figure 5: Pierce County Location Map

Topography and Soils

There are ten major soil associations found in Pierce County (see Figure 7), with surface topography and soils mostly formed by glacial activity resulting in the wide valleys, hills, and ridges which cover much of the county. Many parts of the county were covered by two separate glacial episodes, and four other glacial periods directly influenced the county with rock and silt overburden and since covered in windblown loess. There are dramatic bluffs along the St. Croix and Mississippi Rivers and steep wooded hills along the many streams of Pierce County. This steep and rolling topography creates problems with soil erosion and building placement. Furthermore, limestone rock found in many parts of the county has led to the formation of caves and caverns and led to problems with sinkholes.

A study completed in 1991 by the Cooperative Extension Service and the Wisconsin Geological and Natural History Survey studied the ability of the various soils in Pierce County to reduce pollution effects from a variety of sources. In general, the best soils for pollution reduction are mainly located in the uplands between the steep stream valleys in the southern half of the county. These soils are naturally drained and are more effective at contaminant removal. The worst locations for contaminant removal are the steep and stony hillsides of the stream valleys and alluvial lands. Because of this, forest and other cover should not be removed for cropland or development purposes from such soils. The alluvial soils of Pierce County have very poor natural drainage, while the deep sands elsewhere in the county allow water to pass through too quickly for pollutant removal.

In many locations across the northern half of the county, the bedrock is within 5 feet of the surface. Even though bedrock may be covered by 2 to 4 feet of soil that has a good capacity to attenuate contaminants, the proximity to the surface still limits the subsurface and surface land-use activities.

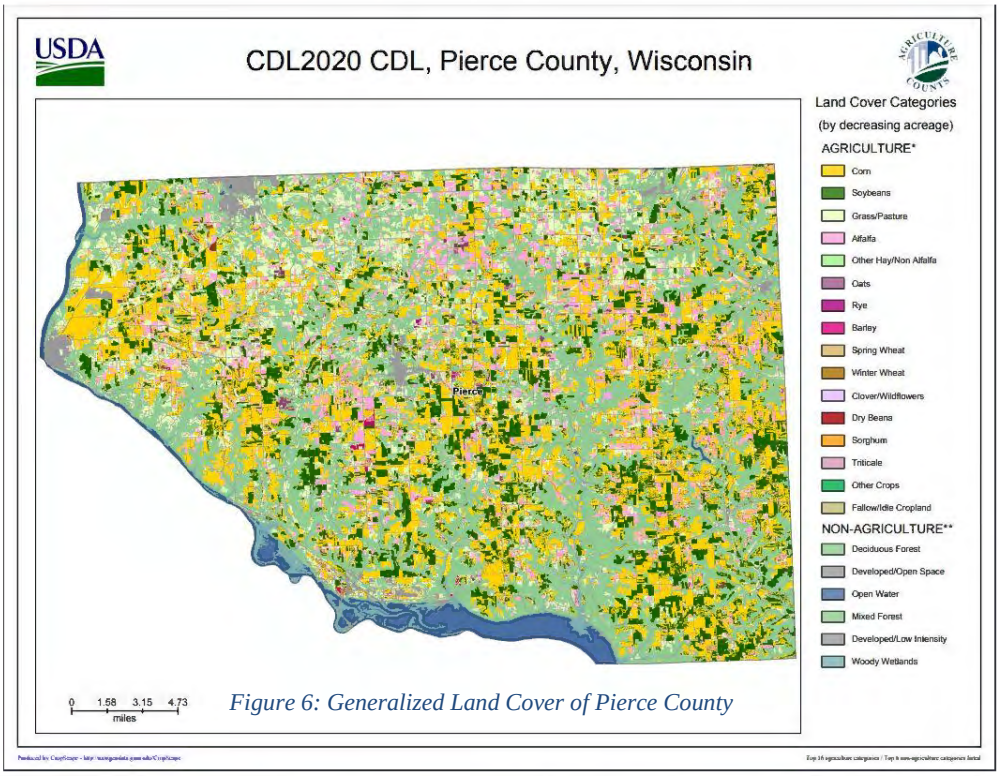


Figure 6: Generalized Land Cover of Pierce County

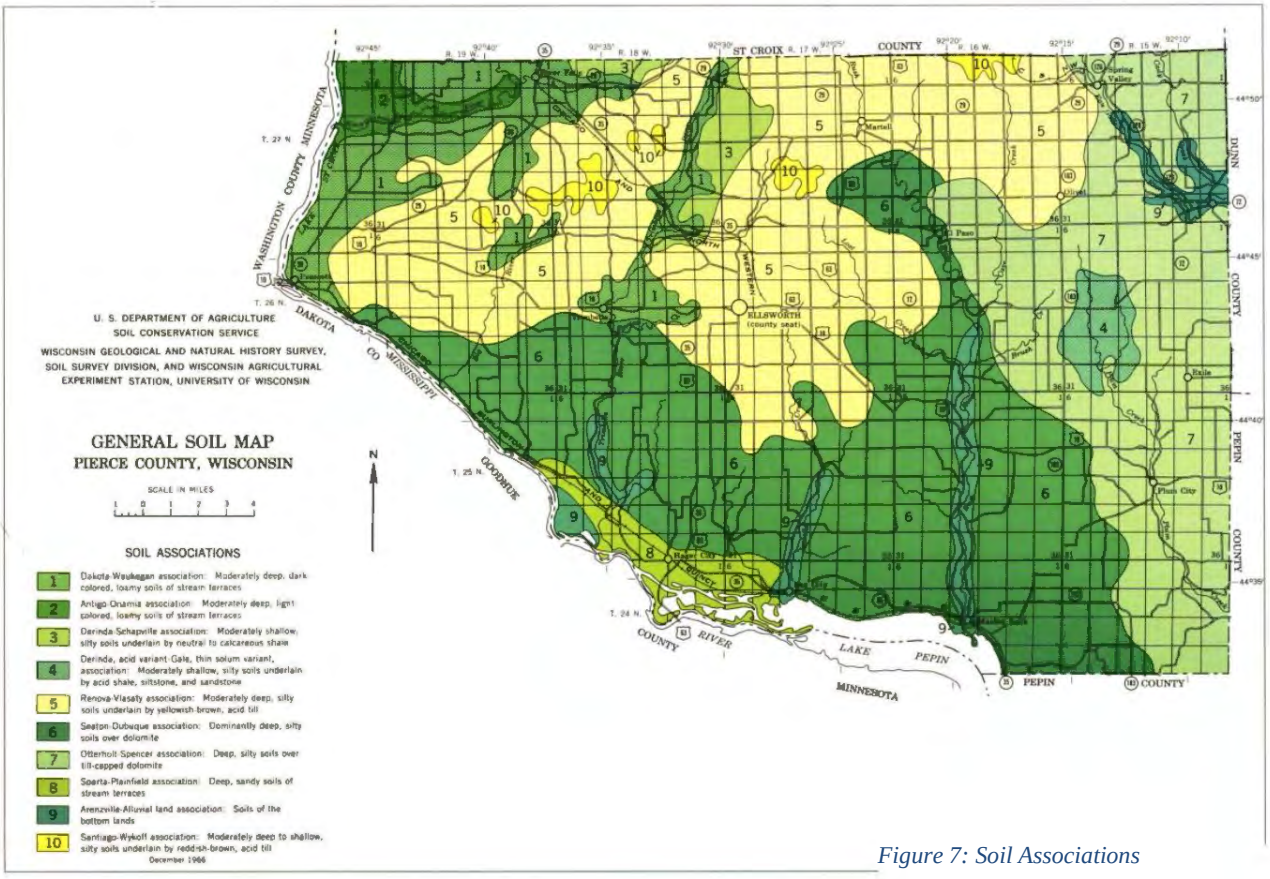


Figure 7: Soil Associations

Pierce County Soil Survey

Soil survey work in Wisconsin began in the early 1900s shortly after the inception of the National Cooperative Soil Survey. Pierce County's original soil survey was issued in May of 1968. The Pierce County Soil Survey depicts the various soil types and terrains in the county and explains various properties of these soils such as suitability for agricultural uses, tree planting, and various development uses.

According to the survey, 130,500 (34%) of Pierce County's 378,240 acres are "prime" for farming; 121,800 (32%) are ranked as additional farmland of "statewide importance;" and 70,300 (19%) are of local importance for farming. Thus, 85% of the county is potentially productive farmland. Of course, many of these parts of the county are already occupied by non-farm development such as cities, roads and rural houses.

Soil Erosion Rates

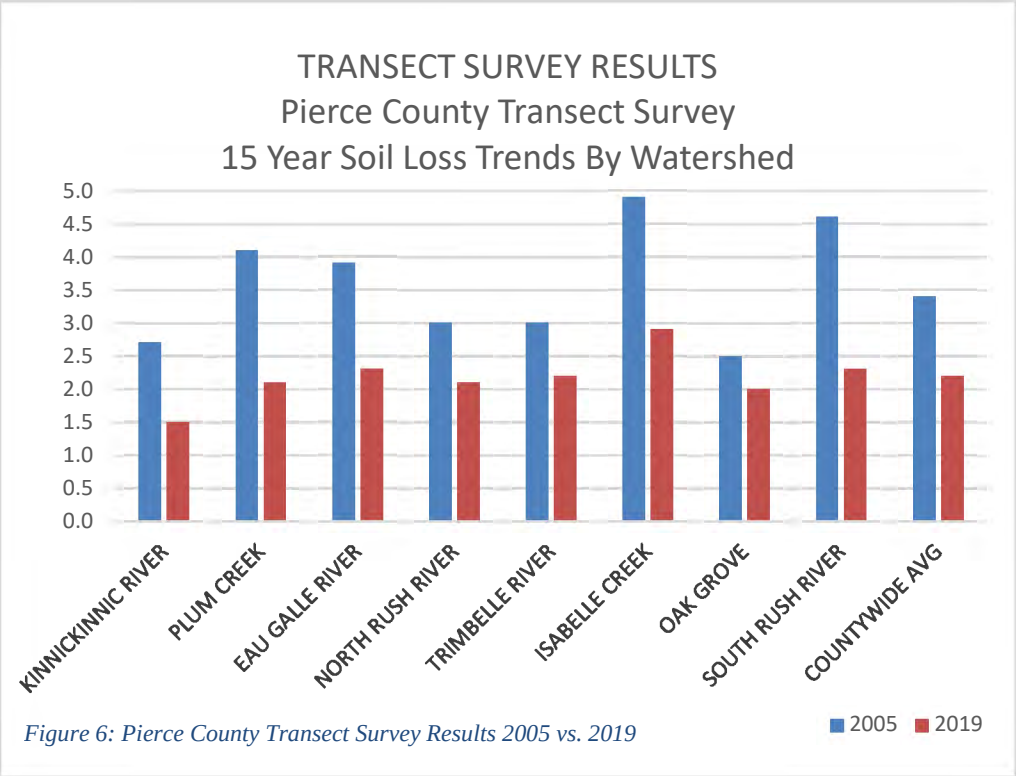


Figure 6: Pierce County Transect Survey Results 2005 vs. 2019

The Pierce County Land Conservation Department completes a countywide windshield transect survey each year. The transect survey involves collecting soils information, cropping, and tillage data at 764 pre-selected points approximately every half mile across the county. This information is used to estimate erosion rates in Pierce County.

Current estimates for countywide average soil erosion rates are 2.2 tons per acre per year. The Isabelle Creek watershed and South Rush River watershed currently have the highest erosion rates. Countywide average erosion rates have decreased considerably from the 6.74 tons/acre/year figure derived through the 1985 erosion control program planning process. The

current dominance of row crop production on highly erodible lands in Pierce County continues to challenge this downward trend in erosion rates.

Agricultural Land

The total land in farms is 233,188 acres as of 2017 ag census, this compares to 245,974 acres in 2012.[2] These lands include: cropland, pasture, and other agricultural uses including woodlands. Of the total land in farms, 166,265 acres, or 71 percent is harvestable cropland.

Clearly, agricultural land dominates the landscape in Pierce County with roughly ¾ of the land in agricultural use. With cash grain farms of all sizes dominating the acreage and significant number of livestock. There were 116 dairy farms with a total of 14,800 cows as of 2017. Like in other areas of Wisconsin, largely due to market factors, the number of dairies in the county has decreased dramatically in the past 10 years; in 2007 there were 216 dairy farms in Pierce county.

Row crop production accounts for a large portion of the total acres of crop land. In 2020 there was 88,510 acres of corn and 47,403 acres of soybeans planted in Pierce County[3]. Alfalfa acres were 32,572 and oats were planted on 3116 acres. Corn acreage has increased nearly 50% since 2002 and soybeans acreage has nearly doubled while acres in forage have predictably fallen.

Significant adoption of modern conservation farming techniques, such as no-till planting, has occurred over the past decade. If this movement continues the excellent soils of Pierce County will be protected for generations to come.

Farmland rental rates continue to fluctuate with grain prices, demand for cropland acres is extremely high. The 2017 Pierce County Farmland Rent Study showed an average rental rate of $142 per acre.[4]

Groundwater

Groundwater is the source of drinking water for all residents of Pierce County and is also important for supplying cold, fresh water to rivers and streams. Contamination of groundwater by human activity can be a severe problem because contaminants generally travel unnoticed, are difficult to remove and may persist for decades. Water percolating through the soil or conduits such as improperly sealed wells can pick up human-made pollutants and transport them to the groundwater. Groundwater contamination comes from a variety of sources including leaking underground petroleum pipes and tanks; use and storage of road salt;

[2] 2019 Census of Agriculture
[3] 2020 USDA Cropscape
[4] 2019 Census of Agriculture

improper use, disposal, and storage of hazardous materials and mismanagement of fertilizers, pesticides, and animal waste. Figure 9 depicts the susceptibility for groundwater contamination throughout Pierce County.

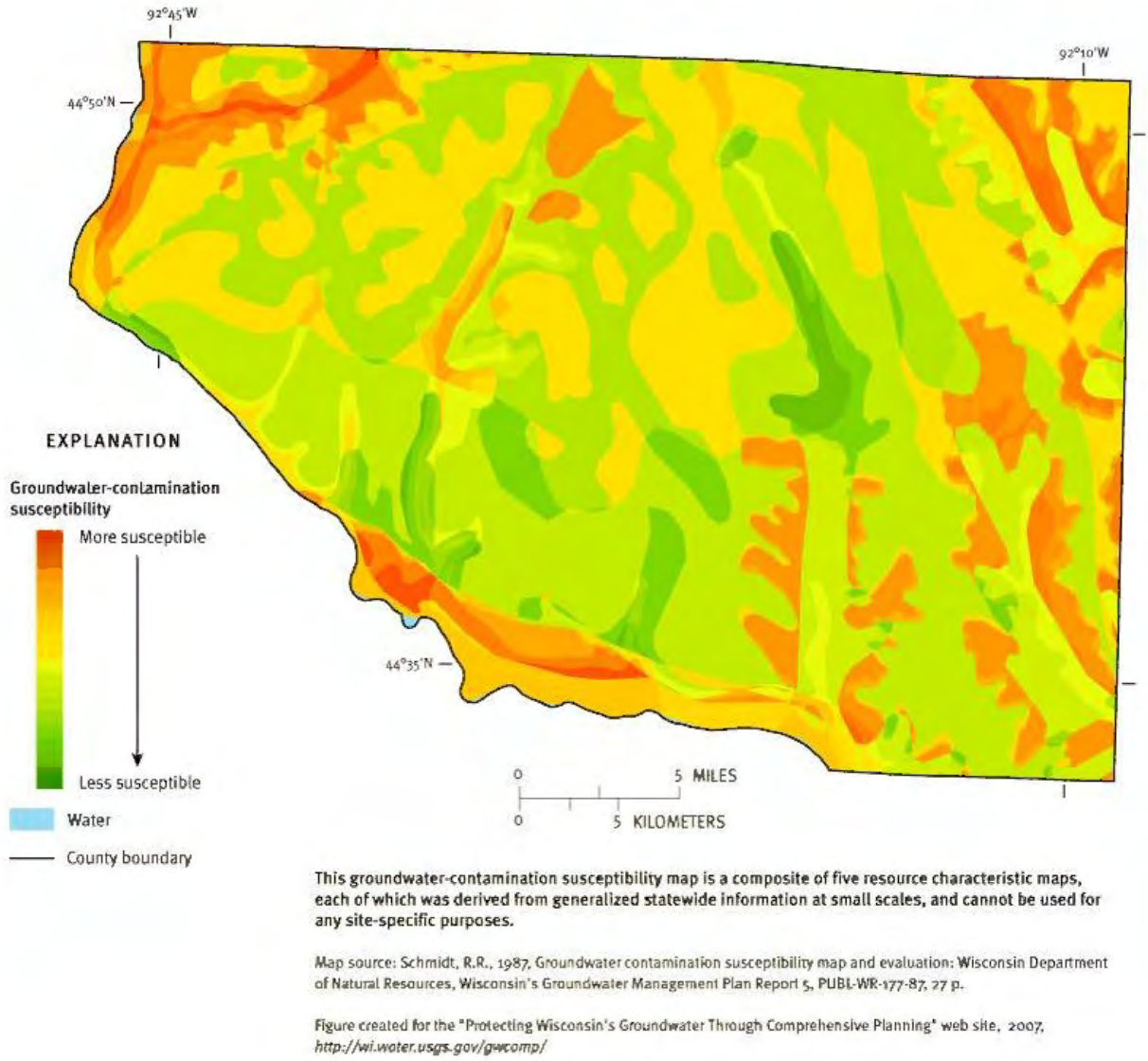


Figure 7: Pierce County Groundwater Contamination Susceptibility Analysis

Drinking Water Testing Results

Pierce County conducted the first comprehensive study of the groundwater resource in Pierce County from 1988-90. The study identified 537 drinking water wells in the county based upon the well construction reports and geographic distribution throughout the county. The analysis included measurements of nitrates, pH, hardness, electrical conductivity, chlorides, sulfates and alkalinity. At that time, 10.6% of the samples exceeded the health advisory standard of 10 mg/l for nitrates.

In 2019, Land Conservation & Public Health Department staff initiated a new well water sampling program to obtain a new data set of nitrate levels in Pierce County's private wells. The program was designed to offer well water analysis (UWSP groundwater center Homeowner's package) at a 50% cost share rate, with funding provided by the Pierce County Board of Supervisors. Residents of Clifton, Oak Grove and River Falls townships were offered participation in the sampling program. Population density, soil types and past survey data were factors for selecting these areas first. Five more townships were selected for sampling in 2020, but due to the Covid-19 pandemic, the program was suspended for the year. Plans are in place to continue the sampling program until all township residents have been offered participation. Pierce County Public Health Department collects drinking water samples from establishments, with private wells, that are open to the public. This data set provides a multi-year trend of nitrate levels throughout the county. The sample results of this sampling effort show nitrate level vary greatly from un-detectable levels to over 1.5 times the health advisory standard of 10 mg/l for nitrates.

Surface Waters

River basins and watersheds are the management units used by the WI DNR and other state and federal agencies. The surface waters of Pierce County occupy two major basins of West Central Wisconsin – the St. Croix and the Lower Chippewa. Watersheds are the subsets of each basin. Figure 10 illustrates watershed boundaries and the major surface water features within each basin.

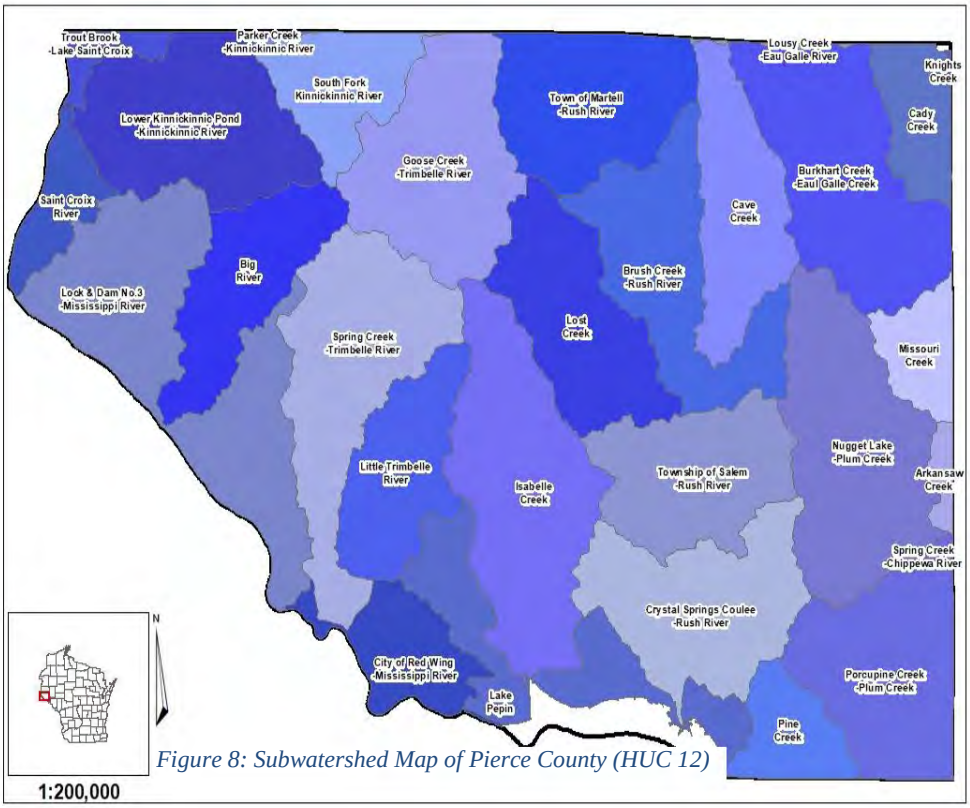


Figure 8: Subwatershed Map of Pierce County (HUC 12)

Pierce County has approximately 2,000 miles of streams, but only about 27 percent of them are perennial or continually flowing. The remaining intermittent streams play an important role in surface water quality by delivering runoff water seasonally. There are 33 inland lakes or ponds covering 387 acres in Pierce County. Thirteen of the lakes are associated with the backwaters of the Mississippi River. There are two man-made impoundments, Nugget Lake and the Spring

Valley Reservoir. Nugget Lake (116 acres) is created by the Nugget Lake Dam which is maintained by the Pierce County Land Conservation Department. The Eau Galle Dam maintained by the U.S. Army Corps of Engineers, creates the 126-acre Spring Valley Reservoir. The majority of the Spring Valley Reservoir is in St. Croix County.[5]

Pierce County has numerous high gradient coulee trout streams. Most contain naturalized brown trout, native brook trout, or stocked brown trout in moderate to high-density populations. Department of Natural Resources records show that Pierce County trout streams have improved substantially during the past 40 years.[6] In 1980, Pierce County had 17 trout streams for a total of 97 miles.[7] By 2002, there were 47 trout streams for a total of 159 miles and Class I trout streams increased from 11 miles to 47.7 miles and Class II streams increased from 55 miles to 108 miles. The most recent information from Wisconsin DNR, shows 109 miles of Class I trout streams and 95 miles of Class II trout streams in the area.[8]

Nonpoint Source Pollution

Runoff from urban and agricultural land is a source of water quality impairment to lakes, rivers and streams. Runoff from intensive row crop farming, heavy fertilizer applications (both residential and agricultural) and poor manure management practices contribute to increased plant and algal growth in lakes and streams and may lead to fish kills from oxygen depletion. A limited number of barnyards still exist that negatively impact stream banks.

Sediment Loads

Historically agricultural soil erosion from fields led to heavy deposition of fine sediment in streambeds. Excessive bank erosion in wooded and heavily pastured areas continues today. Gully and sheet erosion from agricultural fields also contribute to the current problem. Sedimentation of streams results in the loss of deep-water fish habitat and declines in spawning habitat and stream productivity. Additionally, construction site erosion from urban growth may impact sedimentation. Conservation practices such as stream bank restoration, rotational grazing, fencing, buffer strips and controls on construction site erosion can be taken to reduce active bank erosion and reduce the impact of fine sediment to streams.

Urbanization Impacts on Groundwater Recharge

Several cold-water streams in Pierce County are threatened by urban growth and associated increases in impervious (hard) surfaces. As impervious surface increases in a watershed, groundwater recharge and spring water outflow is reduced while floodwater flow increases. Loss of spring flow weakens cold-water flows that support cold-water fish communities. Best

[5] Wisconsin Department of Natural Resources. Surface Water Resources of Pierce County.
[6] Unpublished DNR files, Rush 2000, Plum Report 1999.
[7] Wisconsin Trout Streams. DNR 1980.
[8] Wisconsin Trout Streams. Wisconsin Department of Natural Resources. 2002, 2021.

management practices to reduce impervious surfaces are important to protect and improve cold-water trout streams. Of note high-capacity groundwater withdrawals for agriculture, drinking and industrial use could also contribute to declines in spring flow.

Water Classification

Outstanding and exceptional resource waters are protected through Department of Natural Resources (DNR) regulation. These waters may not be lowered in quality due to DNR permitted activities, such as wastewater treatment plants. The St. Croix River, on Pierce County's western border and the Kinnickinnic River, are Outstanding Resource Waters (ORW). Class 1 trout streams designated Exceptional Resource Waters (ERW) include the 47.7 miles of Trimbelle and Rush Rivers along with Cady Creek. Class 1 trout streams include a portion of the Big River, Cave Creek, Lost Creek, Pine Creek and Plum Creek.

The impaired waters list, also known as 303(d) listed waters, was created by the Department of Natural Resources in 2004. The list, required by the Environmental Protection Agency under the Clean Water Act, identifies water bodies that do not meet water quality standards. The Eau Galle River, Porcupine Creek, Lake George and Lake Pepin are on the 303(d) list because of total phosphorus. Missouri Creek is 303(d) listed for sediment/total suspended solids. A total maximum daily load (TMDL) was approved for the St. Croix River Basin in 2012 to identify the amount of pollution the watershed can receive while still maintaining water quality standards.

The Mississippi River is also 303(d) listed for PFOS contamination and PCB contamination in fish tissue. [9]

Watershed and Lake Evaluations

Wisconsin initiated a process to rank watersheds for nonpoint source problems in the mid-to-late 1980s to identify high priority areas under the state's Nonpoint Source Pollution Abatement Program. As management of nonpoint source problems has changed, so has the nonpoint source ranking process.

Currently, the DNR ranks every stream and lake according to 1) expressed impacts from nonpoint source pollution and 2) the waterbody's potential response to best management practices.

The DNR uses these watershed and waterbody rankings for several purposes: 1) to identify priority areas for best management practice implementation 2) to help guide funding decisions under nonpoint source related programs and 3) to convey nonpoint source priority areas to counties for county land and water planning, specifically work tasks and other activities related

[9] Wisconsin DNR Impaired Waters List 2021

to BMPs and performance standards implementation.[10]

Individual lakes are also ranked during the development of some of the DNR water basin plans. A high ranking indicates that the lake has documented problems or threats related to water quality and is likely to be responsive to watershed protection efforts. None of the lakes in Pierce County ranked high in these plans.

An analysis of surface water quality can be found in the DNR's Lower Chippewa River Basin Plan and St. Croix River Water Quality Management Plan. A synopsis of reports for the eight major Pierce County Watersheds follows. DNR fisheries biologist, Kasey Yallaly, provided updates to the published watershed reports in the basin plans for this plan.

Plum Creek Watershed (LC02)
Length: 26 miles with 11.7 miles of Class I trout water in Pierce County and 8 miles of Class II trout water in Pepin County
Mean Stream Width: 9.4m
Gradient: 21.4 ft/mi
Base Flow Stream Discharge: 0.826 cms
Stream Order: 4
Natural Community: Coldwater, Cool-Cold Headwater, Cool-Warm Headwater

Overview: Fishery and Habitat
Plum Creek is a medium sized tributary to the Chippewa River. It originates in eastern Pierce County and flows south easterly into Pepin County where it reaches the Chippewa south of Ella. Plum Creek drains wooded and agricultural highlands. It is a clear water stream with moderate flooding. Originally a brook trout stream, degradation of the watershed eliminated the majority of trout and Plum Creek was managed as a warm water forage stream for many years. In 1972 Nugget Lake, located north of Plum City, was completed as a multipurpose reservoir on Plum Creek. It was built to provide flood control and recreational opportunities. The 50-foot head on the reservoir also created a significant increase in colder water upwelling a short distance downstream from the dam. This eventually led to restoration of the trout fishery downstream from Nugget Lake Dam (Lower Plum). Plum Creek (CTH U upstream to Nugget Lake) was recommended for Class II B designation in 1977. A comprehensive watershed survey conducted in 1999 found major improvements in trout density and natural reproduction in Lower Plum Creek. Trout stocking was stopped, and all waters in Pierce County downstream from Nugget Lake were reclassified as Class I trout water in 2002.

The 2018 assessments of Plum Creek (mouth with Chippewa River to HWY SS (mile 7.23)) showed impairment by phosphorus; new total phosphorus sample data exceeded the 2018 WisCALM listing criteria for the Fish and Aquatic Life use. However, available biological data did not indicate impairment (i.e. no macroinvertebrate or fish Index of Biotic Integrity (IBI) scored

[10] From DNR website http://dnr.wi.gov/org/water/wm GLWSP/NPSRANK Last revised: January 2004.

in the "poor" condition category). Based on the most updated information, this water was proposed for the impaired waters list.

Eau Galle River Watershed (LC03)
Eau Galle River
Length: 39.2 miles with 5.5 miles of Class III water and 21.3 miles of Class II trout water
Mean Stream Width: 16.6 m Gradient: 4.2 m/km
Base Flow Stream Discharge: 3.71 cms
Stream Character: Coldwater/Cool-Cold Stream Order: 4th & 5th order
Year Last Monitored: 2019
General Condition: Poor *(this river is impaired)*
Pollutants include: Total phosphorus

Overview: Fishery and Habitat
The Eau Galle River is a large trout stream flowing through St. Croix, Pierce, and Dunn county into the Chippewa River. It originates north of Spring Valley Reservoir. There are 2 impoundments along the river which produce warmer thermals below the dams. The water cools quickly as it flows downstream and is influenced by springs, groundwater, and cold-water tributaries. The watershed consists mainly of agricultural lands, woods, and wetland. There is a lack of pool and riffle structure especially in the lower reaches of the classified trout water contributing to low trout density. The main limiting factor is lack of fish cover and extensive fine sediments in the substrate. The 4.5 miles of Class III trout water above Spring Valley Reservoir were recently upgraded to Class II trout water in 2021.

The 10.1-mile stretch of Class II trout water below Spring Valley is threatened by turbidity, natural erosion, and streambank grazing. The 1.8-mile section of Class III trout stream below Spring Valley was also recently upgraded to Class II trout water in 2021 because of recent surveys. The levels of ammonia coming from the Spring Valley wastewater treatment plant has the potential to affect the fishery during low flows. WDNR is revising its standards and policies for ammonia and will apply any necessary limits to the Spring Valley WPDES permit.

Cady Creek (Tributary to Eau Galle)
Cady Creek is a medium sized cold-water tributary of the Eau Galle River. Its watershed begins in southeastern St. Croix County and it flows south through the northeastern corner of Pierce County until it enters the Eau Galle River in the Village of Elmwood in Dunn County. Cady Creek is a coulee type stream that drains steep hilly woods and agricultural land. It is designated as an Exceptional Resource Water (ERW) which prohibits any new point source effluent discharge that contains compounds in excess of normal levels found in Cady Creek. Cady Creek is a popular fishing destination because of its robust trout population and scenic beauty. Fish habitat ratings were good in Cady Creek. A high percentage of fine sediments are found throughout the stream substrate. Although there is a lack of pools in Cady Creek as well, cover for adult trout is fairly common as habitat rehabilitation has been done on approximately 5 miles of stream. Stream bank buffers are very good, and erosion is light, except at the lower

end where some severe erosion exists. Perpetual conservation and fishing access easements protect 3.6 miles of Cady Creek.

Rush River Watershed (LC22)

The Rush River Watershed comprises 245 square miles in Pierce and St. Croix Counties. Agriculture is the major land use affecting surface waters in this watershed. The comparison of current land use to original vegetation shows a significant conversion of prairie and forests to cropland and pasture. This land use conversion has led to a larger volume of runoff and less infiltration of precipitation. The storm runoff to Rush River tends to be high due to the tight clay soils responsible for reducing infiltration rates. The Rush River begins in southern St. Croix County as a warm water forage fishery. As more springs add cold water to the river, the lower three miles in St. Croix County are designated as Class III trout water. More springs exist at the border with Pierce County, which aids in survival and recruitment of trout. No stocking has occurred in the watershed since 2000. In recent decades, water temperatures have improved, and the St. Croix county section has been upgraded to Class II trout water while the Pierce County section has been re-classified to Class I. The Class I portion is designated as an exceptional resource water (ERW) in NR 102. The ERW designation requires that all new point sources must have discharge limits as stringent as the water quality found in the Rush River, unless the discharge is needed to correct an environmental problem. The Rush River is normally a dry run above the city of Baldwin except during storm runoff. The storm runoff tends to be severe and highly turbid due to cropping of clay soils. This direct connection between ground and surface water is potentially very hazardous to groundwater quality. While the river most likely always floods during storms, continued farming has decreased infiltration, which reduces the amount of groundwater entering the Rush River from its numerous springs.

The Rush River is an excellent Class I trout stream with high angler use and fast trout growth rates, but severe and frequent flooding and loss of spring flow threaten this resource.

General Condition

The Rush River was assessed during the 2018 listing cycle; new biological (macroinvertebrate Index of Biotic Integrity (IBI) scores) sample data were clearly below the 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. This water was meeting this designated use and was not considered impaired.

Watershed Characteristics

Rush River is located in the Rush River watershed which is 289.57 mi^2. Land use in the watershed is primarily agricultural (42.10%), forest (24.30%) and a mix of grassland (23.40%) and other uses (10.10%). This watershed has 599.35 stream miles, 191.91 lake acres and 2,372.17 wetland acres. Tributaries include Lost Creek, Cave Creek and Brush Creek

Lost Creek

Length: 5.6 miles of Class I trout water
Mean Stream Width: 6.7m
Gradient: 5.57m/km

Base Flow Stream Discharge: 0.65cms
Stream Character: Cold water; Cool-Cold Headwater
Stream Order: 4
Habitat Rating: Good to Excellent
IBI Rating: Good

Overview
Los Creek is a major tributary of the Rush River. It is located east of the Village of Ellsworth. It is a Class I brook and brown trout stream. It is spring fed with a moderate gradient and coulee type characteristics. It is subject to flash floods and unstable sediment loads and has unstable banks and moderate upland erosion. Fish habitat ratings are Good in the majority of Lost Creek to Excellent in the headwaters. Lost Creek is well buffered and bank erosion is low. It has a lack of pools and bends, but riffles are common. Fine sediments are not problematic in Lost Creek. There is a lack of adult fish cover, however, likely due to the effects of flash flooding which frequently alter the streambed.

Trimbelle River
Length: 21.1 miles of Class II trout water
Mean Stream Width: 7.4 m
Gradient: 17.9 ft/mi
Base Flow Stream Discharge: 0.99 cms
Stream Character: Cold Main stem
Stream Order: 4
Habitat Rating: Fair– Good
IBI Rating: Poor– Fair

Overview
The Trimbelle River is a medium to large cold-water stream in Pierce County. Its headwaters begin in the north central part of the county east of the City of River Falls. It flows in a south westerly direction until it reaches the Mississippi River in Trenton Slough near Hager City. Most of the Trimbelle is known as an Exceptional Resource Water. It is a coulee type stream prone to flooding. The Trimbelle drains mainly agricultural lands and wooded hills. Upstream of CTH W, the Trimbelle is a small wetland cool water stream. It transitions into a cold-water stream as groundwater influence increases downstream of CTH W. Fish habitat rankings tend to be Fair throughout the Trimbelle except where habitat restoration has occurred. These sites ranked Good. Bank erosion varies from light to heavy. Erosion, fine sediments and the lack of pools are especially problematic upstream of STH 10. The lack of fish cover is a limiting factor for trout. Class II tributaries of the Trimbelle include: Little Trimbelle River (WBIC: 2447100), Spring Creek (WBIC: 2447200) and Goose Creek (WBIC: 2447300).

General Condition
The entirety of the Trimbelle River is classified as an Exceptional Resource Water and a Class II Trout water. This water was assessed during the 2018 listing cycle. The portion from the mouth to Little Trimbelle Creek was assessed during the 2018 listing cycle; new total phosphorus and

biological (macroinvertebrate Index of Biotic Integrity (IBI) scores) sample data were clearly below 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. The portions from Little Trimbelle Creek to to CTH W was assessed during the 2018 listing cycle; new temperature sample data were clearly below the 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. This water was meeting this designated use and was not considered impaired.

Watershed Characteristics
Trimbelle River is located in the Trimbelle River and Isabelle Creek watershed which is 221.40 mi². Land use in the watershed is primarily agricultural (40.70%), forest (26.30%) and a mix of grassland (22.90%) and other uses (10.10%). This watershed has 467.20 stream miles, 1,912.55 lake acres and 3,854.20 wetland acres. Sub-watersheds include Little Trimbelle Creek, Isabelle Creek, and Big River.

Little Trimbelle Creek
Length: 5.3 miles with 5.3 miles of Class II trout water
Mean Stream Width: 5.7m
Gradient: 25.5 ft/mi
Base Flow Stream Discharge: 0.13cms
Stream Character: Coldwater
Stream Order: 3
Habitat Rating: Fair at St. 1 & 3 (2005)
IBI Rating: Good at St. 2 (2012)
Overview

Overview
Little Trimbelle Creek is a spring fed tributary to the Trimbelle River. Its headwaters begin near the City of Ellsworth in central Pierce County. It then flows southwest to the Trimbelle River just north of STH 35. The Little Trimbelle is a coulee type stream with significant flooding problems because of steep hills in the watershed. Fish habitat ratings in 2005 were Fair at Stations 1 and 3. Bank erosion is moderate, and substrate consists of fine sediments interspersed with cobble and gravel. There often is a lack of suitable cover for adult and quality size trout. Little Trimbelle Creek has numerous unnamed intermittent streams entering along its length.

Isabelle Creek
Length: 13 miles with 7.6 miles of Class II trout water and 3 miles of Class III trout water
Mean Stream Width: 6.4m
Gradient: 4.9m/km
Base Flow Stream Discharge: 1.7cms
Stream Character: Cold water Stream Order: 4
Habitat Rating: Fair to Good
IBI Rating: Very Poor to Good

Overview

The headwaters of Isabelle Creek originate within the town of Ellsworth in Pierce County and flows for about 13 miles before discharging into the Mississippi River at Bay City. From its mouth to 7.6 miles upstream Isabelle Creek is considered a Class II Trout stream. Further upstream is classified as a Class III Trout water.
Isabelle Creek is a medium sized stream located in southern Pierce County. Its headwaters begin in the Village of Ellsworth where continuous flow is maintained by effluent from the wastewater treatment plant and the Ellsworth Creamery until it reaches substantial spring input in the vicinity of CTH V. Isabelle Creek continues to flow south until it discharges into the Mississippi River in Bay City. It is a typical coulee-type stream. The watershed mainly consists of agricultural lands and hilly woodland. Flash flooding is common and results in high upland soil erosion rates and unstable substrate in the stream bed. Fish habitat ratings vary from Fair to Good. The majority of Isabelle is rated Good. Habitat is Fair at Stations 1 and 6. Stream bank buffers are good throughout and bank erosion is minimal until the headwaters upstream of Station 8, where it becomes moderate to severe. Bends and pools are uncommon and adult fish cover is rare.

Big River
Overview
Length: 11 miles with 5.5 miles of Class I and 2.6 miles of Class II trout water.
Mean Stream Width: 4.3 m
Gradient: 5.9 m/km
Base Flow Stream Discharge: 0.322 cms
Stream Character: Cold water, Cool – Cold Headwater
Stream Order: 3
Habitat Rating: Fair – Good
IBI Rating: Good -Poor above USH 10

Fishery Overview
Brown trout were found at both stations 2 and 5 during the 2016 survey. No presence of brook trout was noted. Lengths of brown trout ranged from 2.2 to 14.2 inches. At least three-year classes were sampled at station 2. Moderate natural reproduction was found in this station. Reproduction of trout tends to fluctuate naturally, with 2015 having excellent reproduction. That year class was reflected in the large numbers of 6-8-inch fish that were sampled in the 2016 survey (Figure 1). Density of fish 5 inches and greater was in the 95th percentile (CPE 920/ mi.) of streams in the Western Corn Belt/Driftless ecoregion, but the density of trout 9 inches and larger was very low at CPE 82/ mi. (21st percentile). Station 5 showed no evidence of reproduction and had a low/ moderate density of adult fish at CPE 177/ mi. (77 percentile) in the 2016 survey. Trout sampled at this site were in the 6 –9-inch range. Low density reproduction was found in a past survey here (Big River Watershed Survey, 1999 WDNR). The cold-water Index of Biotic Integrity (IBI) was Good for station 2 and Poor for station 5 (Table 2). Station 2 had only cold-water species present with the exception of one white sucker. High quality cold-water streams usually have few species Stream Classification Report BIG RIVER WBIC: 2447600 Pierce County Class I & II Trout Stream Trout Fishing Regulation 3 in total Brown

and Rainbow Trout over 12"; Brook Trout over 8" STOCKING RECORDS: In 1990 -91 brook trout fingerlings were stocked for experimental reintroduction. No stocking is currently being done. Figure 1 Length distribution DRAFT present. This station's rank was lowered by having naturalized brown trout as the top predator. Station 5 is in the Class II segment of Big River and has less cold-water influence. Fewer trout, more minnow species and species that are tolerant were found here resulting in a lower rank. A ranking of Poor indicates that major environmental degradation has been experienced. This station may become partially dry or experience very low flow in periods of drought.

Kinnickinnic River
Length: 25 miles of Class I trout water.
Mean Stream Width: Lower River-16.3 m; Upper River-9.3 m
Gradient:1.1 m/km
Base Flow Stream Discharge: 3.52 cms
Stream Character: Cool-Cold Mainstem
Stream Order: 5
Habitat Rating: Fair to Good
Coldwater IBI Rating: Fair to Good

Overview
The Kinnickinnic River is an Outstanding Resource Water located in St. Croix and Pierce Counties. It is considered one of the best brown trout streams in the Midwest. This medium to large size stream is often referred to as the "Kinni". It originates from a series of springs upstream of Interstate 94 in central St. Croix County and flows through the City of River Falls into Pierce County and eventually enters the St. Croix River south of the City of Hudson in Kinnickinnic State Park. The watershed upstream of River Falls (Upper Kinni) is primarily in row crop agriculture with scattered wetlands and wooded hills. This area is becoming increasingly residential. As the Kinnickinnic River flows through River Falls it is subject to urban impacts such as storm water runoff, sewage treatment plant discharge and the effects of two shallow impoundments which have power generating dams. Downstream of River Falls (Lower Kinni) the gradient increases and the river changes character, flowing through a deep canyon with steep wooded bluffs. Classified trout water ends approximately 0.7 miles upstream (at Devil's Den near Station 1) where the stream becomes sluggish before entering the St. Croix River. Fish Habitat Ratings varied from Fair to Good throughout the river. The sites with Fair ratings tended to have more fine sediments, fewer riffles and sometimes less fish cover. The Upper Kinni sites rated Fair also had more bank erosion. The Kinnickinnic River is fed by many springs and tributaries throughout the watershed. Classified and named tributaries include Parker Creek (WBIC: 2604700), Kelly Creek (WBIC:2604600), Nye Creek (WBIC:2604500), Ted Creek (WBIC:2604400), South Fork Kinnickinnic River (WBIC:2603100) and Rocky Run (WBIC:2602400). There are numerous classified unnamed tributaries that drain directly into the main stem. (See Kinnickinnic River Fishery Report 2015 for more details).
The Kinnickinnic River was assessed during the 2018 listing cycle; new total phosphorus sample data were clearly below the 2018 WisCALM listing thresholds for the Fish and Aquatic Life use. This water was meeting this designated use and was not considered impaired.

Watershed Characteristics
Kinnickinnic River is located in the Kinnickinnic River watershed which is 206.08 mi². Land use in the watershed is primarily agricultural (47.30%), grassland (25.40%) and a mix of forest (19.40%) and other uses (7.80%). This watershed has 283.63 stream miles, 508.55 lake acres and 1,305.73 wetland acres. Tributaries include South Fork, Rocky Branch & Parker Creek.

South Fork Kinnickinnic River
Length: 4.5 miles of Class II trout water.
Mean Stream Width: 6.0 m
Gradient: 42 ft/mi
Base Flow Stream Discharge: 0.34 cms
Stream Character: Coldwater
Stream Order: 3
Habitat Rating: Fair
IBI Rating: 1-2: Good 3: Exc 4: V. Poor

Overview
South Fork Kinnickinnic River is a small spring-fed tributary to the Kinnickinnic River. Its headwaters begin in southern St. Croix County and it flows west through northern Pierce County where it reaches the Kinnickinnic River in the City of River Falls. The South Fork flows mostly through agricultural lands, restored prairie habitat and urban landscapes. Part of the South Fork is owned by the State of Wisconsin and is managed as a Fishery Area. The last mile of the South Fork runs through the UW-River Falls campus and a rocky canyon before entering the Kinnickinnic River just below the dam on Lake George. There is a twenty-foot waterfall just upstream of the mouth that prevents brown trout from moving into the South Fork. Fish habitat rankings in 1996 ranged from Good at the lower stations to Excellent in the middle stations. Station 4 ranked Very Poor. There is little groundwater recharge this far upstream. Bank erosion is light to medium and substrate consists mainly of fine sediments. There are some areas of limestone bedrock in Stations 1 and 2. There is a lack of suitable cover for adult trout in many areas outside of the trout habitat project areas. Beaver activity has been an issue on the South Fork in past years, especially between Stations 1 and 4. An intensive removal effort was made in 1991, and annual removals have been done to maintain beaver populations at low densities. Creek 10-6(WBIC:2603500), Creek 5-15(WBIC:3000370) and Creek 7-1(WBIC:2603200) are small tributaries to the South Fork. (See South Fork Kinnickinnic River Report 2012 for more fishery details).[11]

Woodlands

Forestland is one of the major natural and aesthetic features of Pierce County. Good forest management can sustain the full range of economic, ecological and social benefits our forests provide. Streamside forest vegetation helps to slow runoff, filters sediment and nutrients from

[11] Kasey Yallaly, WDNR Senior fish biologist

runoff and increases infiltration. The forest resource also provides habitat for a wide variety of wildlife. The loess soils that cover much of the county are very productive forest soils. The county historically and currently produces high quality hardwood timber. Total net growth exceeds timber harvest.[12]

At the time of European settlement, trees covered 78 percent of Pierce County, but forest cover has been reduced to approximately 27 percent of the total land area. The average forest cover for the state is 46 percent. The major forest types/groups in Pierce County include Maple-Basswood (31%), Elm-Ash-Cottonwood (9%), Oak-Hickory (47%), Aspen (9%) and Pine (4%).

Wisconsin's forest tax law programs have been popular with Pierce County residents and will likely remain popular as property tax assessments continue to rise on wooded properties. There are 105,050 acres of forestland in Pierce County (forest inventory data 2005-2009). Currently 28,290 acres are enrolled in the forest tax law programs in Pierce County[13].

Invasive Species

Next to the loss of forestland from development, the greatest potential threat to Pierce County forestland is non-native invasive plants. Honeysuckle, buckthorn and garlic mustard infest many acres in the county. Aquatic invasive species information and education efforts are conducted by University of Wisconsin River Falls.

The gypsy moth is becoming established in Pierce County. When the population becomes large enough to cause defoliations, proper forest management, particularly of oak species, can help to make forests more resilient to attacks, and reduce tree mortality. Although present in the nearby Twin Cities, Emerald Ash borer (EAB) has not been detected in Pierce County. Compliance with established rules for transporting ash materials in quarantine areas and cooperation with recommendations for transporting fuel wood etc. in non-quarantine areas may prevent the introduction of the destructive pest into Pierce County. Ash trees are an important component of forests in Pierce County (estimated 3,398,800 trees per Wisconsin Forest inventory 2002-2006).

Wildlife

Pierce County's land and water resources provide habitat for a wide variety of game and non-game wildlife. The mix of agricultural lands and woodlands provide ideal habitat for common species such as white-tailed deer, squirrels, rabbits and raccoons.

Grouse, turkeys and many songbirds utilize the woodlands. Due to conversion of marginal agricultural land to grassland through the Conservation Reserve Program (CRP), pheasants and

[12] 1996 USDA-FS Inventory

[13] WI DNR Forestry

other grassland birds are making a comeback. In 2020 there were approximately 4,658 acres enrolled in CRP. This value is down from 27,710 acres in 1997.

Although wetland habitat is generally lacking, the Mississippi River bottomlands provide a unique and important habitat for waterfowl and other wetland birds and mammals. In addition, the Mississippi River and associated bluffs are a major migratory corridor for a wide variety of both upland and lowland birds.

Rare Species & Natural Communities

The Natural Heritage Inventory of the Wisconsin Department of Natural Resources lists 21 natural areas containing significant remnants of native plant communities. Seven of these are in part or completely on state owned lands with the remaining areas on private land. Sites range from bottomland forest to river gorges to bluff prairies. Known sites include:

- Kinnickinnic River Gorge and Delta State Natural Area
- Pierce County Islands Natural Area
- Trenton Bluff Prairie State Natural Area
- Bay City Bluff Natural Area
- Diamond Bluff Prairie-Savanna
- Rush River Delta State Natural Area
- Beldenville Woods Natural Area
- Cave Creek Natural Area
- Diamond Bluff Oak Barrens Natural Area
- Exile Maples Natural Area
- Forester Hill Prairie Natural Area
- Kinnickinnic Valley Natural Area
- Plum Creek Woods State Natural Area
- Lake Pepin Hardwoods Natural Area
- Lost Creek Cliff Natural Area
- Morgan Coulee Prairie State Natural Area
- Nugget Lake Woods Natural Area
- Pine Creek Woods Natural Area
- Psoralea Prairie Natural Area
- Waverly Pines Natural Area
- Brush Creek Maples Natural Area
- Bat Cave Natural Area

Eighty-one endangered, threatened or rare species are known to occur or have occurred in Pierce County. These include 34 plants, 2 birds, 25 invertebrates, 17 fish, and 3 herptiles. (See Appendix D for a complete list of species).

Human Population

Pierce County's population in the year 2010 was 41,029. The 2019 estimate was 42,754 a 4.2% percent increase from the year 2010. Over half of the county lives in incorporated areas (57%) with about half of these people living in the City of River Falls.

Recent population growth rates are highest in the north and west portion of the county. The Town of Clifton and the Town of Oak Grove each experienced highest growth rates.

Urbanized areas pose special threats to water quality. Urbanization and other human activities disrupt the natural course of water as it moves across a watershed. Removing vegetation and constructing impervious surfaces such as roads, parking lots, driveways, sidewalks and rooftops greatly increases the amount and rate of stormwater runoff. Water level fluctuations increase

because of lower stream base flow from reduced infiltration and increased storm water flow from impervious surfaces. These changes may bring flooding, increased water temperatures, decreased oxygen levels, greater channel erosion, and increased sedimentation. As storm water runoff crosses the urbanized landscape; it picks up fertilizers, pesticides, debris, salt, oil, grease, other toxic substances, and sediments.

Identification of Concerns

The Pierce County Land Conservation Department conducted a public opinion survey in 1999. The survey identified degradation of groundwater quality as the greatest concern to Pierce County residents completing the survey. This issue was followed by the loss of prime agricultural lands, degradation of surface water quality and loss of environmentally sensitive land areas in the county. Soil erosion and soil productivity were ranked next followed by loss of wildlife and/or wildlife habitat, forestry issues and air quality.

A similar public survey was completed in the fall of 2020. The online survey link was sent to all residents that have provided the LCD with an email address. Additionally, advertisement of the survey was included in the Farm Service Agency electronic newsletter, public notice was placed in the local papers and a survey link was placed on Pierce County's website. One hundred twenty responses were received. Top natural resource issues as ranked by public opinion survey respondents:

- Groundwater quality degradation/contamination
- Loss of wildlife habitat
- Invasive species
- Cropland soil loss/ loss of productivity
- Forestry issues
- Rainfall intensity/climate change resiliency

Review of survey conclusions

The citizen advisory committee and technical work group members reviewed survey results in the 2021 planning process. Each group was asked to identify natural resource concerns, potential threats to county natural resources and activities to address the threats. Input from Citizen Advisory Committee and Technical Work Group members was used to re-evaluate the priority of plan goals and to prioritize plan action items.[14]

Citizens advisory group members identified these issues as most concerning:

- Soil health
- Cropland soil erosion & loss of productivity
- Rainfall intensity & flooding frequencies
- Loss of farmland & farmland soils to development
- Groundwater quality degradation/contamination

Technical advisory committee members were concerned with these priority threats:

- Ground water quality

[14] Citizen advisory committee analysis results are included in Appendix B.

- Soil erosion & sedimentation to rivers & streams
- Nutrient management (manure & commercial fertilizer applications)
- Soil infiltration rates & soil health
- Stream bank/gully erosion
- Weather variability & intensity of rainfall events

Implementation of the plan, including goals and objectives, and action items focused on the top five resource concerns identified. Some of the other individual resource concerns will be addressed through the activities developed for the priority concerns. Other concerns that received lower priority may at times be given attention because they may be most critical at a site. Concerns that were not prioritized are also often addressed as part of required on-going agency efforts.

Chapter 3. Goals, Objectives, and Activities

The goals established in this plan represent priorities for land and water resource conservation and protection in Pierce County. They will be implemented over a ten-year planning period beginning in the year 2022. A detailed work plan will be developed annually to identify the specific objectives and activities necessary to achieve the goals identified below. Land Conservation Committee members and LCD staff will continually work together to ensure the department activities are addressing the highest priority resource concerns.

Plan Goals

Goal I: Water Quality--Improve and protect surface and groundwater quality.

1. Develop and implement a targeted watershed approach to identify necessary conservation practices with potential to reduce delivery of sediment and nutrients to surface waters
2. Promote positive conservation ethic among landowners and operators.
3. Monitor ground & surface water quality throughout the county.
4. Identify environmentally sensitive areas within crop fields, farmsteads & non-crop areas. Promote awareness of karst bedrock features and the associated risks to groundwater quality
5. Provide technical assistance and cost sharing for installation of water quality best managements practices (BMP's).
6. Implement a systematic approach to evaluate and determine compliance with Agricultural Performance Standards (NR151).

Goal II: Agricultural Land & Soils--Encourage the preservation of prime agricultural lands and improve the health and productivity of agricultural soils.

1. Encourage landowners to adopt crop production methods that reduce topsoil losses, increase infiltration, and improve soil productivity.
2. Promote the preservation of farmland.
3. Promote diversity of agriculture production systems.

Goal III: Wildlife, Woodlands & Environmentally Sensitive Habitats--Promote wildlife habitat restoration and maintenance, good stewardship of woodlands and protection of environmentally sensitive lands

1. Encourage best management practices that support healthy wildlife populations
2. Identify and enhance important fish and wildlife habitat areas
3. Promote awareness of aquatic and terrestrial non-native invasive species
4. Promote restoration of woodlands on steep slopes and other sensitive lands

Goal IV: Climate Variability & Rainfall Intensity--Address the effects of changing weather patterns on land & water resources

1. Incorporate the topic of climate variability when discussing long range resource protection plans.
2. Promote land use strategies that manage carbon sequestration and reduce greenhouse gas emissions.
3. Consider rainfall intensity trends when planning conservation practices.

Other Responsibilities / Activities of the Land Conservation Department

A. Continue current floodwater protection program constructed under PL566 and CCC programs.
B. Maintain the emergency notification system at Nugget Lake. Provide software, hardware, staff training, and data for an integrated county Geographic Information System that is available to the public.
C. Participate in Multi-Discharger Variance and Water Quality Trading program with WDNR.
D. Administer the Wildlife Damage Program in cooperation with USDA-APHIS.

Implementation Strategy

Pierce County Land Conservation Department staff will use this document as a guide to ensure that the plan goals are addressed. A comprehensive review of agricultural lands based on the goals and objectives of this plan will be conducted to determine the environmental need for a given resource area. All HUC12 sized watersheds have been analyzed for critical source areas, which have been defined as[15]:

- Cropland with 12% or greater land slope
- Cropland soils with hydrologic group D classification (poorly drained)
- Cropland within 300 feet of perennial flowing surface water
- Cropland with 5 feet or less of soil over bedrock (susceptible to groundwater contamination)

These criteria will be used to help field staff identify areas that should be thoroughly evaluated during farm walkovers with landowners. Additionally, funding priority may be given to

[15] see critical source area maps in Appendix E

practices that are located within these critical source areas.

USDA-NRCS Mississippi River Basin Healthy Watershed Initiative (MRBI) funding has been secured for 5 watersheds that are the focus of conservation activities. Any landowner that wishes to implement conservation practices will receive an evaluation of their property. This approach will allow LCD staff will meet with landowners to conduct the field portion of the review. During this review, staff will discuss the critical source area definitions and explain the need to address these areas first. The results of the review will be discussed with the landowner and a list of recommended actions to achieve the goals of the watershed will be developed. All reviews and recommended actions will be recorded with the use of GIS database to ease tracking of recommended practices along with parcels meeting the conservation objectives. This database will provide fast and accurate data to be used when applying cost share funds and provide reliable information to evaluate the success of this plan.

Information and Education Strategy

Because many individuals in the county must make behavioral changes to achieve plan goals, information and educational strategies will be necessary. People will not make these changes unless they understand the importance of natural resources, the ways to protect them, and assistance available. To meet educational goals, LCD will target conservation education in the following areas:

- Pierce County conservation educational programs: speaking contest; poster contest; conservation tours and social media and website posts
- Nutrient management planning; Assist farms in interpreting consultant-developed nutrient management plans and educate farmers to help them develop their own nutrient management plans
- Land Conservation Department Annual Report
- LCD staff classroom presentations and field days
- Conservation Brochures
- Pierce County Fair Participation

Chapter 4. Implementation Strategy for NR 151 Agricultural Nonpoint Performance Standards

Implementation Considerations

The Pierce County Land Conservation Department (LCD) will cooperate with the Department of Natural Resources (DNR), and other agencies to assist landowners in meeting the agricultural performance standards and prohibitions. The DNR 10-point implementation strategy will be used as a model to guide department staff through this process. Implementation of each component of the strategy outlined below will be dependent upon receiving adequate staffing, support, and cost share funds for completion.

The following principles will guide implementation of the agricultural performance standards in Pierce County:

1. Prioritize sub-watersheds to be evaluated based on highest soil erosion rates as determined by transect survey, critical source areas, conservation partner agency survey data, and department staff knowledge of resource concerns.
2. Encourage voluntary participation in on-farm resource evaluations and cost sharing program for agricultural conservation practices.
3. Implement most cost-effective practices as a high priority.
4. Evaluate all parcels enrolled in Farmland Preservation Program or receiving cost sharing from DATCP or DNR grant.
5. Evaluate all parcels owned by a landowner applying for a Pierce County Manure Storage Ordinance permit.
6. Coordinate DATCP funding for conservation practices to meet the agricultural performance standards with other cost share opportunities such as the Federal EQIP (Environmental Quality Incentives Program).
7. Evaluate all performance standards at one time for a farm/site with an on-site visit.
8. Document compliant parcels through a landowner compliance status report and track parcels using a GIS database (contingent on available staff time).

Conduct Information & Education Activities

The LCD will distribute information and educational material prepared by the DNR. The information may be distributed via newsletters, social media, public information meetings, and one-on-one contacts. The educational materials will be designed to meet the following objectives:

1. Educate landowners about Wisconsin's agricultural performance standards and prohibitions, applicable conservation practices and cost share grant opportunities.
2. Promote implementation of conservation practices necessary to meet performance standards and prohibitions.
3. Inform landowners about procedures and agency roles to be used statewide and locally for ensuring compliance with the performance standards and prohibitions.

Determine Compliance

Identification of Priority Farms:

Pierce County Land Conservation Department and Committee will identify priority farms for NR151 evaluation by these methods. A farm will be evaluated if they meet one of the following criteria[16]

1. Landowner receives a cost share contract for installation of a conservation practice from County, DATCP or DNR.
2. The landowner applies for a manure storage ordinance permit.

[16] Successful Implementation of this priority farm strategy will hinge on continued funding for staff and cost sharing at the County and State level along with personnel support from partner agencies. Pierce County will encourage voluntary compliance with NR151. All enforcement actions will be referred to the DNR nonpoint coordinator.

3. The landowner enrolls in Farmland Preservation Program within an AEA or Farmland Preservation Zoning area.
4. The department receives a complaint regarding potential violation.
5. Livestock facilities or cropland/pastureland are located in Surface Water Quality Management Areas (SWQMA) or a DNR designated Outstanding/Exceptional Resource Water (ORW/ERW), Critical Source Area (as defined in appendix E) or 303(d) listed water

Onsite Evaluations Procedure

1. Compile list of priority farm parcels for on-site evaluations based upon the priority list completed above.
2. Contact owners of selected parcels and schedule site evaluations.
3. Conduct onsite evaluations to determine and document the extent of current compliance with each of the performance standards and prohibition.
4. Non-compliant parcels will have a cost estimate for practices required along with cost sharing opportunities detailed in Compliance Status Report

Maintaining Voluntary Cost Share Program:

Pierce County plans to maintain what has been a very successful voluntary cost share program with modifications to incorporate the agricultural performance standards. Interest in voluntary cost sharing is high and significant water quality improvements are made through this voluntary participation. Guidance for the voluntary cost sharing program is listed below

1. Applicants will receive on-site evaluations on a first come, first serve basis. Agricultural performance standards on-site evaluation procedure and compliance status documentation will be used at this evaluation to screen applicants.
2. Cost sharing offered will be prioritized using the criteria for priority farms. Cost sharing may be provided to exceed the agricultural performance standards if water quality benefits are achieved and practices are relatively low-cost.
3. Scheduling of cost share practices will be based upon funding availability from state and federal sources, applicant's desired timeframe match with fund availability, and cost effectiveness of meeting agricultural performance standards.

Document & Report Compliance Status

NR151 Status Report: Following completion of on-site evaluation, prepare and issue NR 151 status report (appendix I) to owners of the evaluated parcels. This report will convey the following information at a minimum:

1. Current status of compliance of individual parcels with each of the performance standards and prohibitions. Parcel information will be filed and traced using Pierce County parcel identification number for use with a Geographic Information System.
2. Corrective measure options and rough cost estimates to comply with each of the performance standards and prohibitions for which a parcel is not in compliance.

3. Status of eligibility for public cost sharing[17].
4. Grant funding sources and technical assistance available from federal, state, and local government and third-party service providers.
5. An explanation of conditions that apply if public cost share funds are used. *(If public funds are used, applicable technical standards must be met.)*
6. A timeline for completing corrective measures, if necessary.
7. Signature lines indicating landowner agreement or disagreement with report findings.
8. Processes and procedures to contest evaluation results to county and or state. The Land Conservation Committee will review cases of contested compliance evaluation results at a regularly scheduled LCC meeting.

Maintain Public Records: Keep and maintain evaluation and compliance information as public record.

> Note: The primary objective of this step is to ensure subsequent owners are made aware of (and have access to) NR 151 information pertinent to their property. The method for maintaining these records and for ensuring relevant information is conveyed to subsequent owners will be discussed with the Pierce County Corporation Counsel.

Cost Share Funding, Administration & Technical Assistance

Voluntary Component (Cooperative)

1. Receive request for cost-share and/or technical assistance from landowner. *Note: Landowners will be prompted to voluntarily apply for cost-sharing based on information provided in a NR 151 Compliance Status Report. (See appendix I).*
2. Confirm cost-share grant eligibility and availability of cost-share and technical assistance.
3. Develop and issue cost-share contract (including BMPs to be installed or implemented, estimated costs, project schedule, and notification requirements under NR 151.09(5-6) and/or 151.095(6-7).

Non-Voluntary Component (Non-Cooperative):

In the event that a landowner chooses not to install corrective measures either with or without cost sharing, issue landowner notification per NR 151.09(5-6) and/or 151.095(6-7). If eligible costs are involved, this notification shall include an offer of cost sharing. If no eligible costs are involved, or if cost sharing is or was already made available, the notification will not include an offer of cost sharing. The notification referenced above will be designed by the DNR and contain the following

1. A description of the performance standard or prohibition being addressed.
2. The compliance status determination made in accordance with NR 151.
3. The determination of which best management practices or other corrective measures are needed and which, if any, are eligible for cost sharing.
4. The determination that cost sharing is or has been made available, including a written offer of cost sharing when appropriate.

[17] Livestock facilities constructed after October 1, 2002 are not eligible for DATCP cost sharing to reach compliance with the state agricultural performance standards.

5. An offer to provide or coordinate the provision of technical assistance.
6. A compliance period for meeting the performance standard or prohibition.
7. An explanation of the possible consequences if the owner or operator fails to comply with provisions of the notice.
8. An explanation of state appeals procedures.

Compliance Enforcement

If a landowner if found to be out of compliance with state performance standards and prohibitions and refuses technical and financial assistance from Pierce County Land Conservation Committee, they will receive notification by mail that they are subject to enforcement actions pursuant to NR151.09 or NR151.095. Pierce County Land Conservation Committee will then refer the landowner to the Department of Natural Resources, Runoff Management Program, West-Central Office in Eau Claire, Wisconsin. Pierce County will work closely with DNR staff to provide necessary information related to the enforcement procedure.

Tracking and Reporting Program Activities and Progress

In order to track and report activities and progress, LCD staff will regularly maintain and appropriately convey the following records:

1. Record of annual site evaluations showing their location and compliance status
2. Record of estimated costs of corrective measures for each evaluated parcel.
3. Record showing parcels where public cost sharing has been applied to implement standards and prohibitions, the amount and source of those funds and the landowner share.
4. Record of location of parcels receiving notification under component 2A.
5. Record of the annual cost of technical and administrative assistance needed to administer agricultural performance standards and prohibitions, as established in NR151.

Chapter 5. Work Plan Implementation

The land and water resource management plan is a ten-year strategic plan for Pierce County. The plan was developed to guide the Pierce County Land Conservation Committee and Department. Some of the activities are led by other organizations and county departments. A work plan to implement the plan activities will be created annually. Development of the work plan will be completed in conjunction with local, state and federal partners as well as the Land Conservation Committee members. A review of work plan accomplishments with partners and Land Conservation Committee will be conducted prior to creation of the next year's plan.

There are many groups and agencies that are involved with resource conservation in Pierce County. Carrying out the provisions of this county land and water resource management plan will require the cooperation of many individuals and organizations. The following is an overview of the main state and federal agencies that will work together with the Pierce County Land Conservation Department and Committee.

Plan Partners

1. Local

a) Pierce County Department of Land Management

The Department of Land Management is responsible for planning and zoning functions in Pierce County. The Land Conservation Departments provides review and technical assistance in the administration of the zoning and subdivision ordinances.

b) Pierce County Nugget Lake Park

Park staff work together with the LCD to maintain the dam at Nugget Lake. Cooperative projects maintain the dam and work to improve water quality in Nugget Lake.

c) Non-Government Organizations (NGO's)

Land Conservation staff will collaborate with private conservation groups such as Land Trusts and Sportsman's Clubs to effectively address resource protection and enhancements.

2. Statewide

a) University of Wisconsin Madison (UWEX)

UWEX is responsible under state law for research and educational programs related to soil and water conservation. The extension service is directed to work with local counties on these programs.

b) University of Wisconsin River Falls Responsible for providing Aquatic Invasive Species education and outreach under the Lakes Protection and Monitoring grant program

c) University of Wisconsin Stevens Point The Groundwater Center at UWSP provides laboratory analysis of well water samples and presents sampling results and information to residents participating in well water sampling program

d) Wisconsin Department of Agriculture, Trade & Consumer Protection (DATCP)

According to state statute, DATCP is responsible for serving as the central agency for setting up and implementing statewide soil and water conservation policies and administering the state's soil and water conservation programs. DATCP provides assistance and reviews for the county land and water management plans. DATCP has overall responsibility for the Wisconsin Farmland Preservation Program. State Statues requires that DATCP funding be provided to Land Conservation Departments to support local staff, training and to fund local conservation projects.

e) Wisconsin Department of Natural Resources (DNR)

This state agency manages nearly all state-owned land and protects all public waters of the state. The DNR provides cost-sharing and technical assistance to implement a variety of resource programs such as the Multi-Discharger Variance Program (MDV), Wildlife Damage Abatement and Claims Program, Animal Targeted Runoff Management Grants, Notice of Discharge and WPDES (NR-243), Fisheries Management Programs, Lake Management Programs, and Forestry Assistance Programs such as the Wisconsin Managed Forest Law Program. DNR has twenty-three basin water teams throughout the state. These teams deal with nonpoint

pollution, point source pollution, and other water issues on a multi-county area based upon the major basins of the state.

f) Wisconsin Land + Water (WL+W)

WL+W is a membership organization representing all of the state's 72 county Land Conservation Committees. On behalf of county LCC's, WL+W lobbies elected officials and government agencies to secure financial and program support for local conservation activities. In addition, several state conservation education and recognition programs are sponsored by the WL+W. On a larger basis, the National Association of Conservation Districts (NACD) comprised of over 3000 local conservation districts and departments throughout the nation, provides national support and lobbying efforts on behalf of its local members. Pierce County is an active member in both organizations.

3. Federal

a) Farm Service Agency (FSA)

A part of USDA, the FSA administers a variety of agricultural assistance programs including production controls, price supports, and conservation incentives. The Pierce County Land Conservation Committee has a representative from FSA on their committee as a regular voting member to encourage further coordination and cooperation between agencies. Specific conservation programs which FSA has partial or sole responsibility for administering include: Conservation Reserve Program, Conservation Reserve Enhancement Program, Sodbuster, and Swampbuster.

b) Natural Resources Conservation Service (NRCS)

Part of the United States Department of Agriculture (USDA), NRCS has long-cooperated with and assisted land conservation committees and departments. NRCS is linked to the Pierce County LCC and LCD through a memorandum of understanding that is reviewed on an annual basis. This memorandum spells out the roles and responsibilities of each agency. Some of the existing conservation programs and activities which NRCS has been given partial or sole responsibility for administering include: Conservation Reserve Program, Conservation Compliance, Conservation Security Program, and Environmental Quality Incentives Program (EQIP).

c) USDA-Animal & Plant Health Inspection Service - Wildlife Services (APHIS-WS)

This federal agency provides technical and financial support in cooperation with the Pierce County Land Conservation Department and Wisconsin DNR to assist Pierce County landowners in minimizing crop losses due to wildlife damages.

4. Other Cooperating Partners and Non-Government Organizations

There are many non-governmental organizations, clubs and groups that participate in conservation related activities throughout Pierce County. The many people that make up these groups will be very influential in guiding resource management within their communities.

Chapter 6. Evaluation and Monitoring

A comprehensive evaluation of the plan's objectives and action items is essential to any conservation program. Likewise, a system of quantitative and qualitative measurements must be used to determine a program's effectiveness. The annual transect survey will be used to monitor cropland soil loss and to track changes in land uses. Pierce County LCD staff maintain a GIS database to track the number of conservation practices installed, acres of conservation plans, nutrient management plans written, number of status reviews completed, as well as information and education program progress. (See Figure 11 for a summary of practices installed during current LWRM plan cycle.) A very large number of conservation practices has been installed in the last 10 years. Funding from many sources has allowed conservation staff to focus efforts on increasing water infiltration on cropland through improved soil health, reducing gully erosion by installing over 435 acres of grassed waterways and constructing 119 grade stabilization structures. Pierce County GIS tracking system now shows that over 950 grade stabilization structures are functioning to reduce runoff intensity and capture sediment throughout the county.

Additionally, an inventory of recommended practices from on-farm evaluations will be developed and maintained in GIS database. DNR water quality monitoring data will be reviewed periodically, and stream monitoring conducted by LCD staff (in collaboration with DNR) will continue on several streams to document baseline water quality and track any changes in water quality parameters.

Installed Practices (2011-2020)	#	Units
Agri-Chemical Handling Facility	1	units
Waste Storage Facility	4	units
Cover Crop (2020 cost share acres)	8414	acres
Critical Area Treatment	61.17	acres
Well Decommissioning	49	units
Nutrient Management (2020 checklist acres)	22,059	acres
Manure Storage Closure	11	units
Diversion	7	units
Livestock Fencing	926	feet
Filter Strip	4	acres
Grade Stabilization Structure	119	units
Grassed Waterway	437.3	acres
Sinkhole treatment	19	units
Access road	2,269	feet
Roof Runoff Structure	2,243	feet
Trails and Walkways	500	feet
Stream Crossing	1,521	feet
Streambank Stabilization	5,597	feet
Subsurface Drain	24,080	feet
Livestock Watering Facility	13	units
Underground Outlet	4,127	feet
Waste Transfer System	2	units

Figure 9: Conservation Practices Installed with Cost Share Funds 2011-2020

Pierce County will continue to offer well water sampling program to residents with private wells. This program started in 2019, was paused in 2020, and will resume in 2021 & 2022. Well water analysis results will be mapped, and data will be reviewed. Pierce County Land Conservation & Public Health departments collaborate with University of Wisconsin- Stevens Point to conduct groundwater information meetings with residents after each sampling event. The annual work plan will be adjusted to address any significant contamination issues that appear during this sampling program. Annual reporting will be completed to the Department of Agriculture, Trade and Consumer Protection (DATCP) using the web-based reporting system maintained by DATCP.

The Pierce County Land Conservation Committee (LCC) will review the annual report and work plan outcomes each year. Furthermore, a five-year review of plan implementation will be conducted by Wisconsin Land & Water Conservation Board in conjunction with Wisconsin DATCP.

Chapter 7. Conclusion

Conservation efforts in Pierce County have a long history dating back to the Civilian Conservation Corps days in the 1930's. The cumulative efforts of generations of conservation practice installations are visible when you visit the one of the class I trout streams or drive around the county to observe the many grassed waterways and grade stabilization structures. But, as many people realize, conservation is not a one and done thing; everyone involved with our natural resources must remain vigilant to preserve and protect Pierce County's soil & water resources.

This plan includes 4 goals that will be the focus for the conservation team in Pierce County. Land Conservation Committee members, department staff, agency partners and citizen organizations will all play a part in the implementation. Pierce County's landscape is very diverse, approximately 44% of the acres are classified as cropland and 27% is woodland. The soils are highly-productive, but also highly erodible, requiring numerous soil conserving practices to ensure productive farmland for future generations.

All residents of Pierce County rely on groundwater for their source of water for their homes. Karst topography, shallow soils and coarse-textured soils all exist in different parts of Pierce County. Care must be taken when nutrient applications are made to cropland as well as residential and commercial property, so our groundwater remains a safe source for human consumption.

Pierce County landowners and residents value the abundance of wildlife species that exist throughout the county. Many conservation practices provide multiple benefits, including improving wildlife habitat. Conservation staff will continue to incorporate habitat enhancements when developing conservation plans.

In recent years, Pierce County, like many other areas in the world, has witnessed numerous large rain events that cause record flood levels in our streams and rivers. Rainfall intensity has increased, placing more importance on maximizing infiltration of the cropland soils. No-till farming practices, cover crops, and grass field borders will be frequently recommended to landowners as a method to combat the variability of the current climate weather.

Protection and enhancement of Pierce County natural resources over the next ten-year period will be guided by this document. Annual work plans will be developed to allow the conservation staff to respond to new challenges in resource protection.

Appendix A. Public Input Survey Summary of Results (2021)

Question 1) Do you own land in Pierce County, WI?	Responses	%
Yes	107	100
No	0	0

Question 2) If you own property, which type? (Please check all that apply)	Responses	%
Residential	85	79.4
Woodland	66	61.7
Farmland	55	51.4
Other (prairie, riverfront, wetland)	6	5.6
N/A	0	0.0

Question 3) What customer group best describes you?	Responses	%
Rural homeowner	67	62.6
Farmer	20	18.7
Recreational user	9	8.4
Town/city/suburban/urban resident	9	8.4
Absentee landowner	1	0.9
Other: Hobby Farm	1	0.9
Renter	0	0.0

Question 4) What local natural resources issues are you most concerned about? (Select top 5)	Responses	%
Groundwater quality degradation/contamination	64	60.4
Loss of wildlife habitat	56	52.8
Invasive species (terrestiral or aquatic)	48	45.3
Cropland soil erosion & loss of soil productivity	46	43.4
Forestry issues	44	41.5
Climate change resiliency	30	28.3
Rainfall intensity and flooding frequencies	30	28.3
Loss of environmentally sensitive land (including bluff lands)	29	27.4
Loss of farmland & farmland soils (development)	28	26.4
Soil health (sustainability)	28	26.4
Surface water quality degradation	26	24.5
Lack of public lands for outdoor recreation	24	22.6
Air quality	16	15.1
Construction site storm water management & erosion control	9	8.5
Other: Over Regulation by Government	1	0.9

Question 5) What services should the Land Conservation Department prioritize?	Responses	%
Wildlife habitat restoration/creation	58	55.8
Conservation planning	54	51.9
Water quality monitoring & well sampling	50	48.1
Education & outreach	46	44.2
Financial assistance for conservation practices	45	43.3
Engineering technical assistance	22	21.2
Rental of conservation tools, equipment, machinery, etc.	22	21.2
Storm water & erosion control for residential development	20	19.2
Farmer-led watershed groups	18	17.3
One-on-one outreach & farm walkovers	17	16.3
No-till drill rental	16	15.4
Nutrient management planning	15	14.4
Field days & trainings	14	13.5
Other: Money for buckthorn, garlic mustard and wild parsnip removal	1	1.0
Other: addressing development on good farmland	1	1.0

Question 6) What could help you incorporate more conservation in your everyday life?	Responses	%
Having more knowledge about conservation and how you can apply it on your property	63	61.8
Having financial assistance to aid with installing/implementing conservation practices	55	53.9
Opportunities to interact with conservation professional or other landowners with outstanding conservation ethic	41	40.2
Opportunities to rent & try out a variety of conservation tools and/or equipment	28	27.5
Small group trainings and/or field days	28	27.5
Video training and/or "how to" videos	20	19.6
Other: pay for the removal of invasive non natives	1	1.0

Question 7) Do you have any additional comments or input you would like to provide for the 2021 LWRM Plan revision? (14 responses)
I'd like to see a county pollinator incentive program created.....where landowners are given incentive to plant native grasslands and pollinator crops.
Very sad to watch mature forest and wildlife habitat and productive farmland be wiped out by industrial solar project in Gilman township, Pierce County. Very poor sitting of project!
Not at this time
Doubt if anything could be done at this level but my number one concern. People who are shooting high volume weapons for hours at a time, literally 100's of rounds on a regular basis. Really takes away from enjoying the outdoors. Especially the 20 years I've spent planting trees and prairie.
I'm concerned about private businesses such as (kayak/tubing rental companies) using public parks and public access points. The increase in commercial river traffic on the Rush River and Kinnikinnic and how it affects water quality, erosion, trout population, and wildlife habitat should be addressed before it's too late.
Thank you
Thanks for the survey. It is a good idea.
Every one of the issues listed are major and impact residents of our county. We all have a responsibility to do what we should even if it's a stretch. Education and outreach can help to start moving our community members to look at their actions and find ways to reach help meet our goals
Past water run corrections have worked. Would appreciate better grass coverage on the water run
People from the land conservation office need to get out and observe some of the horrific farm practices going on and encourage farmers to change their farming practices of farming up and down hills, not leaving grass water runs etc. There is a lot of soil loss happening and needs to be stopped.
This program seem to help farmers more than land owners
We have to stop the massive erosion from farming!
I think recreation property should be a priority especially with (COVID-19) people can't do as much in the city as they once did, and are outside more. You should jump on that and provide as much recreational land as possible

Appendix B. Citizens Advisory Committee Survey Summary of Results

Question 1) What local natural resources issues are you most concerned about? (Select top 5)	Responses	%
Soil health (sustainability)	17	70.8
Cropland soil erosion & loss of soil productivity	17	70.8
Rainfall intensity and flooding frequencies	14	58.3
Loss of farmland & farmland soils (development)	14	58.3
Groundwater quality degradation/contamination	13	54.2
Climate change resiliency	11	45.8
Invasive species (terrestrial or aquatic)	9	37.5
Surface water quality degradation	9	37.5
Air Quality	2	8.3
Lack of public lands for outdoor recreation	2	8.3
Loss of environmentally sensitive land (including bluff lands)	2	8.3
Loss of wildlife habitat	2	8.3
Construction site storm water management & erosion control	1	4.2
Other: Specifically, the Maiden Rock back water aside the bay has bank soils and grasses from last year's June flooding on The Rush. It now has a mat of grass. Also the Flood Forest trees which were used by Eagles, Egrets and Heron are gone.	1	4.2
Forestry Issues	0	0.0

Question 2) What services should the Land Conservation Department prioritize? (Select Top 5)	Responses	%
Conservation planning	14	56.0
Education & outreach	14	56.0
Water quality monitoring & well sampling	13	52.0
Financial assistance for conservation practices	12	48.0
One-on-one outreach & farm walkovers	11	44.0
Farmer-led watershed groups	8	32.0
Farmland Preservation Program support	8	32.0
Nutrient management planning	7	28.0
Field days & trainings	6	24.0
Rental of conservation tools, equipment, machinery, etc.	6	24.0
No-till drill rental	5	20.0
Engineering technical assistance	4	16.0
Fish & Wildlife habitat restoration/creation	3	12.0
Storm water & erosion control for residential development	2	8.0
Support of Farmer-Led Watershed Councils (e.g. South Kinne Farmer-Led Watershed in River Falls)	2	8.0
Other: Stop The 590 Plans Nobody actually follows them anyways...Waste of time	1	4.0
Other: Water storage on agricultural & residential land (to reduce peak flows).	1	4.0
Other: cost share for regenerative farming classes	1	4.0

Question 3) What do you think may be the top 3 biggest threats to surface water in Pierce County?	Responses	%
Cropland soil erosion & sedimentation	18	72.0
Manure runoff from field applications	15	60.0
Commercial fertilizer runoff from agricultural fields	15	60.0
Fertilizer runoff from lawns, urban areas, and commercial/business properties	10	40.0
Salt applications to roads, parking lots, driveways	5	20.0
Livestock feedlot runoff	4	16.0
Unlimited livestock access to Waters of the State	4	16.0
Failing septic systems	3	12.0
Overtopping of manure storage structures	3	12.0
Unconfined manure piles	3	12.0
Construction site erosion (commercial & single-family homes)	0	0.0
Other:	0	0.0

Question 4) What do you think may be the top 3 biggest threats to groundwater in Pierce County?	Responses	%
Commercial fertilizer applications on cropland fields	14	56.0
Manure application on cropland fields	12	48.0
Sinkholes located in cropland fields or water courses	10	40.0
Commercial fertilizer applications on lawns, gardens, commercial properties, etc.	9	36.0
Unused wells not properly sealed	8	32.0
Failing or leaking manure storage structures	8	32.0
Fractured bedrock near the soil surface	7	28.0
Failing or leaking septic systems	6	24.0
Overtopping of manure storage structures	2	8.0
Unconfined manure piles	0	0.0
Other:	0	0.0

Question 5) What top 3 practices do you feel are the most effective in controlling sheet and rill erosion?	Responses	%
No-till/strip-till planting (no full width tillage)	17	68.0
Perennial plants in rotation (hay/forage)	15	60.0
Cover crops seeded after harvest of row crops	11	44.0
Reduced tillage practices that leave greater than 30% crop residue on the soil surface	11	44.0
Cover Crops inter-seeded with the growing row crops	7	28.0
Contour farming	6	24.0
Contour in-field grass buffers	3	12.0
Grass field borders	2	8.0
Including small grains in crop rotation	2	8.0
Other: Grass Waterways	1	4.0

Question 6) Which practice do you think is the most important for protection & enhancement of fish & other aquatic species habitat?	Responses	%
Upland practices that reduce runoff	13	56.5
Riparian buffers (adjacent to the stream)	5	21.7
In-stream habitat practices such as streambank rip rap	3	13.0
Streambank tree clearing (obstruction removal), shaping and reseeding	1	4.3
Other: I think the above practices are good but they are there to slow the effects of runoff. We should put a focus on water infiltration in our soils. Improve our organic matter in our soils and improve soil structure. This will reduce runoff and the other effects from it. Put incentives for higher organic matter & infiltration rates.	1	4.3

Question 7) What do you think are the most effective methods to inform landowners/farmers about NR151 Standards & Prohibitions?	Responses	%
One-on-one farm visits with Conservation Staff	20	80.0
On-Farm Field Days	11	44.0
Newsletters (UWEX, USDA-FSA, Agricultural Organizations)	10	40.0
County Website/Social Media	7	28.0
Information campaigns at County Fair, Dairy Breakfasts, Community Events	7	28.0
Articles in local newspapers	4	16.0
Other:	0	0.0

Question 8) What do you think will help gain more wide-spread adoption of Nutrient Management Planning throughout the county?	Responses	%
Farmer-Farmer (seeing/learning the usefulness of NMP from other farmers)	13	52.0
Cost-sharing/higher cost-share rates for nutrient management plan development	12	48.0
Increased promotion regarding benefits of Nutrient Management Planning	9	36.0
Recommendations from retail agronomist/crop consultant	7	28.0
County-wide ordinance requiring nutrient management plans	6	24.0
Other: The last thing I would want to see is more mandatory regulations. It is apparent that things have gotten better. Continuing education will work.	1	4.0
Other: Precision Ag Practices/Platforms Nutrient Applications by crop removal	1	4.0

Question 9) Do you think that utilizing the identified Critical Source Area is a suitable method for helping to prioritize the allocation of cost share funding (for conservation practices) throughout the County?	Responses	%
Yes	18	72.0
Maybe	7	28.0
No	0	0.0
Other:	0	0.0

Question 10) Is there another critical source feature that you would like to see utilized (e.g. shallow, fractured bedrock areas-groundwater issues)?
Sinkholes seem to be becoming more prevalent in our crop area.
CRP Programs. These areas with limited top soil and shallow limestone do not produce the farmer any income so why farm them?
I think anything that helps preserve groundwater should be top priority
Yes - fractured bedrock areas susceptible to groundwater issues!
Not familiar enough to answer.

Question 11) Do you have any additional comments or input you would like to provide for the 2021 LWRM Plan revision?
Not at this time.
How to get started with NMP's
Most items you list are important. It was difficult to select the best. Some overlap in choices.
Thanks for asking, to do survey
Would be very interested in better understanding water storage capacity in the county to reduce runoff / peak flow / etc.
What about pesticides and herbicides?
As I commented earlier I would like to see a shift to compensate for results. A lot of people may use cover crops but then use tillage which destroys everything that was gained. If you could wean farmers from getting paid for covers to being paid for results that show that what was being done with covers made a positive effect on their land. I think this would make farmers more aware of the link between covers and soil structure & health which in end helps reduce runoff.
I would like to see increased funding from the County Tax Levy.

Appendix C. Farmland Preservation Program Conservation Standards Summary

FARMLAND PRESERVATION PROGRAM and NR 151 - CONSERVATION PERFORMANCE PRACTICE REQUIREMENTS[1]

1) **Landowners with Cropland or Pasture:**

- **Cropland and Pasture Soil Erosion Control**
  - Maintain soil erosion rates at or below Tolerable level, "T"
    - Control gully erosion
- **Cropland and *Pasture Nutrient Management**
  - Annually develop and follow a Nutrient Management plan that meets Natural Resources Conservation Service (NRCS) Standard 590 on cropland.
  - *On pasture land if:
    - Receives mechanical applications of nutrients, and/or
    - Is stocked at >1 animal unit per acre during the grazing season
  - Average rotational phosphorus index (PI) of 6 or less, and annual PI of 12 or less, on all cropland, pasture land, and winter grazing areas
- **Tillage Setback**
  - No tillage within 5' (up to 20') from surface water

2) **Landowners with Livestock, Livestock Facilities, or Manure:**

- **Manure Storage Facilities**
  - New Construction and Alterations must meet NRCS Standard 313.
  - Manure storage facilities must be closed within 2 years of abandonment according to NRCS Standard 360.
  - Manure storage facilities that are failing or leaking must be upgraded, replaced, or closed.
    (Note: These activities all require an Animal Waste Impoundment Permit from the Pierce County Land Conservation Department prior to beginning work.)
- **Clean Water Diversion**
  - Divert runoff away from feedlots, manure storage, and barnyards. Applies to:
    - Livestock Producers within Water Quality Management Areas (WQMAs).
      (**WQMAs** are areas within 300' of river or stream; areas within 1000' of lake, flowage or pond; and sites susceptible to groundwater contamination or potential direct conduit to groundwater.)
- **Process Wastewater Management**
  - No significant discharge to waters of the State. Applies to: feed leachate, milking center waste, wash water, watering system spillage or overflow, etc.
- **Manure Management Prohibitions**
  - All Livestock Producers
    - No overflow of manure storage facilities
    - No unconfined manure piles in WQMAs (see above for definition)
    - No direct runoff from feedlots, stored manure, and barnyards to waters of the State
    - No unlimited livestock access to waters of the State where sod or vegetative cover cannot be maintained

Footnotes: [1] Informational Summary Only. See WI Administrative Codes ATCP 50 and NR 151 for complete codes and details.

(● = **new** "2012" standards)

(Produced 9/06, rev. 9/08, 1/11, 3/11, 7/13, 7/14, 9/14, 11/14, 11/15)

Appendix D. Rare, Threatened, and Endangered Species and Natural Communities

The DNR Bureau of Endangered Resources maintains databases of endangered plants and animals. The Bureau urges that special notice be taken to protect any and all endangered resources from development.

Rare or endangered species and communities are generally very sensitive to encroachment of development and changes in their surroundings. Development on or near the locations of rare or endangered species can threaten their survival. The following table lists rare, threatened, and endangered species in Pierce County.

PLANTS

Common Name	Species Name	WI Status[18]
Musk-Root	*Adoxa moschatellina*	Threatened
Roundstem Foxglove	*Agalinis gattingeri*	Threatened
Carolina Anemone	*Anemone caroliniana*	Endangered
Dragon Wormwood	*Artemsia dracunculus*	Special Concern
Prairie Sagebrush	*Artemisia frigida*	Special Concern
Ground-Plum	*Astragalus crassicarpus*	Endangered
Kitten Tails	*Besseya bullii*	Threatened
Great Indian Plantain	*Cacalia muehlenbergii*	Special Concern
Yellow Evening Primrose	*Calylophus serrulatus*	Special Concern
Carey's Sedge	*Carex careyana*	Threatened
Hill's Thistle	*Cirsium hillii*	Threatened
Arrow-Headed Rattle-Box	*Crotalaria sagittalis*	Special Concern
Silky Prairie Clover	*Dalea villosa*	Special Concern
Glade Fern	*Diplazium pycnocarpon*	Special Concern
Twinleaf	*Jeffersonia diphylla*	Special Concern
Prairie Bush Clover	*Lespediza leptostachya*	Endangered**
Silver Bladderpod	*Lesquerella ludoviciana*	Threatened
Dotted Blazing Star	*Liatris punctata var.Nebraskana*	Endangered
American Gromwell	*Lithospermum latifolium*	Special Concern
Prairie False-Dandelion	*Nothocalais cuspidata*	Special Concern
Marbleseed	*Onosmodium molle*	Special Concern
Louisiana Broomrape	*Orobanche ludoviciana*	Endangered

[18] Wisconsin Status:
Endangered: continued existence in Wisconsin is in jeopardy.
Threatened: appears likely, within the foreseeable future, to become endangered.
Special Concern: species for which some problem of abundance or distribution is suspected but not yet proven.
* = Candidate for federal listing.
** = Federally Endangered or Threatened.
Last Updated: April 2004.

Pomme-De-Prairie	*Pediomelum esculentum*	Special Concern
Small Skull Cap	*Scutellaria parvula var. parvula*	Endangered
Prairie Ragwort	*Senecio plattensis*	Special Concern
Snowy Campion	*Silene nivea*	Threatened
Small-Flowered Woolly Bean	*Strophostyles leiosperma*	Special Concern
Prairie Fame-Flower	*Talinum rugospermum*	Special Concern
Snow Trillium	*Trillium nivale*	Threatened
Showy Lady's Slipper	*Cypripedium reginae*	Special Concern
Tufted Hairgrass	*Deschampsia cespitosa*	Special Concern
Wild Licorice	*Glycyrrhiza lepidota*	Special Concern
Glade Mallow	*Napaea dioica*	Special Concern
Marsh Ragwort	*Senecio congestus*	Special Concern

ANIMALS

Common Name	Species Name	Wisconsin Status[19]	Group
Red-Shouldered Hawk	*Buteo lineatus*	Threatened	Bird
Bald Eagle	*Haliaeetus leucocephalus*	Special Concern**	Bird
Lake Sturgeon	*Acipenser fulvescens*	Special Concern	Fish
Skipjack Herring	*Alosa chrysochloris*	Endangered	Fish
American Eel	*Anguilla rostrata*	Special Concern	Fish
Redside Dace	*Clinostomus elongates*	Special Concern	Fish
Crystal Darter	*Crystallaria asprella*	Endangered	Fish
Blue Sucker	*Cycleptus elongates*	Threatened	Fish
Mud Darter	*Etheostoma asprigene*	Special Concern	Fish
Western Sand Darter	*Etheostoma clarum*	Special Concern	Fish
Banded Killifish	*Fundulus diaphanus*	Special Concern	Fish
Goldeye	*Hiodon alosoides*	Endangered	Fish
Black Buffalo	*Ictiobus niger*	Threatened	Fish
Shoal Chub	*Macrhybopsis aestivalis*	Threatened	Fish
Silver Chub	*Macrhybopsis storeriana*	Special Concern	Fish
River Redhorse	*Moxostoma carinatum*	Threatened	Fish
Pallid Shiner	*Notropis amnis*	Endangered	Fish
Weed Shiner	*Notropsi texanus*	Special Concern	Fish
Pugnose Minnow	*Opsopoeodus emiliae*	Special Concern	Fish
Yellow-Bellied Racer	*Coluber constrictor*	Special Concern	Herptile
Timber Rattlesnake	*Crotalus horridus*	Special Concern	Herptile

[19] Wisconsin Status:
Endangered: continued existence in Wisconsin is in jeopardy.
Threatened: appears likely, within the foreseeable future, to become endangered.
Special Concern: species for which some problem of abundance or distribution is suspected but not yet proven.
* = Candidate for federal listing.
** = Federally Endangered or Threatened.
Last Updated: April 2004.

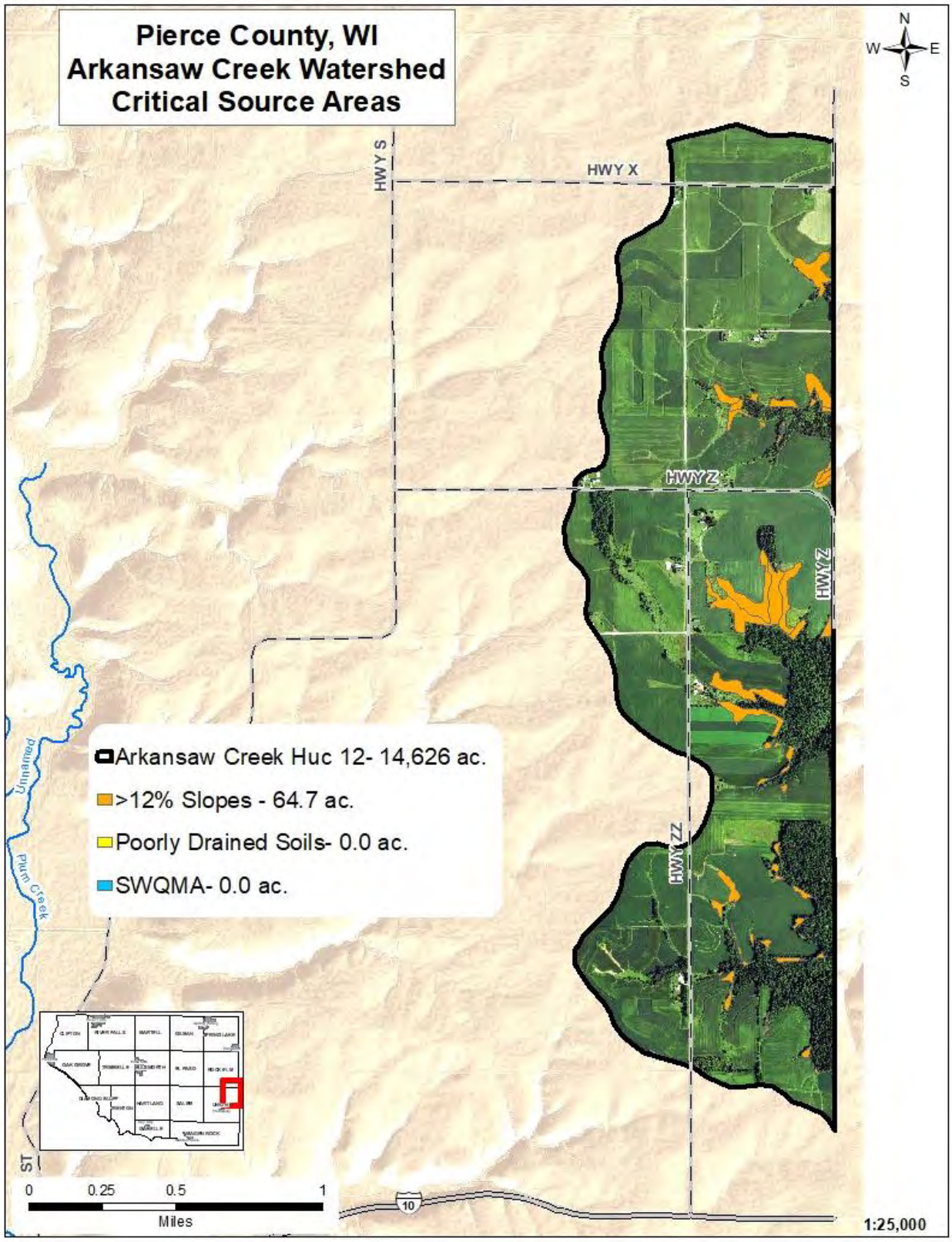
Wood Turtle	*Clemmys insculpta*	Threatened	Herptile
Olive Hairstreak	*Callophrys gryneus*	Special Concern	Invertebrate
Wing Snaggletooth	*Gastrocopta procera*	Threatened	Invertebrate
Smooth Coil	*Helicodiscus singleyanus*	Special Concern	Invertebrate
Net-Veined Leafhopper	*Polyamia dilate*	Threatened	Invertebrate
Elktoe	*Alasmidonta marginata*	Special Concern	Invertebrate
Rock Pocketbook	*Arcidens confragosus*	Threatened	Invertebrate
Spectacle Case	*Cumberlandia monodonta*	Endangered	Invertebrate
Purple Wartyback	*Cyclonaias tuberculata*	Endangered	Invertebrate
Butterfly	*Ellipsaria lineolata*	Endangered	Invertebrate
Elephant Ear	*Elliptio crassidens*	Endangered	Invertebrate
Snuffbox	*Epiblasma triquetra*	Endangered	Invertebrate
Ebony Shell	*Fusconaia ebena*	Endangered	Invertebrate
Plains Clubtail	*Gomphurus externus*	Special Concern	Invertebrate
Skillet Clubtail	*Gomphurus ventricosus*	Special Concern	Invertebrate
Higgins' Eye	*Lampsilis higginsii*	Endangered	Invertebrate
Yellow & Slough Sandshells	*Lampsilis teres*	Endangered	Invertebrate
Washboard	*Megalonaias nervosa*	Special Concern	Invertebrate
Smoky Shadowfly	*Neurocordulia molesta*	Special Concern	Invertebrate
Stygian shadowfly	*Neurocordulia yamaskanesis*	Special Concern	Invertebrate
Bullhead	*Plethobasus cyphysus*	Endangered	Invertebrate
Round Pigtoe	*Pleurobema sintoxia*	Special Concern	Invertebrate
Winged Mapleleaf	*Quadrula fragosa*	Endangered**	Invertebrate
Monkeyface	*Quadrula metanevra*	Threatened	Invertebrate
Russet-Tipped Clubtail	*Stylurus plagiatus*	Special Concern	Invertebrate
Buckhorn	*Tritogonia verrucosa*	Threatened	Invertebrate
Eastern Pipistrelle	*Pipistrellus subflavus*	Special Concern	Mammal
Bat Hibernaculum	Bat *Hibernaculum*	Special Concern	Bat

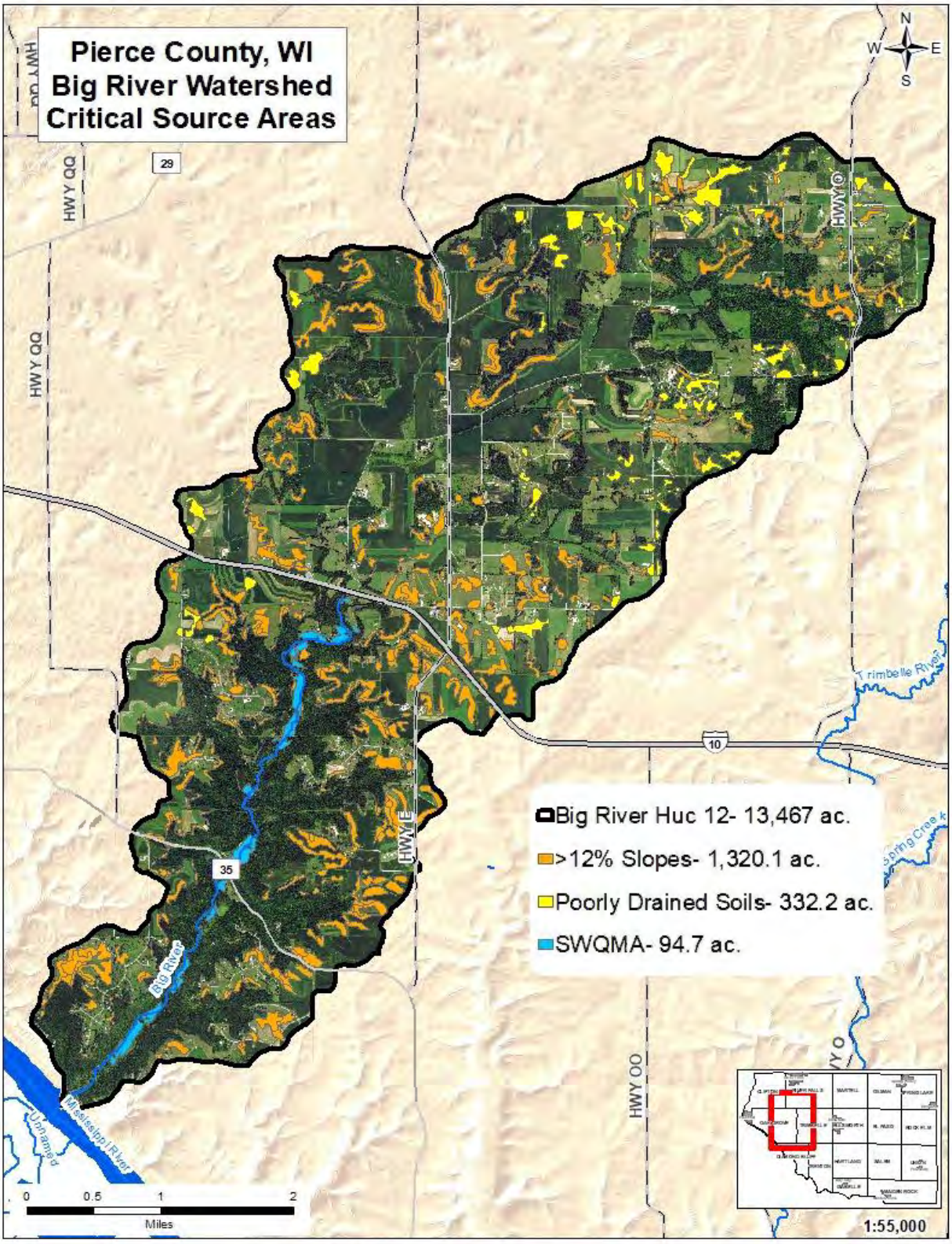
NATURAL COMMUNITIES

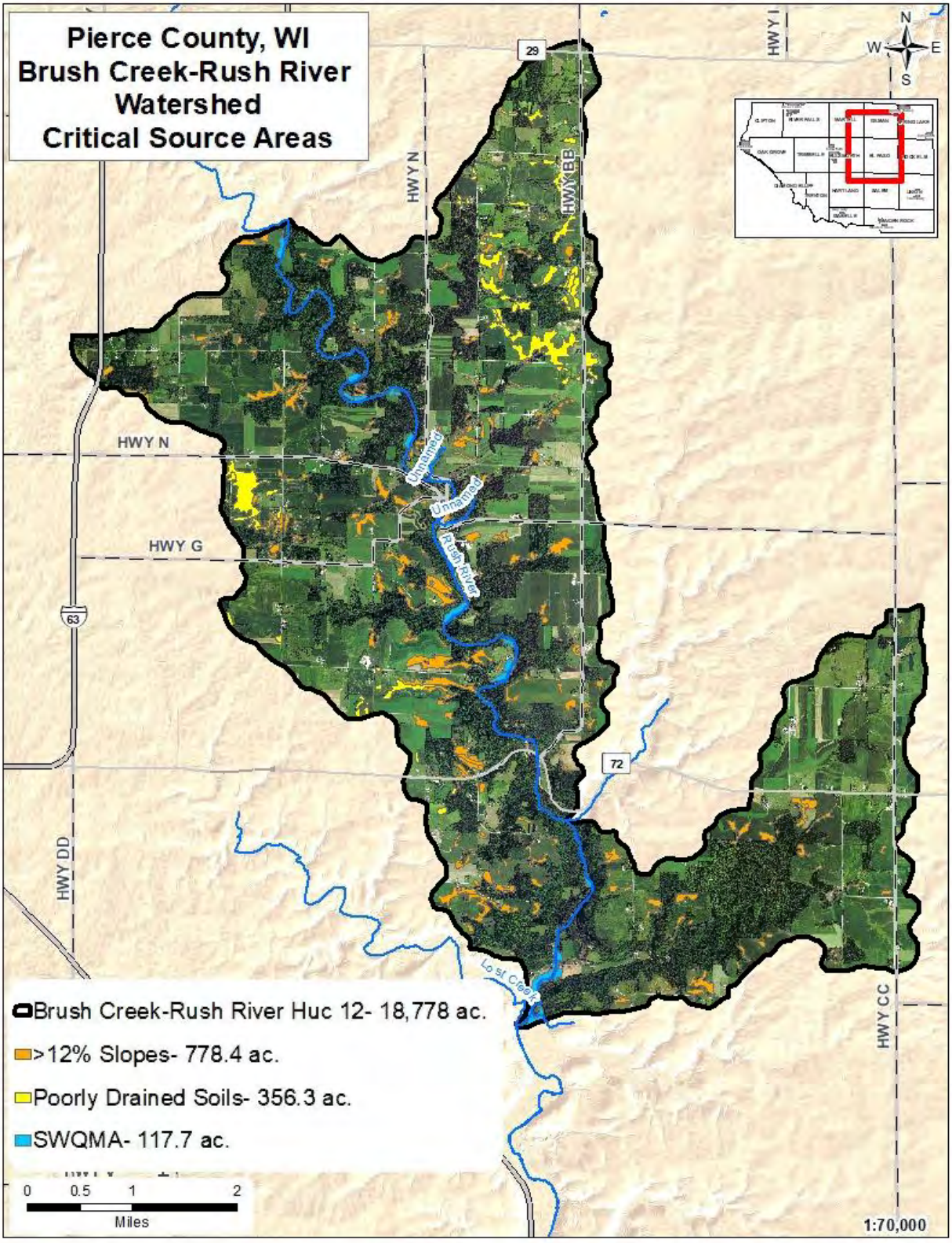
Important examples of the following natural community types have been found in Pierce County. Although communities are not legally protected, they are critical components of Wisconsin's biodiversity and may provide the habitat for rare, threatened, and endangered species.

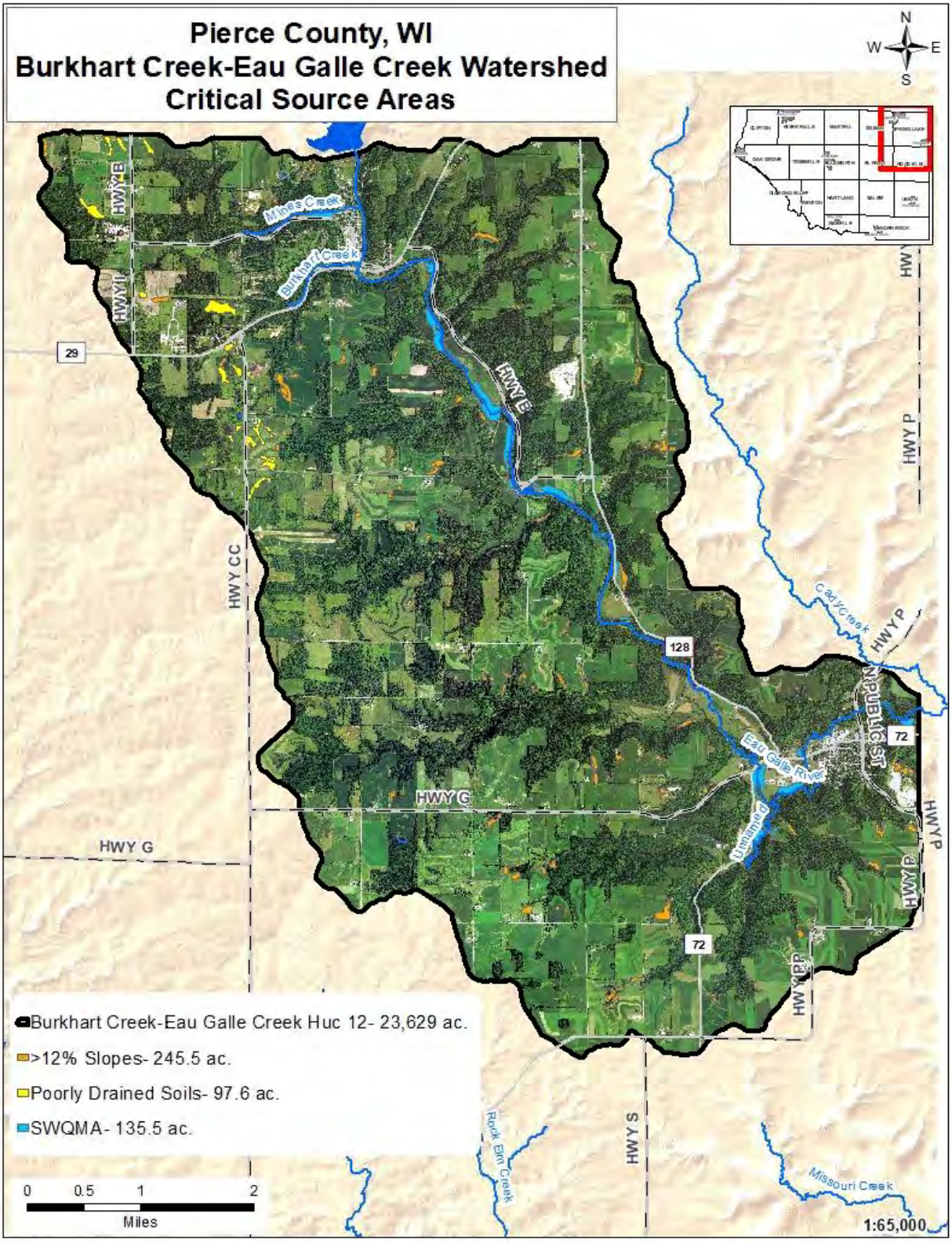
Dry Cliff
Moist Prairie
Moist Cliff
Northern Dry-Mesic Forest
Oak Barrens
Pine Relict
Southern Dry Forest
Southern Dry-Mesic Forest
Southern Mesic Forest
Emergent Marsh
Floodplain Forest
Stream-Slow; Hard;

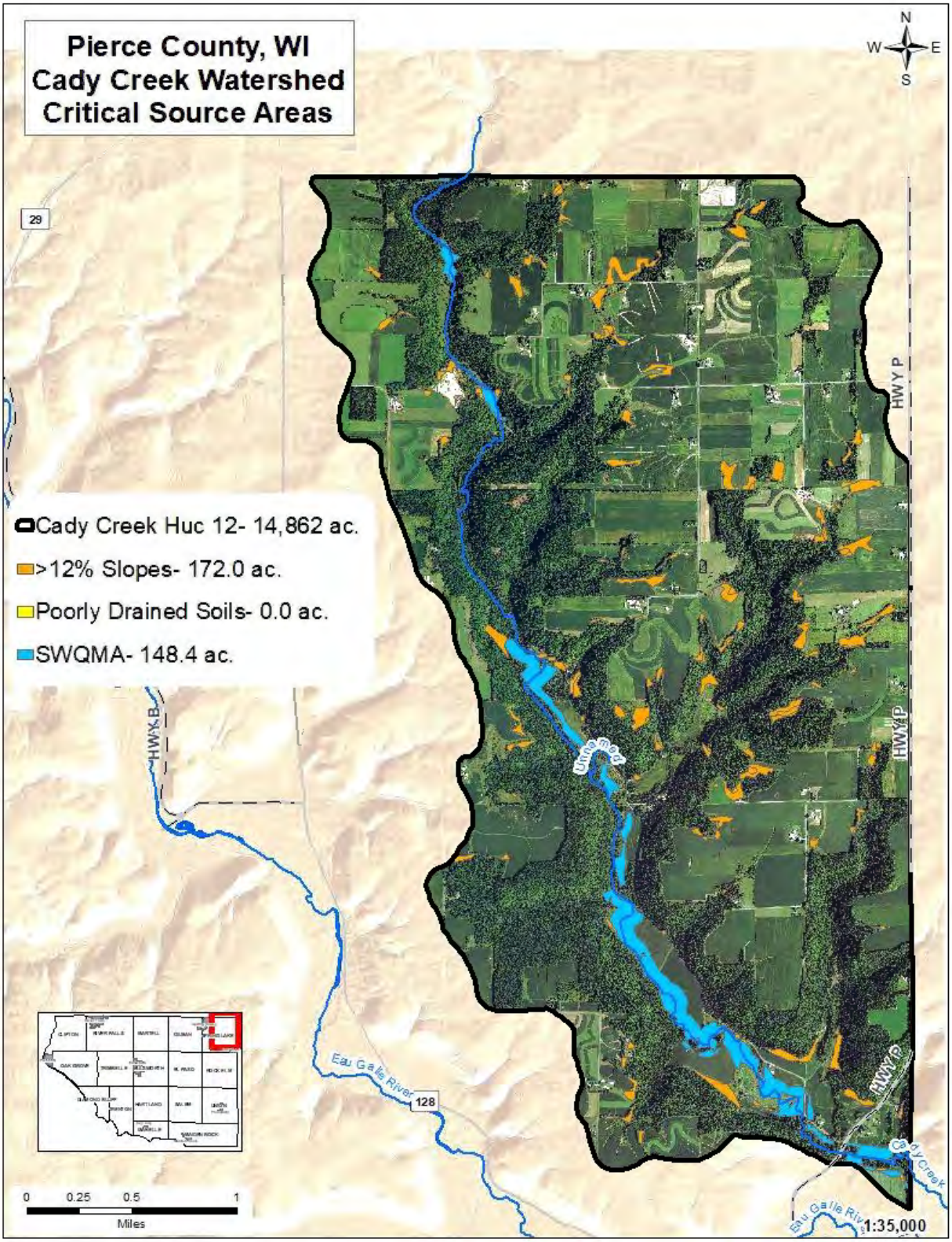
Appendix E. Huc 12 Watershed Critical Source Area Maps

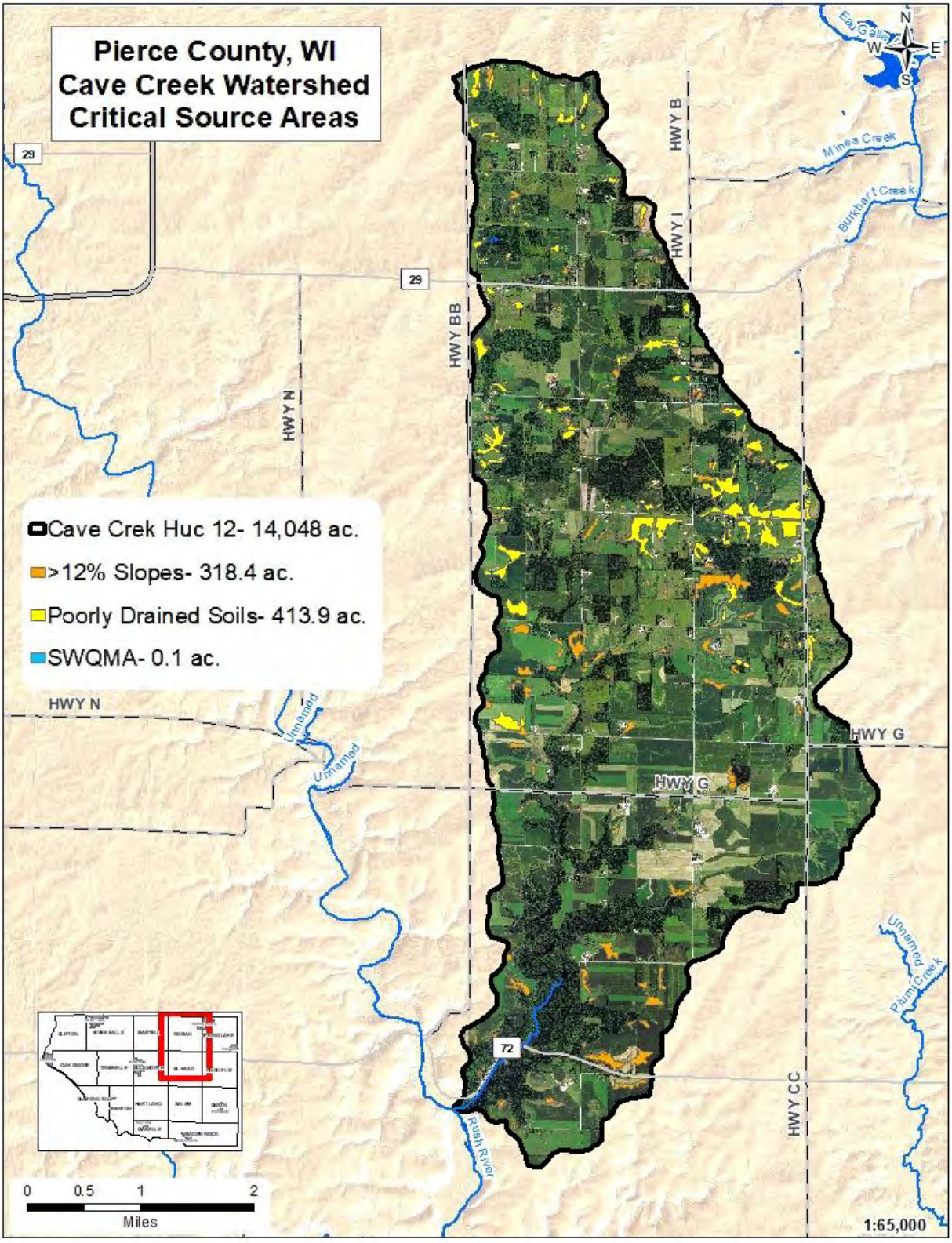


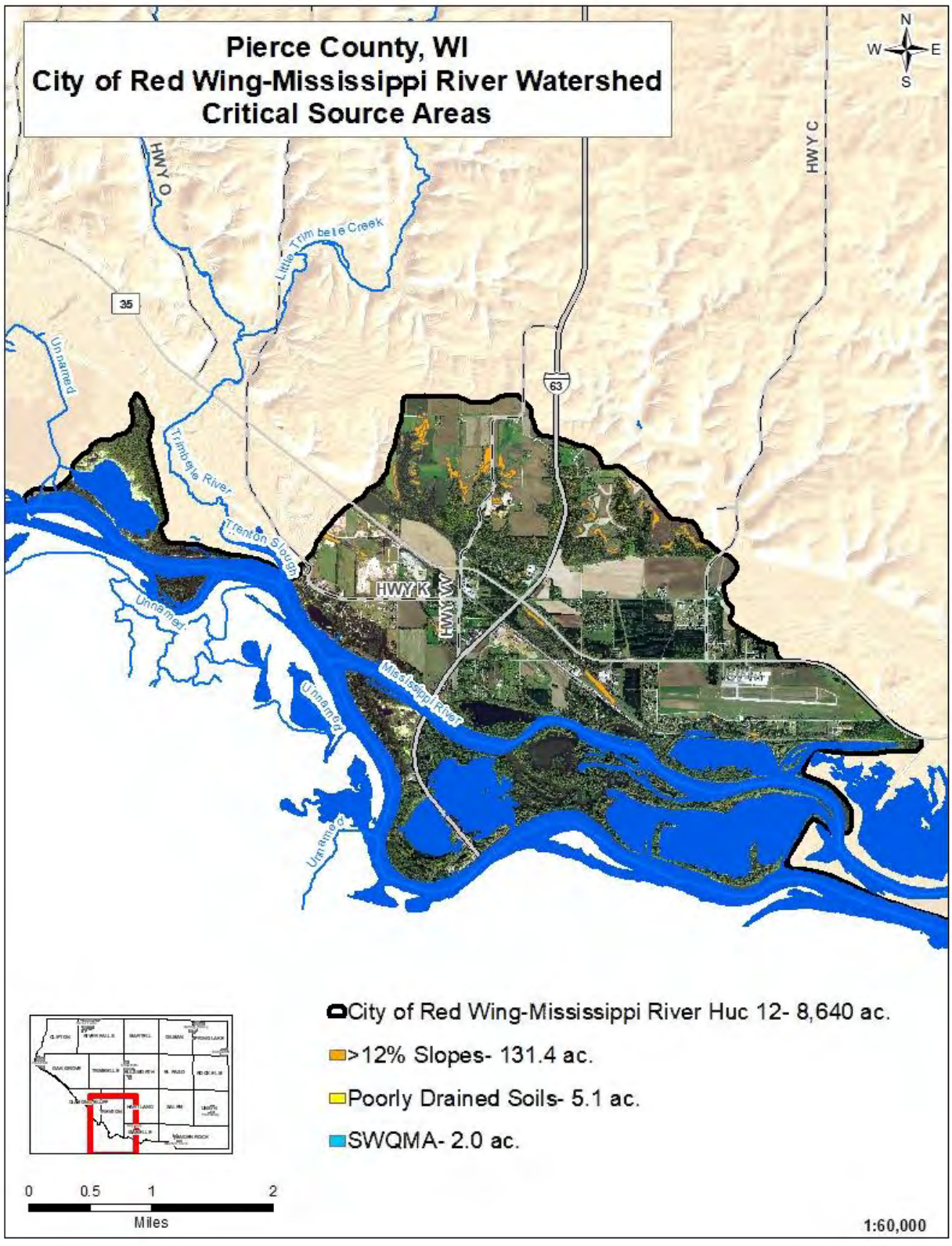

Pierce County, WI
Big River Watershed
Critical Source Areas
N
W
E
S
29
HWY QQ
HWY O
HWY E
HWY OO
10
35
Trimbelle River
Big River
Mississippi River
Big River Huc 12- 13,467 ac.
>12% Slopes- 1,320.1 ac.
Poorly Drained Soils- 332.2 ac.
SWQMA- 94.7 ac.
0
0.5
1
2
Miles
1:55,000

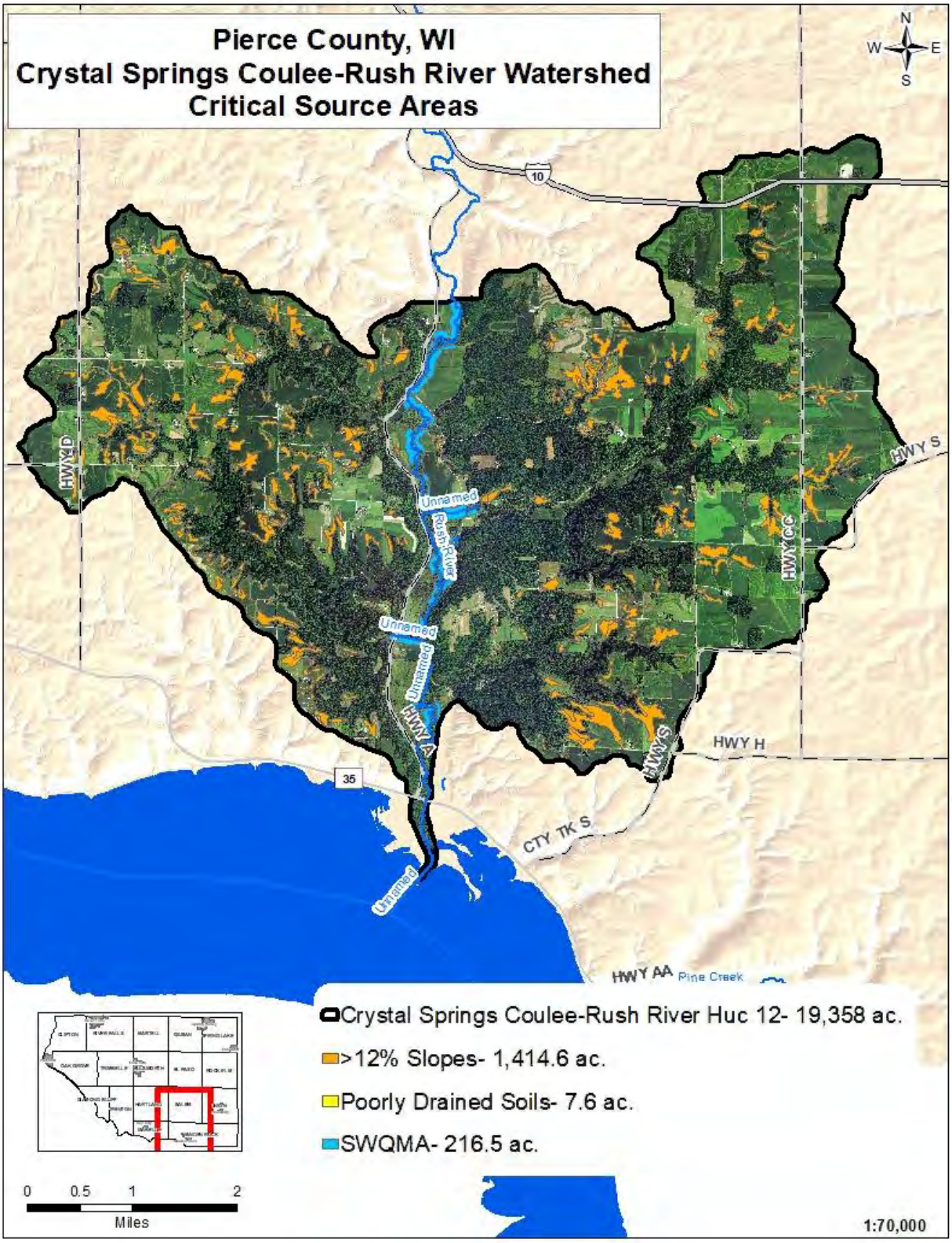

Pierce County, WI
Brush Creek-Rush River
Watershed
Critical Source Areas
N
W
E
S
29
HWY I
HWY N
HWY BB
HWY N
Unnamed
Unnamed
Rush River
HWY G
63
72
HWY DD
HWY CC
Lo St Creek
Brush Creek-Rush River Huc 12- 18,778 ac.
>12% Slopes- 778.4 ac.
Poorly Drained Soils- 356.3 ac.
SWQMA- 117.7 ac.
0
0.5
1
2
Miles
1:70,000


Pierce County, WI
Burkhart Creek-Eau Galle Creek Watershed
Critical Source Areas
N
W
E
S
HWY B
HWY H
Mines Creek
Burkhart Creek
29
HWY E
HWY CC
HWY G
HWY G
HWY P
HWY P
128
Cady Creek
NPUBLIC ST
72
Eau Galle River
Unnamed
HWY P
HWY B
72
HWY PP
HWY S
Rock Elm Creek
Missouri Creek
Burkhart Creek-Eau Galle Creek Huc 12- 23,629 ac.
>12% Slopes- 245.5 ac.
Poorly Drained Soils- 97.6 ac.
SWQMA- 135.5 ac.
0
0.5
1
2
Miles
1:65,000

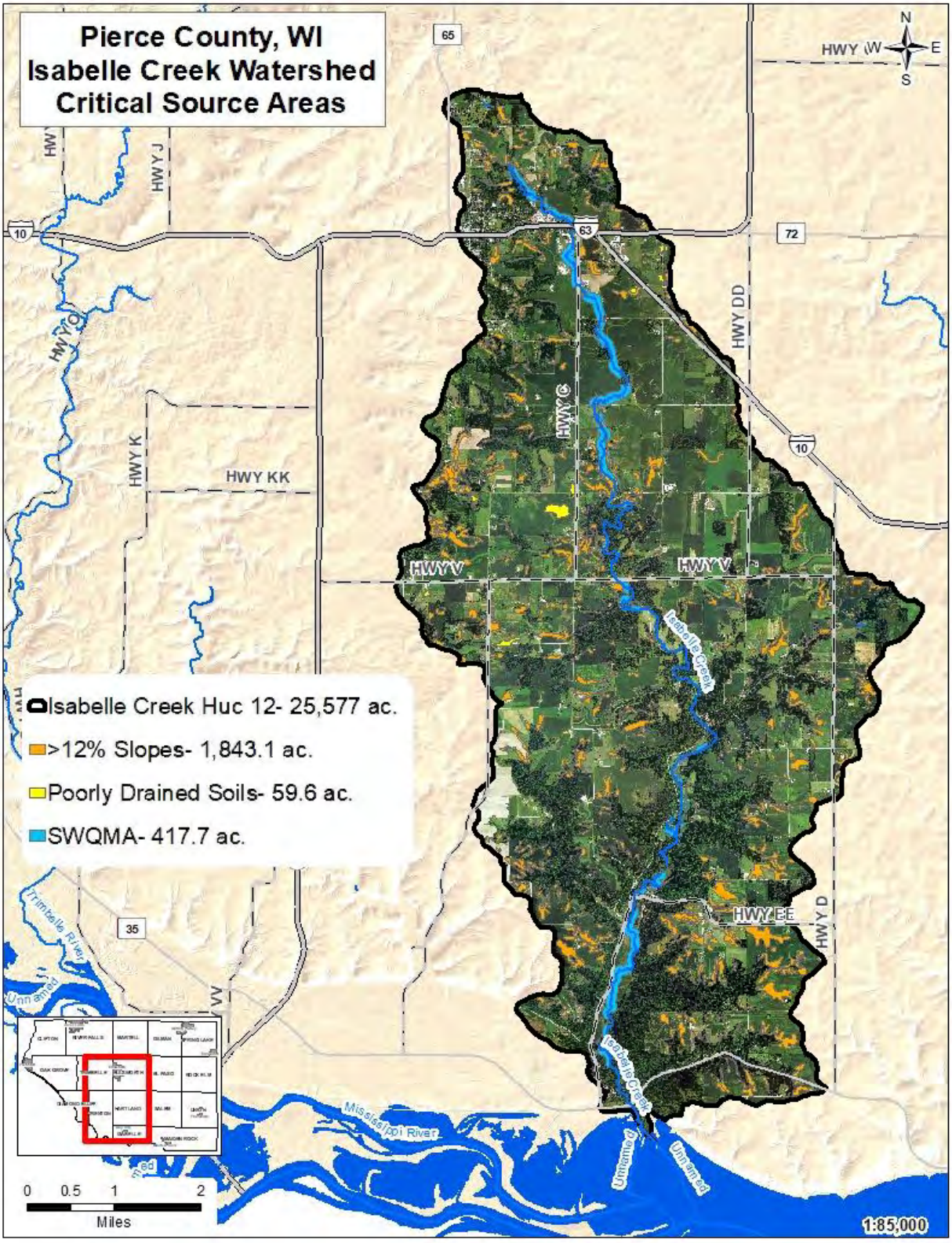

Pierce County, WI
Cady Creek Watershed
Critical Source Areas
N
W
E
S
29
HWY P
HWY B
Cady Creek Huc 12- 14,862 ac.
>12% Slopes- 172.0 ac.
Poorly Drained Soils- 0.0 ac.
SWQMA- 148.4 ac.
Eau Galle River
128
Cady Creek
0 0.25 0.5 1
Miles
1:35,000


Pierce County, WI
Cave Creek Watershed
Critical Source Areas
Cave Creek Huc 12- 14,048 ac.
>12% Slopes- 318.4 ac.
Poorly Drained Soils- 413.9 ac.
SWQMA- 0.1 ac.
HWY N
HWY BB
HWY B
HWY I
HWY G
HWY CC
29
72
Unnamed
Unnamed
Mines Creek
Burkhart Creek
Rush River
Unnamed
Plum Creek
Eau Galle
N
S
E
W
0 0.5 1 2
Miles
1:65,000

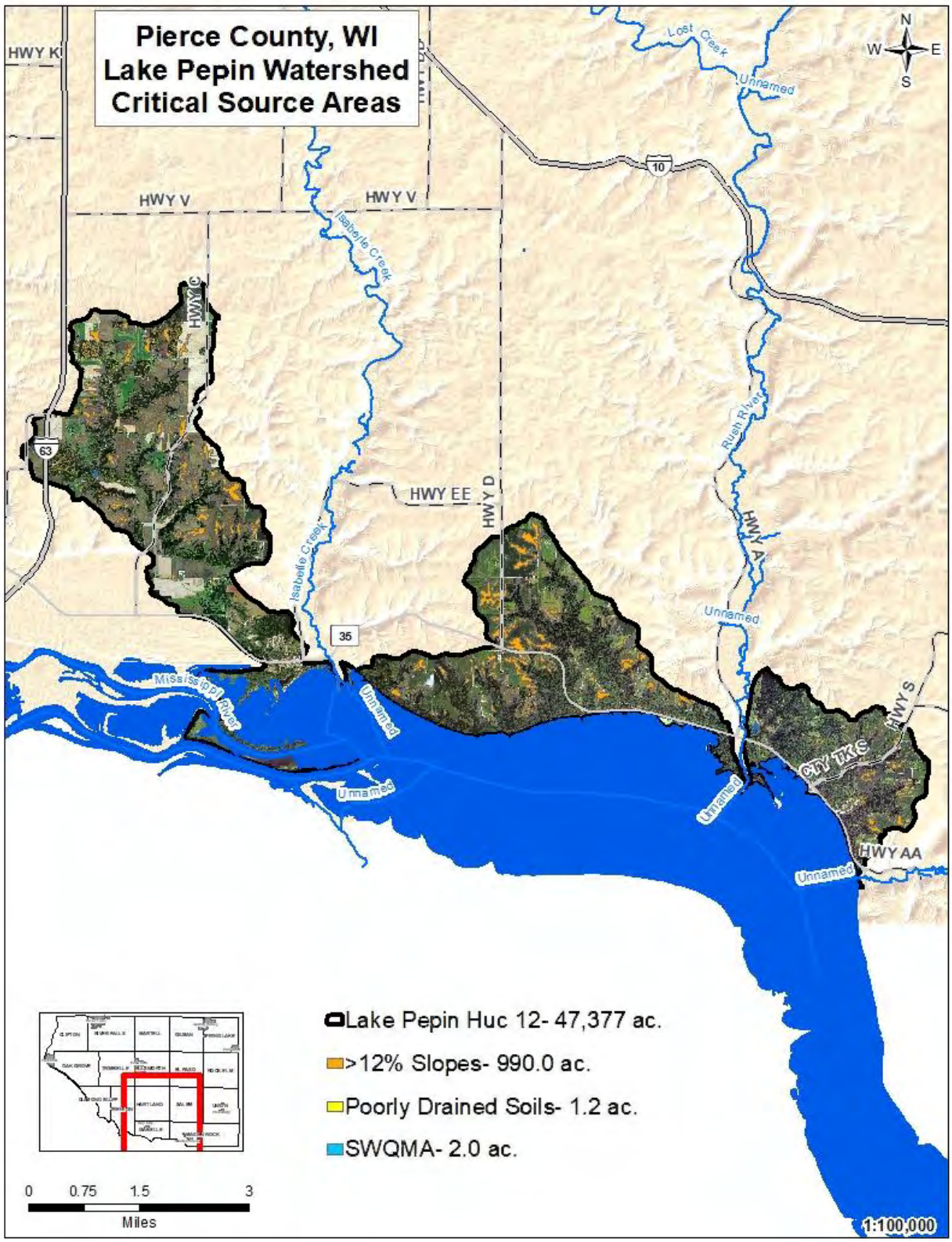

Pierce County, WI
City of Red Wing-Mississippi River Watershed
Critical Source Areas
N
W
E
S
HWY O
HWY C
Little Trim belle Creek
35
63
Unnamed
Trimbelle River
Trenton Slough
HWY K
HWY 63
Unnamed
Mississippi River
Unnamed
City of Red Wing-Mississippi River Huc 12- 8,640 ac.
>12% Slopes- 131.4 ac.
Poorly Drained Soils- 5.1 ac.
SWQMA- 2.0 ac.
0
0.5
1
2
Miles
1:60,000

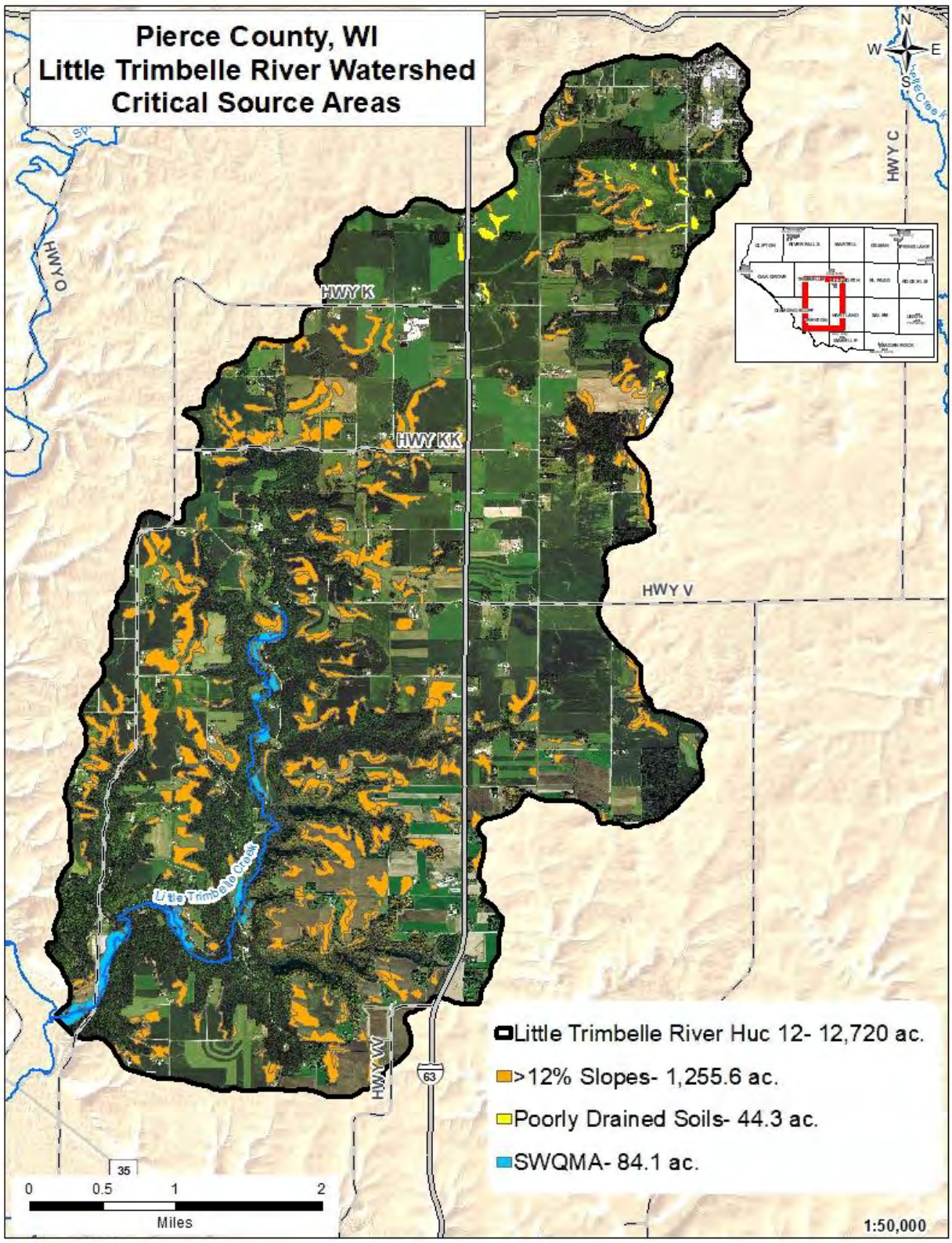

Pierce County, WI
Crystal Springs Coulee-Rush River Watershed
Critical Source Areas
N
W
E
S
10
HWY D
HWY S
HWY CC
Unnamed
Rush River
Unnamed
Unnamed
HWY A
HWY S
HWY H
35
CTY TK S
Unnamed
HWY AA
Pine Creek
Crystal Springs Coulee-Rush River Huc 12- 19,358 ac.
>12% Slopes- 1,414.6 ac.
Poorly Drained Soils- 7.6 ac.
SWQMA- 216.5 ac.
0
0.5
1
2
Miles
1:70,000

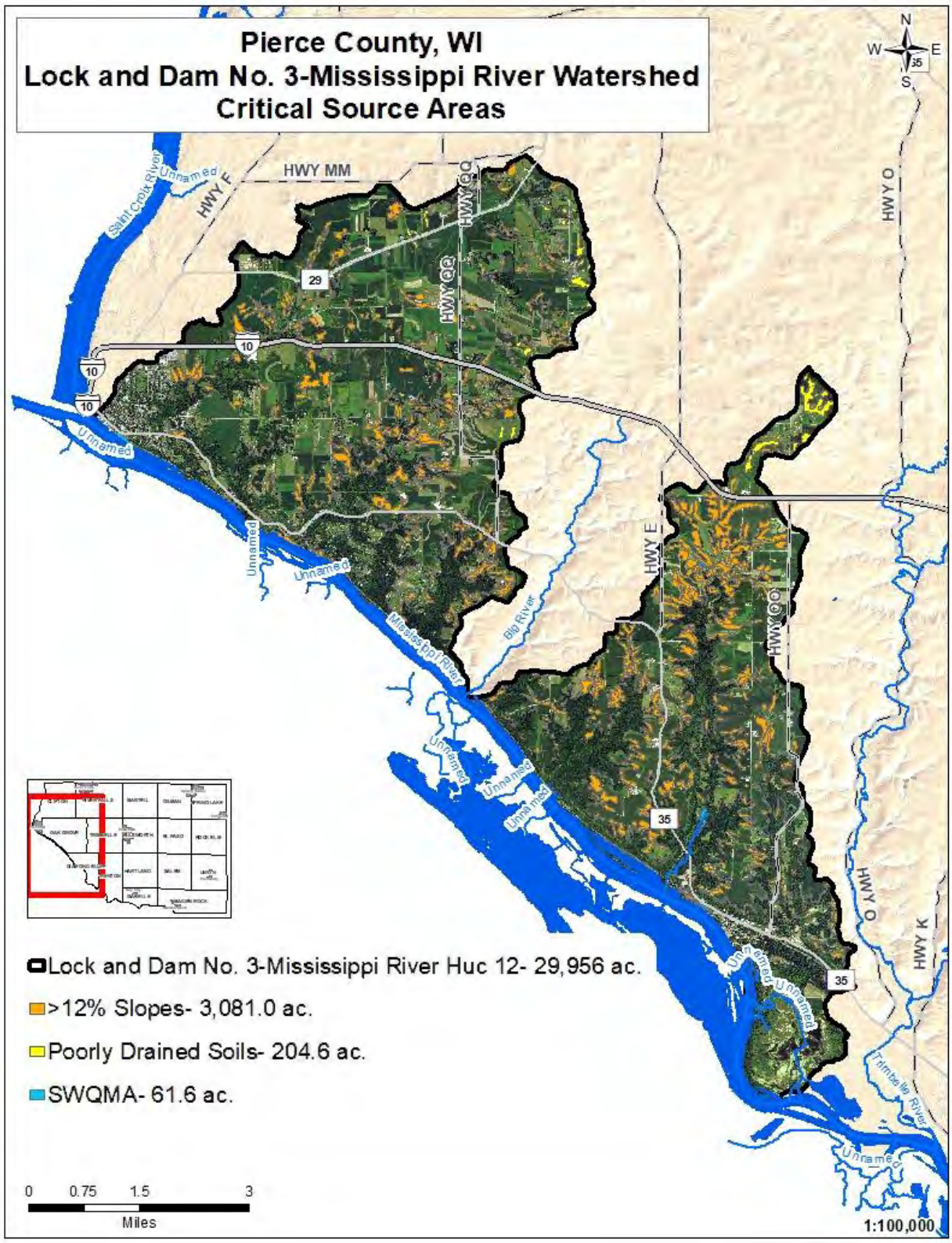

Pierce County, WI
Goose Creek-Trimbelle River Watershed
Critical Source Areas
N
W
E
S
South Fork Kinnickinnic River
29
HWY J
65
HWY W
HWY O
Goose Creek
HWY N
72
HWY DD
Goose Creek-Trimbelle River Huc 12- 20,822 ac.
>12% Slopes- 1,044.0 ac.
Poorly Drained Soils- 783.2 ac.
SWQMA- 302.2 ac.
0 0.5 1 2
Miles
1:65,000

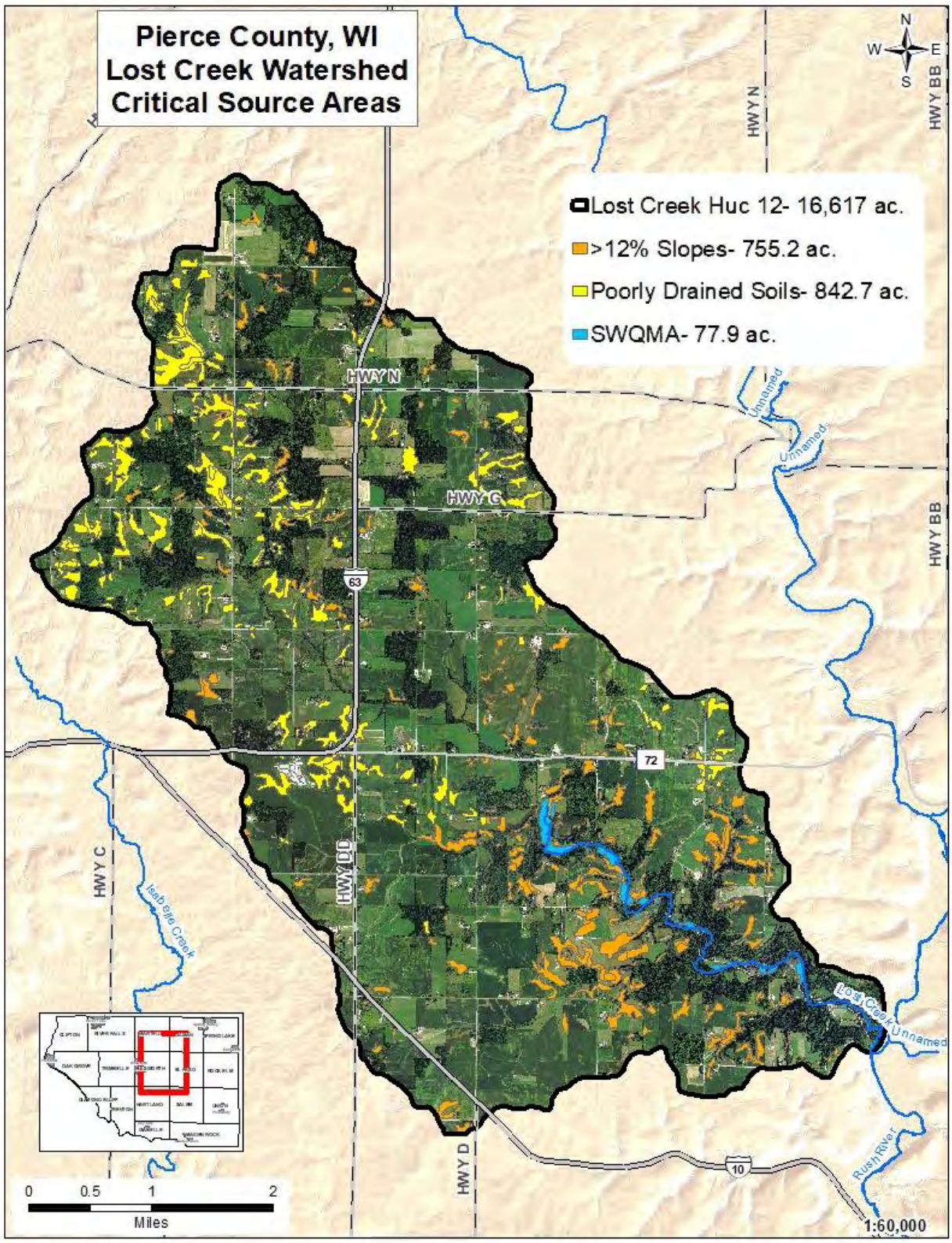

Pierce County, WI
Isabelle Creek Watershed
Critical Source Areas
Isabelle Creek Huc 12- 25,577 ac.
>12% Slopes- 1,843.1 ac.
Poorly Drained Soils- 59.6 ac.
SWQMA- 417.7 ac.
HWY J
HWY K
HWY KK
HWY O
HWY C
HWY DD
HWY V
HWY EE
HWY D
Isabelle Creek
Trimbelle River
Unnamed
Mississippi River
65
63
72
10
35
N
S
E
W
0 0.5 1 2
Miles
1:85,000

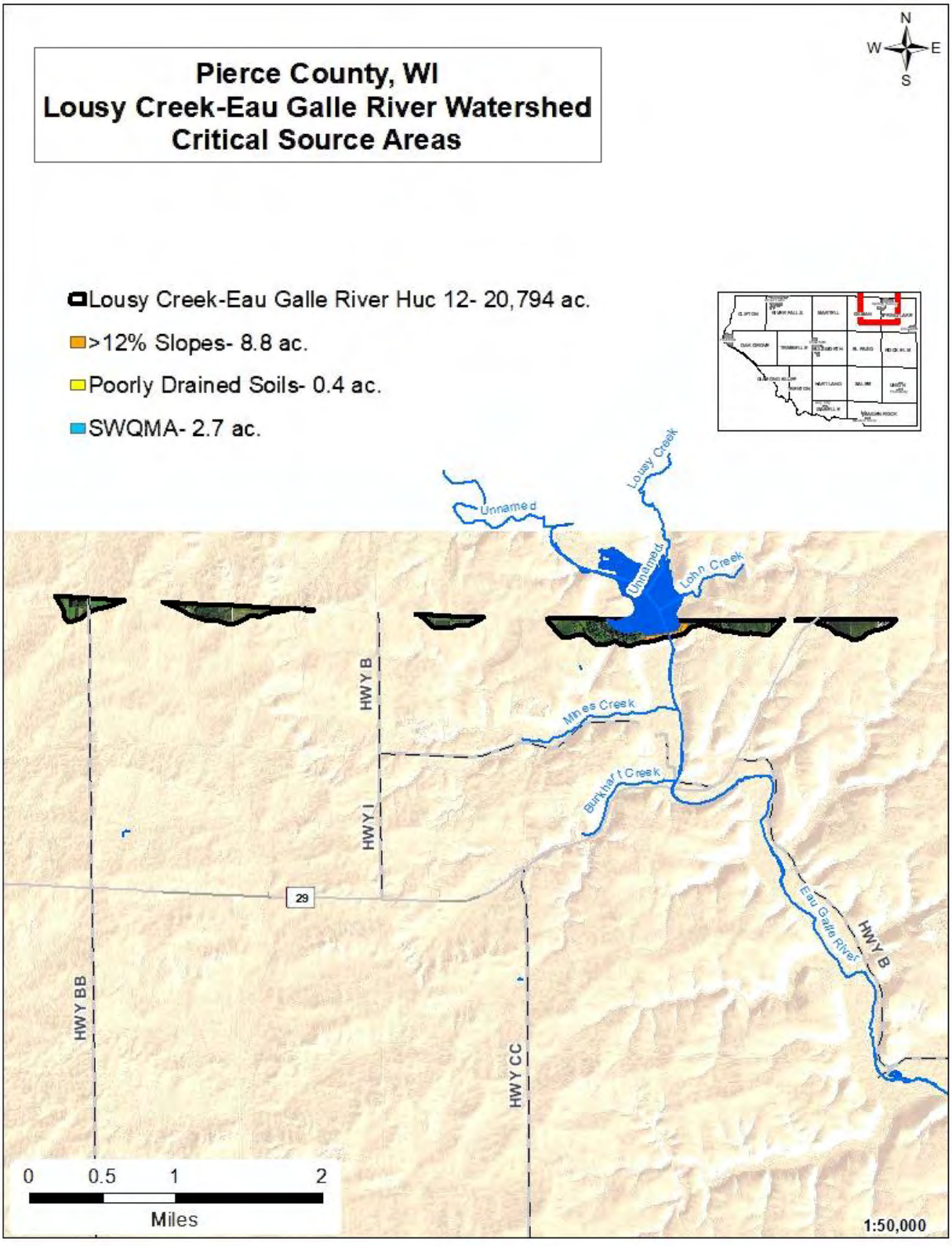

Pierce County, WI
Knights Creek Watershed
Critical Source Areas
N
W
E
S
HWY P
Knights Creek Huc 12- 20,769 ac.
>12% Slopes- 0.0 ac.
Poorly Drained Soils- 0.0 ac.
SWQMA- 0.0 ac.
0
0.125
0.25
0.5
Miles
1:8,000

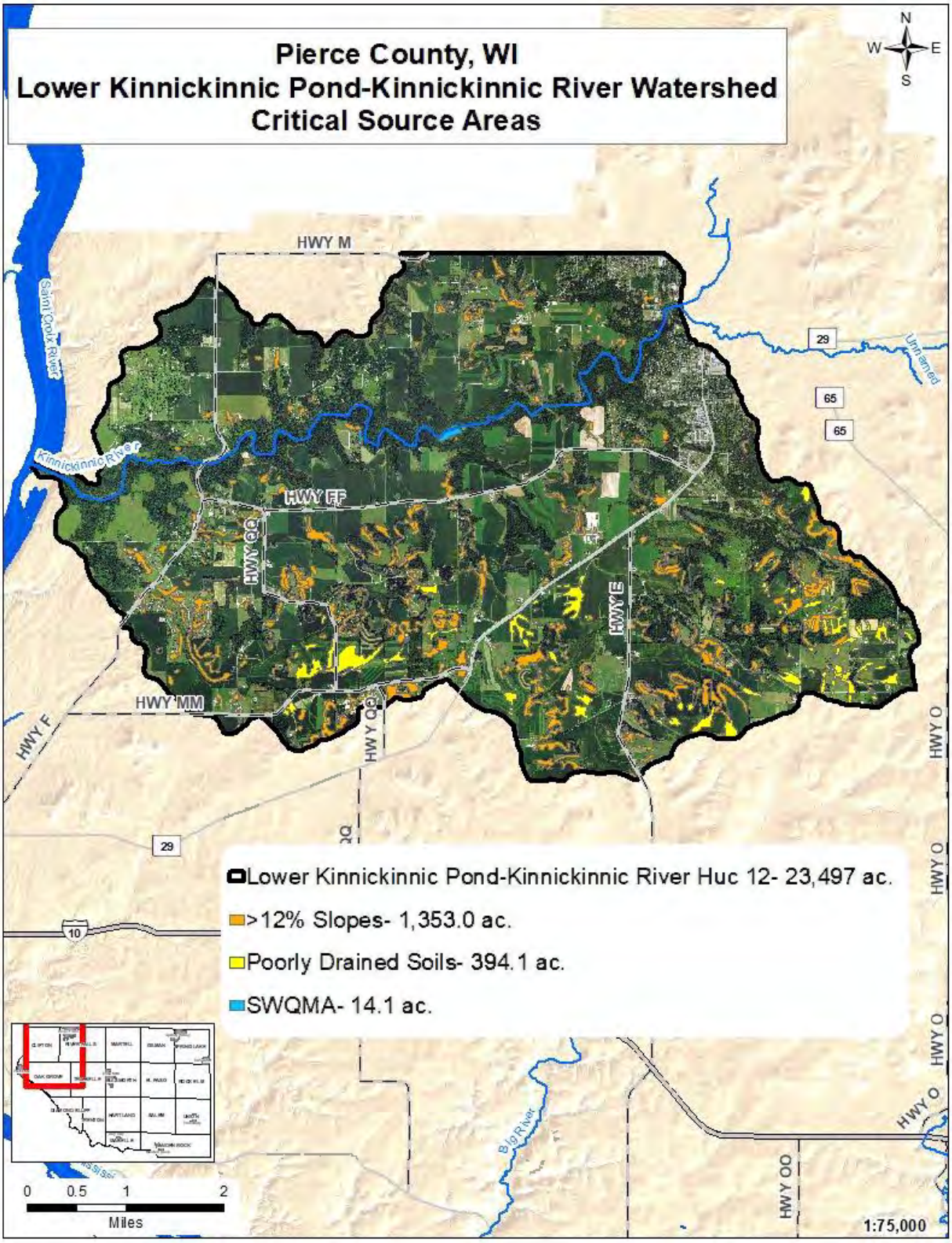

Pierce County, WI
Lake Pepin Watershed
Critical Source Areas
N
W
E
S
HWY K
HWY V
HWY V
HWY C
HWY EE
HWY D
HWY A
HWY S
HWY AA
CTY TKS
Lost Creek
Unnamed
Isabelle Creek
Isabelle Creek
Rush River
Unnamed
Mississippi River
Unnamed
Unnamed
Unnamed
Unnamed
10
63
35
Lake Pepin Huc 12- 47,377 ac.
>12% Slopes- 990.0 ac.
Poorly Drained Soils- 1.2 ac.
SWQMA- 2.0 ac.
0
0.75
1.5
3
Miles
1:100,000

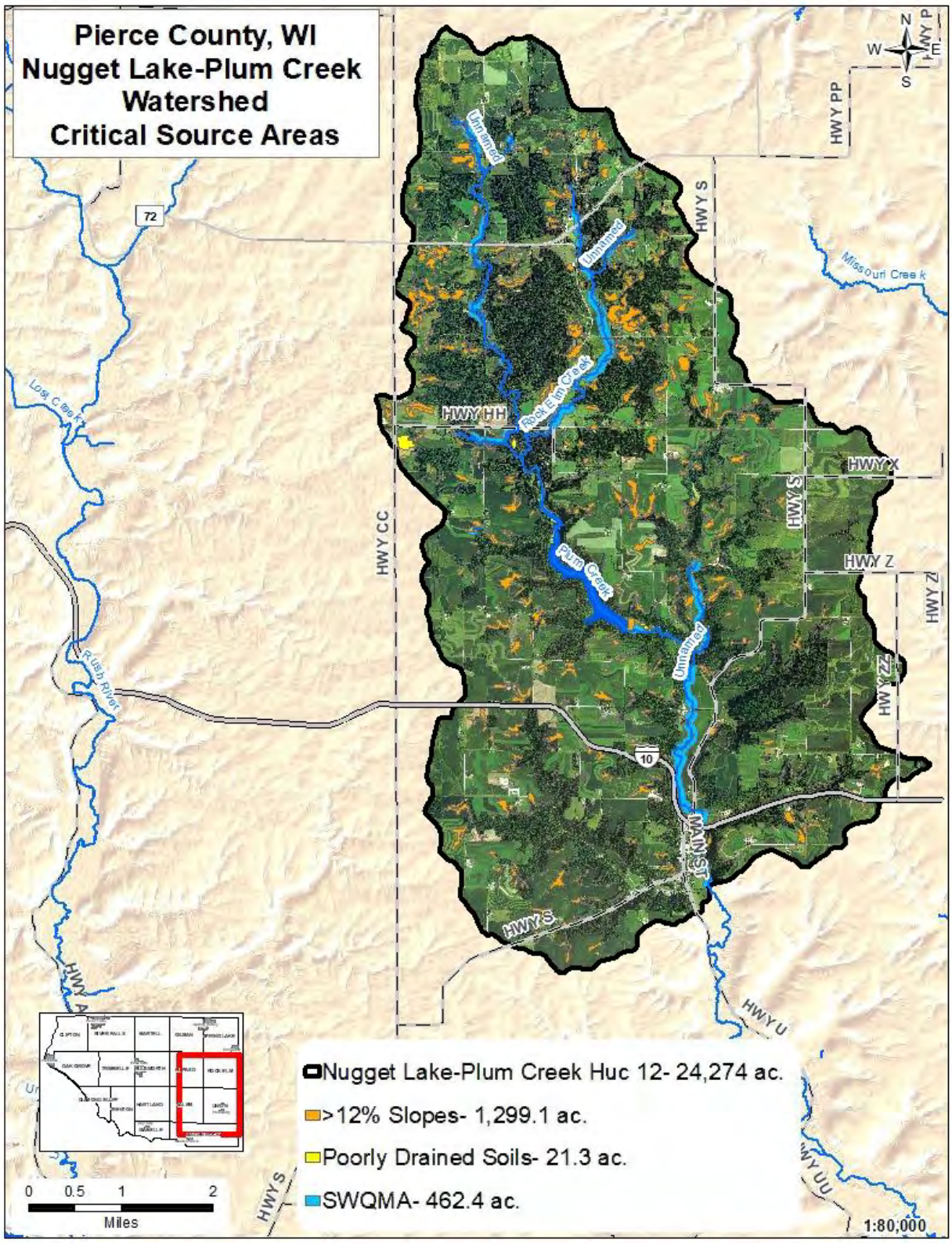

Pierce County, WI
Little Trimbelle River Watershed
Critical Source Areas
N
W
E
S
HWY C
HWY O
HWY K
HWY KK
HWY V
HWY W
63
Little Trimbelle Creek
Little Trimbelle River Huc 12- 12,720 ac.
>12% Slopes- 1,255.6 ac.
Poorly Drained Soils- 44.3 ac.
SWQMA- 84.1 ac.
35
0
0.5
1
2
Miles
1:50,000

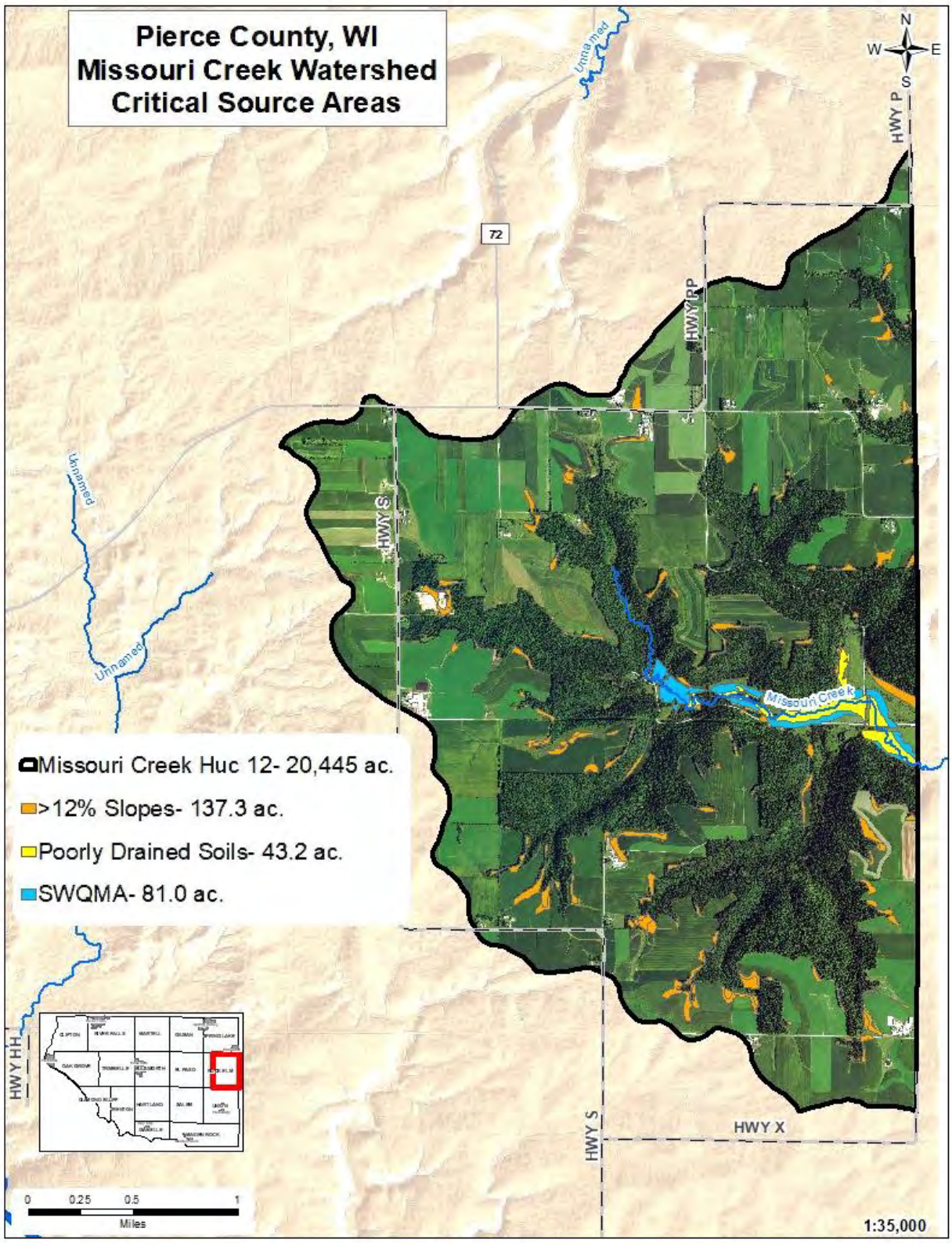

Pierce County, WI
Lock and Dam No. 3-Mississippi River Watershed
Critical Source Areas
N
W
E
S
35
HWY MM
HWY F
HWY QQ
HWY O
HWY E
HWY K
Saint Croix River
Unnamed
Big River
Mississippi River
Trimbelle River
29
10
35
Lock and Dam No. 3-Mississippi River Huc 12- 29,956 ac.
>12% Slopes- 3,081.0 ac.
Poorly Drained Soils- 204.6 ac.
SWQMA- 61.6 ac.
0 0.75 1.5 3
Miles
1:100,000

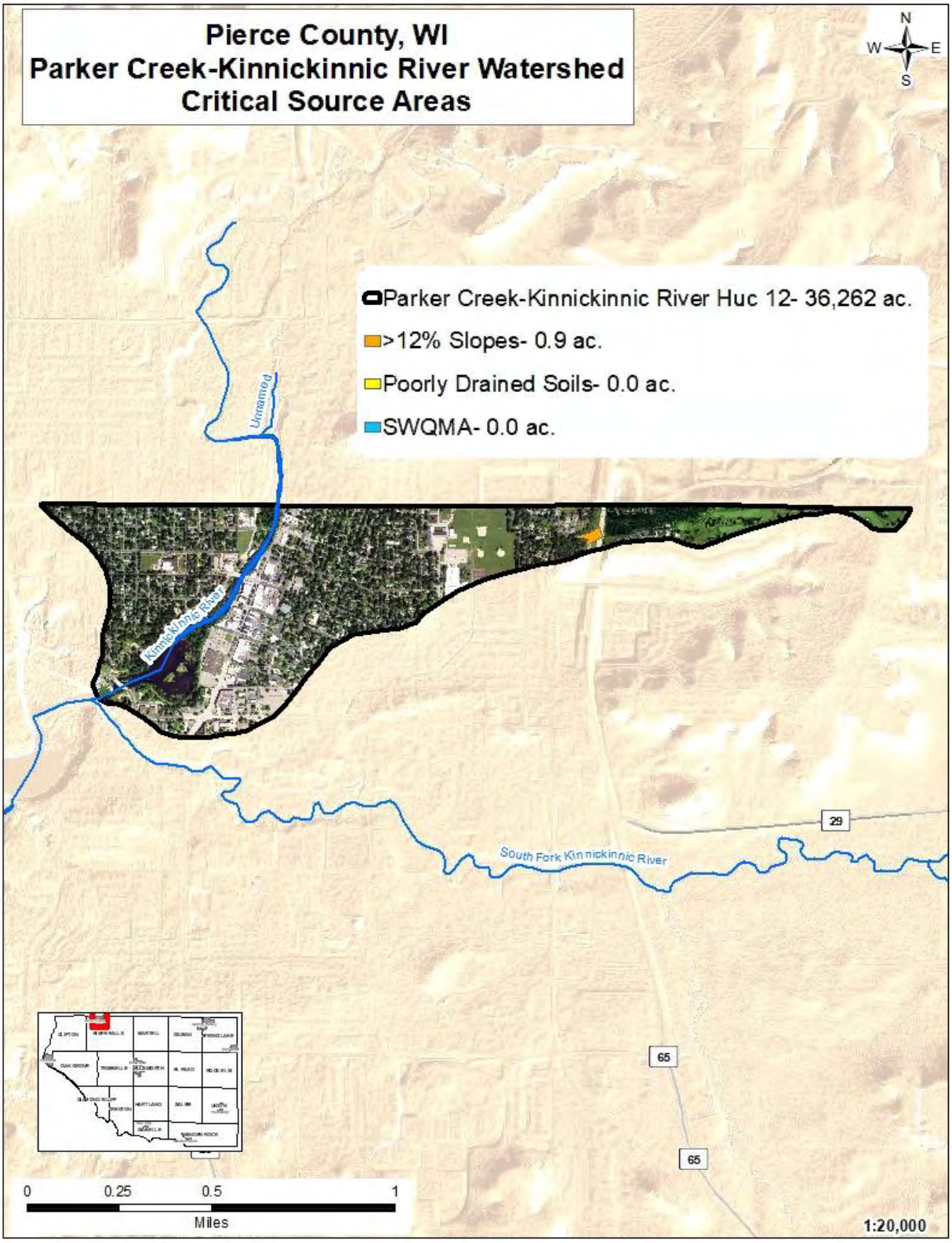

Pierce County, WI
Lost Creek Watershed
Critical Source Areas
N
W
E
S
Lost Creek Huc 12- 16,617 ac.
>12% Slopes- 755.2 ac.
Poorly Drained Soils- 842.7 ac.
SWQMA- 77.9 ac.
HWY N
HWY BB
HWY C
HWY DD
HWY D
63
72
10
Unnamed
Unnamed
Unnamed
Lost Creek
Rush River
Isabelle Creek
0
0.5
1
2
Miles
1:60,000

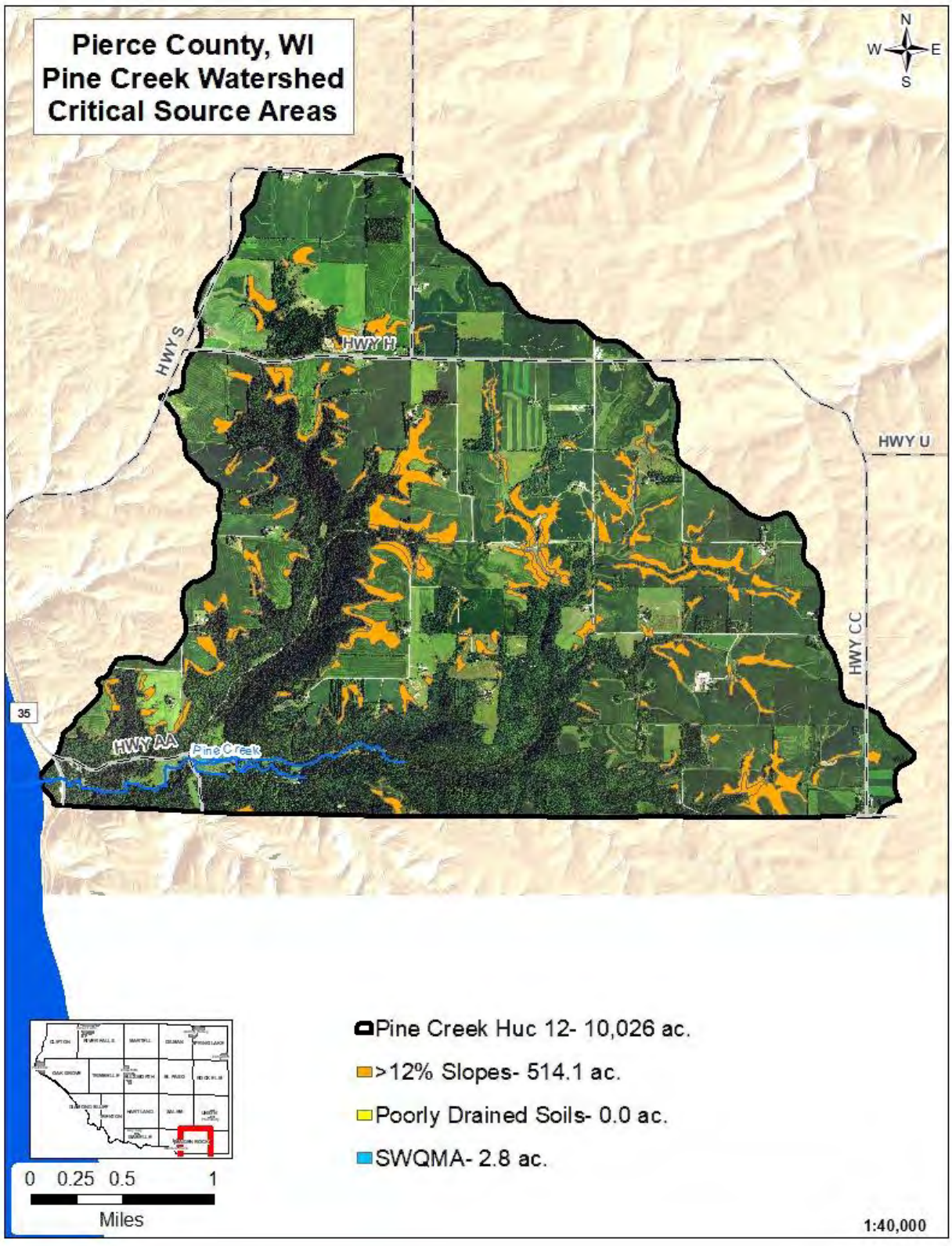

Pierce County, WI
Lousy Creek-Eau Galle River Watershed
Critical Source Areas
N
W
E
S
Lousy Creek-Eau Galle River Huc 12- 20,794 ac.
>12% Slopes- 8.8 ac.
Poorly Drained Soils- 0.4 ac.
SWQMA- 2.7 ac.
Unnamed
Lousy Creek
Unnamed
Lohn Creek
Mines Creek
Burkhart Creek
Eau Galle River
HWY B
HWY I
HWY BB
HWY CC
HWY B
29
0
0.5
1
2
Miles
1:50,000

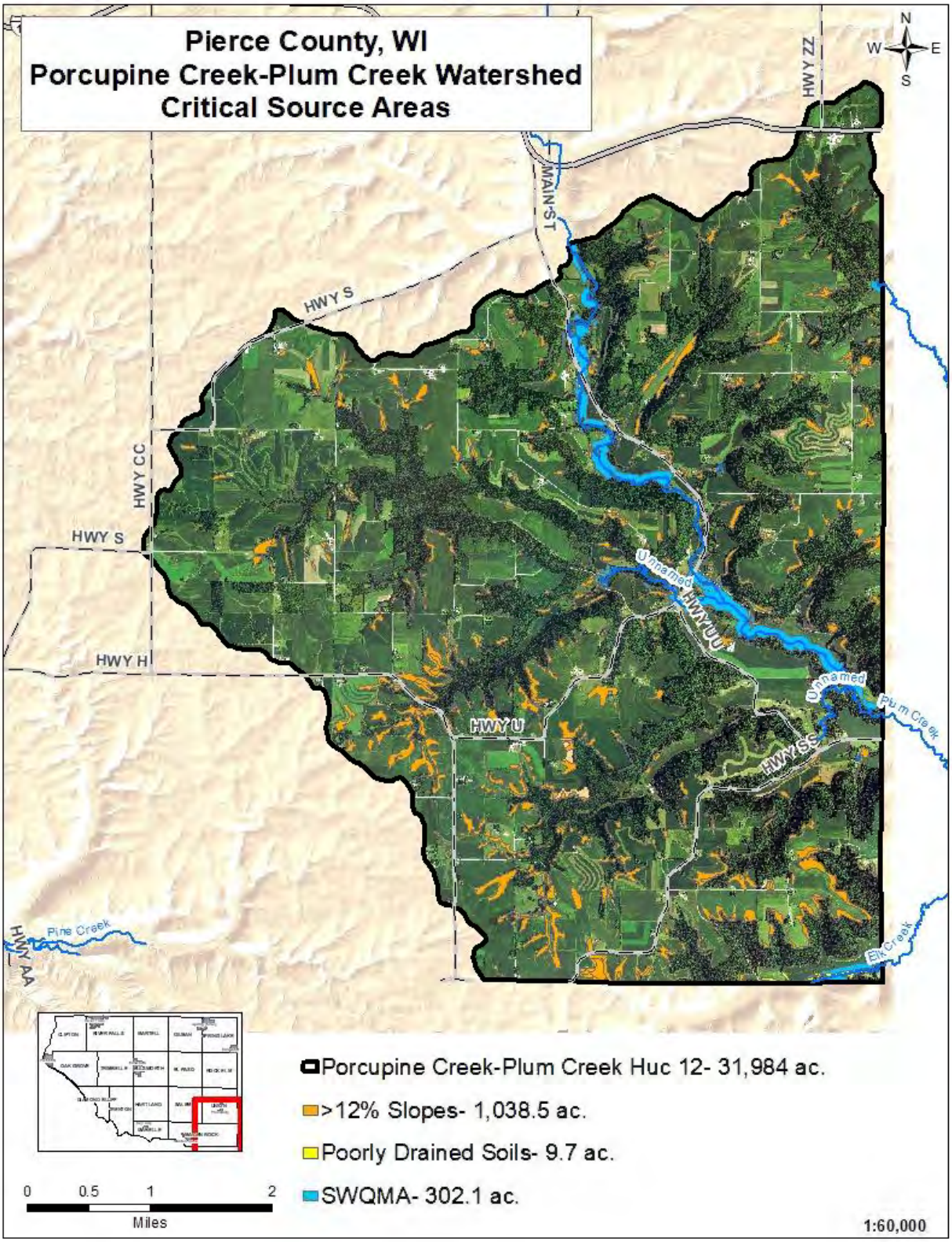

Pierce County, WI
Lower Kinnickinnic Pond-Kinnickinnic River Watershed
Critical Source Areas
N
W
E
S
HWY M
Saint Croix River
Kinnickinnic River
Unnamed
29
65
65
HWY FF
HWY GG
HWY E
HWY MM
HWY F
HWY O
HWY O
HWY O
HWY O
HWY O
29
10
Lower Kinnickinnic Pond-Kinnickinnic River Huc 12- 23,497 ac.
>12% Slopes- 1,353.0 ac.
Poorly Drained Soils- 394.1 ac.
SWQMA- 14.1 ac.
Big River
HWY OO
0 0.5 1 2
Miles
1:75,000

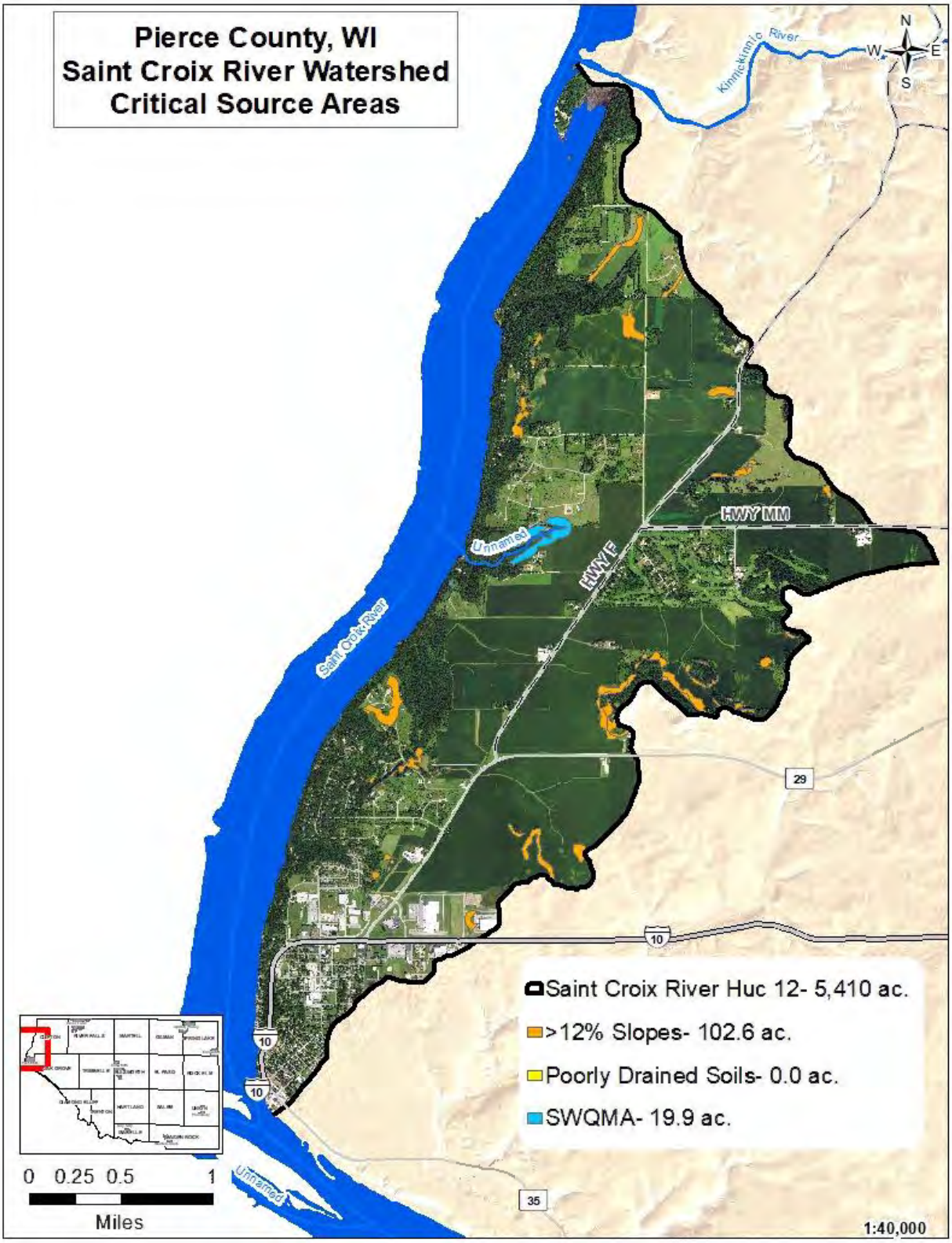

Pierce County, WI
Nugget Lake-Plum Creek
Watershed
Critical Source Areas
N
W
E
S
HWY P
HWY PP
HWY S
HWY HH
HWY X
HWY CC
HWY Z
HWY ZZ
MAIN ST
HWY U
HWY UU
72
10
Unnamed
Rock Elm Creek
Plum Creek
Missouri Creek
Lost Creek
Rush River
Nugget Lake-Plum Creek Huc 12- 24,274 ac.
>12% Slopes- 1,299.1 ac.
Poorly Drained Soils- 21.3 ac.
SWQMA- 462.4 ac.
0 0.5 1 2
Miles
1:80,000

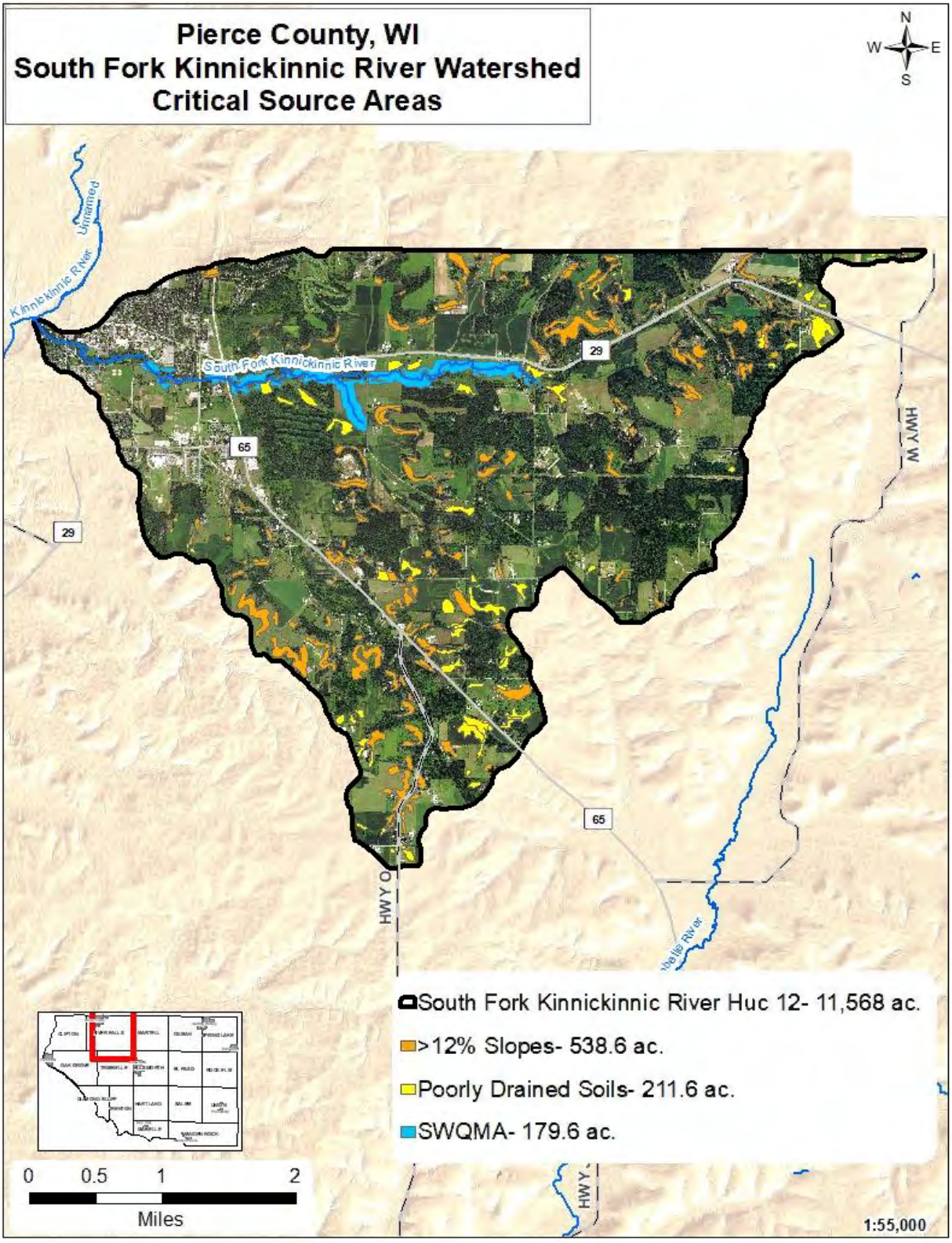

Pierce County, WI
Missouri Creek Watershed
Critical Source Areas
N
W
E
S
Unnamed
HWY P
72
HWY PP
HWY S
Unnamed
Unnamed
Missouri Creek
Missouri Creek Huc 12- 20,445 ac.
>12% Slopes- 137.3 ac.
Poorly Drained Soils- 43.2 ac.
SWQMA- 81.0 ac.
HWY HH
HWY S
HWY X
0 0.25 0.5 1
Miles
1:35,000

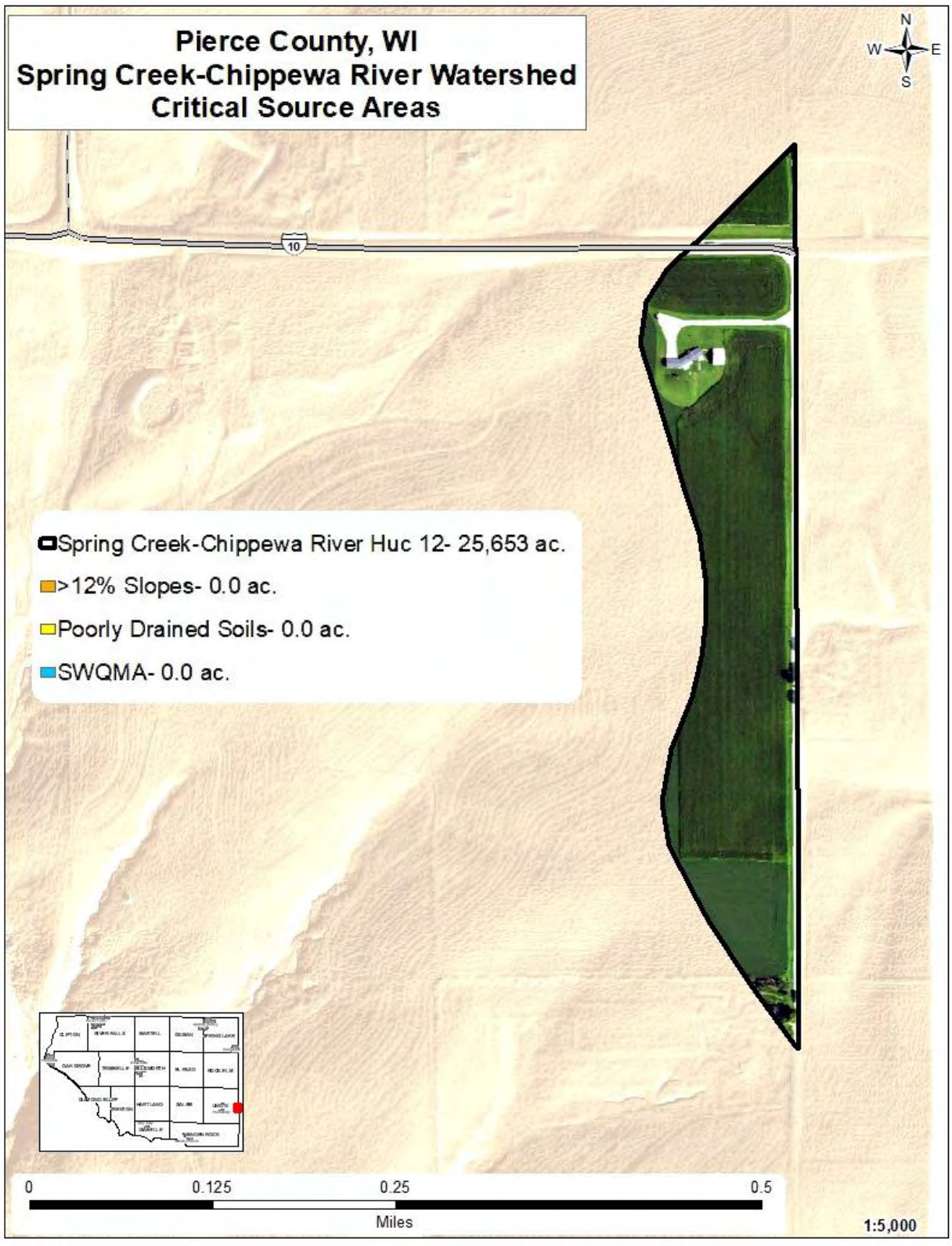

Pierce County, WI
Parker Creek-Kinnickinnic River Watershed
Critical Source Areas
N
W
E
S
Parker Creek-Kinnickinnic River Huc 12- 36,262 ac.
>12% Slopes- 0.9 ac.
Poorly Drained Soils- 0.0 ac.
SWQMA- 0.0 ac.
Unnamed
Kinnickinnic River
South Fork Kinnickinnic River
29
65
65
0
0.25
0.5
1
Miles
1:20,000

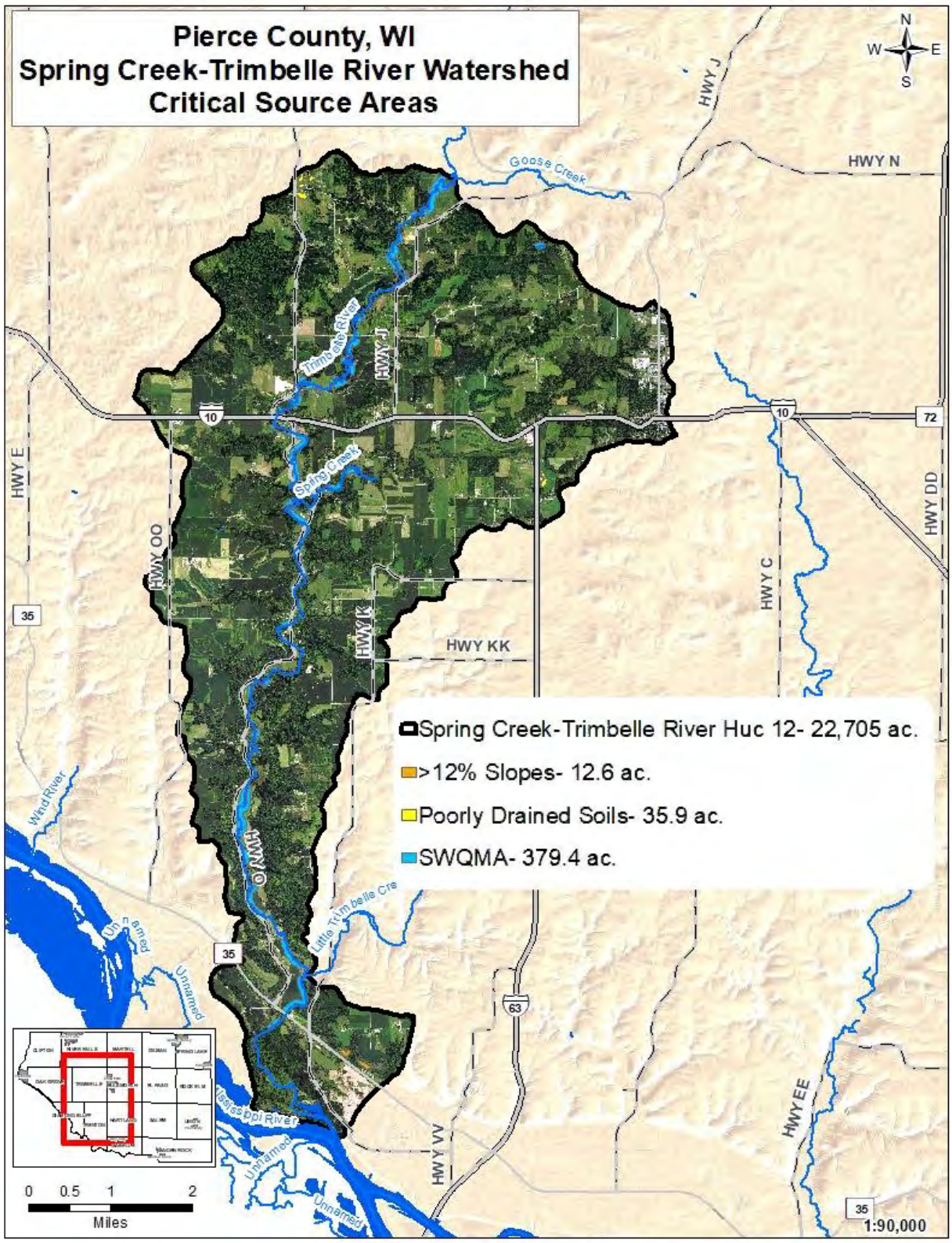

Pierce County, WI
Pine Creek Watershed
Critical Source Areas
N
W
E
S
HWY S
HWY H
HWY U
HWY CC
35
HWY AA
Pine Creek
Pine Creek Huc 12- 10,026 ac.
>12% Slopes- 514.1 ac.
Poorly Drained Soils- 0.0 ac.
SWQMA- 2.8 ac.
0 0.25 0.5 1
Miles
1:40,000

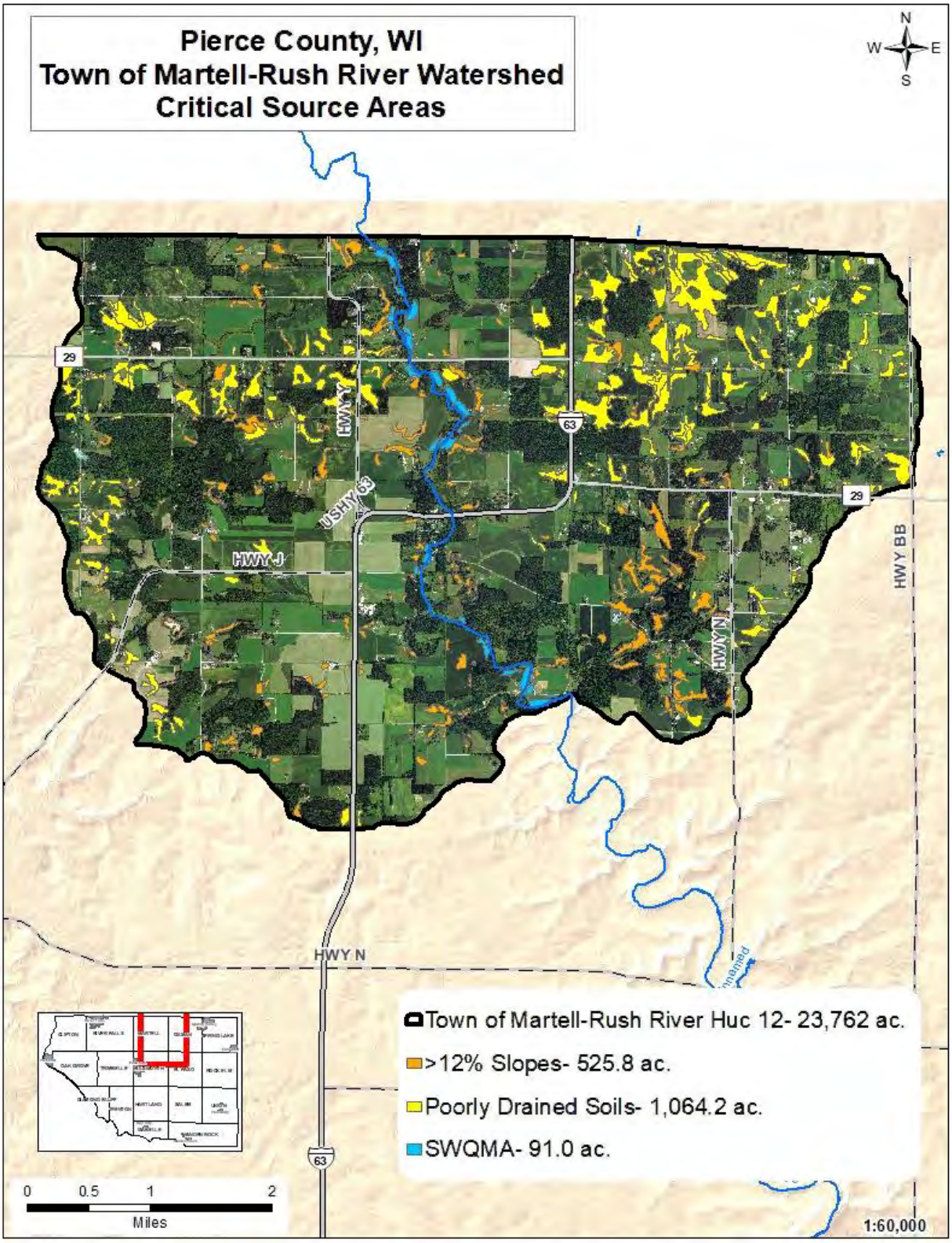

Pierce County, WI
Porcupine Creek-Plum Creek Watershed
Critical Source Areas
N
W
E
S
HWY ZZ
MAIN ST
HWY S
HWY CC
HWY S
HWY H
HWY U
Unnamed
HWY UU
Unnamed
Plum Creek
HWY SS
Pine Creek
HWY AA
Elk Creek
Porcupine Creek-Plum Creek Huc 12- 31,984 ac.
>12% Slopes- 1,038.5 ac.
Poorly Drained Soils- 9.7 ac.
SWQMA- 302.1 ac.
0
0.5
1
2
Miles
1:60,000

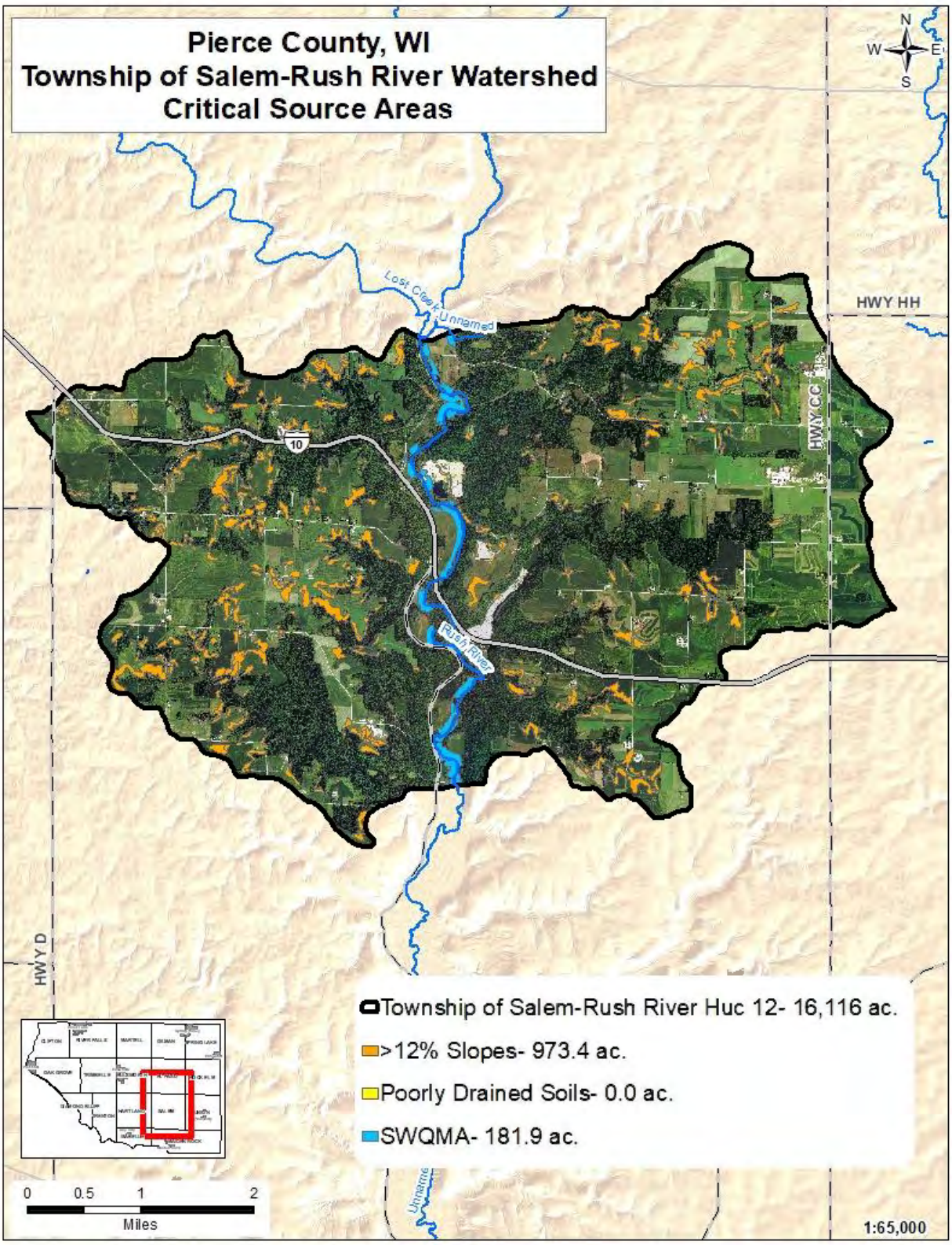

Pierce County, WI
Saint Croix River Watershed
Critical Source Areas
N
W
E
S
Kinnickinnic River
HWY MM
HWY F
Unnamed
Saint Croix River
29
10
10
10
35
Unnamed
Saint Croix River Huc 12- 5,410 ac.
>12% Slopes- 102.6 ac.
Poorly Drained Soils- 0.0 ac.
SWQMA- 19.9 ac.
0 0.25 0.5 1
Miles
1:40,000

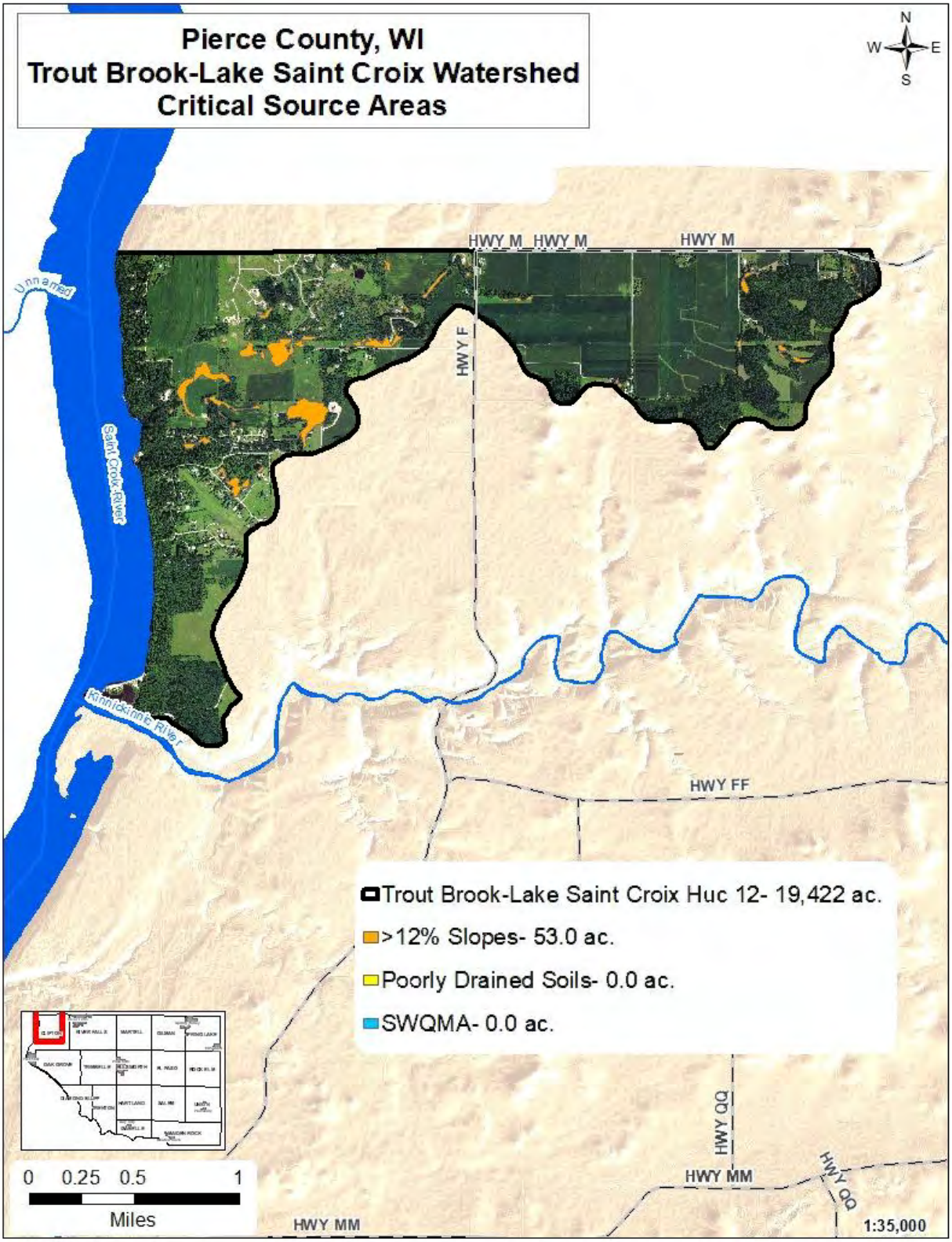

Pierce County, WI
South Fork Kinnickinnic River Watershed
Critical Source Areas
N
W
E
S
Unnamed
Kinnickinnic River
South Fork Kinnickinnic River
29
65
HWY W
HWY O
South Fork Kinnickinnic River Huc 12- 11,568 ac.
>12% Slopes- 538.6 ac.
Poorly Drained Soils- 211.6 ac.
SWQMA- 179.6 ac.
0
0.5
1
2
Miles
1:55,000


Pierce County, WI
Spring Creek-Chippewa River Watershed
Critical Source Areas
N
W
E
S
10
Spring Creek-Chippewa River Huc 12- 25,653 ac.
>12% Slopes- 0.0 ac.
Poorly Drained Soils- 0.0 ac.
SWQMA- 0.0 ac.
0
0.125
0.25
0.5
Miles
1:5,000


Pierce County, WI
Spring Creek-Trimbelle River Watershed
Critical Source Areas
N
W
E
S
HWY J
HWY N
Goose Creek
Trimbelle River
HWY J
10
10
72
HWY E
HWY OO
Spring Creek
HWY K
HWY C
HWY DD
35
HWY KK
Spring Creek-Trimbelle River Huc 12- 22,705 ac.
>12% Slopes- 12.6 ac.
Poorly Drained Soils- 35.9 ac.
SWQMA- 379.4 ac.
Ward River
HWY O
Little Trimbelle Cre
Unnamed
Unnamed
35
63
Mississippi River
HWY VV
HWY EE
Unnamed
Unnamed
0 0.5 1 2
Miles
35
1:90,000


Pierce County, WI
Town of Martell-Rush River Watershed
Critical Source Areas
N
W
E
S
29
HWY Y
63
USHY 63
HWY J
29
HWY BB
HWY N
HWY N
63
Town of Martell-Rush River Huc 12- 23,762 ac.
>12% Slopes- 525.8 ac.
Poorly Drained Soils- 1,064.2 ac.
SWQMA- 91.0 ac.
0
0.5
1
2
Miles
1:60,000


Pierce County, WI
Township of Salem-Rush River Watershed
Critical Source Areas
N
W
E
S
Lost Creek
Unnamed
HWY HH
HWY CC
10
Rush River
HWY D
Township of Salem-Rush River Huc 12- 16,116 ac.
>12% Slopes- 973.4 ac.
Poorly Drained Soils- 0.0 ac.
SWQMA- 181.9 ac.
0
0.5
1
2
Miles
1:65,000


Pierce County, WI
Trout Brook-Lake Saint Croix Watershed
Critical Source Areas
N
W
E
S
HWY M
HWY M
HWY M
HWY F
Unnamed
Saint Croix River
Kinnickinnic River
HWY FF
Trout Brook-Lake Saint Croix Huc 12- 19,422 ac.
>12% Slopes- 53.0 ac.
Poorly Drained Soils- 0.0 ac.
SWQMA- 0.0 ac.
HWY QQ
HWY MM
HWY QQ
HWY MM
0 0.25 0.5 1
Miles
1:35,000

Appendix F. Glossary

ALGAE:
A group of microscopic, photosynthetic water plants. Algae give off oxygen during the day as a product of photosynthesis and consume oxygen during the night as a result of respiration. Therefore, algae affect the oxygen content of water. Nutrient-enriched water increases algae growth.

ALLUVIUM:
Clay, silt, sand, gravel, or similar detrital material deposited by running water.

ANIMAL WASTE MANAGEMENT:
A group of practices including barnyard runoff management, nutrient management, and manure storage facilities designed to minimize the effects of animal manure on surface and groundwater resources.

AQUIFER:
A water-bearing stratum of permeable rock, sand, or gravel.

AREAWIDE WATER QUALITY MANAGEMENT PLANS (208 PLANS):
A plan to document water quality conditions in a drainage basin and make recommendations to protect and improve basin water quality. Each basin in Wisconsin must have a plan prepared for it, according to section 208 of the Clean Water Act.

BASIN PLAN:
See "Areawide Water Quality Management Plan."

BEST MANAGEMENT PRACTICES (BMPs):
The most effective, practical measures to control nonpoint sources of pollutants that runoff from land surfaces.

BUFFER STRIPS:
Strips of grass, shrubs, trees, and other vegetation between disturbed areas and a stream, lake, or wetland.

CLUSTER DEVELOPMENT:
Grouping homes on part of a property while maintaining a large amount of open space on the remaining land.

CONSERVATION EASEMENT:
A legal document that restricts the use of land to farming, open space, or wildlife habitat. A landowner may sell or donate an easement to a government agency or a private land trust.

COST-EFFECTIVE:
A level of treatment or management with the greatest incremental benefit for the money spent.

ECOSYSTEM:
The interacting system of a biological community and its nonliving surroundings.

ENVIRONMENTAL PROTECTION AGENCY (USEPA):
The federal agency responsible for enforcing federal environmental regulations. The Environmental Protection Agency delegates some of its responsibilities for water, air, and solid waste pollution control to state agencies.

EROSION:
The wearing away of the land surface by wind or water.

EUTROPHIC:
Refers to a nutrient-rich lake. Large amounts of algae and weeds characterize a eutrophic lake (see also "Oligotrophic" and "Mesotrophic").

EUTROPHICATION:
The process of nutrient enrichment of a lake leading to increased production of aquatic organisms. Eutrophication can be accelerated by human activity such as agriculture and improper waste disposal.

FECAL COLIFORM:
A group of bacteria used to indicate the presence of other bacteria that cause disease. The number of coliform is particularly important when water is used for drinking and swimming.

FISHABLE AND SWIMMABLE:
Refers to the water quality goal set for the nation's surface waters by Congress in the Clean Water Act. All waters were to meet this goal by 1984.

FOOD CHAIN:
A sequence of organisms where each uses the next as a food source.

GROUNDWATER:
Underground water-bearing areas generally within the boundaries of a watershed, which fill internal passageways of porous geologic formations (aquifers) with water that flows in response to gravity and pressure. Often used as the source of water for communities and industries.

HABITAT:
The place or type of site where a plant or animal naturally lives and grows.

HERBICIDE:
A type of pesticide that is specifically designed to kill plants and can also be toxic to other organisms.

MACROPHYTE:
A rooted aquatic plant.

MESOTROPHIC:
Refers to a moderately fertile nutrient level of a lake between the oligotrophic and eutrophic levels. (See also "Eutrophic" and "Oligotrohpic.")

MILLIGRAMS PER LITER (mg/1):
A measure of the concentration of substance in water. For most pollution measurements this is the equivalent of "parts per million" (ppm).

MITIGATION:
The effort to lessen the damages from a particular project through modifying a project, providing alternatives, compensating for losses, or replacing lost values.

NAVIGABLE WATERS: A water body with a bed and a bank that can float a watercraft at any point in the year.

NONPOINT SOURCE POLLUTION (NSP):
Pollution whose sources cannot be traced to a single point such as a municipal or industrial wastewater treatment plant discharge pipe. Nonpoint sources include eroding farmland and construction sites, urban streets, and barnyards. Pollutants from these sources reach water bodies in runoff, which can best be controlled by proper land management.

NUTRIENT MANAGEMENT PLAN:
A guidance document that provides fertilizer and manure spreading recommendations for crop fields based upon soil test results and crop needs. Plans are sometimes referred to as NRCS 590 plans for the Natural Resources Conservation Service Standard that guides their preparation.

OLIGOTROPHIC:
Refers to an unproductive and nutrient-poor lake. Such lakes typically have very clear water. (See also "Eutrophic" and "Mesotrophic.")

ORDINARY HIGH-WATER MARK:
The point on the bank or shore up to which the water leaves a distinct mark on the shore or bank from its presence, wave action, or flow. The mark may be indicated by erosion, destruction of or change in vegetation, or another easily recognizable characteristic.

PESTICIDE:
Any chemical agent used to control specific organisms, such as insecticides, herbicides, fungicides, etc.

PHOSPHORUS:
A nutrient that, when reaching lakes in excess amounts, can lead to over-fertile conditions and algae blooms.

POINT SOURCES:
Sources of pollution that have discrete discharges, usually from a pipe or outfall.

POLLUTION:
The presence of materials or energy whose nature, location, or quantity produces undesired environmental effects.

PRIME AGRICULTURAL LAND:
Farmland that has gentle slopes and well-drained soils and requires a minimum of conservation practices. It is the easiest land to farm. Class I and II soils, as defined by the Natural Resources Conservation Service are considered prime agricultural soils.

PRIORITY WATERSHED:
A drainage area selected to receive state money to help pay the cost of controlling nonpoint source pollution.

PRODUCTIVITY:
A measure of the amount of living matter which is supported by an environment over a specific period of time. Often described in terms of algae production for a lake.

PUBLIC PARTICIPATION:
The active involvement of interested and affected citizens in governmental decision-making.

PURCHASE OF DEVELOPMENT RIGHTS:
The voluntary sale of the rights to develop a piece of property by the landowner to a government agency or a land trust. The sale price is determined by an appraisal. The land is restricted to farming or open space.

REDUCED TILLAGE:
Planting row crops while only slightly disturbing the soil. With reduced tillage, a protective layer of plant residue stays on the surface and erosion rates decrease.

RIPARIAN:
Belonging or relating to the bank of a lake, river, or stream.

RIPRAP:
Broken rock, cobbles, or boulders placed on the bank of a stream to protect it against erosion.

RUNOFF:
Water from rain, snowmelt, or irrigation that flows over the ground surface and returns to streams and lakes. Runoff can collect pollutants from air or land and carry them to receiving waters.

SEDIMENT:
Soil particles suspended in and carried by water as a result of erosion.

SEPTIC SYSTEM:
Sewage treatment and disposal for homes not connected to sewer lines usually with a tank and drain field. Solids settle to the bottom of the tank. Liquid percolates through the drain field.

STORM SEWERS:
A system of sewers that collect and transport rain and snow runoff. In areas that have separated sewers, such storm water is not mixed with sanitary sewage.

SUSPENDED SOLIDS (SS):
Small particles of solid pollutants suspended in water.

TOLERABLE SOIL LOSS:
The tolerable soil loss rate, commonly referred to as "T," is the maximum average annual rate of soil erosion for each soil type that will permit a high level of crop productivity to be sustained economically and indefinitely (ATCP 50.01(16)).

TOTAL MAXIMUM DAILY LOADS:
The maximum amount of a pollutant that can be discharged into a stream without causing a violation of water quality standards.

TRANSFER OF DEVELOPMENT RIGHTS:
Property rights that may not be used on the land from which they come. TDRs may be sold to be used on a designated site in a receiving (growth) area. When TDRs are sold, the land they came from is then restricted to farming.

TROPHIC STATUS:
The level of growth or productivity of a lake as measured by phosphorus content, algae abundance, and depth of light penetration.

TURBIDITY:
Lack of water clarity. Turbidity is closely related to the amount of suspended solids in water.

UNIFORM DWELLING CODE:
A statewide building code specifying requirements for electrical, heating, ventilation, fire, structural, plumbing, construction site erosion, and other construction related practices.

UNIVERSITY OF WISCONSIN EXTENSION (UWEX):
A special outreach and education branch of the state university system.

VARIANCE:
Government permission for a delay or exception in the application of a given law, ordinance, or regulation. Also, see water quality standard variance.

WASTE:
Unwanted materials left over from manufacturing processes; refuse from places of human or animal habitation.

WATER QUALITY CRITERIA:
A measure of the physical, chemical, or biological characteristics of a water body necessary to protect and maintain different water uses (fish and aquatic life, swimming, etc.).

WATER QUALITY STANDARDS:
The legal basis and determination of the use of a water body and the water quality criteria; physical, chemical, or biological characteristics of a water body, that must be met to make it suitable for the specified use.

WATER QUALITY MANAGEMENT AREA OR WQMA:
The area within 1,000 feet from the ordinary high water mark of navigable waters that consists of a lake, pond or flowage, except that, for a navigable water that is a glacial pothole lake, the term means the area within 1,000 feet of the high water mark of the lake; the area within 300 feet from the ordinary high water mark of navigable waters that consist of a river or stream; and a site that is susceptible to groundwater contamination, or that has the potential to be a direct conduit for contamination to reach groundwater. (NR 151.015(24))

WATER QUALITY STANDARD VARIANCE:
When natural conditions of a water body preclude meeting all conditions necessary to maintain full fish and aquatic life and swimming, a variance may be granted.

WATERSHED:
The land area that drains into a lake or stream.

WETLANDS:
Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a variety of vegetative or aquatic life. Wetland vegetation requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas.

WISCONSIN ADMINISTRATIVE CODE:
The set of rules written and used by state agencies to implement state statutes. Administrative codes are subject to public hearing and have the force of law.

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT GRANT PROGRAM:
A state cost-share program established by the state legislature in 1978 to help pay the costs of controlling nonpoint source pollution. Also known as the nonpoint source element of the Wisconsin Fund or the Priority Watershed Program.

Appendix G. List of Commonly Used Initials

BMP	Best Management Practice
CAC	Citizen Advisory Committee
FSA	Farm Service Agency (United States Department of Agriculture)
CREP	Conservation Reserve Enhancement Program
CRP	Federal Conservation Reserve Program
CSA	Cost Share Agreement
DATCP	Wisconsin Department of Agriculture, Trade, and Consumer Protection
DILHR	Department of Industry, Labor, and Human Resources
DNR	Wisconsin Department of Natural Resources
EQIP	Environmental Quality Incentives Program (USDA)
FOCS	Field Office Computing System (NRCS)
FFA	Future Farmers of America
FPP	Wisconsin Farmland Preservation Program
FRPP	Farm and Ranchland Protection Program
GIS	Geographic Information System
GPR	General Purpose Revenue
I&E	Information and Education
LCC	Land Conservation Committee
LCD	Land Conservation Department
LWCB	Land and Water Conservation Board
NAWCA	North American Waterfowl Conservation Act
NPM	Nutrient and Pest Management
NRCS	Natural Resources Conservation Service
PDR	Protection of Development Rights
SIP	Stewardship Incentive Program
SOS	Signs of Success Monitoring Program
TDR	Transfer of Development Rights
USFWS	United States Fish and Wildlife Service
USEPA	United States Environmental Protection Agency
USDA	United States Department of Agriculture
USGS	United States Geological Survey
UWEX	University of Wisconsin-Extension
WGNHS	Wisconsin Geological and Natural History Survey
WHIP	Wildlife Habitat Incentives Program
WPDES	Wisconsin Pollutant Discharge Elimination System [permit system]
WRP	Wetland Reserve Program
WUWN	Wisconsin Unique Well Number assigned to well sample sites

Appendix H. Potential Conservation Practices

The following table lists all conservation practices currently in ATCP 50 along with the appropriate funding source. DATCP currently has only bond revenue available to fund cost-share projects for Land and Water Resource Management Plan implementation.

PRACTICE or ACTIVITY	ATCP 50 Reference	Funding Source[20] [21]
Manure storage systems	50.62	Bonding
Manure storage closure	50.63	Bonding
Barnyard runoff control systems (specify components)	50.64	Bonding
Access road or cattle crossing	50.65	Bonding
Animal trails and walkways	50.66	Bonding
Contour farming	50.67	GPR
Cover and green manure crop	50.68	GPR
Critical area stabilization	50.69	Bonding
Diversions	50.70	Bonding
Field windbreaks	50.71	Bonding
Filter strips	50.72	Bonding
Grade stabilization structures	50.73	Bonding
Heavy use area protection	50.74	Bonding
Livestock fencing	50.75	Bonding
Livestock watering facilities	50.76	Bonding
Milking center waste control systems	50.77	Bonding
Nutrient management	50.78	GPR
Pesticide management	50.79	GPR
Prescribed grazing	50.80	
a. management plan		GPR
b. fencing (not permanent)		GPR
c. fencing (permanent)		Bonding
Relocating or abandoning animal feeding operations	50.81	Bonding
Residue management	50.82	GPR
Riparian buffers	50.83	

[20] Cost share rates are 70% for practices installed with bonding money. Practices installed with General Purpose Revenue (GPR) are generally reimbursed at a per acre rate established in ATCP 50.

[21] Cost sharing may also be available through the Natural Resource Conservation Service Environmental Quality Incentives Program (EQIP). These cost share rates range from 50 – 75%.

a. installation (including land out of production)		Bonding
b. maintenance		GPR
Roofs	50.84	Bonding
Roof runoff systems	50.85	Bonding
Sediment basins	50.86	Bonding
Sinkhole treatment	50.87	Bonding
Streambank and shoreline protection	50.88	Bonding
Strip-cropping	50.89	GPR
Subsurface drains	50.90	Bonding
Terrace systems	50.91	Bonding
Underground outlet	50.92	Bonding
Waste transfer systems	50.93	Bonding
Wastewater treatment strips	50.94	Bonding
Water and sediment control basins	50.95	Bonding
Waterway systems	50.96	Bonding
Well decommissioning	50.97	Bonding
Wetland restoration	50.98	Bonding
Engineering services provided in connection with a cost-share practice for which bond revenue may be used	50.34(4)	Bonding
Other cost-effective practices with DATCP's written approval	50.40(3)(a)	GPR

Appendix I. NR 151 Performance Standards -Status Review