

Planning Report

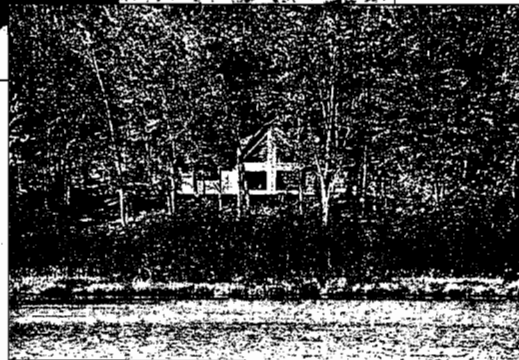
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Town of Delta Inventory and Trends

Town of Delta Bayfield County, Wisconsin

June 2003



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consultants · engineers · scientists

1. Issues and Opportunities

The *Issues and Opportunities* element of the comprehensive plan provides background information on the town planning process, a summary of the issues facing the town, and an analysis of the town's population. Public participation efforts, community goals, and forecasts for the future will be discussed.

1.1 Introduction

The Town of Delta is a remote, rural community in northwestern Wisconsin. The town's landscape is a rolling expanse of seemingly endless forest. Breaking the expanse is a small farming area in the northeast, the White River and its tributaries, and more than 50 lakes of varying sizes and depths. Most of the town's development is circled around these lakes. Delta is home not only to individuals who support the local tourism and recreation industry, but also to growing numbers of education, finance, medical, and other professionals.

Major influences in the town include a significant presence of non-resident property owners, a tourism and recreation based economy, and the almost overwhelming presence of public lands. Recreational properties are used seasonally by residents of the surrounding region, drawn to Delta from larger metropolitan areas of Wisconsin and Minnesota. Delta is a destination for hunters, hikers, snowmobiles, ATVs, anglers, and a wide variety of other recreationists that come in search of lakes, trout streams, and wild lands. They have no trouble accessing natural resources, as tens of thousands of acres of federal and state land are available within the town. The Chequamegon National Forest and White River State Fishery Area occupy just over one half of the land area.

1.2 Initiation of the Planning Process

In May of 2002, the Town of Delta Plan Commission and Town Board took action to begin a comprehensive planning process. The town's planning process was initiated to provide tools for the management of growth and development. Significant housing growth, conversion of resorts to condominium ownership, the sale of large blocks of forest land, changing zoning regulations at the county level, and the need for a basis for decision making on these issues were all drivers in motivating the town to develop a comprehensive plan. The development of this plan will also ensure compliance with Wisconsin's Comprehensive Planning law (Wis. Stats. 66.1001) and provide a more detailed level of planning for the town than was accomplished in the Bayfield County Land Use Plan.

The Town of Delta initiated this comprehensive plan development process under the authority of Wisconsin's Comprehensive Planning legislation, Wis. Stats. 66.1001. The Town also acted under the authority of Wis. Stats. 60.22(3) (village powers) and Wis. Stats. 61.35 (village planning). The Town of Delta was granted village powers at its annual meeting in 1979 and has been operating as such since April 11, 1979.

Soil associations included: Orienta-Ogemaw
 Superior
 Superior-Ogemaw

Course to medium textured soils formed in glacial lake deposits, rolling.

Found in an isolated area in southwestern Delta, these soils are composed of sandy and loamy material underlain by clay at 3 to 6 feet in depth. Limitations due to poor drainage and erosion potential are common in these soils.

Soil associations included: Orienta

Moderately coarse and medium-textured formed in upland glacial drift, undulating.

Found throughout the Town of Delta, except in the extreme western portions, these soils are composed mainly of sandy and loamy material. Low fertility and moisture holding capacity limit their productivity for crops, and stones limit the use of many areas to forest and recreation.

Soil associations included: Cloquet-Gogebic
 Cloquet-Hiawatha
 Gogebic-Cloquet
 Munising

Moderately coarse and medium-textured formed in upland glacial drift, rolling.

Found throughout the town, these soils are primarily composed of sandy and loamy material. Glacial features known as moraines and pitted outwash result in the hilly landscape found in association with these soils. Fertility is low, but these soils are well suited for use as woodland.

Soil associations included: Cloquet-Hiawatha
 Gogebic-Cloquet

Coarse-textured soils of the uplands and outwash plains, nearly level and undulating.

Occupying most of the western third and scattered throughout the central portion of the Town of Delta, these soils are mainly composed of sandy material. The vast majority of this soil type within Delta is located in the Chequamegon National Forest and has been planted to red pine. Limitations of these soils include low fertility, low moisture holding capacity, and high acidity.

Soil associations included: Kinross
 Omega-Vilas
 Vilas-Omega

Coarse-textured soils of the uplands and outwash plains, nearly level and rolling.

Occupying most of central Delta and scattered throughout the rest of the town, these soils are primarily composed of sandy material. Glacial features known as moraines and pitted outwash result in the hilly landscape found in association with these soils. Limitations of these soils include low fertility, low moisture holding capacity, high acidity, and steep slopes. These areas are best suited as woodlands.

Soil associations included: Vilas-Omega

Coarse-textured soils of the uplands and outwash plains, hilly and steep.

Found mainly in northwestern Delta, these soils are primarily composed of sandy material. Similar to the Vilas-Omega rolling soil association, these soils are limited in use by low nutrients

and moisture, high acidity, and steep slopes. The Vilas-Omega rolling and Vilas-Omega hilly and steep associations together underly most of the area known as the barrens of Bayfield County. The barrens are characterized by fairly open timber stands mixed with grasses. Soil associations included: Vilas-Omega

Moderately coarse and medium-textured soils of the outwash plains and stream valleys, nearly level and undulating.

Found in one isolated location near Muskellunge and Twin Bear lakes, these soils are composed mainly of sandy and loamy material with underlying sand and gravel. Fertility and moisture holding capacity of these soils are fair, but erosion control is a concern due to moderately steep slopes.

Soil associations included: Pence

Organic soils.

Scattered throughout the eastern two thirds of the Town of Delta, these soils are found in wetlands. The soil is composed of decaying organic material known as peat. The majority of these soils abut the shoreline of the town's lakes, ponds, and bogs.

Soil associations included: Greenwood peat
Rifle peat
Spalding peat
Tahquamenon peat

Alluvial land.

These soils form in sediment deposits associated with major rivers and streams. Soil characteristics vary widely from one alluvial area to another. Alluvium is mapped along the White River in the Town of Delta.

Soil associations included: Alluvial land

5.2 Farmland

Agricultural production is a small but important part of Delta's resource base. Approximately 2% of the town can be considered farmland as classified on the 2002 Existing Land Use Map (Map 8-1). According to figures from the *Wisconsin Town Land Use Data Project*, as compiled by the Program on Agricultural Technology Studies at the University of Wisconsin-Madison, 8.6% of the town was in farmland use from 1991-1993. Information from the project also indicated that in 1990 there were three farms in the town, however by 1997 there were seven. None of the farms were indicated as dairy farms. The *Land Use* element of this plan further details trends and amount of land devoted to farming.

5.3 Forest

Forests are the most expansive land cover found in the Town of Delta and are some of the most significant features of the town's resource base, culture, and economy. Forest land serves many functions, adds value to both the local economy and quality of life, and contributes to the town's rural atmosphere. They provide wildlife habitat, recreational opportunities, timber and pulpwood, and educational opportunities. They are connected to many aspects of the local and

regional economy. The health and management of these forests have many planning implications for the town.

According to Wisconsin Department of Natural Resources (WDNR) land cover maps (see Map 5-1), about 36,000 acres or 78% of the town is forested. The majority of the forested land found within Bayfield County and within the Town of Delta is located within the Chequamegon National Forest. Forest types found within Delta vary widely. According to WDNR land cover maps, aspen, maple, and mixed coniferous/deciduous forests dominate the eastern half of the town. Jack pine, red pine, aspen, and other mixed coniferous/deciduous forests dominate the western half.

Historic State

Native forest types in the town were primarily northern conifers and hardwoods according to the WDNR's map: *Original Vegetative Cover of Wisconsin*. This map approximates forest types that were likely to be found in Wisconsin during the mid 1800s. Native forest communities included:

Boreal

- ♦ White spruce, balsam fir, tamarack, white cedar, white birch, aspen

Upland Mixed Conifer – Deciduous

- ♦ Sugar maple, yellow birch, white pine, red pine
- ♦ White pine, red pine
- ♦ Aspen, white birch, pine

Deciduous

- ♦ White oak, black oak, bur oak

Forested Wetland

- ♦ White cedar, black spruce, tamarack, hemlock

Forest Uses and Economics

Forests impacted the region of northwest Wisconsin by nearly 9 billion dollars (based on 1994 data) of forest related industry output according to *Forests and Regional Development* (Marcoullier & Mace, 2002). These related industries include wood processing, other manufacturing, construction, tourism, wholesale and retail trade, and a myriad of support services. These outputs are driven by both recreational and timber harvest uses of forest lands. Often viewed as being in conflict with one another, both forms of forest use must be balanced and managed in order to ensure continued benefits to the region and the Town of Delta.

Potential conflicts within the realm of recreational forest use must also be taken into consideration when managing forest land. Motorized uses such as snowmobiles and ATVs, use for hunting and trapping, and passive uses like hiking and cross-country skiing all take place on forest lands in the Town of Delta. Adequate separation between potentially conflicting uses must be maintained in order to ensure continued forest viability and quality into the future.

Chequamegon-Nicolet National Forest

The Chequamegon National Forest occupies nearly one half of the Town of Delta. This national forest was established by presidential proclamation in 1933. Since 1998, the Chequamegon National Forest and the Nicolet National Forest have been consolidated and managed as one administrative unit. The Chequamegon side of the forest includes 858,400 acres in six northern counties including approximately 21,000 acres in the Town of Delta. National Forest lands are managed by the United States Department of Agriculture – Forest Service (USDA-FS), which also develops and administers forest policy and planning.

Management of the Chequamegon National Forest is prescribed generally by the 1986 *Forest Plan* as amended. The overall forest management policy was last amended in 1992 to include a philosophy known as “ecosystem management.” The Forest Service defines ecosystem management as “an ecological approach to natural resource management to assure productive, healthy ecosystems by blending social, economic, physical, and biological needs and values.” General management prescriptions found within the Town of Delta fall into three categories:

Management Prescription 1

Desired land conditions include even-aged stands on short rotation. Hardwoods are harvested for fiber production, and consideration is given to motorized recreation and wildlife game species. Land under this prescription includes the area north of West Delta Road and Rocky Run Road.

Management Prescription 4

Desired land conditions include even-aged stands on long and short rotation. Softwoods are harvested for sawtimber and fiber production, and consideration is given to motorized recreation and both game and non-game wildlife. Land under this prescription includes the area south of West Delta Road and west of North Delta Road.

Management Prescription 5

Desired land conditions include Congressionally designated wilderness. These areas are reserved for the protection of the natural ecosystem, wilderness character, and recreational experience. These are also known as “roadless areas.” Land under this prescription includes the Rainbow Lake Wilderness Area.

Privately Owned Forest Land

Approximately 40% of the Town of Delta is privately owned resource land. This figure, derived from the 2002 Existing Land Use Map (Map 8-1), includes both forested and open privately owned undeveloped lands, but is predominantly forested. Public forest lands are often thought of as the primary source of forest related functions and values, but a significant amount of timber production, wildlife management, and forest recreation also take place on privately owned forest lands.

Private forest lands in the Town of Delta are owned both by individuals and corporate entities. Corporately owned, or industrial forests, occupy about, 1500 acres, or just over 3% of the town. Industrial forests are important to note, as they are often managed more intensively for commodity production and often contain large contiguous blocks of forest land. Changes in the

ownership and management of industrial forests can have a drastic and noticeable impact on the town.

The use of voluntary management programs on private forest lands is also significant in Delta. Lands enrolled in WDNR forest management programs like Managed Forest Law (MFL) and Forest Crop Law (FCL) included nearly 2,300 acres in 2002. Management programs on private forest lands are important to note for timber harvest and public access reasons. These programs require that a timber harvest takes place at some point on enrolled lands, and some of these private properties become open to public use for recreational purposes. Refer to *Land and Resource Protection/Management Programs* in the *Land Use* element for a description of the MFL and FCL programs. Demand for enrollment in these programs is expected to increase as property values and the resulting taxes continue to rise.

5.4 Topography

Topography in the Town of Delta can be described as nearly level to rolling and steep. Elevations in Delta range from a low of approximately 1,010 feet above sea level in the far northeast corner to a high of about 1,330 feet above sea level in the southern and western reaches of the town. This puts the Town of Delta in the middle to upper range of elevations found throughout Bayfield County.

The most variety in elevation is associated with a region of glacial lakebed that extends from the northwest to the southeast and contains the majority of the town's lakes. Steep slopes in excess of 15% are common in this area according to slope maps developed by the U.S. Forest Service.

More level areas of the town are associated with areas of glacial lake deposits in the northeast, the Pine Barrens in the southwest, and alluvial lands surrounding the White River. The sandy "Pine Barrens" is a flat plain extending in a belt 10 to 20 miles wide from Bayfield County across Douglas and northern Washburn into Burnett and Polk Counties.

5.5 Geology

Geological features directly influence topography, soils, surface water, and groundwater, and indirectly influence many other natural resources as well. Understanding the geology of the town is important in planning for the future. The geology of the Town of Delta is primarily influenced by bedrock, Lake Superior, and glacial activity.

The soils of Bayfield County are underlain by layers of ancient sandstone and igneous rocks. The bedrock below the Town of Delta is primarily composed of varying depths of sandstone. The sandstone bedrock was scoured by the rising waters of lake superior as well as the advance and retreat of glaciers. This scoured sandstone influenced many of the coarse textured soils found within the town.

During glaciation, the water level of Lake Superior was much higher than it is today. According to the *Bayfield County Soil Survey*, the glacial basin of Lake Superior ran through the Town of Delta from the northwest corner to the southeast corner. Clay, silt, and sand were deposited by the lake, influencing the soils and surface waters of the town.

Other glacial features present in the town include end moraines and pitted outwash. Moraines formed where glaciers halted temporarily and deposited material in meltwater. End moraines in the northeast corner of Delta were further modified as they were submerged by the rising waters of Lake Superior. Outwash plains formed where rivers of meltwater deposited masses of sand and gravel. In the northeast and southwest corners of the town, pitted outwash plains contained blocks of ice that, when melted, formed depressions.

5.6 Metallic and Nonmetallic Mineral Resources

Non-metallic mineral resources found in the Town of Delta include sand and gravel deposits. No known deposits of metallic mineral resources are located in Delta.

Wisconsin Administrative Code NR 135 requires that all counties adopt and enforce a Non-Metallic Mining Reclamation Ordinance that establishes performance standards for the reclamation of active and future nonmetallic mining sites, but not abandoned sites. It is intended that NR 135 will contribute to environmental protection, stable non-eroding sites, productive end land use, and the potential to enhance habitat and increase land values and tax revenues. The Bayfield County Zoning Department administers this program in Bayfield County and currently has eight active sites licensed within the Town of Delta.

5.7 Watersheds and Drainage

A watershed can be defined as an interconnected area of land draining from surrounding ridge tops to a common point such as a lake or stream confluence with a neighboring watershed. All lands and waterways can be found within one watershed or another. In Wisconsin, watersheds vary in scale from major river systems to small creek drainage areas and typically range in size from 100 to 300 square miles. River basins encompass several watersheds. There are 32 river basins in Wisconsin which range in size from 500 to over 5,000 square miles.

The vast majority of lands within the Town of Delta are located within the White River, Iron River, and Fish Creek Watersheds of the Lake Superior Basin. A very small segment of western Delta is located within the Upper St. Croix and Eau Claire Rivers Watershed of the St. Croix Basin. See Map 5-2, Water Features, for local watershed boundaries.

5.8 Wetlands

According to the United States Environmental Protection Agency, wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season. Water saturation (hydrology) largely determines how the soil develops and the types of plant and animal communities living in and on the soil. Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specially adapted plants (hydrophytes) and promotes the development of characteristic wetland (hydric) soils.

Wetlands may be seasonal or permanent and are commonly referred to as swamps, marshes, fens or bogs. Wetland plants and soils have the capacity to store and filter pollutants ranging from

pesticides to animal wastes. Wetlands can make lakes, rivers and streams cleaner, and drinking water safer. Wetlands also provide valuable habitat for fish, plants, and animals. In addition, some wetlands can also replenish groundwater supplies. Groundwater discharge from wetlands is common and can be important in maintaining stream flows, especially during dry months.

Local, state, and federal regulations place limitations on the development and use of wetlands and shorelands. The Wisconsin Department of Natural Resources (WDNR) has inventory maps for each town that identify wetlands two acres and larger. The wetland inventory map should be consulted in conjunction with this document whenever the town reviews development proposals in order to identify wetlands and to ensure their protection from development. Wetlands located in Delta are shown on Map 5-2, Water Features and Map 5-3, Environmental Features.

The Bibon Marsh, located just east of Delta in the Town of Mason, is the largest wetland in Bayfield County and is afforded protection as the Bibon Swamp State Natural Area. Land use in the Town of Delta is important to this wetland, as a portion of the White River watershed is located within the town. This wetland occupies the basin of a glacial lake bed and displays a high level of ecological diversity. Several rare and state-listed threatened species are found within the marsh, and some forested portions contain trees that are more than 150 years old.

5.9 Floodplains

For planning and regulatory purposes, floodplain is normally defined as those areas, excluding the stream channel, that are subject to inundation by the 100-year recurrence interval flood event. This event has a 1% chance of occurring in any given year. Because of this chance of flooding, structural development in the floodplain should be discouraged. Floodplain includes the floodway and flood fringe. The floodway is the portion of the floodplain that carries rapidly flowing water, while the flood fringe is the portion of the floodplain outside the floodway, generally associated with standing water. Park and open space uses may be permitted in the flood fringe.

Wisconsin Statute 87.30 requires Counties, Cities, and Villages to implement floodplain zoning. The Bayfield County Zoning Department enforces a Floodplain Zoning Ordinance. This ordinance strictly regulates development within the floodplain. In addition, the Federal Emergency Management Agency (FEMA) has developed flood hazard data. Under the authority of the National Flood Insurance Act of 1968, FEMA conducted studies to determine the location and extent of floodlands and the monetary damage risks related to the insurance of urban development in floodland areas. The 100-year floodplain areas for the unincorporated areas of Bayfield County have been delineated by FEMA.

Floodplains are present in the Town of Delta in association with the White River and some of its tributaries and connected lakes. In addition to the main channel of the White River, the South and East Forks of the White River have floodplain identified on FEMA maps. Along the South Fork, Lake Two is also shown as having floodplain. In association with the East Fork, Bear, Delta, Everett, and Hay Lakes all have areas of floodplain along their shores. Floodplains within the town are relatively narrow and usually found in conjunction with wetland areas. Floodplains in Delta are shown on Map 5-2, Water Features.

The Town of Delta received FEMA disaster relief funds in 1999 and 2001 due to flooding situations. Early spring rains overwhelmed the still frozen road ditches, washing out several roads and culverts.

5.10 Surface Water Features

The Town of Delta is rich in surface water resources, and the vast majority of existing development is centered around the town's 50 plus lakes. The town's lakes are generally small to medium sized and occupy a total of approximately 1,800 acres. These lakes vary widely from wild 5 acre, 50 foot deep glacial potholes to 180 acre drainage lakes ringed with cottages and resorts. Table 5-1 displays a list of DNR identified lakes found in the Town of Delta. The public access information in this table has been updated by the town plan commission. Map 5-2 displays lakes, rivers, and streams found in the town.



Delta contains more than 50 lakes and many miles of streams.

The surface waters of the Town of Delta include many unique and pristine resources. Several of the town's lakes form the headwaters of the White River – one of the primary sources of water for the Bibon Marsh State Wildlife Area. This wildlife area, as well as the Iron River watershed, are both considered critical to the integrity of the Lake Superior ecosystem. The Town of Delta is also home to Bollen Creek – an Exceptional Resource Water and class I trout stream. The *Lake Superior Basin Water Quality Management Plan* (1999) identifies the White River as an “aquatic priority site” exhibiting high species diversity. The *Bayfield County Critical Resource Information Booklet* (1975) identified the following “potentially critical resources” within the Town of Delta:

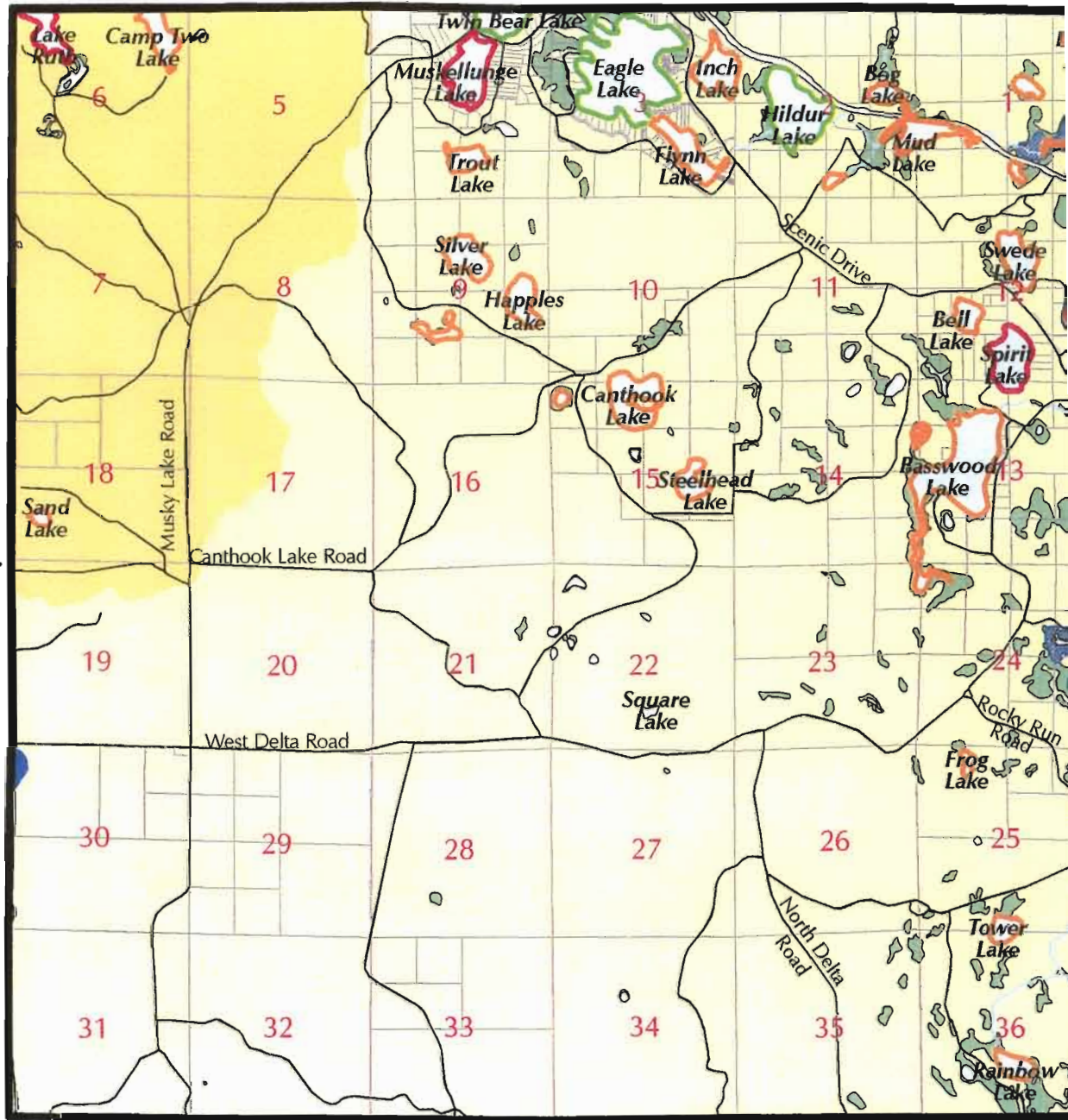
- ◆ The White River watershed
- ◆ Cold water environments
- ◆ Rainbow Lake
- ◆ Beaver Lake
- ◆ Bullhead Lake
- ◆ Steelhead Lake
- ◆ Trout Lake

TOWN OF IRON RIVER, BAYFIELD COUNTY
T. 47 N., R. 8 W.

TOWN OF HUGHES, BAYFIELD COUNTY
T. 46 N., R. 9 W.

TOWN OF BARNES, BAYFIELD COUNTY
T. 46 N., R. 9 W.








TOWN OF DRUMMOND, BAYFIELD COUNTY
T. 45 N., R. 8-7 W.



Water Features

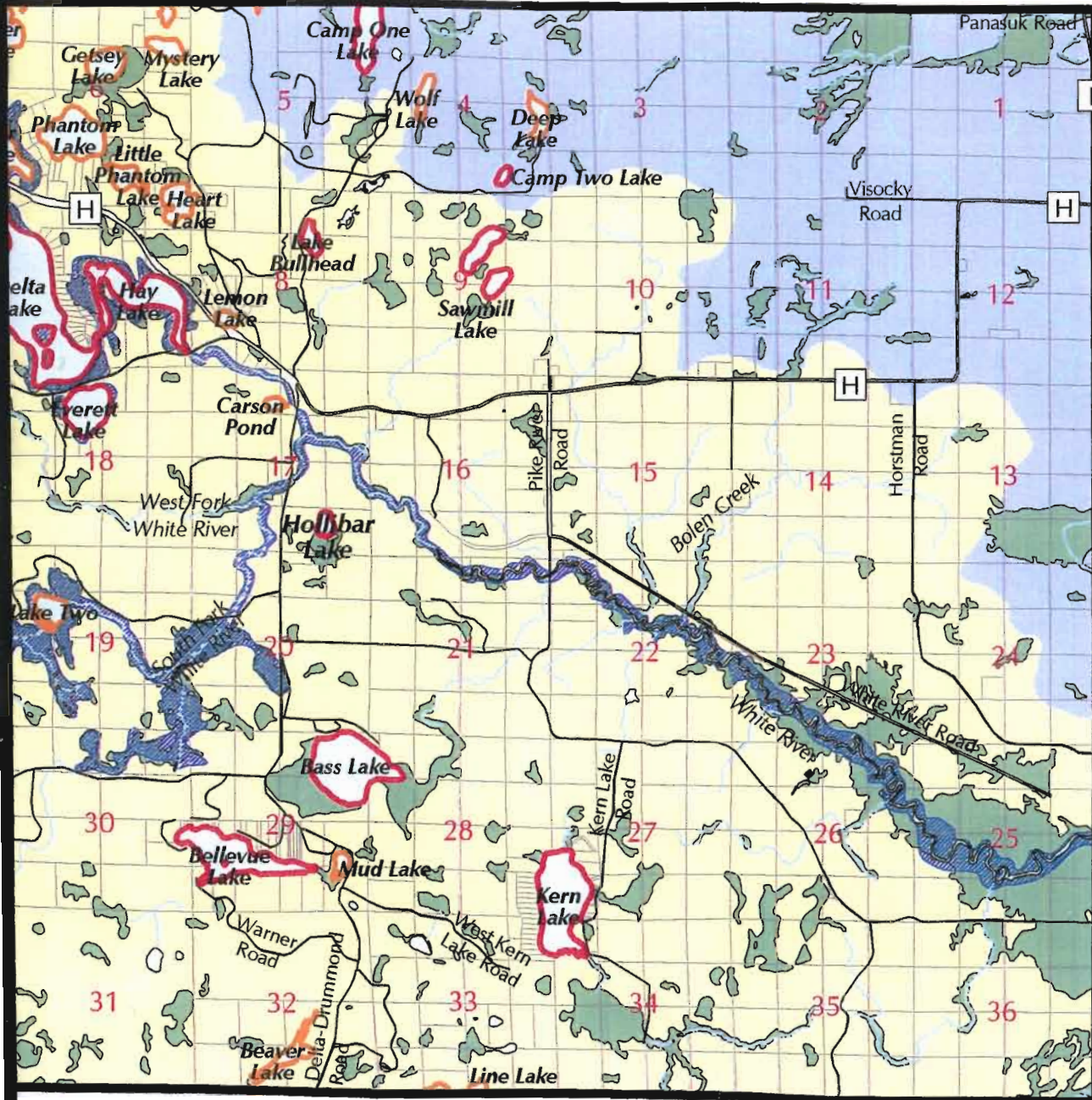
-  Fish Creek Watershed
-  Iron River Watershed
-  Upper Saint Croix and Eau Claire Rivers Watershed
-  White River Watershed
-  WDNR Designated Wetlands*
-  FEMA Floodplain**
-  Class One Lake***
-  Class Two Lake
-  Class Three Lake

Other Features

-  Town Boundary
-  Local Road
-  Parcel Lines
-  Streams
-  Surface Water
-  County Highway
-  Section Numbers

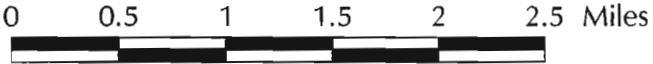
* Wisconsin Department of Natural Resources.
** Federal Emergency Management Agency.
*** Bayfield County Shoreland Zoning.

TOWN OF KEYSTONE, BAYFIELD COUNTY
T. 47 N., R. 7 W.



TOWN OF MASON, BAYFIELD COUNTY
T. 46 N., R. 6 W.

NTY



MAP 5-2
WATER
FEATURE DATA
Town of Delta
Bayfield County, Wisconsin

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

Source: Northwest Regional Planning Commission, 2002;
Bayfield County 1998-2000; WDNR 2002; FEMA 1997.



Table 5-1: Lake Descriptions, Town of Delta, 2001

Lake Name	Surface area (acres)	Maximum depth (feet)	Public access	Water source	Abundent and common fish species
Bass Lake	76	43	boat ramp	seepage	panfish
Basswood Lake	119	9	trail	spring	N. pike, panfish
Bear Lake	32	18	trail	drainage	N. pike, panfish
Beaver Lake	19	39	trail	seepage	
Bell Lake	14	35		seepage	panfish
Bellevue Lake	65	45	boat ramp	seepage	N. pike, panfish
Bog Lake	12	13	roadside	spring	LM bass
Bullhead Lake	7	46		seepage	panfish
Camp One Lake	37	40	boat ramp	seepage	panfish
Camp Two Lake (46-7)	4	53		seepage	
Camp Two Lake (46-8)	23	39	trail	seepage	panfish
Canthook Lake	34	38		seepage	panfish
Carson Pond	5	12		spring	panfish
Deep Lake	13	61		seepage	panfish
Delta Lake	180	30	boat ramp	drainage	
Eagle Lake	170	52	navigable	drainage	muskie, LM bass
Echo Lake	no data				
Everett Lake	34	55		seepage	
Flynn Lake	29	9	navigable	drainage	
Frog Lake	8	8	wilderness	seepage	
Getsey Lake	19	20		seepage	panfish
Happles Lake	24	36	trail	seepage	
Hay Lake	59	21		drainage	N. pike, LM bass
Heart Lake	24	19		seepage	walley, panfish
Hilder Lake	67	66	roadside	drainage	
Hollibar Lake	7	20		seepage	
Inch Lake	31	41		seepage	
Kern Lake	91	21		seepage	panfish
Lemon Lake	6	40	roadside	seepage	
Lester Lake	24	44	trail	seepage	panfish
Line Lake	8	18	wilderness	seepage	LM bass, panfish
Little Phantom Lake	no data				
Mud Lake (46 -7)	8	8	wilderness	seepage	
Mud Lake (46-8)	no data				
Muskellunge Lake	44	33		seepage	N. pike
Mystery Lake	14	13		seepage	
Phantom Lake	44	35		seepage	panfish
Rainbow Lake	14	21	wilderness	seepage	
Ruth Lake	66	30	boat ramp	seepage	N. pike, LM bass, panfish
Sawmill Lake	12	45		seepage	
Silver Lake	26	51	trail	seepage	LM bass, panfish
Spirit Lake	35	30		seepage	panfish
Square Lake	3	9	wilderness	seepage	
Steelhead Lake	17	51		seepage	LM bass, panfish
Swede Lake	27	35	wilderness	seepage	
Toothpick Lake	7	20	trail	seepage	LM bass, panfish
Tower Lake	13	54	wilderness	seepage	LM bass
Trout Lake	14	39		seepage	LM bass, trout
Tub Lake	11	31	boat ramp	seepage	LM bass, panfish
Twin Bear Lake	172	59	boat ramp	seepage	N. pike, walleye
Two Lake	8	7	trail	drainage	trout
Unnamed lakes	23	7	various	various	
West Lake	11	17	wilderness	seepage	panfish
Wolf Lake	12	27		seepage	
	1822				

Source: Wisconsin Department of Natural Resources, 2001 Revision to Wisconsin Lakes Book. Town of Delta.

5.11 Groundwater Quality

Groundwater is the source of all drinking water in the Town of Delta. Groundwater is a limited resource, and both its quality and quantity are important factors. These factors are primarily influenced by local geology and local land use. Precipitation percolates through the soil and bedrock where it eventually reaches a saturated zone known as an aquifer. It is from these aquifers that wells draw their water.

Groundwater in the Town of Delta is generally abundant and of good quality. Two primary aquifers are present in the town: the sand and gravel aquifer and the crystalline rock aquifer. The sand and gravel aquifer is present throughout the town at varying depths below the ground surface. This aquifer is easily accessible, but it is also the most easily contaminated. The crystalline rock aquifer is a deep aquifer and is also found throughout the town. The crystalline rock aquifer yields low to moderate amounts of water, but is generally less susceptible to contamination. The sand and gravel aquifer generally supplies adequate water in the town, but where this aquifer is not available, wells must draw from the deeper crystalline rock.

Groundwater contamination is most likely to occur where fractured bedrock is near the ground surface, or where only a thin layer of soil separates the ground surface from the water table. Soils are relatively deep in the Town of Delta, so shallow depth to the water table combined with highly permeable soil is the more likely scenario. Potential sources of groundwater contamination include:

- ◆ Chemical storage
- ◆ Landspreading of sewage treatment plant sludge
- ◆ Road salt usage and storage
- ◆ Animal feedlots
- ◆ Use and spillage of fertilizers and pesticides
- ◆ Accidental spills
- ◆ Septic tanks and drainfields
- ◆ Underground storage tanks
- ◆ Underground pipelines and sewers
- ◆ Landfills
- ◆ Mines, pits, and quarries

According to the map, *Groundwater Contamination Susceptibility in Wisconsin* (DNR/USGS/WGNHS, 1989), potential for groundwater contamination in the Town of Delta varies widely. In central Delta, sandy, rapidly permeable soils and shallow depth to groundwater pose a very high risk for contamination. This portion of the town is comparable to the "Central Sands" region of Wisconsin (Portage, Waushara, Wood and Adams Counties) which is considered one of the highest risk areas for groundwater contamination in the state. To the other extreme, in the eastern portion of the town, where heavier silt loam and clay soils are present, there is very little risk of groundwater contamination. In the western and southern areas of Delta, the risk is moderately high.

5.12 Environmentally Sensitive Areas

Environmentally sensitive areas contain natural features that are unique, that serve special functions, or are easily impacted by intensive land uses. Such unique, functional, and sensitive features in the Town of Delta include:

- ◆ Small to medium sized lakes
- ◆ Large blocks of contiguous forest
- ◆ Trout streams
- ◆ Easily contaminated groundwater
- ◆ Rare, threatened, and endangered species
- ◆ Wetlands and floodplains
- ◆ State designated Natural Areas

These features are found throughout the landscape of the Town of Delta and are shown on Map 5-3, Environmental Features.

5.13 Threatened and Endangered Species

The Wisconsin Department of Natural Resources (WDNR) lists species as “endangered” when the continued existence of that species as a viable component of the state’s wild animals or wild plants is determined to be in jeopardy on the basis of scientific evidence. “Threatened” species are listed when it appears likely based on scientific evidence that the species may become endangered within the foreseeable future. The WDNR also lists species of “special concern” of which some problem of abundance or distribution is suspected but not yet proven; the intent of this classification is to focus attention on certain species before becoming endangered or threatened.

The WDNR maps threatened and endangered species occurrences on a general level for planning purposes. According to the Department, threatened and endangered species occurrences are abundant in the Town of Delta. Threatened and endangered aquatic species have been identified in association with the central lakes area and with the White River within the town. Threatened and endangered terrestrial species are found primarily in the forest lands of southwestern Delta within the National Forest. See Map 5-3 for general locations of threatened and endangered species.

5.14 Wildlife Habitat and State Natural Areas

Wildlife habitat is defined as the presence of enough food, cover, and water to sustain a species. The Delta landscape provides habitat for a variety of plants, birds, mammals, amphibians, reptiles, and fish including many rare, threatened, and endangered species. Unique and critical habitat communities present within the town include:

- ◆ Natural shorelines of lakes and streams
- ◆ Large, uninterrupted blocks of forest
- ◆ Wetlands and floodplains
- ◆ Jack pine savannas (pine barrens)

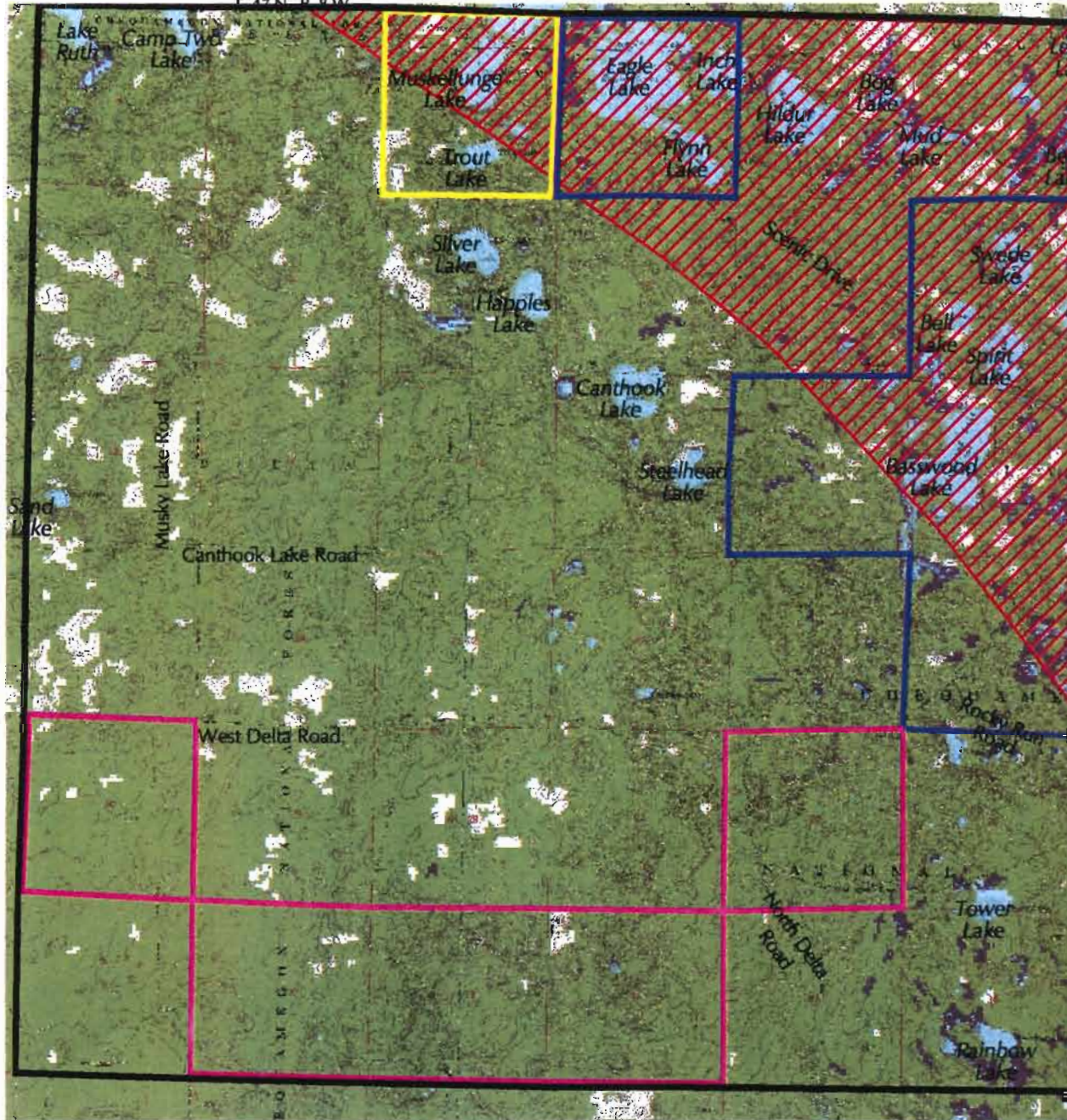
TOWN OF IRON RIVER, BAYFIELD COUNTY

T. 47 N., R. 9 W.




TOWN OF HUGHES, BAYFIELD COUNTY
T. 46 N., R. 9 W.

TOWN OF BARNES, BAYFIELD COUNTY
T. 46 N., R. 9 W.




TOWN OF DRUMMOND, BAYFIELD COUNTY
T. 45 N., R. 8-7 W.





Environmental Features

-  Class I Trout Stream & Exceptional Resource Water
-  Sadjak Springs State Natural Area
-  Highly Susceptible for Groundwater Contamination (Approximate Boundary)





Threatened and Endangered Species Occurrences

-  Aquatic
-  Terrestrial
-  Aquatic and Terrestrial

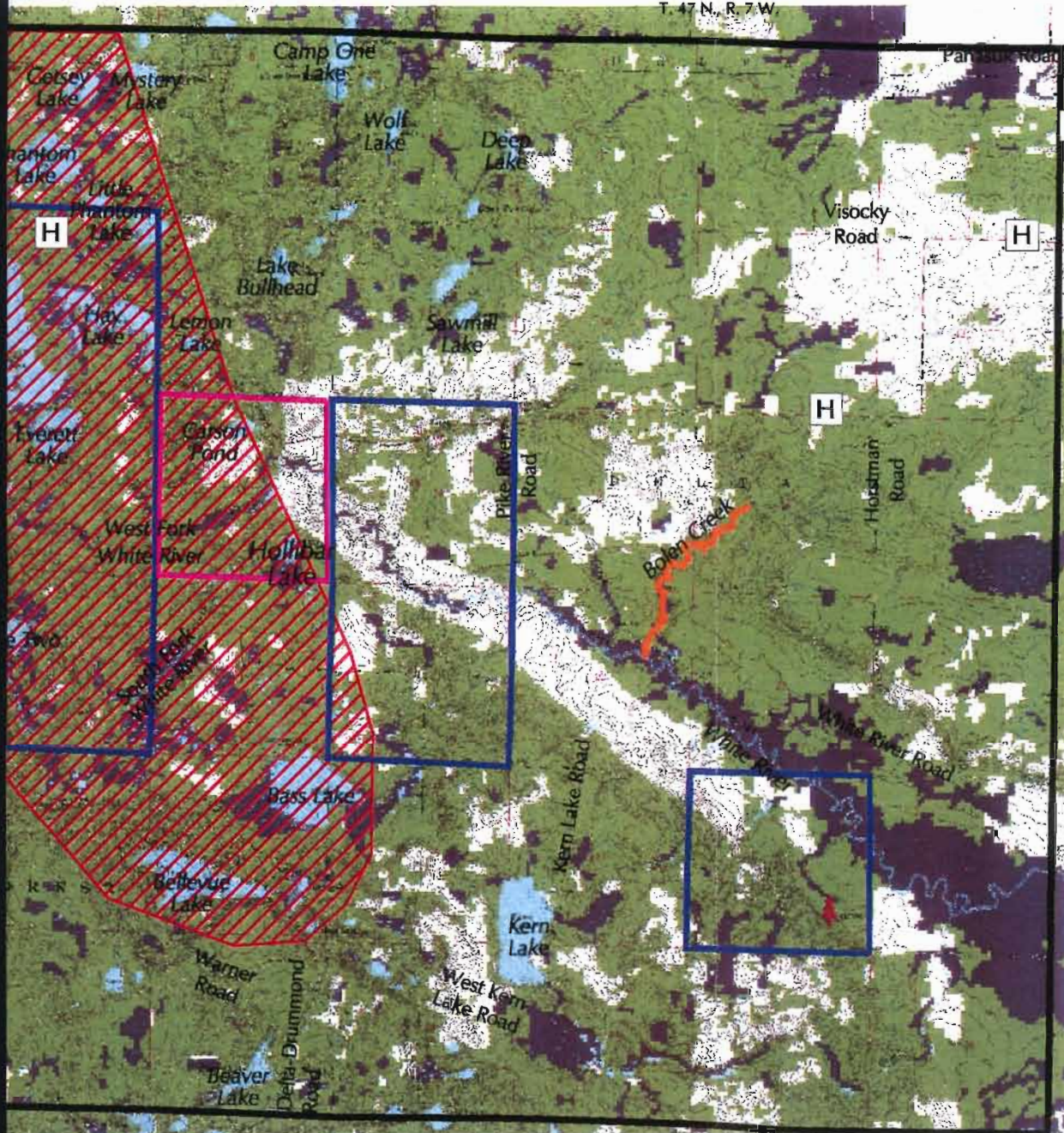
Land Cover

-  Forest
-  Wetland

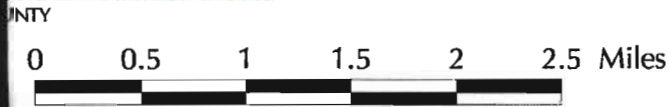
Other Features

-  Town Boundary
-  Local Road
-  Surface Water
-  County Highway

TOWN OF KEYSTONE, BAYFIELD COUNTY
T. 47 N., R. 7 W.



TOWN OF MASON, BAYFIELD COUNTY
T. 46 N., R. 6 W.



This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. It is a compilation of records, information and data used for reference purposes only.

Source: U.S.G.S. 7.5-minute topographic quadrangles—Delta, Drummond NW, Grand View NW (1971), Ino (1975), Hart Lake, Iron River (1984), Bayfield County.

Classification derived from LANDSAT Thematic Mapper (TM) satellite imagery from 1991, 1992, and 1993. The classification has been "smoothed" to a 1-acre minimum mapping unit (4 contiguous pixels) from the original 30-meter pixel size. Wetlands smaller than one acre and open water pixels were not smoothed. Classification was done at the Wisconsin DNR, GEO Services Section.

Source: Wisconsin DNR, 1991-93; U.S.G.S. 1971-1984.

Extension—"Groundwater Contamination Susceptibility in Wisconsin" Map (1989); National Heritage Inventory; DNR Lake Superior Basin Water Quality Management Plan (1999).



MAP 5-3 ENVIRONMENTAL FEATUTRES Town of Delta Bayfield County, Wisconsin

