

Munuscong State Wildlife Management Area

Management Plan



2015

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DRAFT

Introduction

The Michigan Department of Natural Resources (Department) has the primary responsibility and statutory authority for the management of resident wildlife, fish, and state forest land in Michigan. This management plan (Plan) was developed to guide the Department's management of state forest, wildlife, and related public trust natural resources in the Munuscong State Wildlife Management Area. Partnerships with other agencies and organizations have been important for management of this area in the past, and will be increasingly important in the future.

The Department's management authority is specified in state law. Primary legal authority for wildlife management comes from the Natural Resources and Environmental Protection Act (NREPA), Public Act 451 of 1994. Part 401 of Public Act 451 gives authority to the Natural Resources Commission (NRC) and the Department Director to issue orders (the Wildlife Conservation Order) specific to wildlife management and hunting. Forest management on state forest lands is governed under NREPA; Part 525, Sustainable Forestry on State Forest Lands, requires the Department to manage state forest lands consistent with the principles of sustainable forestry, implement a management plan with long term management objectives and maintain third party forest certification. Additional legislation affecting management here includes Part 355 – Biological Diversity Conservation, and Part 405 – Wildlife Restoration, Management, and Research, and Federal Aid in Wildlife Restoration Act (Pittman-Robertson). Natural Resources Commission policies affecting management of this area include but may not be limited to Wildlife Flooding Projects - Operation and Maintenance. A Directors Order prohibiting ORV traffic was issued for resource protection, public safety and enhanced law enforcement capabilities.

This Plan is appropriately aligned with Department plans and guidance including the Wildlife Division's strategic plan for 2010 - 2015—*Guiding Principles and Strategies* (GPS), the Eastern Upper Peninsula (UP) Regional State Forest Management Plan (www.michigan.gov/regionalforestplans), and the Regional Operations and Planning Effort (ROPE) document for the Wildlife Division's UP Region. Department and Wildlife Division plans and guidance provide direction that was incorporated into this plan. This plan provides direction for management of resources in the Munuscong State Wildlife Management Area (SWMA).

Former management plans of the SWMA were the Munuscong Wildlife Area Management Plan of 1995 (Soulliere, 1995) and a 2003 revision (Ainslie, 2003). The 1995 plan was written after 5 years of relevant literature review and formal and informal meetings with individuals knowledgeable in wetland/upland-wildlife management, soil science, hydrology, forestry, grasslands, wetlands, hunting, trapping, bird watching, and financial evaluation and business decision-making. The plan theme was conservation of biological diversity through cost effective processes. The 2003 revision retained most of the goals and objectives of the 1995 plan. This 2015 Plan for the Munuscong SWMA uses these former plans as a foundation. Some of the objectives have changed, or adjusted, as a result of changes in conditions in the SWMA as well as goals and objectives of Wildlife Division and the Department.

The Munuscong SWMA is one of 7 SWMA's in the UP with a high regional priority ranking according to the UP Region's ROPE. High priority SWMA's provide opportunities to showcase waterfowl hunting, nongame wildlife, and wildlife viewing and education. High priority SWMA's are a focus for funding and management efforts within the UP Region. Emphasis on intensive wildlife habitat projects that will be more easily recognized and appreciated by the public, including work on priority SWMA's, has increased in recent years.

The primary purpose of this Plan is to set the strategic direction for the SWMA for the next 10 years. This Plan will guide the management activities used to achieve the desired future condition of the Munuscong SWMA. In addition, obligations of the funding sources used to acquire and manage the SWMA require that it be maintained for the purpose of managing wildlife, wildlife habitat, and associated recreational activities. Other related activities and uses of the SWMA that complement or do not conflict with wildlife management have been considered and incorporated where appropriate.

INVENTORY

The Munuscong SWMA is adjacent to Munuscong Lake and the St. Mary's River in east-central Chippewa County (Fig. 1). State ownership totals about 15,330 acres, or 24 square miles; approximately 14,775 acres are located near the Munuscong Lake and about 555 acres are located just over 5 miles north of the rest of this SWMA. The state ownership will be further described in 3 portions, or areas of focus, later. Approximately 37% of this land was acquired through the Pittman-Robertson Act (P-R), Game and Fish Protection Fund, Land Trust Fund, donation, or a combination of these sources. Purchased land was acquired for the purpose of wildlife restoration and management. Management of wild birds and mammals and provision for public use of wildlife resources is the primary management goal here.

The Munuscong SWMA is part of the Sault Forest Management Unit, and comprises compartments 52 - 58 in the Munuscong Bay Management Area (Eastern UP Regional State Forest Management Plan). Cover types vary within the larger portion (14,775 acre portion described above) of the SWMA. The most common types are lowland deciduous (22%), cedar and lowland conifers (22%), lowland open or semi-open lands (20%), and aspen types (aspen and lowland poplar—14%) (Fig. 2). An additional 555 acres is located north of the primary portion of the SWMA. Marsh and lowland shrub types together dominate 78% of that acreage. Featured species in the management area are American bittern, American woodcock, mallard, wood duck, sharp-tailed grouse, and white-tailed deer. A list of rare species produced by Michigan Natural Features Inventory (MNFI) is referenced (Appendix B). Waterfowl, wading and shorebirds are important wildlife species to utilize the Munuscong SWMA, but other important species include upland birds as well as numerous mammals.



Habitats vary by location within the SWMA. Areas near Munuscong Lake are dominated by coastal marsh and wet meadow habitats. Cattail and bulrush dominate many locations in the coastal marsh. Wet meadow habitats contain grasses, sedges, willow, alder, and other plant species. Coastal systems are influenced by water levels in Munuscong Lake and the St. Mary's River. The connected bays of west Munuscong Lake and the associated river systems are a unique natural resource. Vast coastal wetlands, including wet meadow, shallow marsh, and deep-water marsh, are connected and maintained, albeit in a state of perpetual change, by natural processes. This dynamic wetland system varies from 2,000 - 6,000 acres in size. Outflow from the sediment-laden Munuscong and Little Munuscong Rivers and fluctuating water levels of the St. Mary's River are the two most obvious influences on this large river mouth - delta and Great Lakes floodplain. According to Michigan Natural Features Inventory, much of the coastal area is Great Lakes coastal marsh, a rare natural community type in Michigan. The Department has designated this area as an ecological reference area and a coastal environmental area (Fig 3). Several rare wildlife species, including legally protected species, have been known to occur in or near this system. Yellow rail, marsh wren, osprey, red-shouldered hawk, bald eagle, least bittern, and common tern are among these species. A great blue heron rookery was also noted.

Further inland, lowland forested stands, particularly deciduous stands, are dominant west as far as Riverside Drive. However, a sandy ridge exists north of Allard Road and contains an approximately 90 acre grassy opening surrounded primarily by aspen types.

Open land, or grassland, habitat exists on the southwest end west of Riverside Drive and primarily north of 22-Mile Road. The open land here was historically farmland. Approximately 28 shallow floodings were created, starting in the 1990's, using push-out, ditch plug, and low berm designs. Most are located in former farmlands referred to as the Munuscong potholes (see photos below). The open lands here and on nearby private lands provide grassland and wetland habitat for grassland and wetland wildlife species, including sharp-tailed grouse, bobolinks, and grasshopper sparrows, and nesting waterfowl.



Left: Aerial view of the Munuscong “pothole” shallow floodings—year unknown.

Right: “Munuscong Potholes” sign on 22-Mile Road identifying the project locations and project partners.

A large swamp known locally as the Kelden swamp is located between Riverside Drive and M-129 north of 21-Mile Road. Much of it is deer wintering complex, supplying important cover for wintering deer. Approximately 5,980 acres of the SWMA is part of the Kelden swamp. Cedar stands are most abundant here (33%), followed by lowland deciduous (27%) and tamarack (10%) stands. Limited strip cuts were made in cedar stands in the 1970's. Cedar regeneration is poor in many of the strips, particularly on the west side of the swamp. On the east side of this area, four small shallow floodings were created in an opening north of 18-Mile Road, similar to those further south described earlier.

The remaining 555-acre area in the SWMA is located north between 9-Mile and 11-Mile roads adjacent to the St. Mary's River. Marsh and lowland shrub types together dominate 78% of that acreage, while the remainder is classified as lowland hardwoods. Michigan Natural Features Inventory identifies an occurrence of Great Lakes coastal marsh along the St. Mary's River shoreline throughout the extent of the shoreline ownership here. The coastal marsh north of 10-Mile Road is referred to as the 10-Mile Marsh.

Landscape context

The regional landscape classification is Northern Lacustrine (section) and the landscape ecosystem is Rudyard Clay Lake Plain (subsection) (Albert, 1995). The soils in the area are generally somewhat poorly drained to poorly drained, with a flat to gently rolling topography. The east half of the county, including the Munuscong SWMA, was largely mixed-conifer forest, forested wetlands and Great Lakes coastal marsh along the St. Mary's River prior to European settlement. On the east side of the SWMA and on private lands to the north and south, coastal emergent marsh and meadow remain relatively intact although portions of the St. Mary's River floodplain were ditched for drainage and hay production in the early 1900's.

Inland from the St. Mary's River, and throughout much of eastern Chippewa County, forested wetlands (primarily mixed-conifer swamp) were cleared for agriculture in the late 1800's and early 1900's. Drainage via surface ditching has allowed these "clay plain" wetlands to remain in fairly productive hay and pasture lands. This private land management regime results in vast areas of open grasslands that provide habitat that is unique to the historically forested UP landscape. They support a variety of grassland wildlife species, such as sharp-tailed grouse, American kestrel, bobolink, northern harrier, upland sandpiper, and eastern meadowlark. Grasslands are also important for nesting waterfowl including mallard and blue-winged teal. The grassland habitat requires manipulation to be maintained. Otherwise, succession starting most noticeably with the encroachment of woody species like willow and alder begins. Most areas are maintained through the normal agricultural practices of pasturing livestock and hay production. Some idle fields have reverted to shrubland over time, reducing the grassland habitat available for grassland species.

State and federal environmental regulations help to ensure that privately-held coastal wetlands surrounding the SWMA remain ecologically intact. Grasslands and woodlands near the SWMA are also largely privately-owned. Land use practices on private lands will influence management on the SWMA. Consistency in management between lands in the SWMA and nearby private lands will provide more contiguity in habitats across the landscape here, which is important for waterfowl and grassland wildlife species at present. Currently, involvement with private lands is limited. However, partnerships with agencies, such as the USDA—Natural Resources Conservation Service and the local Conservation District, that work directly with private lands by administering Farm Bill and other programs may prove beneficial for accomplishing habitat management goals across ownerships.

History

Munuscong Lake has long been recognized by wildlife interest groups for its wetland-wildlife abundance, especially the high use by migratory waterfowl. In 1905, a group of wealthy sportsmen established a private duck-hunting club at Munuscong Bay, the most westerly of the bays situated on Munuscong Lake. They constructed a complex of cabins and storage buildings known as the Dodge Estate. Around 1920, heirs to the original members donated the land to the State of Michigan. This parcel is now the core of the SWMA. There are no known archeological or historical sites as determined by the State Historical Preservation Office (SHPO). SHPO procedures have been followed for all documented earth moving or building demolition activities.

Initial wildlife habitat management efforts at the Munuscong SWMA were concentrated in the coastal, river-mouth deltaic wetlands of the Munuscong River. Between 1952 and 1963, annual average water levels on the Upper Great Lakes fell 4 feet (Fig. 4). This caused the de-watering of large portions of coastal marsh and their temporary conversion to mudflats and wet meadow (Fig. 5). Early wildlife managers developed an intensive management approach to "restore" some of the Munuscong marsh, apparently to maintain specific areas in a more stable habitat condition for waterfowl. In 1963 and 1964, a series of small openings (100 - 200 yds²) and ditches were excavated in the wet meadow area to provide additional ponds and open water. A 4-mile dike system, with 3 impounded units totaling 750 acres was added in 1965-66. A water pump was installed on the largest unit at the Munuscong River. Because water levels were perceived to be too low, the pump station was constructed to only move water into the impoundment.

Before project completion in 1966, the downward trend in Great Lakes water levels had reversed. Annual average water levels rose nearly 5 feet between 1964 and 1973. Wind associated seiche and wave action temporarily increased water levels an additional 3 feet. Waves striking dike sides and over topping portions of the dike system resulting in significant erosion. Between 1967 and 1978, the pump station was removed and 430 work days by DNR personnel were used to curb dike-erosion. Although Great Lakes water levels have continued to fluctuate, operation of the dike system ceased in 1978.

In 1995, the Munuscong Wildlife Area Management Plan was completed. That plan provided a new "ecosystem conservation and user accommodation approach" to managing the Munuscong Wildlife Management Area. Objectives of that plan included "naturalizing" a dysfunctional dike and restoring the open-system dynamics of the coastal marsh; maintaining upland grassland communities and creating "emergent-marsh" wetlands to enhance the grasslands, minimizing potential public-safety hazards while improving area aesthetics, viewing opportunities, and user access; and acquiring coastal wetlands, grasslands (hayfields and pasture), and other tracts to manage them as sustainable, naturally functioning systems. Water levels were high compared to recent levels; Figures 6 and 7 show the Munuscong River mouth and impoundment area in 1997 (Fig. 6) and in 2012 (Fig. 7).

Many of the activities prescribed in the 1995 plan were completed. For example, wide spillways (100 plus feet) were placed in various locations along the dikes to restore passage of water between the bay and the impounded marsh. A system of wetland semi-permanent pools were created approximately a mile west of the bay in former agricultural land to increase the grassland-wetland interface. This is the

Munuscong potholes site described above, and has become a popular location for hunting waterfowl, sharp-tailed grouse, and for wildlife viewing.

Public Use

The Munuscong SWMA is used by campers, hunters, trappers, anglers, birdwatchers, canoers, boaters, and berry and mushroom pickers. Munuscong Bay is a popular location for hunting waterfowl and fishing. Deer and small game hunting as well as trapping are popular in the SWMA. A 25-site rustic state forest campground is located adjacent to the Munuscong River, accessed from 21-Mile Road from Riverside Drive. A boat launch is available at the campground. Boaters launch into the river approximately 2 miles upstream of the river mouth. Parks and Recreation Division (PRD) maintains the campground. Canoes may be launched at the boat ramp or at the end of the campground road where the dike continues along the edge of the Munuscong River. Here a parking area exists on the river shoreline approximately 1 mile upstream from the river mouth. The campground and boat launch are used by hunters, anglers, and others. Both receive high use during the first week of walleye season (mid-May) and the first weekend of duck season (late September or early October).

Low water levels challenged navigation out of the mouth of the Munuscong River and into Munuscong Bay until 2013. An additional boat launch is currently under construction on a recently acquired parcel at Kemps Point (also known as Conley Point) on the northeast side of Munuscong Bay in the SWMA; PRD is coordinating that project.

A coastal wetland observation area is available at the Parking & Viewing Area (Fig. 8). Visitors are able to view the bay from various heights (terraces), up to 30 feet above bay level, and all <300 feet from shore—although the water's edge in the bay has been much further out due to low water levels.

There are at least four potential direct access points for walk-in access to the SWMA coastal marsh. One, the Allard Road (18-Mile Road) access is near the north end of the bay. Portions of the road are often impassable with a 2-wheel drive vehicle, making this access poor. The other access points are all accessible from 21-Mile Road (the primary access road into the campground and impoundment area). These include access into the Campground & Boat Launch as well as the Parking Area & Canoe Launch, the Parking & Viewing Area, and the gate accessing the southern trail. A trail is located along the top of the dike from the parking lot along the river east of the campground. The trail is accessible from a gate along 21-Mile Road, and provides access to the south portion of the dike. Except for brushing along the southern trail in 2013, these trails have not been maintained in recent years. A breach along the dike currently separates the northern and southern portions of the trail. Only the northern trail and the Parking & Viewing Area at the end of 21-Mile Road provide direct access to the lake and coastal marsh via quality gravel road and parking areas.

MANAGEMENT GOALS & OBJECTIVES

Wildlife Division's mission is to enhance, restore and conserve the State's wildlife resources, natural communities, and ecosystems for the benefit of Michigan's citizens, visitors and future generations. The primary goals for the Munuscong SWMA are to:

- Provide quality habitat for wildlife, maintaining and encouraging unique habitats present for wetland, grassland, and forest land species;
- Provide for and promote public use and enjoyment of the SWMA for hunting, wildlife viewing, and other wildlife-related recreation.

The goals for the Munuscong SWMA are in-line with the goals in Wildlife Division's GPS. Specifically, the goals, and objectives addressed below, meet goals 1, 2, 4, & 6 in the GPS. Each objective in this plan will be referenced to objective(s) met in the GPS, although additional GPS objectives may also be addressed by the Plan objective.

Many of the objectives identified in 1995 and in 2003 are still valid and will require little change in this Plan. However, some objectives will shift in response to current conditions. Management will emphasize habitats that are suitable for water and wetland dependent species while also including those important for grassland and forested wildlife, both game and non-game. Although management direction for Michigan wildlife is generally provided by the DNR-Wildlife Division mission statement, Wildlife Division leadership supports and has encouraged the approach outlined below at the Munuscong SWMA. This Plan is an update to the 1995 (Soulliere, 1995) and 2003 plans (Ainslie, 2003).

Objective 1: Enhance the near-shore marsh habitat and increase recreational access to marsh habitat for hunting, trapping, and wildlife viewing. GPS objectives 1.1, 2.1, 4.3, 4.5, 6.1

Water levels are cyclical in nature, but have been in a decreasing trend over the last century (Fig. 4). This downward trend is influencing the near-shore marsh habitat in Munuscong Bay as well as the access to that habitat. In 2012, water levels in the St. Mary's River system were near historic lows, similar to those experienced in 1964. Water levels increased substantially from 2012 to 2014, but the long term forecast predicts that this trend will continue in the future.

Low water levels lead to access constraints for public recreation related to wetlands. Water levels were below the wide spillways created in the 1990's to naturalize the dike and restore the open-system dynamics. The largest impoundment (north impoundment, adjacent to the Munuscong River [Fig. 8]), has been impacted the most by low water levels due to its connection to the bay (left, taken in



May 2010). A deep channel in the dike, likely resulting from the removal of culverts or similar structures at that time, allows water exchange with the bay despite water levels being lower than the wide spillways elsewhere on the dike. Water levels in two other impoundments are higher due to their characteristics. The middle impoundment maintains higher water levels that provide more open-water habitat than marsh. The water level had been below the wide spillway created in the 1990's on this impoundment until 2014. The south impoundment has

higher water and marsh habitat. Although a deep channel also exists here, beaver activity has maintained water levels higher than in the north impoundment.

To meet the objective, several actions are necessary. Habitat in the north impoundment will be enhanced by blocking the deep channel and allowing water control in that unit. A water control structure will be placed, both to allow water control in the unit and to allow water exchange with the bay during periods of higher water in the bay. Habitat in the middle and south impoundments will be enhanced and maintained by placing control gates or other structures on the dike that allows the water level to be manipulated to promote hemi-marsh conditions in the units. The overall goal for these structures is to catch and store water from events including spring run-off and high water level events in Munuscong Bay. Efforts will also take place to control shrubby growth where it encroaches on marsh or grassland habitats in the coastal areas. Prescribed burning will be used where feasible and desirable to control shrubby growth in these areas. Mechanical control may be used in some areas to control shrubby encroachment, as well.

In 2013, the Department partnered with Ducks Unlimited, the UP Resource Conservation and Development Council, three local sportsmen's clubs, and other organizations across the UP to seek funding through a North American Wetlands Conservation Act grant for several UP projects, including restoring some of the functionality of the impoundments in Munuscong Bay. Funding was awarded in

2014, and plans are proceeding to place water control structures on the impoundments (Fig. 8) to provide water retention capability particularly during low water periods.

The Munuscong SWMA, and particularly accessible coastal areas near the mouth of the Munuscong River, will become one of Michigan's Wetland Wonders. Explore Michigan's Wetland Wonders is a campaign to promote Michigan's premier wetland areas that provide high quality wetland wildlife habitat and recreational opportunities. It will also be a focal SWMA in the UP Region for management and facilitating public access. As a result, there will be increased advertisement and management focus for wetlands and grassland species at the SWMA and the recreational opportunities they provide. The SWMA should be identified as one of Michigan's Wetland Wonders on the Department's Wetland Wonders web site (www.michigan.gov/wetlandwonders) and information specific to the SWMA should be posted on that site. The Munuscong SWMA is already identified on the MI Hunt web site (www.michigan.gov/mihunt). The information for the SWMA should be updated to reflect current and/or new management activities or strategies that take place. On-site, signs and/or a kiosk will be placed identifying the site as one of Michigan's Wetland Wonders and providing information about the SWMA. This may be done in partnership with PRD.

Although these actions seem to differ from the objectives set in earlier plans, there are similarities. First, the actions in earlier plans were set during periods of higher water levels than those of recent years. Spillways created in the dike to "naturalize" (ie. allow water to flow over them) have been exposed for a number of years, rendering the spillways ineffective. New actions described above primarily address low water levels, such as those experienced between the late 1990's and 2012. Although water levels have been on the rebound since 2012, they remain below the average since 1903. Should water levels rise and exceed the level of the wide spillways, free exchange of water between the bay and the northwestern impoundment can be restored as originally planned. Second, public recreation is important in both plans. In this Plan, public recreational opportunities will be increased by improving water levels in marsh habitat that is most accessible to the public, marsh that was more prevalent when the 1995 Plan was written (Fig 5). Third, these actions will utilize existing forces rather than relying upon high-intensity systems that require substantial long term investments in maintenance and oversight.

Objective 2: Maintain upland grassland communities for wildlife species currently using this cover type, and maintain "emergent-marsh" wetlands to enhance grasslands for species dependent on grassland-wetland complexes. GPS objectives 1.1, 2.1, 2.2

Maintaining the grassland characteristic is an on-going process since the pre-settlement land cover was forested. Grasslands here exist because of periodic manipulation. Prescribed burning has been and will continue to be used as a tool when available to limit woody growth and maintain the grassland characteristic. Prescribed burns, every 3 - 10 years, control brush and result in higher stem densities of grasses and forbs which enhance cover for ground-nesting birds. Although burning temporarily removes cover and spring burning may disrupt some wildlife nesting activity, the resulting diversity from fire should outweigh short-term cover loss. Burns should only be necessary 1 - 2 times within a 10-year period. Less than ¼ of the SWMA grasslands should be burned during a single year unless extenuating circumstances apply. In recent years, prescribed burning has been very difficult to accomplish due to a combination of unsuitable conditions on-site for burning and statewide priorities.

Brush control may also be accomplished through other methods, such as mechanical means or herbicides (primarily spot treatments), when necessary since prescribed burning is not always possible. Brush has become prevalent in some areas, such as near shallow wetlands developed along 18-Mile Road. Mechanical treatments will be necessary before a prescribed burn can be conducted. Mowing and/or herbaceous plantings of native or naturalized grasses and forbs may be considered in certain areas to promote grassland and wetland wildlife. Mowing, if conducted, will take place in late summer or early fall, if possible, to avoid nesting birds.

The goal for creating or enhancing wetlands, stated in previous plans, has been the conversion of up to 15% of existing or newly acquired grasslands to shallow-persistent wetlands. In the potholes area, these conversions currently account for up to 8% of the grassland habitat in the potholes area (40 of the 523 acres). At least 22 semi-permanent wetlands were developed in the potholes area, including 1 on the west side of the Munuscong River. Four more were completed north of 18-Mile Road west of Riverside Drive. Approximately 174 acres of land, much of which contains grassland, located west of the potholes near M-129 and 22-Mile Road, was acquired in 2004 with the goal of developing one or more of these semi-permanent wetlands. Although no actions have been taken to develop additional wetlands here to date, opportunities will be explored in future years particularly if additional adjacent or nearby land is acquired. At present, it is considered a lower priority due to the distance of this parcel from remaining ownership and other priorities in the SWMA.

Wetland restoration and enhancement has been conducted on private lands in the area through Farm Bill programs like the Wetland Reserve Program, creating a mosaic of shallow floodings in the grassland habitats across ownerships. However, recent direction for Farm Bill programs seems to be geared toward restoring hydrology through less intensive means and encouraging pre-settlement vegetation through practices like tree planting. This change is expected to result in fewer open wetland types consistent with a grassland landscape, and more scrub/shrub and forested habitats on private lands enrolled in such programs in the future. The result may be more of a mosaic of grassland and shrubland or forest land habitats across the landscape over time than what exists today. They would not provide the same grassland and wetland habitat that currently supports grassland and wetland wildlife species. Wildlife Division supports maintenance of the grassland and wetland landscape to maintain the wildlife associated with these habitats, and will continue working with partnering agencies on this issue to promote the grassland and wetland habitats important to associated wildlife in this landscape.

The treatments to grasslands and associated wetlands within the SWMA will be done to improve habitat for sharp-tailed grouse and other grassland-dependent wildlife, and waterfowl including mallards. Grasslands here are located close to deer wintering complex, and treatments done here may also be done to support deer in the spring as they leave the wintering areas.

Objective 3: Improve user access and viewing opportunities while minimizing potential public-safety hazards and minimizing conflict with wildlife management objectives.

A similar objective has been in place since 1995. Accomplishments have included removal of dilapidated structures and artificial debris, opening a shoreline viewing area, maintaining dike top trail(s) to coastal wetlands, and monitoring human use and associated impact on wildlife use. The aesthetic improvement portion of the objective in earlier plans has been met. Some of the on-going accomplishments will require renewed commitments. Desired future conditions include a connected and maintained dike-top trail for improved access when water levels permit use of that trail, brush control in viewing areas where succession to woody growth is occurring, parking improvements at the Munuscong potholes to enhance access there, and improvements to the 18-Mile/Allard Road access to marsh along Munuscong Bay (see Fig. 1 for location of Allard Road).

Two trails (River Trail along the dike adjacent to the Munuscong River, and South Trail beginning at 21-Mile Road and extending to the dike on the south end of the north impoundment [Fig. 8]) utilized the top of the dike, but do not connect due to the breach in the dike discussed earlier. The trails have not been maintained for many years. Repairing the breach will enhance the hiking access and create an opportunity for a circle route to be completed from the campground, out along the top of the dike on the River Trail, and loop back through the South Trail for those interested. It will also allow users to access more of the dike system and nearby habitats for hunting and wildlife watching from each end of the trail. The trail will be available when water levels are below the spillways. It will be enhanced by placing identifier signs on both ends of the trail (River Trail parking area and the gate at 21-Mile), and

there may be opportunities for interpretive signs along portions of the trail in strategic locations. Trail maintenance will be minimal, involving periodic (once or twice a year) mowing and/or woody vegetation control along the trail.

Brush control will be conducted as necessary and resources are available around viewing areas and along trails. The opening at the viewing area will be burned or mowed periodically to reduce brush encroachment.

Road, parking, and viewing improvements are desired at two locations to enhance access, and other areas may require maintenance. Visitors to the Munuscong potholes must park along the side of a county road. No parking area is currently available at this site. Opportunities will be explored to create a small parking area there to facilitate public use. A mound or viewing platform will also be considered to provide better viewing opportunities across this site for wildlife viewing.

Road conditions along 18-Mile/Allard Road discourage or prevent access via conventional 2-wheel drive vehicle to the proximity of the marsh along Munuscong Bay. Portions of this are maintained by the Chippewa County Road Commission. In 2014, initial plans for a cooperative road improvement project were outlined in a meeting with the Road Commission. Although it is not yet clear whether road improvements are feasible, communication continues with the Road Commission and efforts will be made to seek access improvements and create a parking area closer to the marsh that still maintains walk-in access to the marsh and bay at that location.

The gravel road leading to the Parking & Viewing Area and to the parking area near River Trail and canoe launch may require additional maintenance if visitation increases significantly. The Chippewa County Road Commission may provide maintenance of this state-owned road. Federal requirements mandate that all facilities paid for with Pittman-Robertson funds be maintained in a safe and useable condition.

The campground and boat launch provide important camping and access opportunities for hunters, anglers, boaters, other recreationalists. In recent years, the capacity of the campground has been reduced. However, this site currently provides the only public boat launch in close proximity to Munuscong Lake, the closest launch for the small craft necessary to navigate the near-shore waters near the mouth of the Munuscong River as well as the west side of Munuscong Lake, and the only state campground near Munuscong Lake. Although under the administration of PRD, Wildlife Division supports the continued availability and maintenance of these features. Future cooperative projects may include improvements to the canoe launch area to facilitate access to the river and reduce human-induced bankside erosion, and improved access to the marsh for hunting and wildlife viewing along one or more trail portions (ex. trail surface improvement).

Objective 4: Manage wildlife habitat on state forest with emphasis on featured species. GPS objectives 1.1, 2.1, 2.2, 3.2

Managing wildlife habitat on the state forest in the SWMA will take place in the compartment review process. The Eastern UP Regional State Forest Management Plan provides guidance for management of each featured species listed for the MA. Compartments 52 through 58 (Fig. 9) will be inventoried and reviewed every ten years, and management priorities will focus on the featured species.

Management in coastal areas will aim to maintain and enhance habitat for wetland species, like mallards, wood ducks, and American bitterns. Early-successional habitat favored by American woodcock and ruffed grouse will be the focus for many deciduous stands. Lowland conifer stands in the deer wintering complex (Kelden swamp) will be managed to maintain winter cover. Most timber harvests will take place during the winter months due to the soil conditions. In wintering complex,

deciduous stands will be managed to provide palatable browse to wintering deer. Harvests will primarily be conducted during the winter months so tops are available as browse.

Forest stands dominated by shade-intolerant tree species (e.g., aspen) will generally be managed by an even-aged silvicultural system, "clear-cutting" when necessary to retain these intolerant types. Clear-cutting results in the removal of all standing timber with minor exceptions for "preferred" individuals (e.g., scattered oak), or identified "clumps" as stated in the timber-sale specifications. Residual standing timber remaining after clear-cutting should not exceed an amount which significantly reduces regeneration of intolerant species. Clear-cutting at least partially mimics natural processes such as forest fire and wind throw. Aesthetic concerns over clear-cutting should not be long lasting because of rapid forest regeneration. Clear-cut timber sales will generally be small (<50 acres), following natural landscape contours, and arranged to provide relatively high quality habitat for wildlife dependent on young growth and multiple-age class stands in close proximity, such as American woodcock, ruffed grouse, and white-tailed deer.

Shade-tolerant forest cover (e.g., maple dominated) will be managed for uneven-age classes within stands, except some hardwoods. Upland hardwood stands typically >1/2 mile from the St. Mary's River / Munuscong Lake system shall generally be managed for mixed-age classes via periodic thinning. Hardwoods within and adjacent to the St. Mary's River floodplain and along corridors of the Munuscong Rivers will generally be allowed to function naturally. Many of these stands contain ash. Stands managed for natural function will have no timber harvest (floodplain and river corridor forest) or longer rotations between thinning (forests adjacent to floodplain). Naturally functioning forest characteristics, such as cavities, high canopies, and "dead-and-downed" trees, will benefit both wetland and upland wildlife using this transition zone. Plantation and deliberate high-grading of forest stands will be discouraged on the SWMA.

Artificial nest structures, like nest houses, should not be necessary on the Munuscong SWMA since forest management should provide adequate nesting habitat for wood ducks and other cavity-nesters. Use of artificial structures will be considered if a shortage of natural nest sites, particularly for rare species, is documented, or placement of structures will further research or other partnering opportunities. Placement of structures to further research or other opportunities will be limited.

Objective 5: Acquire coastal wetlands, grasslands (hayfields and pasture), and other tracts that will provide beneficial habitat in the SWMA proximity, and manage them as sustainable functioning systems. GPS objectives 1.1, 1.2, 2.1, 2.2, 4.4

The Munuscong SWMA has a variety of important and unique cover types ranging from coastal wetlands to grassland habitats, but additions of these habitats will be beneficial to the SWMA. Grassland habitats are particularly limiting on state land in this area. The grassland habitats support a variety of grassland wildlife species like sharp-tailed grouse, and currently offer hunting opportunities not found elsewhere in the state. Portions of eastern Chippewa and Mackinac counties are currently the only locations in the state where hunters can pursue sharp-tailed grouse. See Objective 6 below for additional discussion about sharp-tailed grouse hunting opportunities. Additional grassland habitat in public ownership in this area will benefit the public by adding hunting and wildlife viewing opportunities as well as maintaining habitat for these species. Acquisition of additional grassland habitat near this SWMA is a priority in the ROPE.

Coastal wetlands are important particularly for migrating waterfowl. A number of legally protected and other rare wildlife species are known to utilize these coastal areas, such as osprey, bald eagle, least bittern, and marsh wren. The St. Mary's River system is part of a major migration corridor for migratory waterfowl and other birds. Acquisition of additional coastal habitats will protect these systems and habitats for wetland wildlife, including protected and rare species.

Land acquisition in or near the SWMA boundary will benefit the public by increasing land available for public hunting as well as the maintenance and protection of those lands for wildlife species, especially waterfowl and grassland species that are of particularly interest in this area. Land acquisition must follow regional and statewide priorities and policy. Priority habitats for land acquisition include (1) grassland habitats, (2) Great Lakes coastal wetlands, and (3) deer wintering complex. Priority settings will include inholdings and adjacent or nearby lands.

Objective 6: Increase hunter access to lands near the SWMA, particularly for sharp-tailed grouse, and explore wildlife management opportunities on other ownerships near the SWMA. GPS objectives 1.1, 2.1, 4.3, 4.4, 6.1

Hunting opportunities for sharp-tailed grouse are currently limited on public lands in this area. Although public lands are relatively abundant, open land or semi-open habitats which sharp-tailed grouse prefer are limited on these public lands. Open land habitat will be encouraged where it exists on state land in the SWMA as resources allow.

The Hunting Access Program (HAP) provides a financial incentive to encourage public hunting access on private land. The HAP is being implemented within the sharp-tailed grouse hunting zone in eastern Chippewa and Mackinac counties in 2014. Expanding public hunting opportunities in open land habitat will increase opportunities to pursue sharp-tailed grouse. The HAP program may also encourage grassland or semi-open habitat management on private lands in the area. Partnerships with agencies like the Chippewa/Luce/Mackinac Conservation District and the USDA-Natural Resources Conservation Service may also influence similar habitat management on private lands. Common management across public and private ownerships will increase the habitat available for wildlife in the area.

Objective 7: Control invasive plant species to maintain quality wildlife habitats. GPS objectives 1.5, 2.1

Invasive species are becoming increasingly common in the U.P. Four invasive species (3 plants and 1 animal) are of concern to the Munuscong SWMA at present: European frogbit, purple loosestrife, and invasive phragmites, and emerald ash borer. Invasive species will be treated to control their spread and reduce their prevalence in the system so that impacts to wildlife habitats will be minimal.

European frogbit (right) was initially detected near the mouth of the Munuscong River in 2010, although it wasn't reported to the Department until 2013. This is a free-floating aquatic plant that forms large colonies, creating dense mats with tangled roots. It occurs in shallow, slow moving water of lakes, rivers, streams, and wetlands. Frogbit crowds out native plants and prevents sunlight from reaching submerged plants. When a large colony dies and decomposes, it removes oxygen from the water which can affect fish and other aquatic life. Upon detection at the mouth of the Munuscong River, a crew from Wildlife Division conducted initial surveying in 2013 attempting to identify the location(s) and extent of its occurrence. Survey results indicated frogbit was present primarily near the river mouth (Fig. 10). An experimental mechanical removal treatment was conducted in the fall of 2013. Wildlife Division staff and partners from the Chippewa/Luce/Mackinac Conservation District used rakes and similar equipment to test the feasibility of mechanical removal. Future control efforts will likely focus on other methods given the difficulty of access, extent of the occurrences, and related factors. Control efforts are currently being developed by the Wildlife Division's invasive species coordinator.



Earlier plans indicated purple loosestrife was present in the SWMA, and briefly addressed control using three methods: hand pulling, herbicide application, introduction of beneficial insects. Its prevalence was limited and any control efforts done were likely at a small scale. Water levels were higher at the time, particularly in 1995. Purple loosestrife is still present, and efforts will be made to control this species. This plant appears to be scattered in the north impoundment, and there are occurrences outside of the dike, as well. One larger patch is located just north of the breach in the dike. Hand pulling and herbicide use may be possible in some areas, particularly for isolated patches. However, biological control through the introduction of beneficial insects will be explored since access and similar considerations will likely make conducting the other treatments described difficult or impossible. The methods used for each occurrence or area will be determined by taking into account the feasibility of the treatment, likelihood of success, cost effectiveness, and environmental considerations.

Invasive phragmites has become more prevalent in the eastern U.P. over the last 5 years. Although most phragmites found in the SWMA appears to be native, both native and invasive phragmites have been identified. Phragmites is relatively common in coastal areas in the SWMA. Denser patches with some characteristics similar to invasive phragmites have been identified (example at right—dense patch near the mouth of the Munuscong River in March 2014) causing concern among some experts that at least some patches may be hybrids. Samples from some suspect patches were collected and submitted for analysis. To date, only 1 invasive patch has been identified and treated.



Additional testing is anticipated. If invasive or hybrids are found, control efforts including mapping and treatment plans will be considered and implemented in priority areas as resources allow. Control efforts may include aerial herbicide treatments, prescribed burning, or other acceptable methods. Water level management will be used where practical to help discourage or control invasive phragmites in impoundments once control structures have been installed.

Emerald ash borer (EAB) is present in some ash stands in Chippewa County, including at one location in the SWMA. Forest Resources Division expects that EAB will spread and will negatively impact the ash in the SWMA. A number of ash stands, or stands where ash is common, are located near the Munuscong Lake shoreline. Most ash stands are lowland, and the 3 primary options for lowland stands according to the Department's Ash Management guidance document are to (1) allow EAB mortality to run its course, (2) alter management to non-timber objectives, and (3) convert the stand to different tree species. Treatments to ash may be aggressive at a small scale if treatment has a high likelihood of preventing the spread of EAB to other areas in the SWMA or on nearby ownerships. However, if the spread of EAB will not likely be prevented by treatments, then stands should be managed to maximize wildlife benefits. Stands bordering the shoreline will generally remain untreated due to their value to wildlife here. Treatment of stands further from the shoreline (>1/4 mile) will be considered on an individual stand basis. In any stand containing ash, ash should remain in the retention in a proportion no less than its representation prior to treatment.

Mute swans are large, conspicuous birds that were introduced from Europe. They are an aggressive bird that can be a threat to humans, a danger to native wildlife and cause destruction of wetland habitat. They exhibit aggression toward other waterfowl and can displace native waterfowl from their nesting and feeding areas by attacking, injuring and even killing other birds. In Michigan, of particular concern are native species including trumpeter swans (state threatened), Canada geese, ducks, common loons (state threatened), and black terns (state special concern). If mute swans are identified in the SWMA, control efforts will be conducted or encouraged as resources allow using techniques approved by the Department and in accordance with applicable laws.

Partnerships have been important for invasive species surveying and control efforts, and will be sought for future surveying, controlling, and monitoring efforts in the future. Wildlife Division is part of the Eastern UP Cooperative Weed Management Association, and plans to continue partnering with the Chippewa/Luce/Mackinac Conservation District on surveying and control efforts in the SWMA. These efforts may include educational materials, such as signs placed in the SWMA educating recreational users of the threat of invasive species and steps they can take to limit their spread. Efforts will also include responding to new species invading or having the potential to invade (ex. found near) the SWMA.

Objective 8: Monitor the results of management activities used to meet the objectives in this plan, and use the information to apply adaptive management concepts to better manage the SWMA. GPS objective 2.1

Monitoring is a difficult action to complete due to resource limitations for monitoring, particularly time and funding, and often must be replaced by other high-priority matters. Some of the monitoring prescribed in former plans, such as monitoring any displacement of grassland wildlife species following conversion of a fraction of the grassland habitat to semi-permanent wetlands, were either not accomplished or little monitoring was done. In 2003, no mention was made of results of the 1995 prescription to evaluate wildlife use, changes in plant communities, and cost effectiveness of the potholes project(s) from 1995 - 2000. No formal species or habitat monitoring was planned in 2003, although occasional studies by university students, professors, or other wildlife professionals on various community aspects of the Munuscong SWMA were anticipated. Little change is expected over the next 10 years. Attempts will be made to monitor effectiveness of various treatments at the SWMA. Opportunities still exist to cooperate with university professors, students, and other wildlife professionals to conduct monitoring. Priorities for monitoring include:

- Changes in waterfowl and wildlife use of the impoundments;
- Changes in public use of the SWMA, particularly near the impoundments and potholes areas;
- Sharp-tailed grouse hunter use of the SWMA and HAP lands;
- Grassland species use of the grassland habitats.

SUMMARY

The primary purpose of this Plan is to set the strategic direction for the SWMA for the next 10 years. This Plan will guide the management activities used to achieve the desired future condition of the Munuscong SWMA. The management direction over the past 20 years has focused on natural and emulated ecological processes. The 1995 Munuscong Wildlife Area Management Plan was written with the vision of reducing the amount of high intensity management. The assumption was made that healthy, sustainable ecosystems will maintain viable, diverse populations of associated wildlife species in the most cost-effective manner, benefiting human users in search of wildlife-related experiences. The 2003 revision, the Munuscong Wildlife Area Strategic Management Plan, continued with the same concept.

This 2015 Plan uses the 1995 and 2003 management plans as a foundation. Although many of the factors continue to be valid, system dynamics (particularly low water levels) coupled with recreational considerations (access constraints and increased focus on priority SWMA's in the UP) and increasing threats of new invasive species prompted new considerations for management over the next 10 years. Management will focus on priorities identified in the ROPE and will strive to meet GPS objectives.

The primary goals for the Munuscong SWMA over the next 10 years are to (1) provide quality habitat for wildlife, maintaining and encouraging unique habitats present for wetland, grassland, and forest land species; and (2) provide for and promote public use and enjoyment of the SWMA for hunting, wildlife viewing, and other wildlife-related recreation. These goals will be met through implementing activities to meet 8 objectives ranging from enhancing habitat to improving access and monitoring.

Summary of Prescriptions & Actions

- Water control structures on impoundments (p. 6)
- Openings maintenance in marsh or grassland habitats in coastal areas (p. 6)
- Include in Michigan's Wetland Wonders program and update the appropriate web sites (Wetland Wonders and MI Hunt web sites) (p. 7)
- Openings maintenance in grassland habitats in former agricultural areas (ie. potholes) (p. 7)
- Partnership with other agencies to maintain open land habitats, particularly on other ownerships (p. 8)
- Annual mowing & maintenance on trail & viewing area (p. 8)
- Trail connection on dike (p. 8)
- Parking improvement & viewing improvement at the potholes (p. 9)
- Road improvement on 18-Mile/Allard Road (p. 9)
- Acquire additional lands adjacent to or near the SWMA lands that contain grassland habitats, Great Lakes coastal wetlands, and/or deer wintering complex (p. 10)
- Continue the Hunting Access Program (HAP) (p. 11)
- Control invasive species as resources allow (p. 11)
- Priority-based monitoring (p. 13)

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Figure 1. Location of the Munuscong State Wildlife Management Area (SWMA), Chippewa County, Michigan.

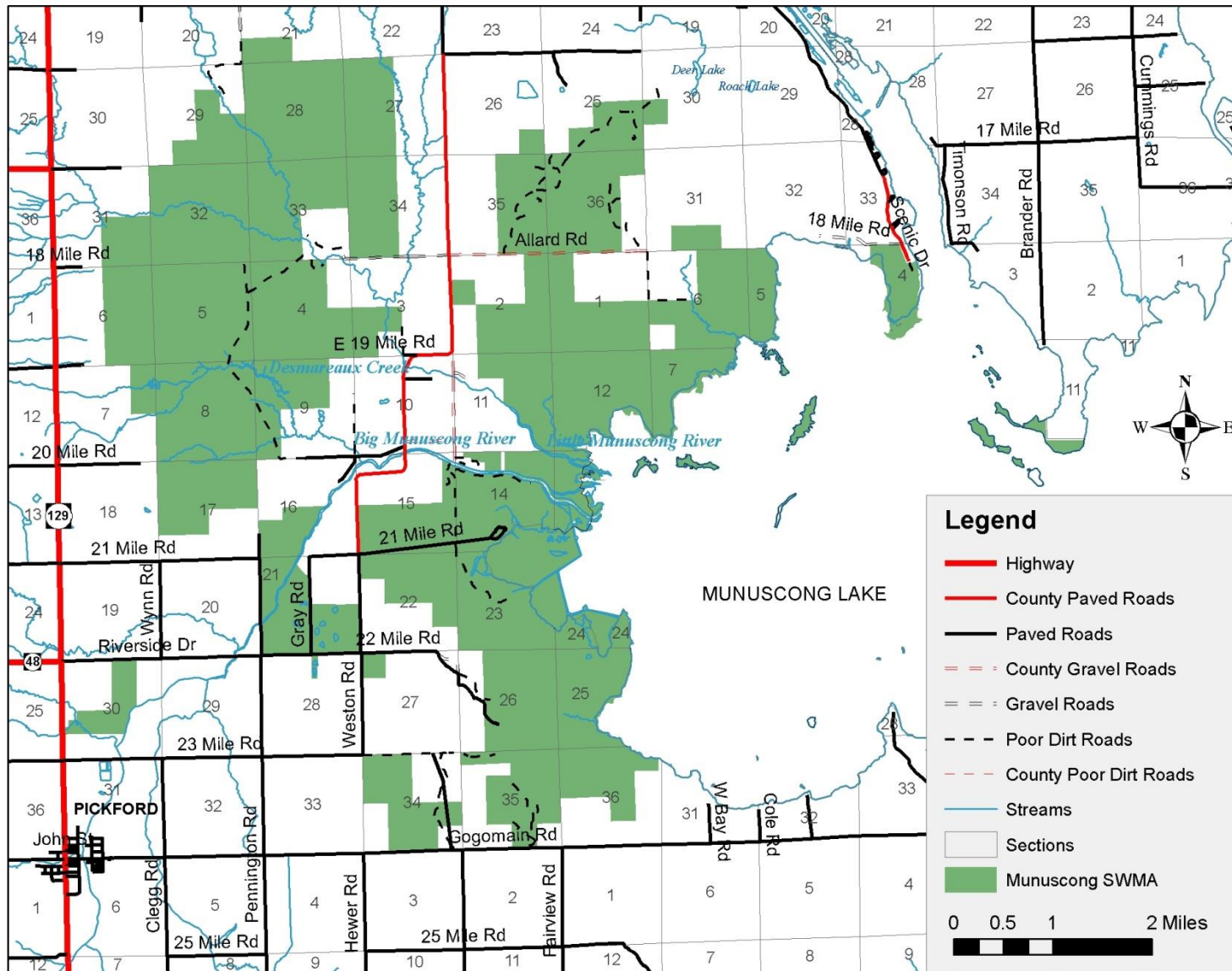


Figure 1 continued. Northern portion of the Munuscong State Wildlife Management Area (SWMA).

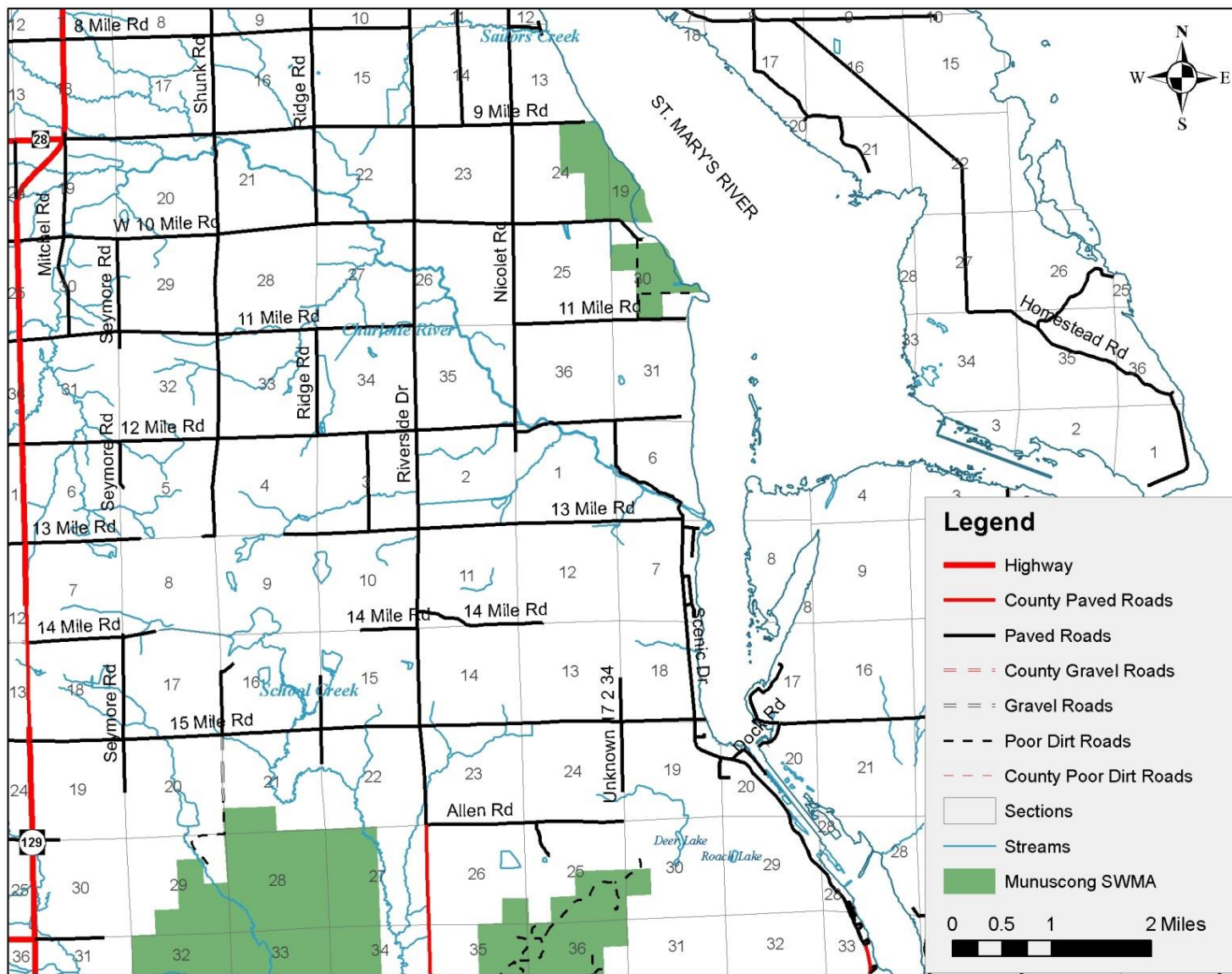


Figure 2. Cover types in the Munuscong State Wildlife Management Area based on state forest inventory.

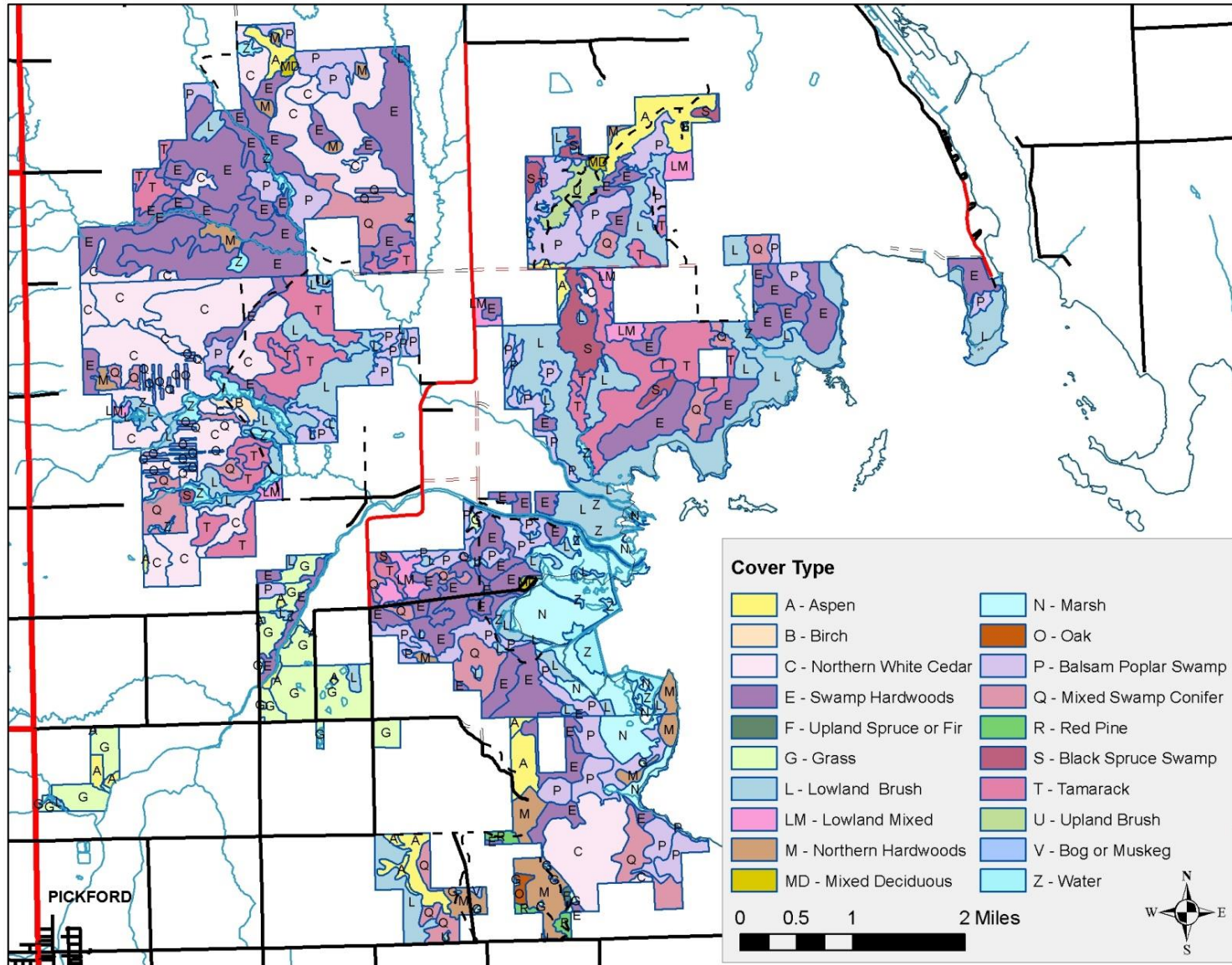


Figure 3. Ecological Reference Areas and Coastal Environmental Area along western Munuscong Lake shoreline and coastal wetlands within the Munuscong State Wildlife Management Area.

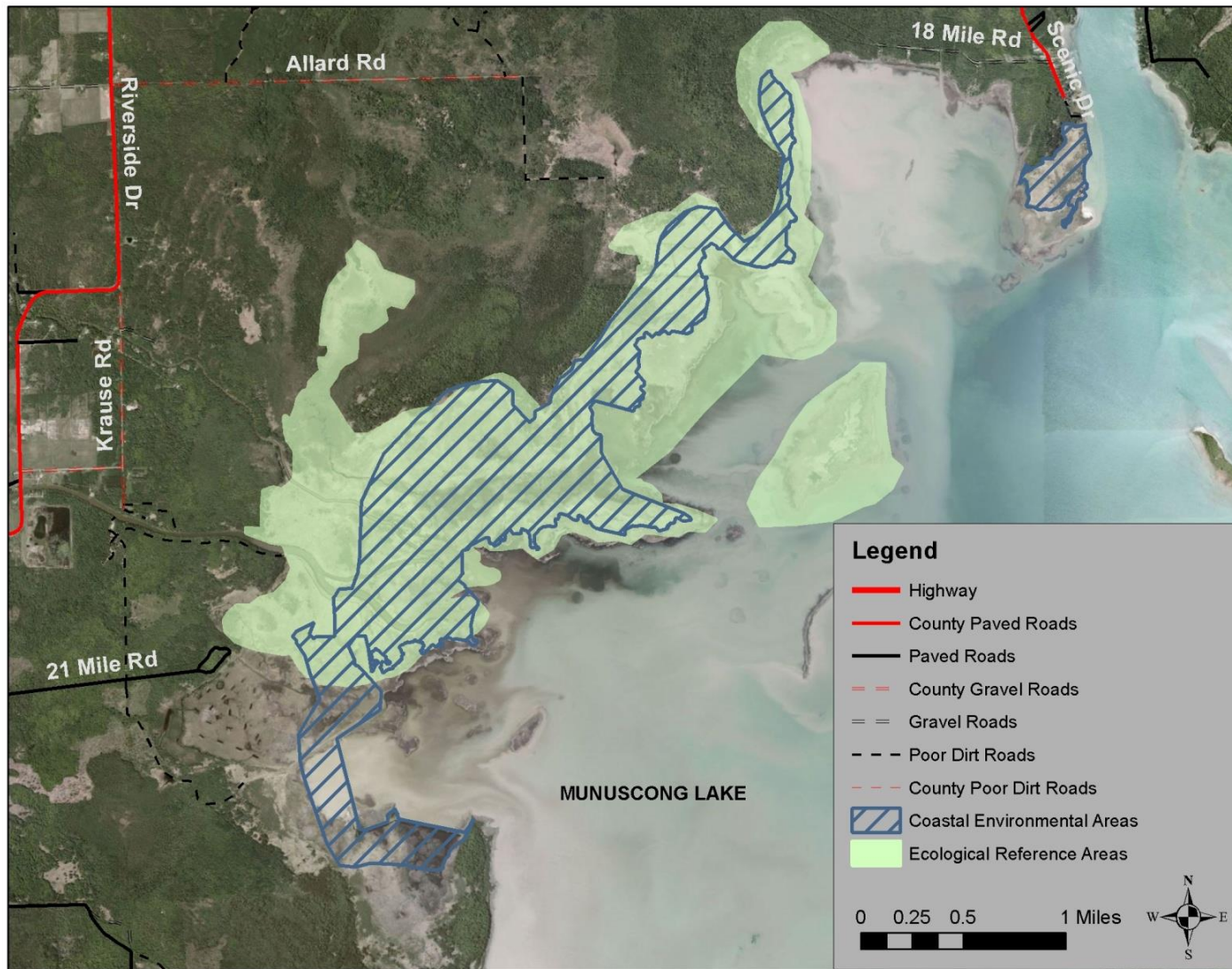


Figure 4. St. Mary's River average annual water levels, 1903 - 2014, based on readings at Station 9076060 U.S. Slip, MI. Data available at www.tidesandcurrents.noaa.gov/reports.html?id=9076060 on February 12, 2015.

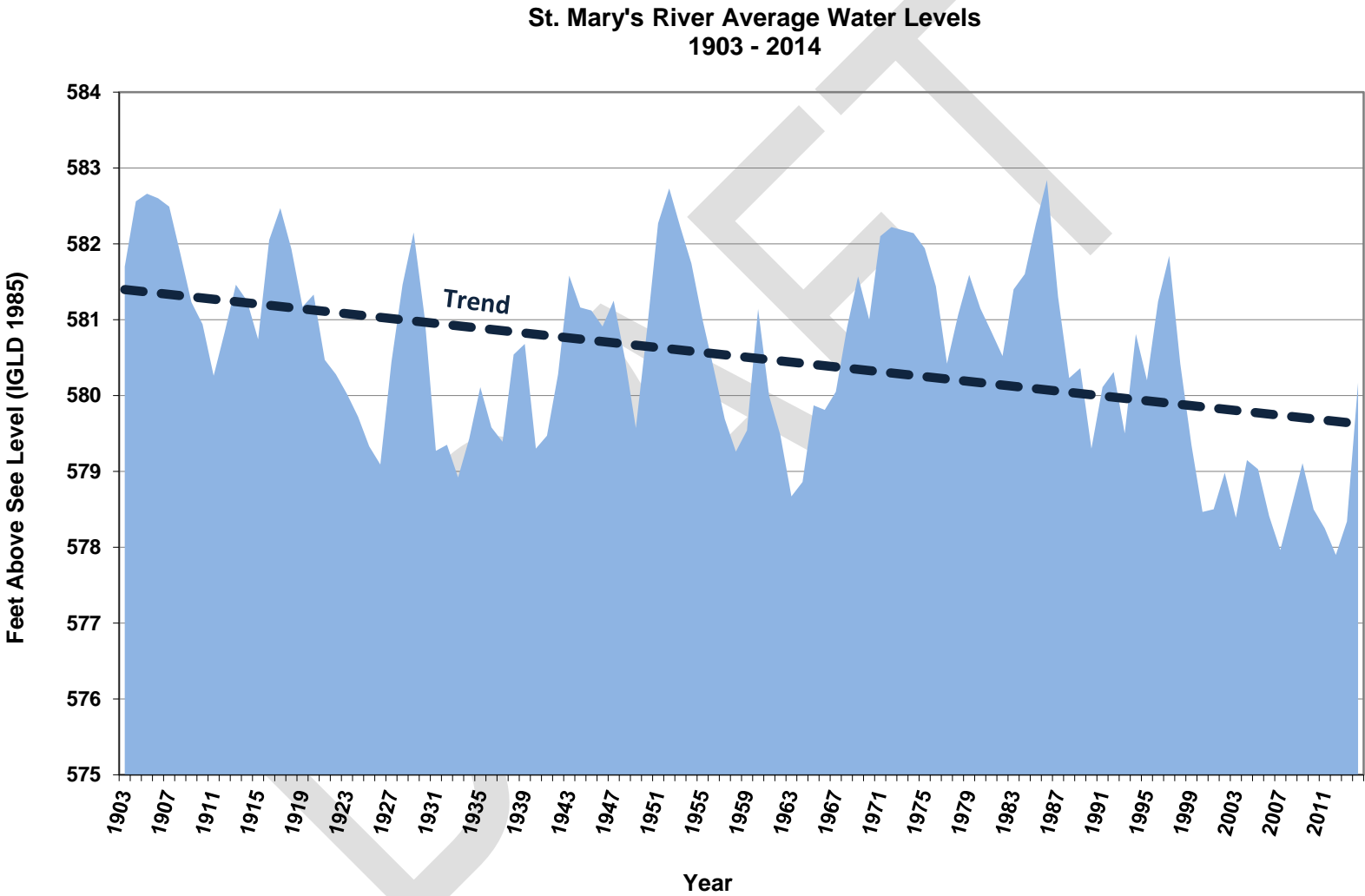


Figure 5. 1964 aerial photograph mosaic of western Munuscong Lake and Munuscong River mouth area. The largest river located near the top is the Munuscong River. The Little Munuscong River is above that. The average water level for 1964 was 578.86 IGLD at Station 076060 U.S. Slip.

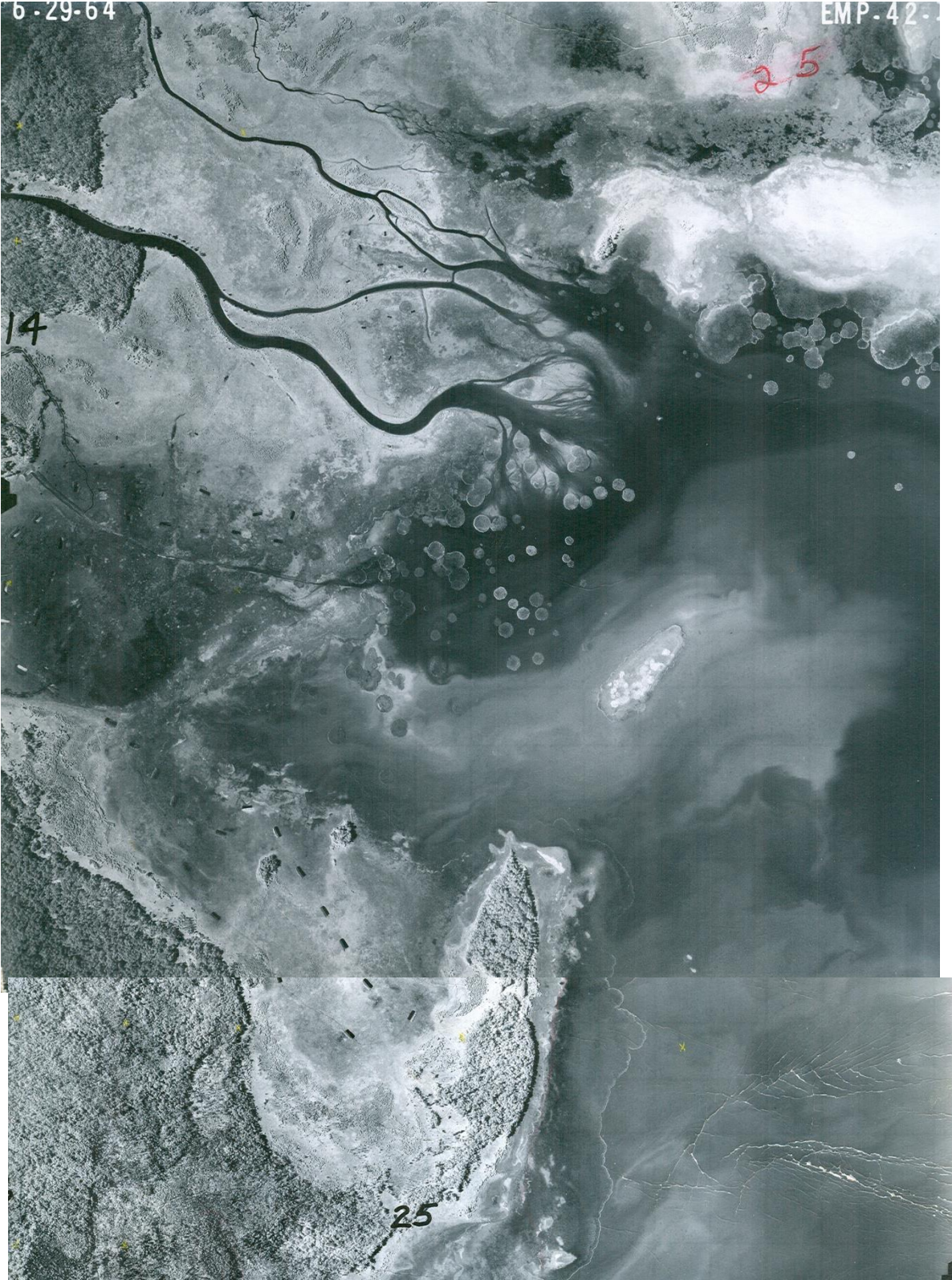


Figure 6. 1997 aerial photograph of Munuscong River and western Munuscong Lake. From top to bottom, Little Munuscong River and rivermouth, Munuscong River and river mouth, dikes and impoundments in the Munuscong State Wildlife Management Area. According to NOAA water level data, the average water level in 1997 was 581.84 IGLD at Station 076060 U.S. Slip.

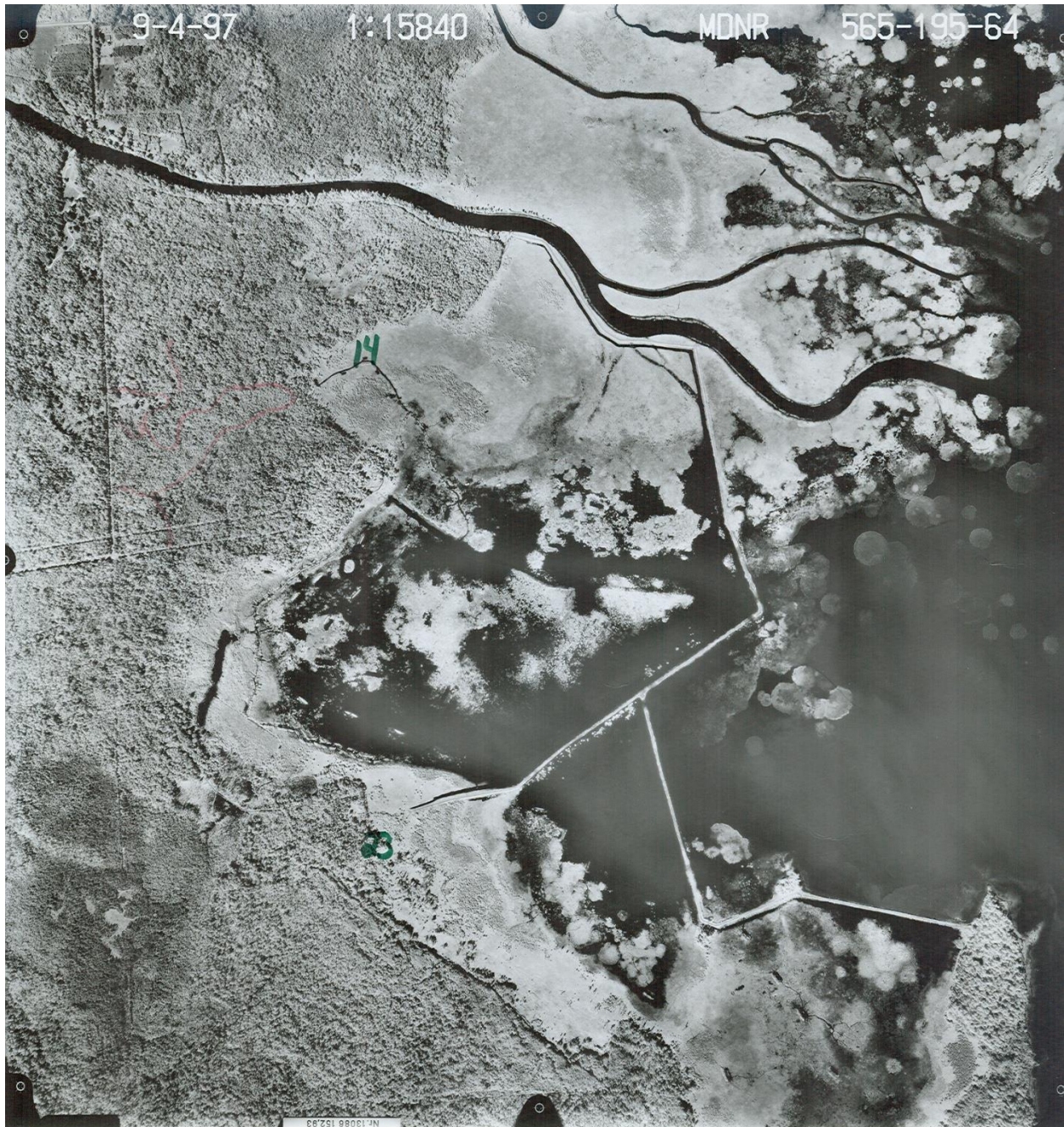


Figure 7. Recent (circa 2012) Bing aerial imagery of the Munuscong River and western Munuscong Lake. From top to bottom, Little Munuscong River and rivermouth, Munuscong River and river mouth, dikes and impoundments in the Munuscong State Wildlife Management Area. According to NOAA water level data, the average water level in 2012 was 577.90 IGLD at Station 076060 U.S. Slip.



Figure 8. Munuscong State Forest campground, parking areas, trails, impoundments, and other nearby features over current Bing aerial imagery. Water control structures are planned general locations only, and are not present currently. In the North Impoundment, a breach is located at the northeastern water control structure site.

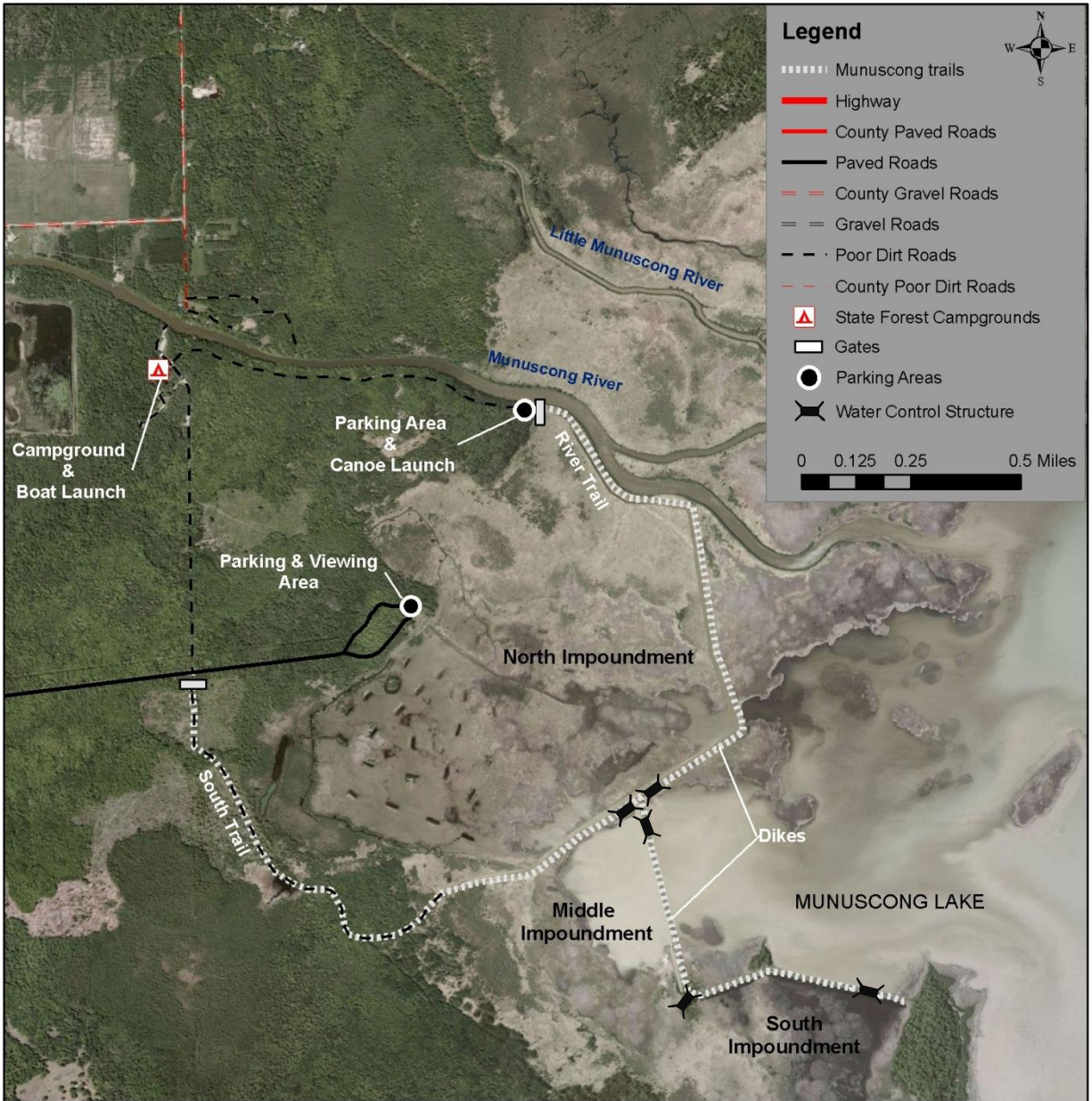


Figure 9. State Forest Compartments in the Munuscong Bay Management Area as defined in the Eastern Upper Peninsula Regional State Forest Management Plan.

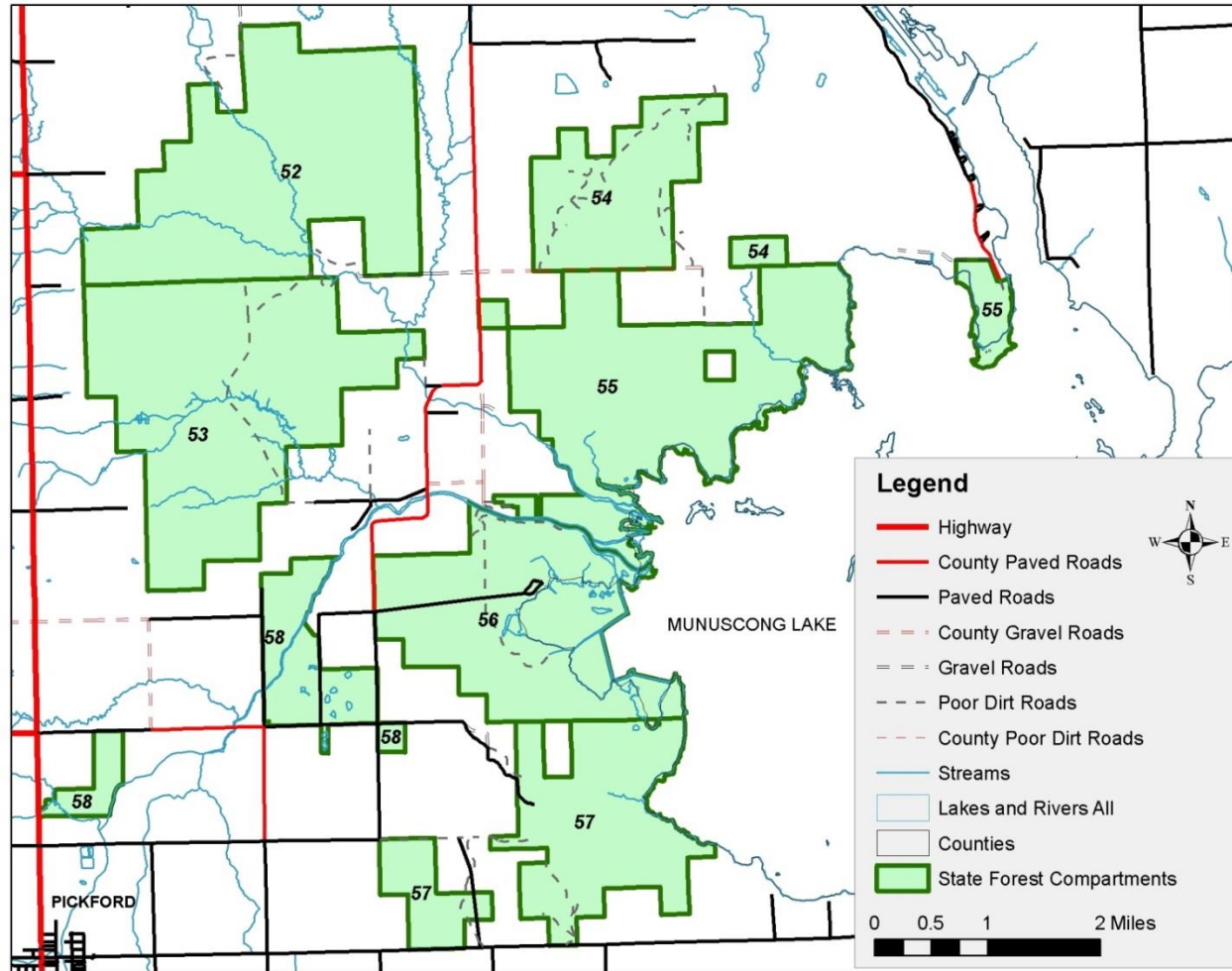
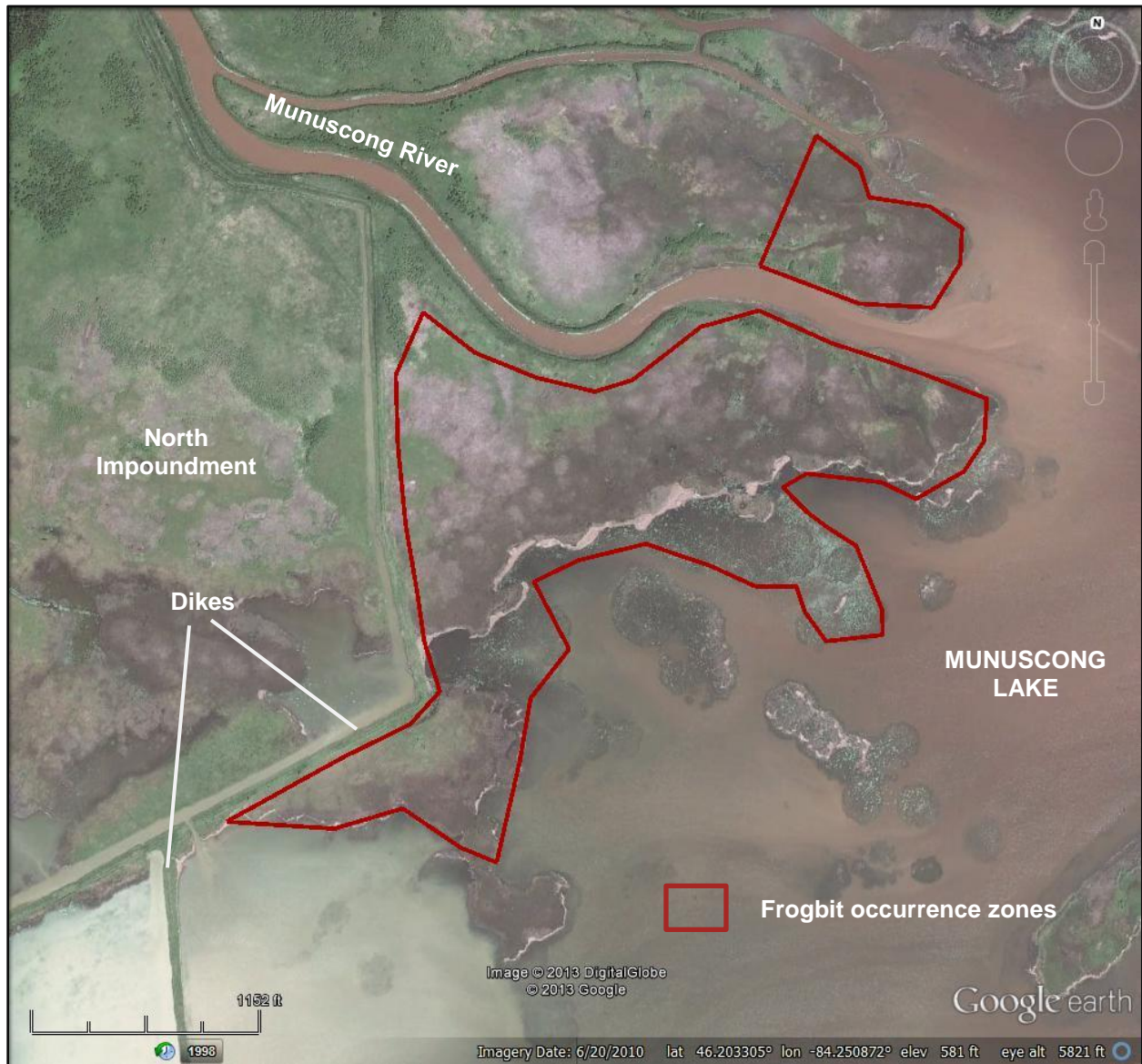


Figure 10. Zone of European frogbit based on surveying in August of 2013 near the mouth of the Munuscong River on the west side of Munuscong Lake.



Appendix A. Acronyms commonly used in this management plan and their definitions.

Acronym	Definition
Department	Michigan Department of Natural Resources
EAB	Emerald ash borer
GPS	Wildlife Division's strategic plan 2010-2015, <i>Guiding Principles and Strategies</i>
MA	Management Area as identified in the Eastern U.P. Regional State Forest Management Plan
NRC	Natural Resources Commission
NREPA	Natural Resources and Environmental Protection Act, Public Act 451 of 1994
Plan	2014 Munuscong State Wildlife Management Area Management Plan
PRD	Parks and Recreation Division
ROPE	Wildlife Division, Upper Peninsula Region's Regional Operations and Planning Effort document
SHPO	State Historical Preservation Office
SWMA	State Wildlife Management Area
UP	Upper Peninsula

Appendix B. Rare species occurrences in the Munuscong State Wildlife Management Area.

<u>Common name</u>	<u>Scientific name</u>	<u>Status in Michigan*</u>
American bittern	<i>Botaurus lentiginosus</i>	Special Concern
Bald eagle	<i>Haliaeetus leucocephalus</i>	Special Concern
Common tern	<i>Sterna hirundo</i>	Threatened
Grasshopper sparrow	<i>Ammodramus savannarum</i>	Special Concern
Least bittern	<i>Ixobrychus exilis</i>	Threatened
Marsh wren	<i>Cistothorus palustris</i>	Special Concern
Osprey	<i>Pandion haliaetus</i>	Special Concern
Red-shouldered hawk	<i>Buteo lineatus</i>	Threatened
Yellow rail	<i>Coturnicops noveboracensis</i>	Threatened

*species with a Threatened or Endangered status are legally protected species in Michigan under Part 365 of NREPA.

Appendix C. List of plant species mentioned in this plan.

<u>Common name</u>	<u>Scientific name</u>
Ash	<i>Fraxinus spp.</i>
Alder spp.	<i>Alnus spp.</i>
Aspen spp.	<i>Populus spp.</i>
Balsam poplar	<i>Populus balsamifera</i>
Bulrush	<i>Schoenoplectus spp.</i>
Cattail spp.	<i>Typha spp.</i>
Cedar	<i>Thuja occidentalis</i>
European frogbit	<i>Hydrocharis morsus-ranae</i>
Maple	<i>Acer spp.</i>
Oak	<i>Quercus spp.</i>
Phragmites	<i>Phragmites australis</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Tamarack	<i>Larix laricina</i>
Willow	<i>Salix spp.</i>

Appendix D. List of animal species mentioned in this plan.

<u>Common name</u>	<u>Scientific name</u>
American bittern	<i>Botaurus lentiginosus</i>
American kestrel	<i>Falco sparverius</i>
American woodcock	<i>Scolopax minor</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Common tern	<i>Sterna hirundo</i>
Eastern meadowlark	<i>Sturnella magna</i>
Grasshopper sparrow	<i>Ammodramus savannarum</i>
Great blue heron	<i>Ardea herodias</i>
Least bittern	<i>Ixobrychus exilis</i>
Mallard	<i>Anas platyrhynchos</i>
Marsh wren	<i>Cistothorus palustris</i>
Northern harrier	<i>Circus cyaneus</i>
Osprey	<i>Pandion haliaetus</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>
Upland sandpiper	<i>Bartramia longicauda</i>
Walleye	<i>Stizostedion canadense</i>
White-tailed deer	<i>Odocoileus virginianus</i>
Yellow rail	<i>Coturnicops noveboracensis</i>