<u>BAY MILLS INDIAN COMMUNITY</u>

WETLAND MANAGEMENT AND PROTECTION PLAN

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INTRODUCTION

Wetlands were viewed historically by generations of European immigrants as waste areas covering potentially viable agricultural land. Over the past 200 years, as a result, the United States has lost more than 50 percent of its wetlands through land clearing, ditching and draining. And even with the current focus on wetland conservation, the U.S. is losing about 60,000 acres of wetlands per year (USFWS, 2005). However, from 1998 to 2004 the United States managed a net gain of 191,750 acres of (mostly freshwater) wetlands. Due largely to an increasing awareness of the value specific wetland functions have to the greater ecosystem and society in general, the past several decades have seen an increasing number of laws and regulations regarding wetlands, their surroundings, and their inhabitants, creating protections through several different channels. Some of the most important legislative channels are the Migratory Bird Act, The Food Security (or "Swampbuster") Act, and the Clean Water Act, to name a few.

Native American culture, by contrast, is closely tied to the land, and the plant and animal inhabitants in the natural setting - including wetland habitats. Wetlands of the eastern Upper Peninsula, for example, are home to dozens of species important to Native American culture including such plant species as northern white cedar (*Thuja occidentalis*), black ash (*Fraxinus nigra*), and sweet-flag (*Acorus calamus*). Many Native Americans still subsist on animals that use wetlands, including white tailed deer (*Odocoileus virginianus*) and American black bear (*Ursa americanus*). Several fish species important in the diet of Native Americans (e.g. northern pike (*Esox lucius*), yellow perch (*Perca flavescens*)) also utilize wetlands as spawning and nursery areas.

The Bay Mills Indian Community (BMIC or "Tribe") is aware of the importance of wetlands to their way of life; in recognition of this, the Tribe developed their first Wetland Management Program in the early 1990's and published the first Wetland Management Plan in 1994 (Inter-Tribal Council of Michigan, 1994). Goals and objectives of this initial management program were to identify and delineate wetland resources and to utilize them sustainably for their natural and cultural resources. Since that time, the community has grown and wetland programming priorities have changed. The following document contains a proposed updated wetland management program for the Tribe.

WETLAND FUNCTIONS AND VALUES

Because of their unique position in the landscape between terrestrial and aquatic habitats, wetlands carry out several valuable functions, such as improving downstream water quality, storing potentially damaging floodwaters, protecting against damaging wave action, providing fish and wildlife habitat, and harboring important cultural and historical resources. The value of a wetland is an estimate of the importance or worth of one or more of its functions to society overall. A value can be determined, for example, by the revenue generated from the sale of fish that depend on a particular wetland; the tourist dollars associated with attractions within the wetland; the level of public support for protecting fish and wildlife, or the concentration of plant and animal resources important to Native American communities. The following is a specific treatment of the important functions carried out in wetlands.

Provide protection from floodwater and damaging wind and wave action

Wetlands function as natural sponges that trap and slowly release surface water, rain, snowmelt, groundwater and flood waters. Trees, root mats, and other wetland vegetation also function to slow the speed of flood waters and distribute them more evenly over the floodplain. This combination of effects lowers flood heights and reduces erosion. Wetlands within and downstream from urban areas are especially valuable, counteracting the greatly increased rate and volume of surface- water runoff from pavement and buildings. The holding capacity of wetlands helps control floods and prevents exposure of crops to prolonged periods of standing water. Preserving and restoring wetlands, together with other water retention measures, can often provide the level of flood control otherwise provided by expensive dredge operations and levees. Bottomland hardwood- riparian wetlands along the Mississippi River once retained floodwater for 60 days or more. Now retention capacity is only 12 days as most of the riparian wetlands along the river have been filled or drained.

Provide fish and wildlife habitat

More than one-third of the Threatened, Endangered, and Special Concern status species in the United States inhabit only wetlands and nearly half use wetlands for some part of their life cycle. Many other animal and plant species depend on wetlands for survival: Estuarine and marine fish and shellfish, birds, and some mammals need coastal wetlands to survive. Several commercial and game fish species breed and raise their young in coastal marshes and estuaries. For many animals and plants, like wood ducks, muskrat, cattails, and swamp rose, inland (palustrine) wetlands are the only places they can inhabit. Beaver may actually create their own wetlands; others, such as striped bass, peregrine falcon, otter, black bear, raccoon, and deer, rely on wetlands for the provision of important food, water, or shelter. Many of the U.S. breeding bird populations-- including ducks, geese, woodpeckers, hawks, wading birds, and many song-birds-- feed, nest, and raise their young in wetlands. Migratory waterfowl use coastal and inland wetlands as resting, feeding, breeding, or nesting grounds for at least part of the year. In fact, international agreements to protect wetlands of international importance were developed because some migratory bird species are completely dependent on specific wetlands and face extinction if those wetlands were destroyed.

Act as filter for downstream water quality:

Wetlands intercept surface- water runoff from higher uplands before it reaches open water. As the runoff passes through, wetlands retain excess nutrients and some pollutants, and reduce sediment that would normally clog waterways and affect fish and amphibian egg development. In performing this filtering function, wetlands may ultimately save local municipalities from having to construct expensive wastewater treatment facilities.

Maintain hydrologic flows and replenish groundwater supplies

Some wetlands help maintain surface water flows during dry periods. Additionally, some wetlands interact with groundwater, and as such, may also replenish groundwater supplies. This function is particularly valuable in communities that rely heavily on groundwater resources for their drinking water supply.

Harbor important cultural resources

Many plant and animal species inhabiting wetlands have always been and are still important culturally to Native American populations today. Some of these are processed for medicinal uses, while others are considered sacred and play a role in ceremonies and other community functions.

Provide economic benefits and recreational opportunities

Wetlands provide a plethora of natural products, including fish and shellfish, blueberries, wild rice, cranberries, and timber, as well as medicines that are derived from wetland soils and plants. Many of the nation's fishing and shellfishing industries harvest wetland-dependent species. In the Southeast, for example, nearly all the commercial catch and over half of the recreational harvest are fish and shellfish that depend on coastal estuaries.

More than half of the U.S. adult population hunts, fishes, and views or photographs wildlife. They spend a total of 59.5 billion USD annually. Artists and writers continue to capture the beauty of wetlands on canvas or paper, or through use of cameras and sound recorders. Others appreciate wetlands through other activities such as hiking, canoeing/kayaking, or boating. For most of their existence, humans have always sought to be near the water; part of this is due to the importance of water in maintaining life, but in part is also due to the strong and ever-present aesthetic attachment humans have to surface waters.

WETLAND PROTECTION STRATEGIES

Historically, wetlands were not protected and were drained at an alarming rate for conversion to agriculture and human settlements. Society in general was ignorant of wetland functions and the values society derives from them. However, wetland protection efforts initiated in the 1930s in the United States accelerated once the values of wetland functions became widely recognized and appreciated at a societal level. At present, the federal, state and local governments protect wetlands in a variety of ways, including:

Section 404 permitting

Section 404 of the Clean Water Act (CWA) establishes a program that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Activities regulated under this program include fill for development, water resource projects (e.g. dams, levees), infrastructure development (e.g. highways, airports) and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from regulation (e.g. certain farming or forestry activities).

Proposed activities are regulated through a permit review process. An individual permit is required for potentially significant impacts. Individual permits are reviewed by the U.S. Army Corps of Engineers, which evaluates applications under a public interest review, as well as the environmental criteria set forth in Section 404(b)(1). However, for most discharges that will have only minimal adverse effects, a general permit is usually suitable. General permits are issued on a nationwide, regional, or State basis for particular categories of activities. The general permit process eliminates individual review and allows certain activities to proceed with little or no delay, provided that the general or specific conditions for the general permit are met. For example, minor road activities, utility line backfill, and bedding are activities that can be considered for a general permit.

Wetland mitigation

Wetland mitigation is the replacement of wetland functions through the creation or restoration of wetlands. It is required by several permits issued under CWA Section 404. The goal of wetland mitigation is to replace the aforementioned wetland functions that provide public benefits. Wetland mitigation banking can facilitate compliance with permit requirements by providing a mechanism for the establishment of new wetland areas, or "banks," in advance of anticipated losses. Wetlands established in a mitigation bank provide "credits" which can be sold to permit applicants, or used by the mitigation bank sponsor to meet permit conditions.

Monitoring and assessment

Assessing wetland health through monitoring is vital to their protection. Knowledge gained from wetland monitoring allows resource managers to:

- More effectively protect wetland and aquatic resources;
- Select and prioritize wetlands and watersheds for restoration;

- Better manage watershed impacts;
- Determine whether proposed projects will create water quality problems;
- Evaluate the effects of the placement of fill within a watershed;
- Aid in evaluating mitigation projects;
- Help assess methods to limit pollution sources to waterways;
- Encourage sound watershed management planning;
- Better understand how wetlands contribute to the functioning of the watershed as a whole.

Restoration

Restoration is the return of a degraded wetland or former wetland to its preexisting naturally functioning condition, or at least a state that is close to that. It is a complex process requiring expertise, resources, and commitment from many different stakeholders. Ideally a successfully restored wetland will mimic the functions of a healthy natural wetland. All restoration projects require planning, implementation, monitoring, and management. Some large restoration projects require a team possessing expertise in ecology, hydrology, engineering, and environmental planning.

Watershed planning

Wetlands are important elements of a watershed because they are located in intermediate positions between land and water resources. Wetland protection programs are most effective when integrated with other surface and groundwater protection programs, as well as programs such as flood control, water supply, protection of fish and wildlife, recreation, control of stormwater, and nonpoint source pollution. Since overall wetland quality is directly linked to the quality of the environment surrounding them, this integrated approach is essential to maintaining the health of wetland systems.

Water quality standards for wetlands

Water quality standards are an effective tool available to Tribes to protect the overall health of their wetlands resources and the valuable functions they provide (including shoreline stabilization, nonpoint source runoff filtration, wildlife habitat, and erosion control) which, in turn, directly benefit adjacent and downstream waters. Water quality standards, including assignment of designated uses, water quality criteria, and an anti-degradation policy can provide a sound legal basis for protecting wetland resources through Tribal surface- and groundwater quality management programs.

THE BAY MILLS INDIAN COMMUNITY

Historical background and community profile

The Bay Mills Indian Community reservation was one of the four original reservations established in Michigan with the passage of the Indian Reorganization Act (IRA) of 1934. Two purposes of the IRA were to help Native Americans regain prior land holdings lost in unscrupulous transactions, and to create a framework for Native American tribes to develop constitutions and charters. Three years later, in 1937, land was purchased and the BMIC was organized with the adoption of the tribal constitution and charter on November 27, 1937. This land area, as well as the original Bay Mills Mission and Sugar Island land, makeup the current reservation area (Maps A, B).

The BMIC currently consists of approximately 1,646 registered members; 827 living within reservation boundaries. It is governed by the General Tribal Council, which consists of all voting-age members of the tribe. Daily decisions are made by the Executive Council, which consists of five elected officials (president, vice-president, treasurer, secretary, councilman). The Tribe operates several enterprises, with the Bay Mills Resort and Casino (including Wild Bluff Golf Course), Bay Mills Community College, and the Ellen Marshall Memorial Health Center being the largest.

General land description

The BMIC is located approximately 15 miles west and southwest from Sault Ste. Marie, Michigan. The area within the reservation is in U.S. Trust status and is divided into two separate areas. As of the 2000 census, the majority of the land base lies immediately northwest of Brimley, Michigan, in the eastern portions of Bay Mills and Superior townships (Map A); a smaller area is located in Sugar Island Township on Sugar Island in the St. Mary's River (Map B). The Tribe has acquired additional land in the last several years for a total land holding of 3,809 acres (3,328 acres within reservation boundaries; 172 acres in Trust; 309 acres fee land) (ITCMI GIS for BMIC database, 2012).

Topography and hydrology

The physical environment within and around the Bay Mills Indian Community was formed through a number of geological processes. The sedimentary bedrock underlying the area consists of red sandstone (Cambrian period) and sandstone and sandy dolomite (Upper Cambrian and Lower Ordovician periods). Deposits overlying bedrock consist of several sedimentary rock units formed between 230 and 620 million years ago when warm, shallow seas covered Michigan. The advance and retreat of glaciers during four major glacial periods that followed formed the current physiographic features of the area. The area within the BMIC lies near the coast of Whitefish Bay, between the larger Lake Superior, and the St. Mary's River. As the glaciers retreated at the end of the last glacial period, lake water levels fluctuated widely which, in turn, and coupled with wind and wave action, is responsible for much of the physical appearance of the area at present.

The majority of the land within the BMIC consists of glacial deposits and generally low, level terrain with a slope of 10 percent or less at a mean elevation between 600 and 700 feet above sea level. The exception to this is Mission Ridge, which extends along the western reservation boundary. Another small ridge covers the northeast portion of the reservation near North Pond (aka Gumshoe Lake). Both ridges have variable slopes between 30 and 180 percent. Mission Ridge, near Spectacle Lake, has a slope between approximately 120 and 180 percent and rises 300 to 400 feet above the surrounding reservation land.

Several soil types, many of them hydric, overlie the BMIC reservation (Table 1). The highly permeable soils of Mission Hill influence high levels of hydrostatic pressure, and hence, groundwater recharge at the lower levels along the base of the hill (which, incidentally, comprises the majority of the main reservation). The excessive hydrostatic pressure leading to high groundwater recharge rate here is responsible for a large number of flowing wells on the reservation, and, generally, is a primary reason for the high proportion of wetlands within the tribal land base.

The hydrology of the BMIC reservation consists of Upper and Lower Perennial Riverine systems and Palustrine wetland systems (including several small ponds that are 40 acres or less in area). Other factors contribute to the high proportion of wetlands on the reservation: beavers, through construction of dams, have increased the occurrence of areas of open water. Considered a nuisance by some, the actions of these animals have generally increased the value of wetlands in the area in regards to their enhanced potential for fish and wildlife habitat.

Table 1: Soil types occurring within the Bay Mills Indian Community reservation (mainland and Sugar Island). Source: U.S.D.A. Natural Resource Conservation Service, Soil Survey of Chippewa County, Michigan. 1991.

USDA NRCS map symbol	Soil map unit name	National hydric soil type? (yes/no)	Local hydric soil type? (yes/no)
Mainland reservation			
10F	Ontonagon silt loam, 6-15 percent slope	no	no
12	Pickford silty clay loam	no	yes
14A	Gaastra silt loam, 0-3 percent slope	no	no
15D	Rousseau fine sand, dark subsoil, 6-15 percent slope	no	no
17D	Deer Park fine sand, 0-15 percent slope	no	no
18B	Rubicon sand, 0-6 percent slope	no	no
18D	Rubicon sand, 6-15 percent slope	no	no
18E	Rubicon sand, 15-35 percent slope	no	no
21A	Au Gres sand, 0-3 percent slope	no	no
22	Kinross muck	yes	yes
23	Roscommon muck	yes	yes
35	Histosols and Aquents, ponded	yes	yes
36	Markey and Carbondale mucks	yes	yes
37	Dawson and Loxley peats	yes	yes
61A	Halfaday sand, 0-3 percent slope	no	no
89A	Kinross-Au Gres complex, 0-3 percent slope	no	Kinross-yes, Au Gres-no
92A	Biscuit very find sandy loam, 0-3 percent slope	no	Biscuit-no, Gogomain-yes
94A	Markey-Kinross-Au Gres complex, 0-3 percent slope	no	Markey-yes, Kinross-yes
97A	Wega very fine sandy loam, 0-3 percent slope	no	Ermatinger inclusion-yes
98A	Ermatinger silt loam	no	yes
132	Sugar very fine sandy loam, 0-6 percent slope	no	no
Sugar Island reservation			
52A	Ingalls loamy sand, 0-3 percent slope	no	Ingalls-no, Pickford-yes
68	Pinconning mucky loamy sand	yes	yes
98	Ermatinger silt loam	no	yes
107B	Oldman stony fine sandy loam, 2-6 percent slope	no	no
126	Pickford silt loam	yes	yes
136	Westbury-Gay complex, 0-3 percent slope	no	Westbury-no, Gay-yes, Pickford inclusion-yes

Classification of wetlands within the Bay Mills Indian Community

Wetlands within the reservation boundaries of the Bay Mills Indian Community are classified using the Federal Geographic Data Committee (FGDC) standard "Classification of Wetlands and Deepwater Habitats" (Cowardin, 1979; aka Cowardin system), which is the approved federal standard for mapping, monitoring, and reporting of wetland data. This classification system provides a standardized system of nomenclature and terms for habitat mapping only. The Cowardin system defines wetlands in a biological framework.

The Cowardin system classification is intended to describe ecological taxa, arrange them in a system useful to resource managers, furnish units for mapping, and provide uniformity of concepts and terms. Wetlands are defined by hydrophytic vegetation, hydric soils, and frequency of flooding (hydrology). Ecologically related areas of deep water, traditionally not considered wetlands, are also included in the classification as deepwater habitats.

Systems form the highest level of the classification hierarchy; five are defined: Marine, Estuarine, Riverine, Lacustrine, and Palustrine. Marine and Estuarine Systems each have two Subsystems, Subtidal and Intertidal; the Riverine System has four Subsystems, Tidal, Lower Perennial, Upper Perennial, and Intermittent; the Lacustrine System has two, Littoral and Limnetic; and the Palustrine System has no subsystems. Most of the wetlands on the BMIC reservation belong to the Palustrine System, with a few exceptions (see Table 2).

Within Subsystems, Classes are based on substrate materials and flooding regime, or on vegetative life form. The same Classes may appear under one or more of the Systems or Subsystems. Six Classes are based on substrate and flooding regime: (1) Rock Bottom with a substrate of bedrock, boulders, or stones; (2) Unconsolidated Bottom with a substrate of cobbles, gravel, sand, mud, or organic material; (3) Rocky Shore with the same substrates as Rock Bottom; (4) Unconsolidated Shore with the same substrates as Unconsolidated Bottom; (5) Streambed with any of the substrates; and (6) Reef with a substrate composed of the living and dead remains of invertebrates (corals, mollusks, and worms). The bottom Classes, (1) and (2), above, are flooded all or most of the time and the shore Classes, (3) and (4), are exposed most of the time. The Class Streambed is restricted to channels of intermittent streams and tidal channels that are dewatered at low tide. The life form of the dominant vegetation defines the five Classes based on vegetative form: (1) Aquatic Bed, dominated by plants that grow principally on or below the surface of the water; (2) Moss-Lichen wetland, dominated by mosses or lichens; (3) Emergent Wetland, dominated by emergent herbaceous angiosperms (flowering plants); (4) Scrub-Shrub wetland, dominated by shrubs or small trees; and (5) Forested wetland, dominated by large trees greater than 6-meters in height. Dominance Type, which is named for the dominant plant or animal forms present, is the lowest level of the classification hierarchy.

Modifiers applied to the Classes or Subclasses are essential for the use of the system. In tidal areas, the type and duration of flooding are described by four Water Regime Modifiers: subtidal, irregularly exposed, regularly flooded, and irregularly flooded. In nontidal areas, eight Regimes are used: permanently flooded, intermittently exposed, semi-permanently flooded, seasonally flooded, saturated, temporarily flooded, intermittently flooded, and artificially flooded. A hierarchical system of Water Chemistry Modifiers is used to describe the salinity levels of the water. Fresh waters are further divided on the basis of pH. Special modifiers may also be used when applicable: excavated, impounded, diked, partly-drained, farmed, and artificial.

The use of the Cowardin system for the purposes of this project is warranted given the status of the system as the federal standard, as well as the high level of accuracy the system possesses in predicting the occurrence of wetlands in the eastern Upper Peninsula of Michigan (Kudray and Gale, 2000). When analyzing the predictive capacity of the Cowardin system for predicting wetland status at a specific location, the aforementioned researchers found that National Wetland Inventory maps were fairly accurate at predicting wetland status within the Hiawatha National Forest. National Wetland Inventory maps were accurate 90 percent of the time in identifying uplands and jurisdictional wetlands. All non-forested wetlands were correctly identified. Uplands were correctly identified 97 percent of the time. The lowest level of accuracy (<91%) was achieved when identifying forested wetlands. The most common error was the NWI classification of wetlands on the Au Gres soil series - a somewhat poorly drained upland (i.e. non-hydric) soil that often occurs in complexes with wetland soils of the regions, including on the BMIC reservation. Table 2 summarizes the wetland cover types and estimated acreages associated with each for wetlands within the BMIC reservation.

Table 2: Occurrence of Cowardin system wetland types and estimated areal coverage, Bay Mills Indian Community (2012). Types are listed in order of decreasing occurrence. Source: Inter-Tribal Council of Michigan GIS for BMIC.

Cowardin Code	Interpretation of Cowardin Code	Acreage (Approx.)
PFO/SSB	Palustrine forested, scrub shrub, saturated	~ 227
PFO4/1B	Palustrine forested needle-leaved evergreen and broad-leaved deciduous, saturated	164
PSSY	Palustrine scrub shrub, saturated, semi-permanently, or seasonally flooded	127
PSS1B	Palustrine scrub shrub broad-leaved deciduous, saturated	101
PFO/SSY	Palustrine forested and scrub shrub, saturated, semi-permanently, or seasonally flooded	83
PFO4B	Palustrine forested needle-leaved evergreen, saturated	71
PFOB	Palustrine forested, saturated	68
PFOY	Palustrine forested, saturated, semi-permanently, or seasonally flooded	46
PSS/EMY	Palustrine scrub shrub and emergent, saturated, semi-permanently, or seasonally flooded	42
PFO1B	Palustrine forested broad-leaved deciduous, saturated	26
PEMY	Palustrine emergent, saturated, semi-permanently, or seasonally flooded	26
PSS/EME	Palustrine scrub shrub and emergent, seasonally flooded or saturated	15
L2EMZ	Lacustrine littoral emergent, intermittently exposed or permanent	11
PEMB	Palustrine emergent, saturated	9
PFO2/4B	Palustrine forested needle-leaved deciduous	7
PFO5/OWF	Palustrine forested dead open water, semi-permanently flooded	7
RABH	Riverine aquatic bed, permanently flooded	5
PEMFb	Palustrine emergent, semi-permanently flooded, modified by beaver	3
TOTAL		**~1038**

The occurrence of wetlands within the Bay Mills Indian Community is considerably higher, relative to total land base, when compared to both the State of Michigan and the United States (Table 3). Additionally, the proportion of wetlands to the total land base in each jurisdiction decreased from 1994 to 2012, mirroring wetland loss trends in the country, generally. However, for the BMIC, this decrease is artificial, as the actual wetland area increased from approximately 873 acres in 1994 to approximately 1038 acres currently.

Table 3: Comparison of wetland occurrence within the jurisdictions of the Bay Mills Indian Community, State of Michigan, and United States of America. Sources: websites for State of Michigan (www.michigan.gov) and U.S. Environmental Protection Agency (www.epa.gov); Inter-Tribal Council of Michigan (1994), GIS data for Bay Mills Indian Community.

Jurisdiction	Total land area (Acres)	Wetland area (Acres)	Proportion of wetlands, 1994 (percent of total land area)	Proportion of wetlands, 2012 (percent of total land area)
Bay Mills Indian Community	3,109 (2012); 2,189 (1994)	1,038 (2012); 873 (1994)	40%	33%
State of Michigan	37,258,240	5,500,000 (2012); 6,333,900 (1994)	17%	15%
United States of America*	2,311,820,000	290,500,000 (2012); 293,200,000 (1994)	13%	13%

*=Continental U.S., Alaska, and Hawaii combined.

BAY MILLS INDIAN COMMUNITY PROPOSED WETLAND MANAGEMENT PROGRAM

In 2008, the U.S. EPA and a State/Tribal workgroup developed the "Core Elements of an Effective State or Tribal Wetland Program Framework" (Core Element Framework, CEF). The CEF describes and defines each of the four core elements of a comprehensive wetlands program, providing a menu of broad actions and more specific activities nested under each action. The core elements are as follows: Monitoring and Assessment (CE-1), Regulation (CE-2), Voluntary Restoration and Protection (CE-3), and Water Quality Standards for Wetlands (CE-4). The CEF is designed to be comprehensive, yet still allow programs a certain amount of flexibility to develop. The U.S. EPA recognizes that not all wetland programs develop and operate at the same pace. The CEF allows for incremental development of tribal wetland management and protection programs.

CE-1: Monitoring and Assessment

Overall goal statement and time frame:

The Bay Mills Indian Community (BMIC or "Tribe") plans to develop its wetland monitoring plan over the next four years (2012-2015). The wetland management plan now in use was developed in 1995 and should be revised to reflect current tribal wetland and water quality programming priorities. In 2011, monitoring protocols were first developed and tested to assess wetland condition within the BMIC Wetland Preserve (or "preserve"; Inter-Tribal Council of Michigan, 2012). Monitoring protocols will be refined and expanded to include wetlands outside of the preserve, but still lying within current reservation boundaries. The Tribe will use this information to improve understanding of baseline wetland condition, to develop benchmarks for wetlands restoration, and to prioritize wetland restoration and protection activities. The Tribe plans to achieve this goal through implementing the following actions and activities over the next five years:

1. *Year One (2012)*
    a. Action: Continue monitoring for presence of Emerald Ash Borer (*Agrilus planipennis*, EAB). Monitor forested stands where green and black ash predominate (i.e. exceed 40-50 percent coverage).
        i. Place monitoring traps in selected known locations. Monitor traps at regular intervals to determine presence/absence of EAB.
        ii. Place monitoring traps in locations not previously known to contain ash trees. These stands - located along the western edge of the BMIC Wetland Preserve - were uncovered during fieldwork there in 2011.
    b. Action: Define strategies and objectives for monitoring and assessment of wetlands on the BMIC reservation.
        i. Activity: The BMIC Biological Services Department will hold a series of coordination meetings with those Tribal committees and departments involved in developing its overall wetlands monitoring goal. Examples of departments

who may be involved include History / Culture Dept., as well as elements of Tribal government.

ii. Activity: Outline specific monitoring objectives and a strategy for the BMIC wetland monitoring program to help achieve the aforementioned monitoring goal.
iii. Activity: Identify data needs based on agreed upon monitoring objectives and strategy.
iv. Activity: Integrate wetlands monitoring strategy into existing water quality monitoring efforts.

2. *Year Two (2013)*
    a. Action: Develop monitoring design
        i. Activity: Refine and document monitoring strategy, which includes a classification scheme in order to group the type, class, and size of wetland resources; a description of the site selection process; a list of the wetland resources from which sites can be selected, and a schedule for implementation.
    b. Action: Select indicators to represent wetland condition or a suite of functions.
        i. Activity: Identify indicators that are relevant for monitoring objectives established in the monitoring strategy.
        ii. Activity: Confirm that indicators are scientifically defensible. In other words, indicators can be quantified and the procedure for collecting information about an indicator is repeatable.
3. *Year Three (2014)*
    a. Action: Monitor wetland resources as specified in the monitoring strategy.
        i. Activity: Identify and train staff to monitor each identified wetland indicator.
        ii. Activity: Send monitoring teams to selected field sites.
4. *Year Four (2015)*
    a. Action: Track monitoring data in a system that is accessible; can be updated in a timely manner; can be integrated with systems tracking other water quality data, and allows for the BMIC Biological Services Dept. to measure and report trends in wetland resources.
        i. Activity: Integrate with other water quality data systems.

CE-3: Voluntary restoration and protection

Overall goal statement and time frame:

The Tribe will utilize monitoring data in a manner that allows them to restore wetlands within the BMIC reservation to the highest condition and function possible. The Tribe plans to achieve this goal through implementing the following actions and activities over the next five years:

1. *Years One and Two (2012-2013)*
    a. Monitoring only (see CE-1, above)
2. *Year Three (2014)*
    a. Action: Define goals of a voluntary restoration program.
        i. Activity: Coordinate with relevant groups / committees to outline restoration and protection goals.
        ii. Activity: Utilize monitoring data from first two years of program to define the range of wetland condition on the BMIC reservation.
        iii. Activity: Define specific scope and framework for voluntary restoration program.
3. *Year Four (2015)*
    a. Action: Define criteria to determine potential wetland areas to designate as part of a voluntary restoration program. Criteria should be based on results of monitoring activities and development of wetland function indicators during first three years of the program.
        i. Activity: Analyze monitoring data for differences in wetland quality between locations. Monitoring data should have been collected in a standardized method, and should also possess the ability to be used to make inferences about some aspect of wetland quality (i.e. floristic quality; quality of functional assessment parameters, etc.).
    b. Action: Implement BMIC Voluntary Wetland Restoration program.
        i. Activity: Coordinate restoration activities with relevant committees and groups of stakeholders.

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