

**BLUFF CREEK / US10 - M18 FLOODINGS
MASTER PLAN
Midland County, Michigan**

**Michigan Department of Natural Resources
Wildlife Division
Saginaw Bay Management Unit
Bay City Operations Service Center**

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I Introduction

1. Purpose of the Plan

This plan provides overall management direction for the Bluff Creek Flooding (BCF) and assures that the legal obligations for wildlife restoration and management are, or will be, met on the area. The plan will guide the management activities used to achieve the desired future conditions of the area. Obligations of the funding sources used to acquire and manage this area require that it be maintained for the purpose of managing wildlife, wildlife habitat, and associated recreation including hunting and trapping. Other related activities and uses of the area that complement or do not conflict with wildlife management have been considered and incorporated where appropriate. Public input was encouraged and considered in developing this plan, but given the requirements for the area, the plan is not a consensus document.

Activities under this program include acquisition and improvement of wildlife habitat, introduction of wildlife into suitable habitat, research into wildlife problems, surveys and inventories of wildlife populations, acquisition and development of access and facilities for public use including construction of public target ranges, operation and maintenance of facilities, and hunter education.

2. Project Location and Boundary

The BCF is located approximately 7 miles northwest of the City of Sanford in Section 31 of Edenville Township (T16N, R1W), Sections 5, 6, 9 and 10 of Jerome Township (T15N, R1W), Midland County (Figures 1 and 2). Other nearby major population centers include: Midland (15 miles) Bay City (35 miles), Saginaw (45 miles), and Mt. Pleasant (25 miles). The boundary of the area considered in this plan includes the actual flooding area and immediately surrounding uplands. The project area encompasses 700 acres all of which are currently in state ownership (Figure 3).

3. Area Description

a. Environmental Conditions and Biotic Inventory

The surrounding uplands within the scope of this plan once consisted of vast stands of white pine (*Pinus strobus*), hemlock (*Tsuga canadensis*) and northern hardwoods which attracted logging interests in the Saginaw and Bay City vicinity between 1830 and 1880. Literally billions of board feet of white pine were cut from the region by the end of the logging era. Additionally, the salt industry and the Saginaw Bay fishery were developing during this time, resulting in the harvest of oak (*Quercus spp.*) and ash (*Fraxinus spp.*) for barrels to store and ship these valuable

commodities (Albert 1995). Parts of the sand plains within the surrounding upland were farmed with little success. By the 1940s, most of what is now state forest land had reverted to the state for non-payment of taxes.

Pre-settlement (circa 1800) vegetation maps provided by the Michigan Natural Features Inventory (MNFI) show that the area currently occupied by the floodings consisted of hemlock-white pine forest interspersed with pockets of mixed hardwood swamp and aspen-birch forest (Figure 4). Forests consisting of white pine, beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), and hemlock were present and extended over much of Midland County. The description of pre-settlement vegetation is useful as a benchmark for understanding the potential conditions that might be encouraged in an area, but restoring pre-settlement conditions should not necessarily be viewed as the management goal for the area.

The BCF lies within the Saginaw Bay Lake Plain subsection of the southern lower Michigan regional landscape ecosystem (Albert 1995). This subsection consists primarily of flat glacial lake plain. The clay plain is broken by several extensive sand channels (Albert 1995). One of Michigan's largest pineries occurred here on the somewhat poorly to very poorly drained sands and clays (Albert 1995). Soils consist of somewhat poorly drained to very poorly drained Parkhill, Pipestone, Londo, Cohactah and Kingsville soils of glacial lacustrine origin with 0-3% slopes (United States Department of Agriculture 1973). Albert (1995) indicated that the Saginaw Bay Lake Plain subsection is underlain primarily by Paleozoic bedrock, primarily Pennsylvanian sandstone, shale, coal and limestone. Climatic conditions are relatively mild and similar to those found in the southern part of the state. The growing season is 150-160 days; extreme minimum temperature is -24 F to -28 F. Average annual precipitation is 28-30 inches, with 40 inches of snowfall. Both annual precipitation and snowfall are among the lightest in the state (Albert 1995).

The BCF has seven floodings which, in total, contain approximately 200 acres of wetland habitat with an average depth of less than 3 feet at full pool. Common wetland submergent plants in the Midland County area include pondweeds (*Potamogeton spp.*), milfoil (*Myriophyllum heterophyllum*), coontail (*Ceratophyllum demersum*), water weed (*Aracharis canadensis*) and water marigold (*Bidens beckii*). Common emergent and floating species include water lily (*Nymphaea spp.*), spatterdock (*Nuphar spp.*), water shield (*Brasenia schreberi*), pickerel weed (*Pontederia cordata*), duck potato (*Sagittaria latifolia*), mud plantain (*Heteranthera dubia*), reed canary grass (*Phalaris arundinacea*), bulrush (*Schoenoplectus spp.*), sedges (*Carex spp.*), rushes (*Juncus spp.*), bulrushes (*Scirpus spp.*), and cattail (*Typha spp.*). The flooding is

bordered by a dense band of wetland adapted shrubs including dogwood (*Cornus spp.*), willow (*Salix spp.*), and speckled alder (*Alnus rugosa*). The surrounding woodlands within the project area consist of a mixture of aspen (*Populus spp.*) dominated forest in various size and age classes on drier sites, lowland hardwood forest, and extensive areas of lowland shrub and wet meadow. Conifers are now uncommon but were once abundant across the area. Beaver (*Castor canadensis*) activity is common throughout the area.

Seasonal use by migratory waterfowl such as Canada geese (*Branta canadensis*), mallards (*Anas platyrhynchos*), and wood ducks (*Aix sponsa*) as well as passerines occurs in spring and fall. Some migratory species stay through the spring and summer months to breed on the area. Herptiles are common on the area and use the floodings and the small permanent and seasonal wetlands found in the area. Surrounding uplands are dominated by lowland hardwood forests which are primarily composed of aspen, ash, red maple (*Acer rubrum*), and oak. These upland areas offer habitat for species such as American woodcock (*Scolopax minor*), ruffed grouse (*Bonasa umbellus*), wild turkey (*Meleagris gallopavo*), white-tailed deer (*Odocoileus virginianus*), and coyote (*Canis latrans*). Upland and wetland areas provide a diversity of habitats for many passerine bird species. MNFI indicates the presence of wood turtle (*Clemmys insculpta*), a species of special concern, within at least one section in which the BCF is also located.

Based on 2001 Integrated Forest Monitoring Assessment and Prescription (IFMAP) data, the BCF is composed of 16% Lowland Deciduous Forest, 12% Herbaceous Openland, 10% Aspen Association, 9% Lowland Shrub, 9% Northern Hardwood Association, 8% Pines, 7% Mixed Non-Forest Wetland, 7% Mixed Upland Deciduous, 6% Miscellaneous, 5% Oak Association, 5% Upland Shrub, 4% Water, and 2% Lowland Coniferous Forest (Figure 5).

b. Cultural History and Current Cultural Context

State Historical Preservation Office (SHPO) procedures have been followed whenever development activities were considered for this area, and will be followed for any future activities that will require movement of soil. No sites of archeological or historical significance are presently known to occur at the BCF.

The BCF is located within a relatively narrow band of state-owned, forest-dominated land in central Midland County which is surrounded by primarily agricultural lands. Currently, the area is rural and dominated by agriculture, but there has been an increase in dispersed housing in the area

in recent years. Some private lands in the area are used primarily for hunting and recreation.

c. Establishment of Area and Land Acquisition History

Most of the area that is now the BCF was tax reverted to state ownership in the mid to late 1930s. In 1943 a parcel in T15N R1W Section 5 was acquired using the State Game Fund. In the late 1940s and in the early 1960s, easements were granted to the Michigan Department of Transportation for the construction of US 10. These areas are not considered part of the BCF. However, the BCF was most likely constructed as borrow pits, removing sand for the construction of US 10. These pits were then returned to MDNR administration. The four water control structures on the north side of US 10 were likely installed around this time (mid to late 1960s). Specific historical information of this area does not appear to be present in the Division files.

Some management activities within the BCF project boundary may be conducted using Federal Aid in Wildlife Restoration Act or Pittman-Robertson (P-R) funds. The Act's rules and regulations state that real property acquired or constructed with Federal Aid funds must continue to promote the restoration, conservation, management and enhancement of wild birds and mammals, and provide for public use of and benefits from these resources. Multiple uses of these areas are encouraged, provided they do not interfere with this primary purpose of wildlife management and habitat restoration. The United States Fish and Wildlife Service (USFWS) is the agency responsible for the oversight of the P-R program. Intensive uses, which cause adverse modification of wildlife habitats or divert from the approved primary use are considered by the USFWS to be incompatible with the primary purpose of the P-R program.

Since the land was acquired, management has been directed toward timber production, recreational hunting, trapping, hiking, and wildlife viewing. Beginning in the early 1990s, the dam in Section 31 began to experience some overflow events which caused erosion of the dam and the outflow channel. Basic repair work was done prior to 1998 to correct the erosion problems, but the dam continues to have some erosion problems over the spillway during high water periods and around the water control structure. A vehicle gate was installed on the access road to the impoundment with a dam (Section 31) in 2002. Most of the water control structures have not received any repair or maintenance for a number of years. A few logging roads closed after timber harvests have been kept open through illegal off-road vehicle (ORV) use and access the BCF impoundments. Today, an extensive network of trails, legal and otherwise, crisscrosses the area. Many attempts to close illegal trails using gates and earthen berms have met with varying degrees of success.

Adjacent private lands are mostly forested and are used as primary residences and recreational hunting land. Large tracts of State Forest land can be found approximately 9 miles to the northeast of the project boundary in north central Midland County as well as immediately north and south of the area in Midland County. Significant tracts of farmland lie to the east and west. Sanford Lake, an impoundment of the Tittabawassee River is approximately 2 miles east of the area. The lake is well developed with primary and secondary homes surrounding it.

d. Legislation, Policies and Legal Agreements Specific to Area

Federal Laws:

Endangered Species Act
Federal Aid in Wildlife Restoration Act (P-R Act)
Clean Water Act, Section 404

State Laws:

Public Act 451

Natural Resource Commission Policies:

1005 Public involvement in activities of Department
1006 Department position – presentations at hearings and meetings
2004 Reforestation
2619 Lands – trespass procedure on state lands
2627 Land Holdings – Department land holdings
5501 Land use

Wildlife Division Procedures:

2108.8 Wildlife flooding projects – operations and maintenance

Land Use Orders of the Director

No specific Orders for the area

4. Public Use of the Area

The BCF and surrounding area is used by hunters throughout the fall hunting seasons, especially by those pursuing deer. Upland game hunters seeking grouse, woodcock, and rabbits (*Sylvilagus floridanus*) also use the area. Light waterfowl hunter use occurs at the floodings. Trappers use the area to some extent and focus their efforts on beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), mink (*Mustela vison*) and otter (*Lutra canadensis*). Coyotes (*Canis latrans*) are also a popular target animal for both trappers and an increasing number of predator hunters. Fishing pressure on the flooding is light; most of the floodings are too shallow to allow for much fishing opportunity.

Non-consumptive use of state lands in Midland County is increasingly popular. Activity specifically within the BCF floodings appears to remain relatively light at this time. This may be due in part to the relative inaccessibility of the floodings despite their proximity to urban centers and US10. The expressway functions as a barrier for access. Bird watchers and hikers use the area mostly in the warmer months. Mountain bikers frequent the area and have created several illegal trails. A small number of cross-country skiers and snowmobilers use the area when snow cover is sufficient. Off-road vehicle use, though illegal, is extensive and has lead to serious habitat degradation and erosion in many locations. This activity has declined in recent years in part due to efforts to restrict illegal access to the area.

5. Commercial Use of the Area

Timber harvests are conducted under the direction of DNR Forest, Mineral and Fire Management (FMFM) Division by local logging interests. All commercial activities are incidental to, and have been determined to be compatible with, management activities that are undertaken to meet stated management goals for the area.

6. Facilities

There are currently seven separate floodings that comprise the BCF, one parking lot, one vehicle gate, less than 1 mile of road within BCF boundaries, one dam, and 4 water control structures. The most accessible and possibly largest flooding has a dam, located in the south-central portion of T16N R1W Section 31, is approximately 300 feet long with a 15 foot wide, 2 foot deep emergency spillway crossing the dam. The dam has a structural height of 6 feet, a hydraulic height of 4 feet, a normal head of 3 feet and creates a flooding with a surface area or approximately 40 acres. This dam has a water control structure within the dam with a 36 inch corrugated metal pipe riser, equipped with boards for water level manipulation, which discharges to an 18 inch corrugated metal outlet pipe. The remaining 3 floodings north of US10 have similar water control structures. The structures have not been used or maintained for several years, with the exception of the main flooding (Section 31) and the flooding immediately to the east of Bluff Creek (Section 6).

II. Management Goal and Objectives

1. Management Goal

Utilizing the principles of ecosystem management, the goal for the BCF is to conserve, enhance, and protect wildlife resources, natural communities, and

ecosystem integrity, while providing for a variety of consumptive and non-consumptive recreational opportunities.

2. Management Objectives

We intend to provide breeding, nesting, brood rearing, and stopover habitats on the BCF for a variety of wetland associated bird species by managing for wetland-dependent plants native to the area. The BCF will also be managed to provide habitat for other wetland associated species such as otter. Adjacent upland areas will be managed in cooperation with FMFM to maintain existing populations of native plant and animal species common to upland habitat types.

a. Desired Wildlife Community (Habitat)

Monitor the presence of exotic plant species and implement control measures when needed.

Encourage rare or uncommon plant communities.

Provide open water and emergent vegetation wetland conditions.

Manage impoundment water levels or use natural water level fluctuations to achieve desired habitat objectives using the principles of adaptive management.

b. Objectives for Public Use

Continue to work with FMFM to provide adequate public access for hunting, trapping, hiking and wildlife viewing.

Monitor public use and work with FMFM and Law Enforcement Division to address activities that are not compatible with wildlife management programs.

Routinely inspect the water control structures and dikes to minimize the impacts of beaver, adverse weather, and illegal activities.

III. Management Activities

1. Habitat Management Techniques

Forest management activities along wetland border will utilize clearcuts to regenerate aspen stands as well as selection harvest cuts to maintain species diversity and composition of lowland hardwoods. Consideration will be given to provide and maintain large trees for potential wood duck nesting cavities.

A combination of berms, stumps, gates, ditching and coordination with Law Enforcement Division will be used to minimize illegal ORV activity and habitat destruction.

Deer hunters will be encouraged to harvest antlerless deer to help manage local deer numbers. Departmental information as well as individual public contacts and presentations to local sportsmen's groups will be the mechanism of communication.

Water levels in impoundments with water control structures will be maintained to create open to semi-open water conditions, with the objective of maintaining a 1:1 ratio between emergent vegetation cover and open water or moist soil/mudflat areas.

Draw downs may be initiated in impoundments with water control structures if undesirable plant species such as *Nuphar spp.*, *Nymphaea spp.*, and other floating leafed aquatics begin to become prevalent. Draw downs will proceed slowly through fall prior to freeze up. Reflooding will commence in late summer or early fall the same year or the following year if desired plant species are slow to establish.

Water levels in impoundments with no structure will be allowed to fluctuate naturally. All impoundments have relatively small watersheds creating conditions that allow for significant seasonal fluctuations in water levels. These fluctuations should allow for the maintenance of emergent vegetation communities.

All impoundments and water control structures will be evaluated over the life of this plan to determine level of use and direction for future management and maintenance. Special attention will be given to the need for water control structures at the four impoundments where they currently exist. Consideration will also be given to the need to retain the three impoundments located south of US10 which currently have no legal public access.

2. Management of Specialized Habitats

Management activities in the BCF will seek to enhance habitats for rare, endangered, and special concern species and communities when appropriate. At this time, no specific communities, plants, or animals have been identified within the project boundary, except wood turtles (*Glyptemys insculpta*). Wood turtles utilize Bluff Creek and associated riparian habitats adjacent to the BCF. Forest management recommendations for stands adjacent to the creek will seek to enhance wood turtle habitat.

3. Facilities Management and Maintenance

The water control structures and dikes will be maintained to minimize downstream hazards. Activities will include maintenance of stop logs in water control structures, brush removal along dike slopes, and maintenance of outflow channels.

Vehicle gates and other vehicle/ORV barriers will be repaired and maintained as needed. Gates and barriers are intended to minimize illegal ORV use and to protect resources and maintain road conditions during wet weather periods. The gates located just off M18 in T16N R1W Section 31 will remain closed at all times.

Repairs to forest roads designated as open to regular vehicular traffic will be conducted as needed.

Federal Aid requirements mandate that all facilities paid for with P-R funds be maintained throughout their useful life (50 CFR 80.17).

4. Monitoring and Adaptive Management

Monitoring efforts will focus on water levels, aquatic plant communities, extent of exotic plant invasion, illegal ORV activity, wildlife populations and habitats to determine management directions.

Monitoring efforts will pay particular attention to the invasion of exotic plant species. Many of the common exotics such as purple loosestrife (*Lythrum salicaria*), Eurasian water milfoil (*Myriophyllum spicatum* L), curly-leaf pondweed (*Potamogeton crispus*), common and glossy buckthorn (*Rhamnus cathartica*, *R. frangula*) and autumn olive (*Elaeagnus umbellata*) frequently encountered elsewhere have not yet become established to a significant extent within the project boundary.

Adaptive management involves integrating management activities and assessing the effectiveness of those activities through monitoring and modifying plans to enhance the desired impacts of management on the area. Results of assessments of management actions will be reviewed by agency personnel and interested stakeholders annually, and appropriate modifications to management actions will be included in annual workplans so that continual improvement can be made toward meeting goals and objectives for this area. Plans will be reviewed periodically to determine if we are meeting our stated goals and if those goals are still relevant.

IV. Public Input

Public input is an important component of the master planning process and will be incorporated and balanced with other social, biological and economic considerations. Public input will be gained through day-to-day contact with area users, local landowners

and interest groups. A public meeting was advertised in the local newspaper and held October 27, 2005 as part of the overall public input process.

V. References

Albert, D.A. 1995. Regional Landscape Ecosystems of Michigan, and Wisconsin: A Working Map and Classification. Gen. Tech. Rep. NC-178. St. Paul, MN: U.S. Dept. of Agriculture, Forest Service, North Central Forest Experiment Station. 250p.

United States Department of Agriculture 1973. Soil survey of Midland County. USDA, Washington D.C.

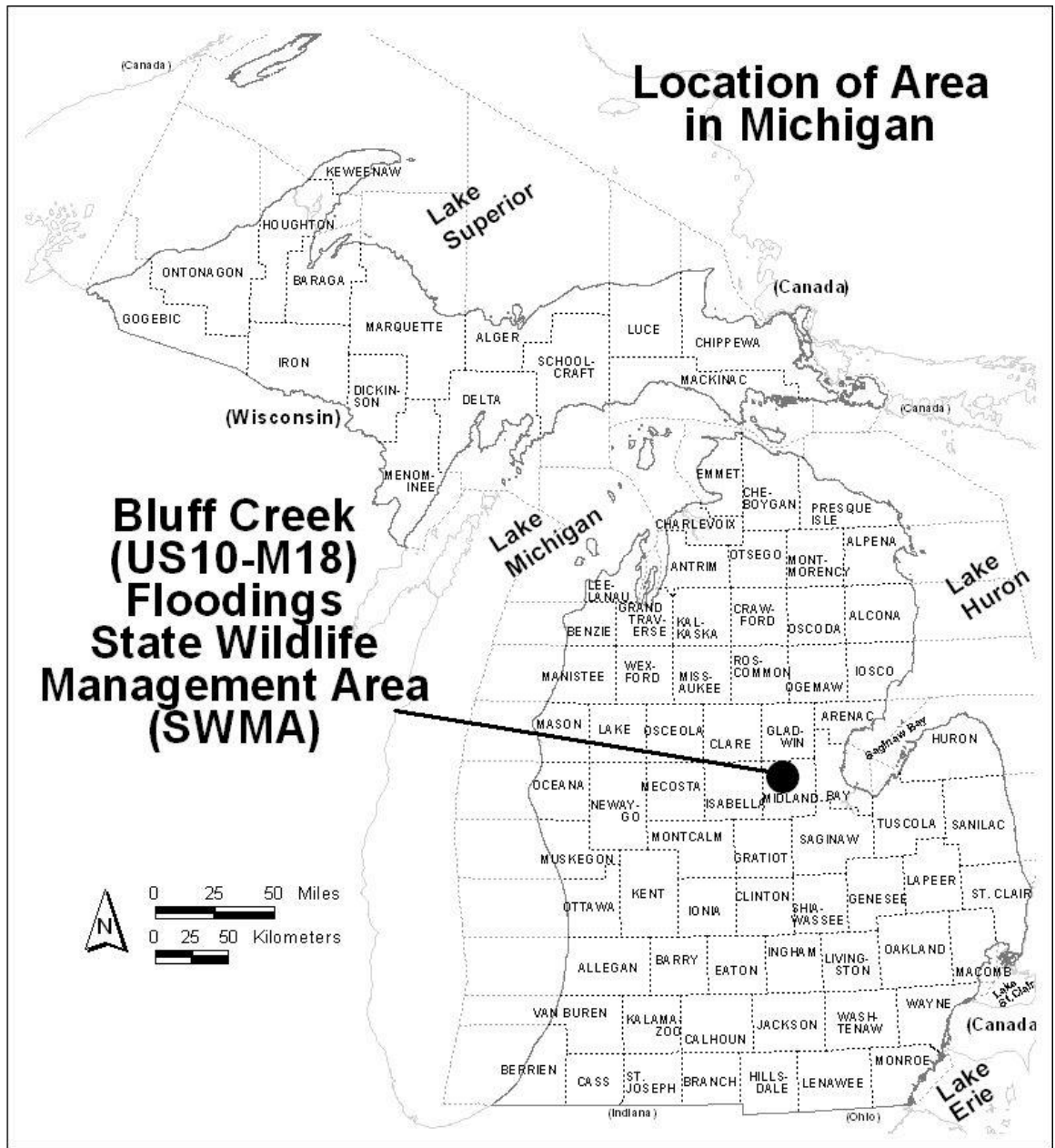


Figure 1. State-wide view of Bluff Creek (US10-M18) State Wildlife Management Area (SWMA).

Regional View of Bluff Creek Floodings (US10-M18) State Wildlife Management Area

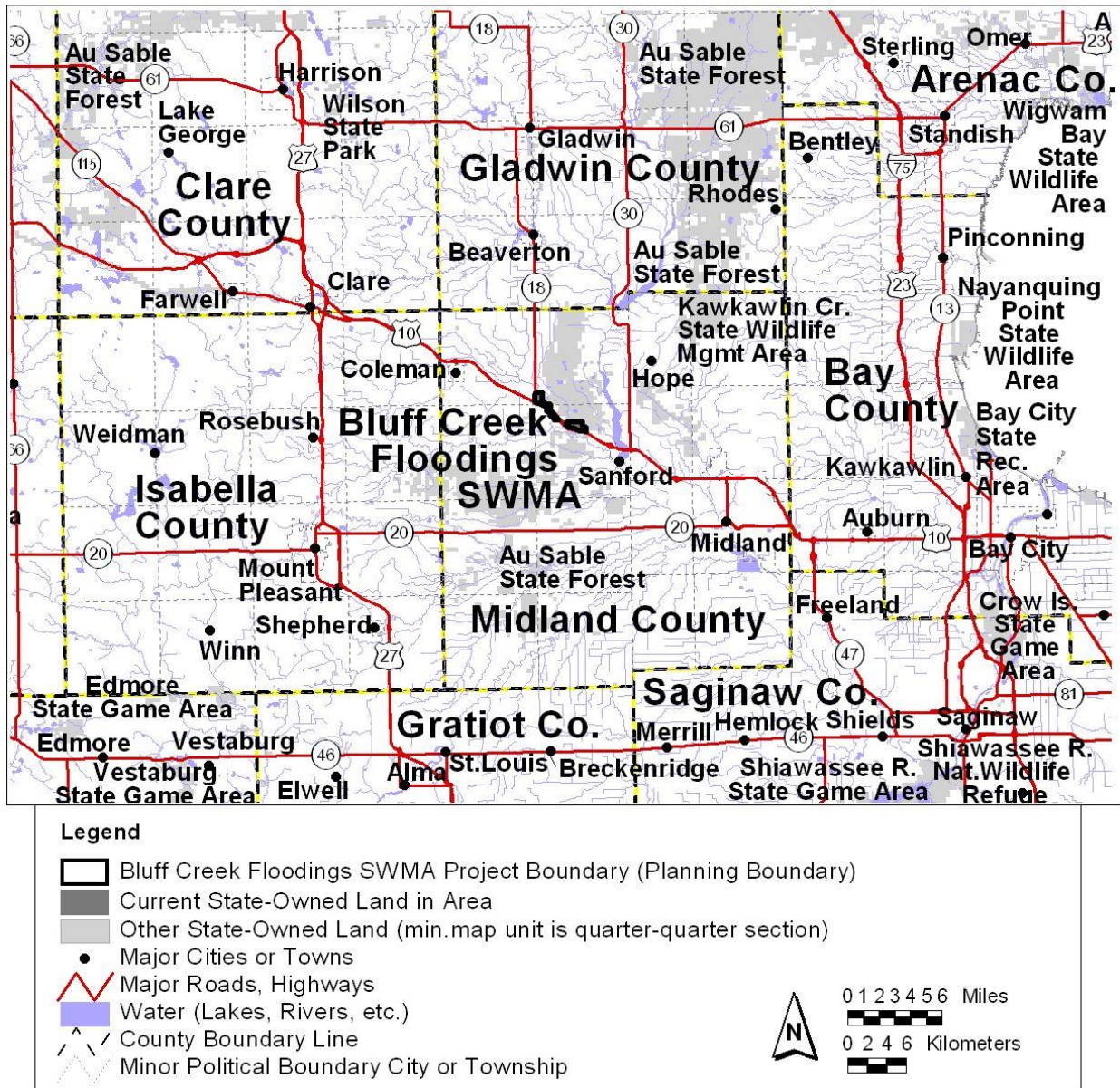


Figure 2: Regional view of Bluff Creek (US10-M18) State Wildlife Management Area (SWMA).

Bluff Creek Floodings State Wildlife Management Area Planning Boundary

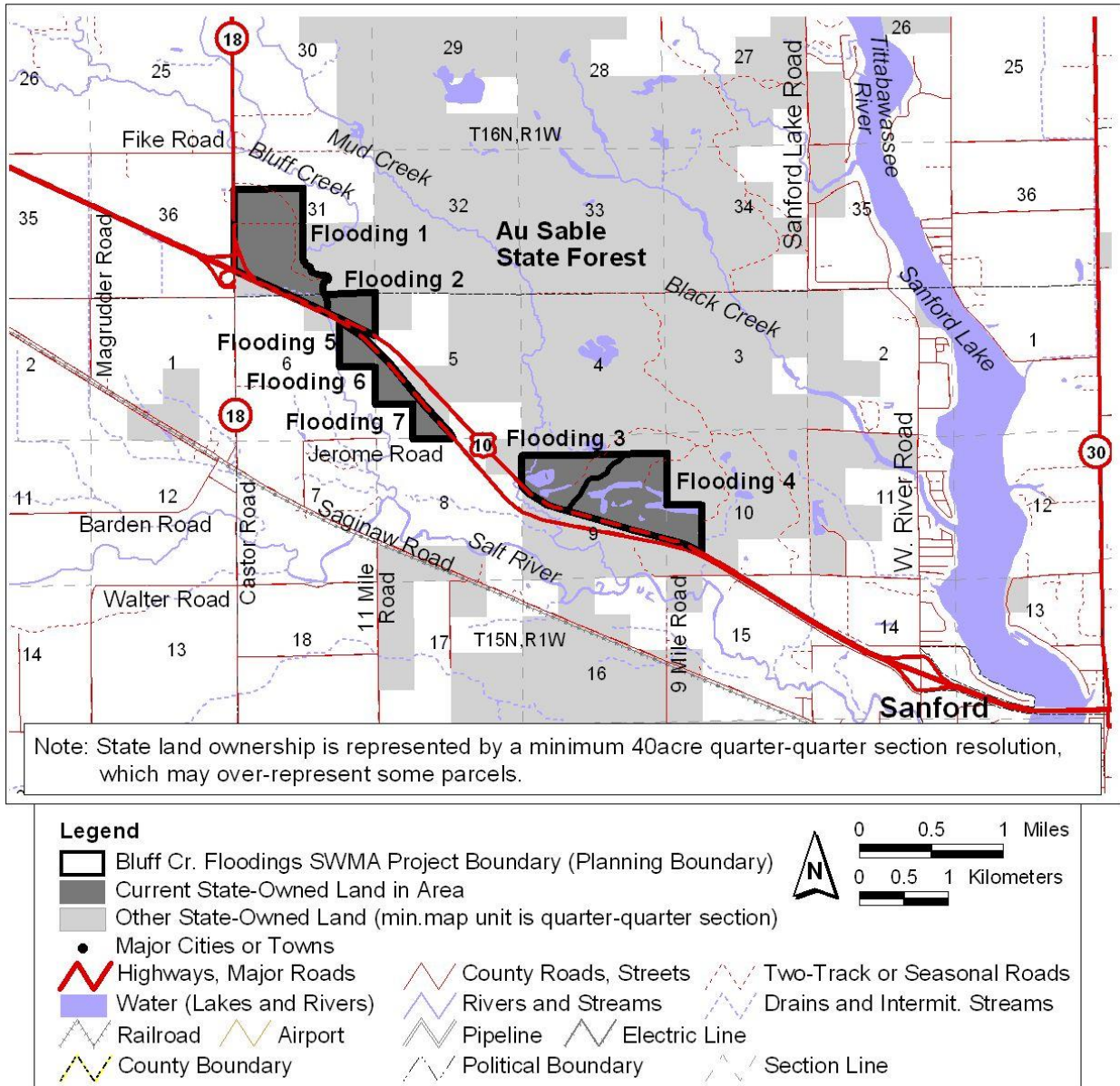


Figure 3: Planning boundary of Bluff Creek (US10-M18) SWMA.

Bluff Creek Floodings SWMA Presettlement Landcover (circa 1800)

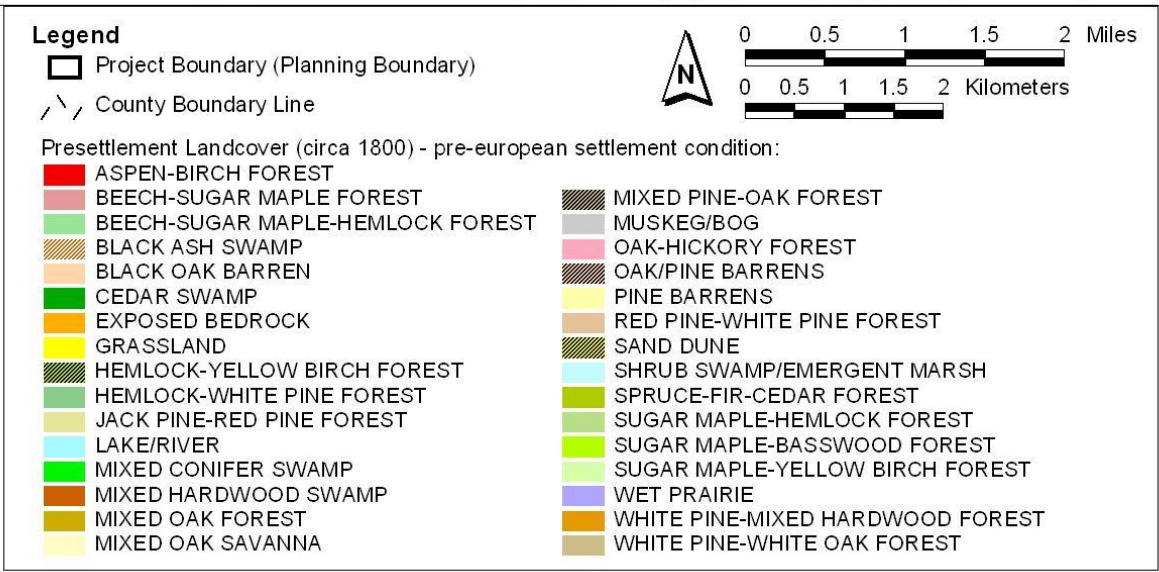
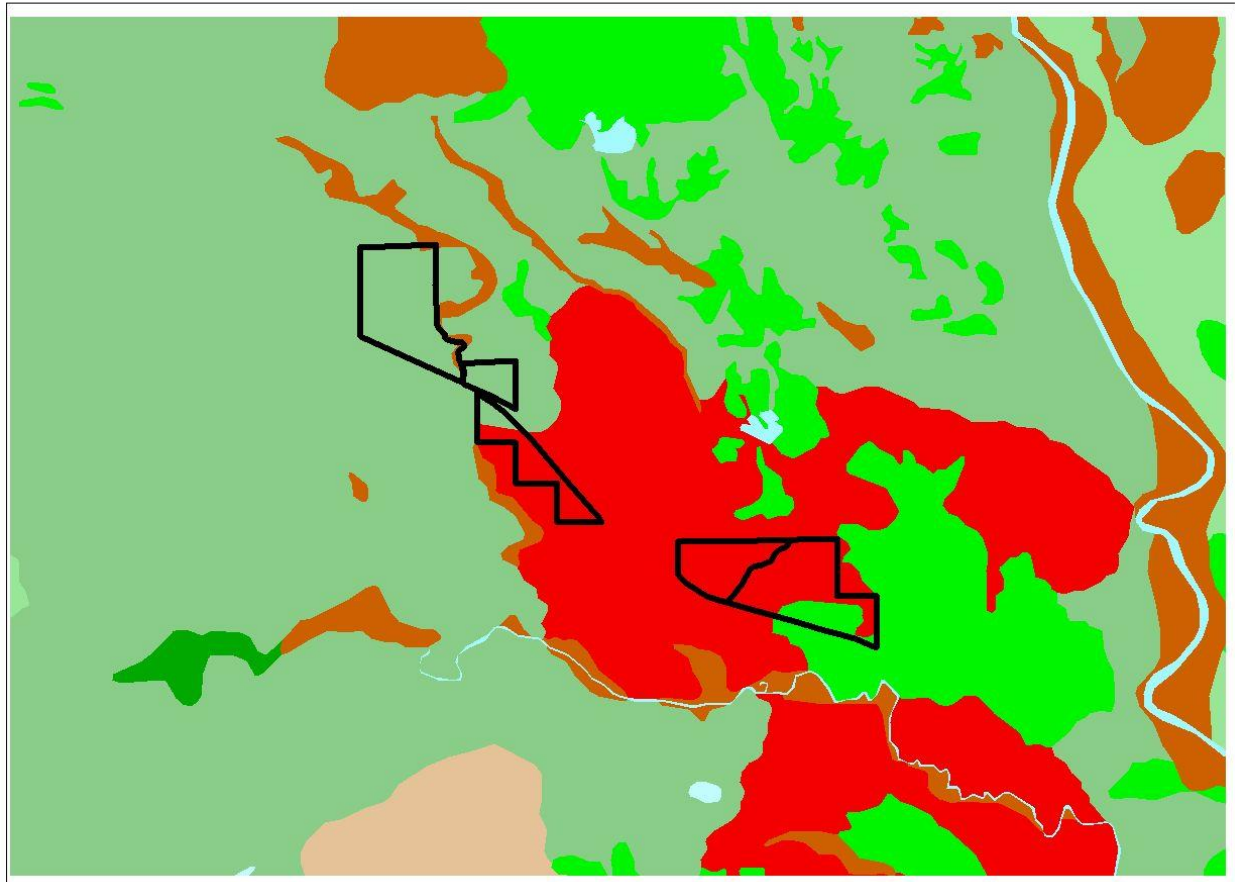


Figure 4: Presettlement (circa 1800) landcover of the Bluff Creek (US10-M18) SWMA area.

Bluff Creek Floodings SWMA Current Landcover (circa 2001)

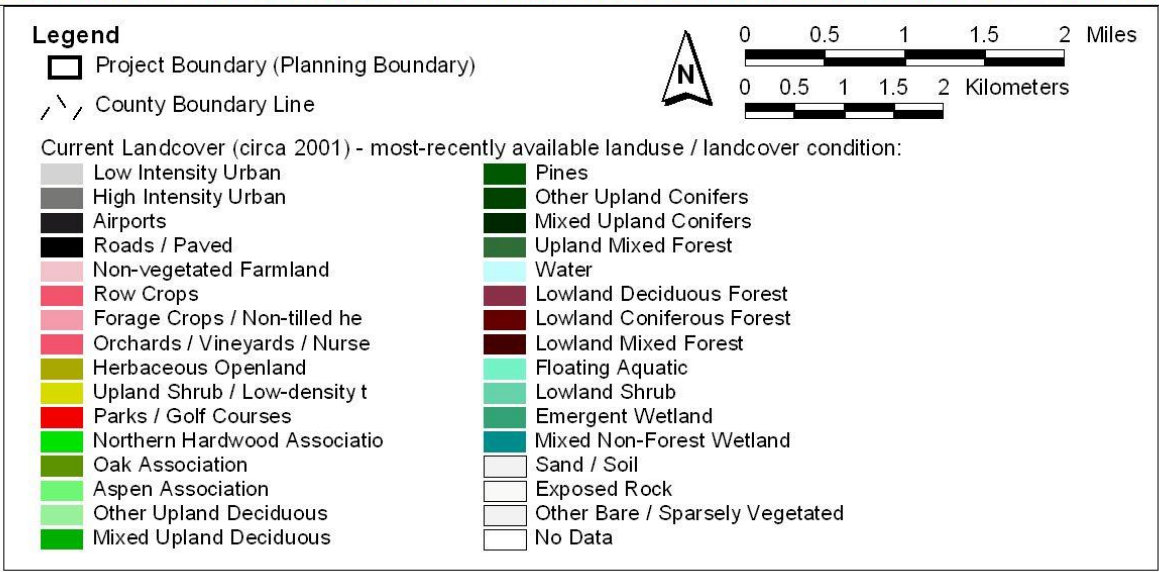
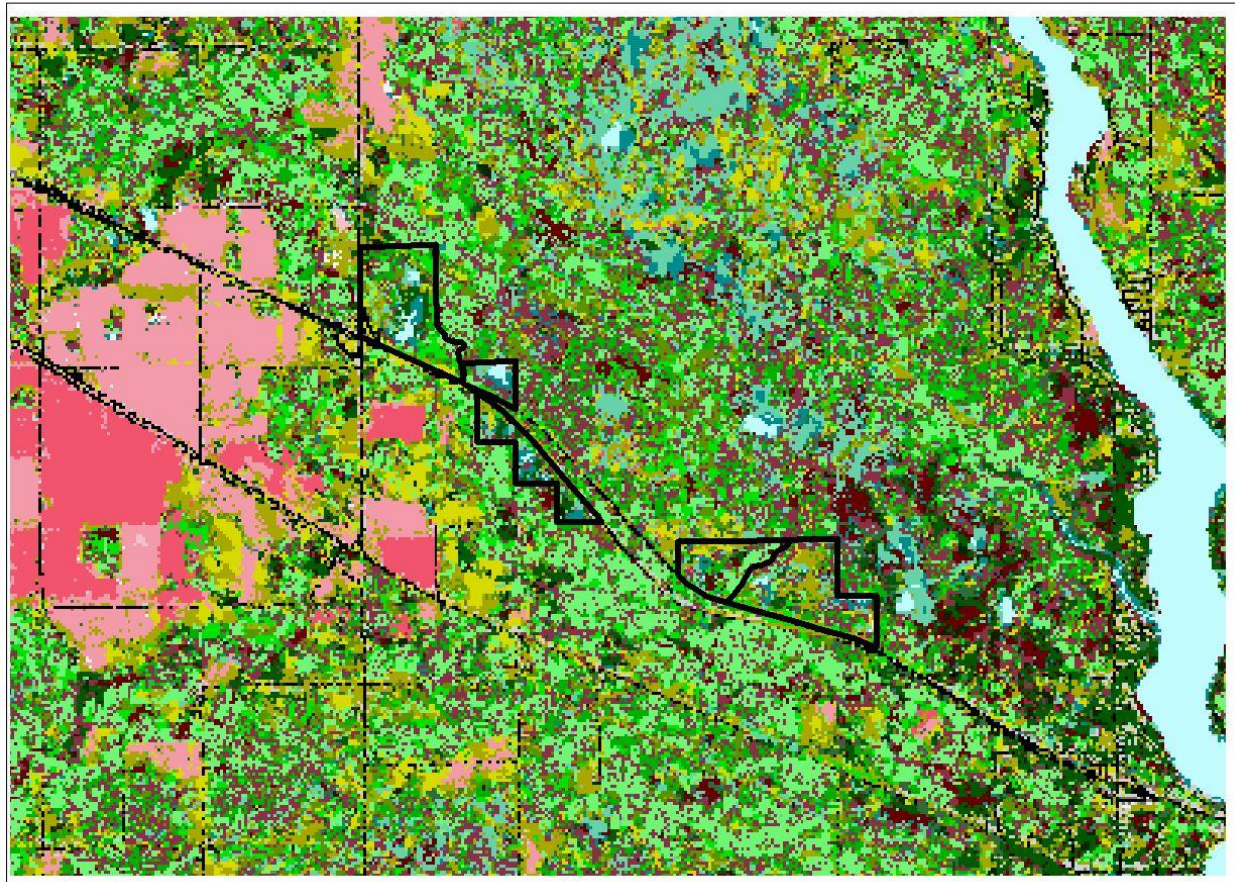


Figure 5: Current (circa 2001, IFMAP) landcover of the Bluff Creek (US10-M18) SWMA area.