

A STRATEGIC PLAN FOR
BEAR CREEK FLOODING
ROSCOMMON COUNTY, T21-22N R04W
WILDLIFE DIVISION – NORTHEAST MANAGEMENT UNIT
HOUGHTON LAKE FIELD UNIT

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I) INTRODUCTION

The purpose of this Strategic Plan is to ensure that legal obligations to manage for the stated purpose of the wildlife area management are fulfilled. The intent of this Plan is to set the desired direction of the Bear Creek Flooding and to justify the choice of that direction. The day-to-day operation plan of the flooding will be addressed in a subsequent "Operational Plan". Public input was considered in developing the plan, but this is not necessarily a consensus document.

History of Bear Creek Flooding

In 1951, a water control structure was erected along Bear Creek in southwestern Roscommon County at an original cost of \$3,309. The project utilized Pittman-Robertson Funds generated from taxes paid by hunters and shooters. The flooding was created for, and maintained for the purpose of wildlife restoration and management. Therefore, restoration and management of wild birds and mammals, and provision for public use of wildlife resources are the primary management goals. The structure was originally designed to impound a head of approximately 3 feet of water and flood an area of approximately 275 acres. A report from November 26, 1951, stated that the flooding supported a summer duck population of about 140 birds. Furthermore, the report stated that 200 hunter days were spent on the flood water. Presently, the structure impounds approximately 570 acres at an average depth of less than 3 feet.

Prior to flooding, Bear Creek intersected a broad, flat wetland complex which included emergent, scrub-shrub, and forest wetland components. Like many wildlife impoundments in northern Michigan, the site was most likely designed to emulate a beaver flooding. Aerial photos from 1939 reveal significant beaver activity along the stream course. General Land Office survey records from the early 1800's, as interpreted by Comer et al. (1995), indicate that the area surrounding the Bear Creek Flooding was historically part of a large mixed conifer swamp complex. Dominant tree species identified in the original survey notes from the site include cedar, tamarack, and spruce. The original character of this wetland landscape was most likely highly variable and dominated by forested species but also including scrub-shrub and emergent components throughout. Significant alteration of the landscape probably occurred after intensive logging, railroad, and road construction in the late 1800's to early 1900's. Recovery success of lowland forested communities following these disturbance activities was highly variable, most likely resulting in a larger proportion of emergent and scrub-shrub communities represented across the landscape today. Knowledge of presettlement vegetation is useful as a benchmark for understanding the potential conditions that can exist in an area, but should not be viewed as a management goal for an area.

Environmental Inventory

The present flooding site is located on State-owned lands within Section 6, N1/2 of N1/2 of Section 7, and NW1/4 of Section 5 in T21N R4W as well as S1/2 and NE 1/4 of Section 32 in T22N R 4W. It consists of a 570 acre wetland complex composed of about 125 acres of open water and about 445 acres of mixed seasonally and semi-permanently flooded emergent marsh. Soils are primarily Tawas Mucks in the lowlands and Croswell and Rubicon Sands on uplands. The site falls within a Broad, flat outwash plain; very poorly drained peat or muck land type association (5149) within the Grayling Outwash Plain sub-subsection of the High Plains subsection. Dominant plant species include broad-leaved cattail, rush, potamogeton, white water-lily and yellow water-lily. The southern portion of the flooding is primarily composed of a matrix of cattail and open water, whereas the northern portion or "narrows" is primarily sedge meadow and open water. (See Appendix A).

The Bear Creek watercourse flows southwesterly into the Muskegon River and is a component of the Wolf Creek Watershed (Appendix A). The Flooding falls within the far southern reaches of the extensive Dead Stream Swamp Complex. This complex also includes the Dead Stream Swamp National Natural Landmark and a portion of the former Houghton Lake Wildlife Research Area, both north of the flooding. Unlike some other areas of the State, this landscape appears to have experienced minimal wetland loss. Within the Wolf Creek watershed, net wetland acreage and distribution seems similar to pre-settlement landcover models and there is little evidence of significant draining or filling activities in the area. However, wetland community composition has probably been significantly altered as a result of past logging and water manipulation activities (primarily road construction). Though numerous emergent marshes exist within the watershed, the Bear Creek Flooding represents one of the few significant open water-mixed emergent marsh wetland communities.

At present, the flooding contains potential habitat for a wide variety of wetland associated wildlife species. Bird species currently utilizing the site include a relatively sizeable black tern population, as well as mallard, wood duck, least bittern, great blue heron, common snipe, red-winged blackbird, and swamp sparrow. In addition, there is a bald eagle nest in a stand adjacent to the southern portion of the flooding. Historical and current waterfowl production is best in the "narrows" portion of the flooding. Though there are historical occurrences of osprey on the flooding, the two nest platforms on site are currently unoccupied. Documented mammal species currently utilizing the flooding complex include beaver, muskrat, and river otter. Documented herptofauna currently on the flooding include bullfrog, northern leopard frog, and painted turtle. There is a historical record of eastern massasauga within the watershed and potential habitat exists within the flooding complex. Appendix B includes a list of wildlife species associated with wetland communities in Roscommon County. Invasive species within the site include Eurasian water milfoil and a few scattered patches of purple loosestrife.

Bear Creek Flooding is surrounded by State Forest land administered by the Department of Natural Resources, Roscommon Forest Management Unit. Adjacent upland communities are composed primarily of early successional dry-mesic forest species. Dominant trees species include big-toothed and quaking aspen; northern pin, red, and white oak; and red, white, and jack pine. Adjacent lowland communities include lowland conifer and lowland mixed hardwood types. Dominant tree species include northern white cedar, quaking aspen, black ash, white spruce, balsam fir, and white pine. The management of adjacent transitional and upland forested communities has influence on the flooding. Timber treatments in transitional habitats or ecotones may have a positive impact on numerous species including white-tailed deer, American woodcock, and ruffed grouse by creating favorable habitat. However, the removal of vegetation adjacent to the flooding may have the potential to effect surface water and sedimentation inflow rate or recharge potential. Mature trees and snags adjacent to the flooding have the potential to provide nesting and perching sites for numerous wildlife species including wood ducks, eagles, osprey, herons, and bats. The flooding will be given primary consideration in all adjacent timber treatment decisions.

Management Area History

The Bear Creek Flooding site was originally surveyed in 1947 and 1948. In 1951, the dam structure was erected and the area was flooded. Dead timber was removed from the flooding in the late 50's. In 1958, wild rice was planted in the southern portion of the flooding, but never became established. Files indicate that the dike structure was repaired on numerous occasions through the 50's and finally seeded in 1960. Also in 1960, minor repairs were conducted on the control structure and rip-rap was added. In 1961, J. Kadlec developed a management plan for the area recommending a drawdown followed by narrow-leaved cattail planting and an herbicide application to the "narrows" portion of the flooding. The file indicates that the flooding was drawn down in the late 60's and *Dowpon* was applied to the "narrows" as recommended in the plan. Files fail to indicate any management activity on the flooding from 1967 to 1990. In 1990, a dam inspection was conducted and the inspection report recommended significant repairs to the dam and dike structure. The flooding was drawn down in 1991 to facilitate repairs on the dam structure. In 1998, the spillway abutment wall and the base of the center stoplog pier were repaired, the stoplogs were replaced, and the downstream wingwalls were removed and replaced. Following completion of the construction, the site was reflooded. There are no known archeological and historical sites located within or adjacent to the flooding.

Public Use of Area

Currently, Bear Creek Flooding receives light to moderate recreational use relative to surrounding areas. Waterfowl hunting pressure is heaviest during the

opener and light through the remainder of the season. The file contained two opening day bag checks for the Flooding, one from 1978 and another from 1994. On both dates, less than 5 hunters were contacted and no more than 3 waterfowl were checked. Other recreational activities include deer and small game hunting, occasional furbearer trapping, and camping. There are no designated campgrounds on the flooding. Any camping adjacent to the flooding would fall under Dispersed Camping Rules on State Forests.

State-administered forested communities adjacent to the flooding may be subject to commercial timber treatments such as clearcutting, thinning and timber stand improvement. All commercial activities are incidental to management activities that are undertaken to meet stated management goals.

II) MANAGEMENT GOALS AND OBJECTIVES

Overall Management Goal

The Bear Creek Flooding was most likely designed and constructed to emulate, control, and improve upon the long history of beaver activity along the Bear Creek riparian system. The overall management goal is to continue to maintain an open water area, within a landscape depleted of such habitats, that will benefit waterfowl and other wetland associated wildlife species. As the area was acquired, developed, and maintained with hunter license fees and monies generated from the sale of hunter equipment and supplies (funds which are restricted to uses to maintain and enhance wildlife populations and their habitats along with associated recreation), this strategic direction is in accordance with the funding requirements. This strategic direction further supports the Wildlife Division mission, "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" by providing a variety of opportunities for hunting, trapping and other forms of wildlife-related recreation, education, observation and appreciation.

Management Objectives

In a naturally functioning beaver influenced riparian system, a beaver flooding may last upwards of 30 years before becoming abandoned. An ecologically-based drawdown schedule in this type of system may include several years (10-15) of sustained water levels followed by one or two years of drawdown (18 months). Based on this premise, the primary management objectives for the Bear Creek Flooding include the following: 1) Maintenance and enhancement of existing facilities and habitat conditions for waterfowl production (nesting and brood rearing habitat), aquatic mammals, and other wetland associated wildlife species, including all existing special concern, threatened, or endangered species; 2) Continued facilitation of wildlife related recreational opportunities; 3) Continued monitoring of facilities condition, wildlife populations and associated habitat quality, and wildlife related recreational activity; and 4)

Regulation of non-wildlife related recreational activities which conflict with the above stated objectives.

III) MANAGEMENT ACTIVITIES

Facilities Maintenance

Numerous management techniques and tools may be used to accomplish the above-listed management objectives. The dike-dam structure will be maintained in accordance with Dam Safety, of the Natural Resources and Environmental Protection Act, 1994 PA 451, Part 315. As required by the Act, regular inspections will be conducted to evaluate the structural conditions and hydraulic capacity of this dam. Following an inspection, a report is given to the local Wildlife Manager who is then required to repair or remove any deficiencies found. Deficiencies are given a hazard potential rating to determine priority and urgency in completing repairs. Examples of deficiencies may include refuse accumulation at the dam spill-over, dike erosion, dike vegetation over-growth, and control structure decay. An Operations and Maintenance plan currently exists for this facility and is revised on an annual basis (see appendix C).

Habitat Manipulation and Enhancement

Habitat manipulation activities include both vegetation management and water management. Vegetation management on adjacent forested communities will be managed in accordance with the Department's Northern Forest planning efforts in the region. Forest treatment decisions are currently made through the Operations Inventory (O-I) Process. State Forest Lands in Roscommon County are co-managed by the Forest, Mineral, and Fire Management Division—Roscommon Forest Management Unit and Wildlife Division—Northeast Management Unit. State forest lands in the Management Unit are divided into compartments. Approximately one-tenth of the compartments of a Management Unit are inventoried each year. Three compartments intersect the boundaries of the Bear Creek Flooding. These compartments were inventoried in 1995, 1997, and 1998. Following inventory, several forest treatments were proposed adjacent to the flooding and completed with in the last 2-3 years. All of these treatments were clearcuts to promote early successional forest communities. In addition, several stands were recommended to be treated during the upcoming entry period.

Water management is accomplished primarily through water level manipulation. In most years the water level will be maintained at the current depth. Water level should be drawn down approximately every 10 years to control emergent growth, promote submergent seeding, and control sediment build up. Applicable permits will be obtained from the Department of Environmental Quality prior to any water level manipulation activities.

Wildlife-Related Recreation

To accomplish the management objective of facilitation of wildlife-related recreational opportunity, all existing access sites will be maintained. The “remote character” of the flooding will be maintained by discouraging the development of new access sites. Furthermore, all gates associated with the flooding will be continually monitored for damage and maintained as needed.

Monitoring

The Flooding will be monitored for both: 1) recreation utilization and facilities condition and 2) species habitat condition and utilization. Recreation utilization and facilities condition will be determined by occasional visits to flooding at key times including the waterfowl opener. Facilities should be inspected several times annually, particularly during drawdowns. During drawdowns, appropriate signage should be displayed to inform individuals of the Department’s intentions. As waterfowl production is a primary objective of the site, a current assessment should be conducted. We currently lack the information needed to answer several important questions related to waterfowl production--How many spring migrants is the site attracting and what species are they? What percentage of migrants are holding and breeding? How is nesting success? How is brood rearing success and duckling survival? Are fall migrants attracted to this flooding?

Adaptive management considerations

Adaptive management is a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. This Strategic Plan will be reviewed annually with all staff involved in implementation of the plan to: 1) consider public input that has been received in the context of the Strategic Plan; 2) determine if management goals stated in the plan need modification; or 3) determine if stated objectives are still consistent with the management goals for the area. Wildlife Division and Forest Mineral and Fire Management Division staff will review such inconsistencies and make necessary adjustments to keep the project goals and objectives in line with those of the area forest management. Public involvement will be maintained in the planning process through periodic public meetings, compartment reviews, reports on activities, etc.

IV) PUBLIC INPUT

Initial public input on The Bear Creek Flooding Strategic Plan was gathered from a variety of sources including an open house presentation of a draft of the plan on August 11th, 2003, and review of the plan by select DNR personnel. At the meeting, specific comments were made regarding the flooding by a representative from Michigan Conservation Foundation only. A 30 day public

comment period was open from August 15th to September 15th, 2003 and was advertised on the DNR Calendar, the internet, and news releases in local papers. Written comments were received from the Michigan Wildlife Foundation and Mr. Mack Tario. All public comments received at the meetings and in the mail are included in appendix F. As part of an adaptive management framework for the Flooding, new public input will be reviewed annually and incorporated into the plan.

V) CONCLUSION

This plan is intended to provide a strategic framework for the future management of the Bear Creek Flooding. Information was compiled with the use of local files and the expertise and historical knowledge of several individuals include Doug Pavlovich of the MDNR and Robert Jacobson of Michigan Conservation Foundation. Public input was gathered through solicitation of comments and a public meeting.

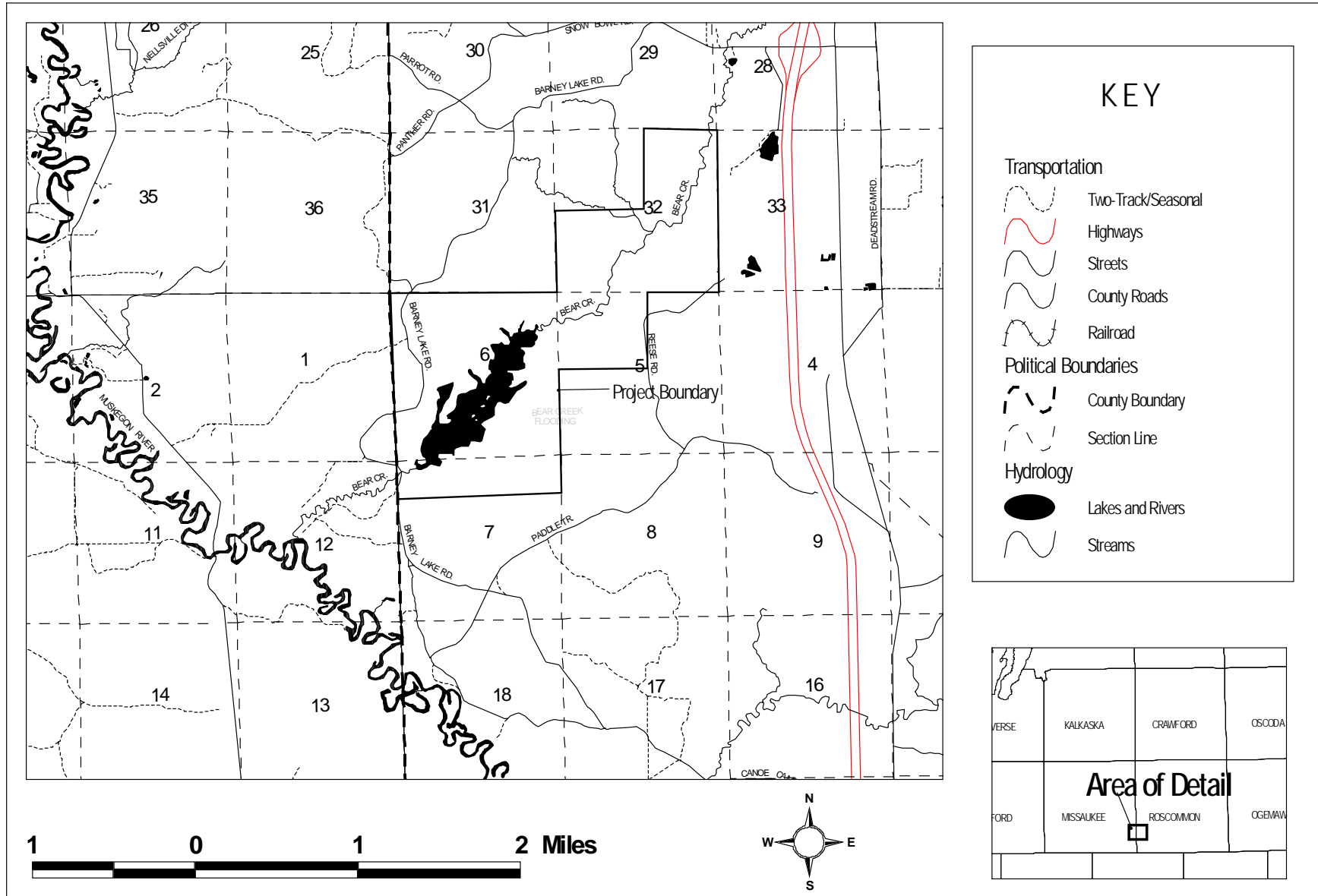
VI) REFERENCES

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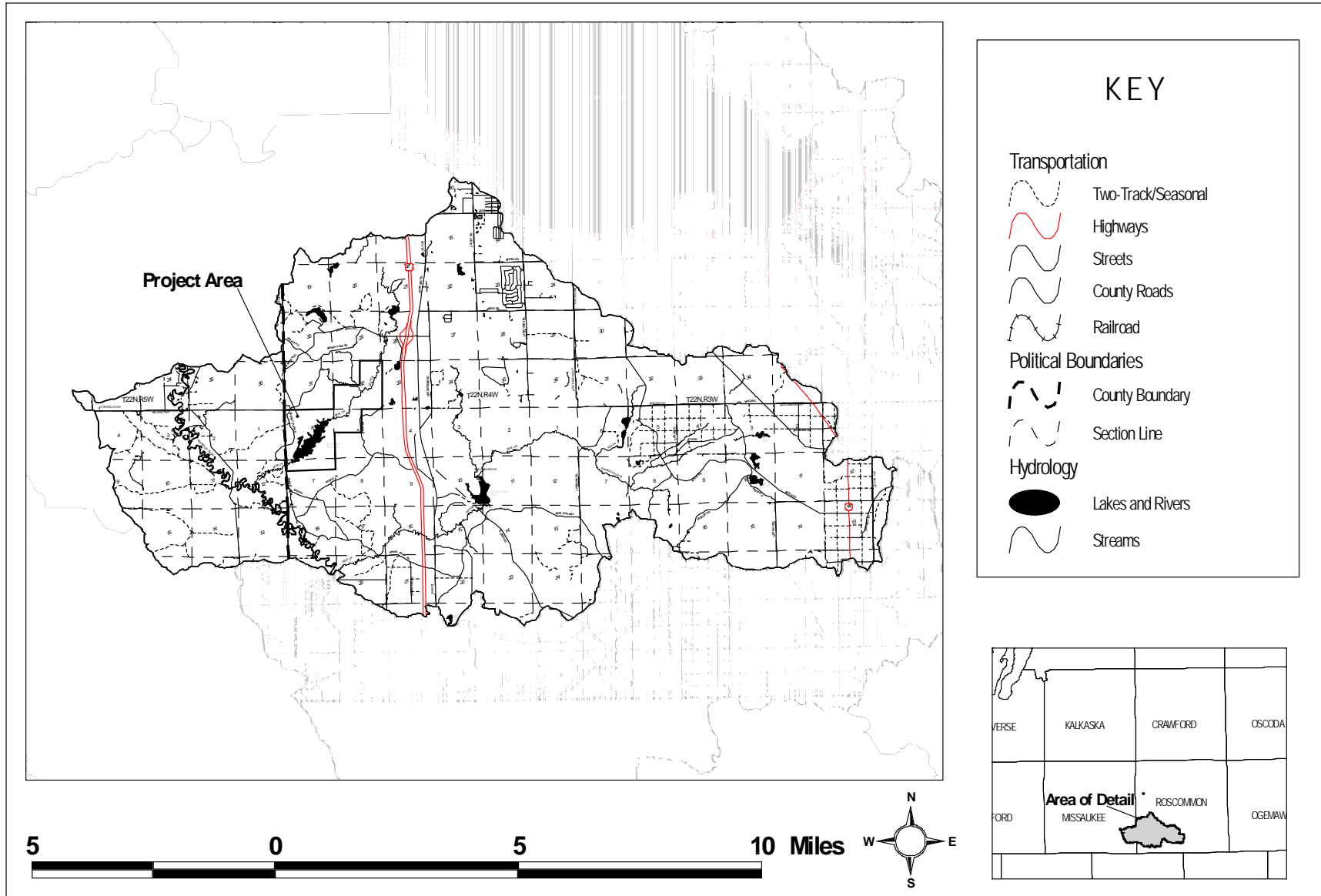
APPENDICES

Appendix A. Maps

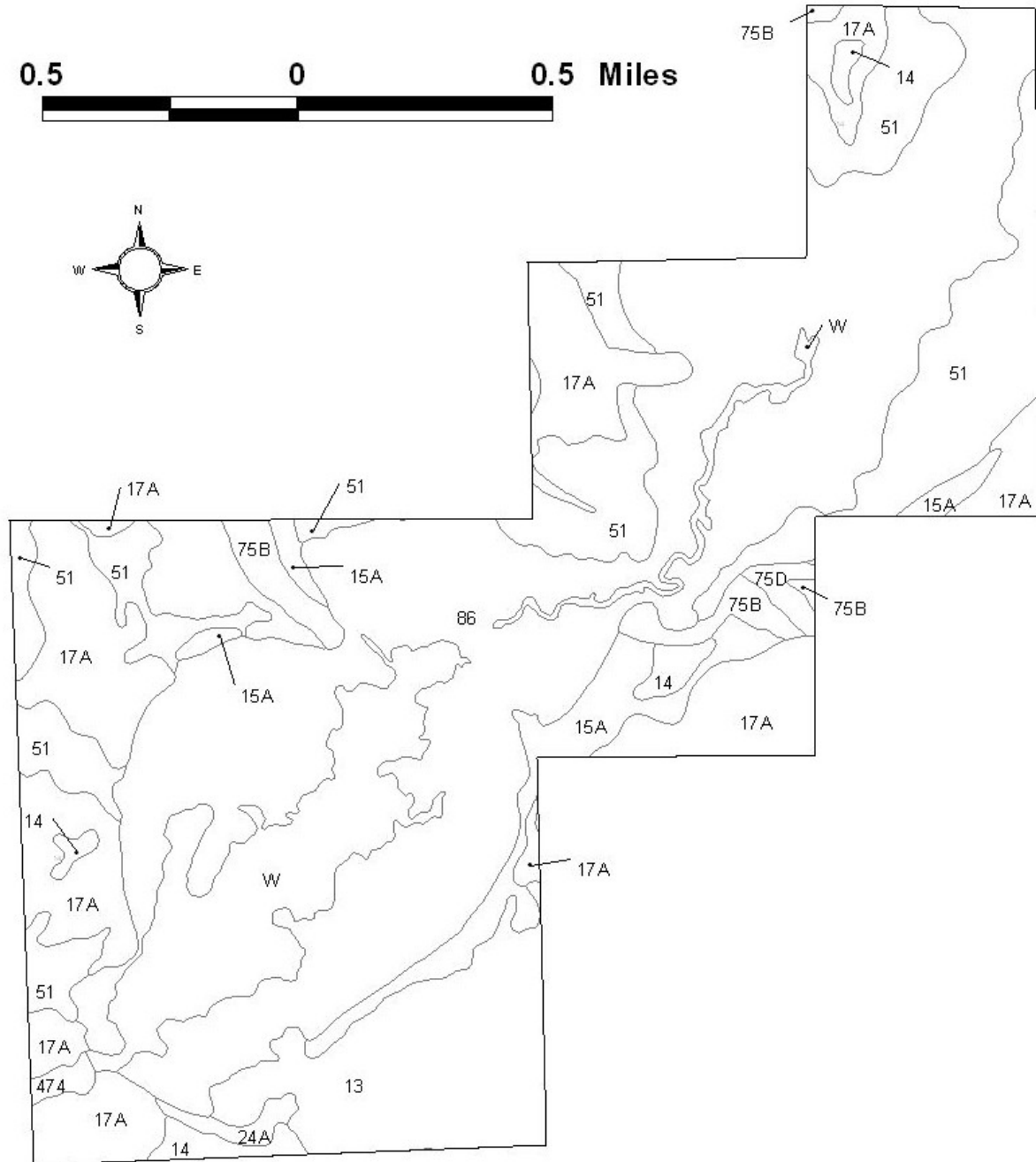
Boundary of Bear Creek Flooding, Roscommon Co., MI, Spring 1998.



Location of Bear Creek Flooding Project within the Wolf Creek Watershed, Roscommon and Missaukee Counties, MI.



USDA Soil Series, Bear Creek Flooding, Roscommon Co., MI.



Map Symbol	Soil Name
13	Tawas-Lupton Mucks
14	Dawson-Loxley Peats
15A	Croswell-Au Gres Sands, 0 To 3 Percent Slopes
17A	Croswell Sand, 0 To 3 Percent Slopes
24A	Kinross-Au Gres Complex, 0 To 3 Percent Slopes
51	Tawas-Leafriver Mucks
75B	Rubicon Sand, 0 To 6 Percent Slopes
75D	Rubicon Sand, 6 To 18 Percent Slopes
86	Histols and Aquents, Poned
474	Histosols-Fluvaquents Complex, Frequently Flooded
W	Water

Appendix B. Wildlife Species Associated with Non-Forested Wetland Communities in Roscommon County, MI.

Common Name	Latin Name	Common Name	Latin Name
Common Loon	<i>Gavia immer</i>	Henslow's Sparrow	<i>Ammodramus henslowii</i>
Pied-Billed Grebe	<i>Podilymbus podiceps</i>	Song Sparrow	<i>Melospiza melodia</i>
American Bittern	<i>Botaurus lentiginosus</i>	Lincoln's Sparrow	<i>Melospiza lincolnii</i>
Least Bittern	<i>Ixobrychus exilis</i>	Swamp Sparrow	<i>Melospiza georgiana</i>
Great Blue Heron	<i>Ardea herodias</i>	White-Throated Sparrow	<i>Zonotrichia albicollis</i>
Green Heron	<i>Butorides virescens</i>	American Tree Sparrow	<i>Spizella arborea</i>
Black-Crowned Night-Heron	<i>Nycticorax nycticorax</i>	Red-Winged Blackbird	<i>Agelaius phoeniceus</i>
Canada Goose	<i>Branta canadensis</i>	Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Wood Duck	<i>Aix sponsa</i>	Common Grackle	<i>Quiscalus quiscula</i>
Green-Winged Teal	<i>Anas crecca</i>	Common Redpoll	<i>Carduelis flammea</i>
American Black Duck	<i>Anas rubripes</i>	Virginia Opossum	<i>Didelphis virginiana</i>
Mallard	<i>Anas platyrhynchos</i>	Masked Shrew	<i>Sorex cinereus</i>
Northern Pintail	<i>Anas acuta</i>	Water Shrew	<i>Sorex palustris</i>
Blue-Winged Teal	<i>Anas discors</i>	Northern Short-Tailed Shrew	<i>Blarina brevicauda</i>
American Wigeon	<i>Anas americana</i>	Star-Nosed Mole	<i>Condylura cristata</i>
Redhead	<i>Aythya americana</i>	Northern Myotis	<i>Myotis septentrionalis</i>
Ring-Necked Duck	<i>Aythya collaris</i>	Little Brown Myotis	<i>Myotis lucifugus</i>
Common Goldeneye	<i>Bucephala clangula</i>	Silver-Haired Bat	<i>Lasionycteris noctivagans</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>	Big Brown Bat	<i>Eptesicus fuscus</i>
Common Merganser	<i>Mergus merganser</i>	Eastern Red Bat	<i>Lasiurus borealis</i>
Red-Breasted Merganser	<i>Mergus serrator</i>	Hoary Bat	<i>Lasiurus cinereus</i>
Bufflehead	<i>Bucephala albeola</i>	Snowshoe Hare	<i>Lepus americanus</i>
Osprey	<i>Pandion haliaetus</i>	American Beaver	<i>Castor canadensis</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Southern Red-Backed Vole	<i>Clethrionomys gapperi</i>
Northern Harrier	<i>Circus cyaneus</i>	Muskrat	<i>Ondatra zibethicus</i>
Red-Tailed Hawk	<i>Buteo jamaicensis</i>	Southern Bog Lemming	<i>Synaptomys cooperi</i>
Spruce Grouse	<i>Falcapennis canadensis</i>	Meadow Jumping Mouse	<i>Zapus hudsonius</i>
Ruffed Grouse	<i>Bonasa umbellus</i>	Coyote	<i>Canis latrans</i>
Virginia Rail	<i>Rallus limicola</i>	Common Raccoon	<i>Procyon lotor</i>
Sora	<i>Porzana carolina</i>	Ermine	<i>Mustela erminea</i>
Yellow Rail	<i>Coturnicops noveboracensis</i>	Long-Tailed Weasel	<i>Mustela frenata</i>
Common Moorhen	<i>Gallinula chloropus</i>	Least Weasel	<i>Mustela nivalis</i>
American Coot	<i>Fulica americana</i>	Mink	<i>Mustela vison</i>
Sandhill Crane	<i>Grus canadensis</i>	Northern River Otter	<i>Lutra canadensis</i>
Killdeer	<i>Charadrius vociferus</i>	Bobcat	<i>Lynx rufus</i>
Spotted Sandpiper	<i>Actitis macularia</i>	Mudpuppy	<i>Necturus maculosus</i>
Upland Sandpiper	<i>Bartramia longicauda</i>	Eastern Newt	<i>Notophthalmus viridescens</i>
Common Snipe	<i>Gallinago gallinago</i>	Tiger Salamander	<i>Ambystoma tigrinum</i>
American Woodcock	<i>Scolopax minor</i>	Four-Toed Salamander	<i>Hemidactylium scutatum</i>
Ring-Billed Gull	<i>Larus delawarensis</i>	American Toad	<i>Bufo americanus</i>
Herring Gull	<i>Larus argentatus</i>	Western Chorus Frog	<i>Pseudacris triseriata</i>
Black Tern	<i>Chlidonias niger</i>	Spring Peeper	<i>Pseudacris crucifer</i>
Black-Billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Gray Treefrog	<i>Hyla versicolor</i>
Yellow-Billed Cuckoo	<i>Coccyzus americanus</i>	Green Frog	<i>Rana clamitans</i>
Belted Kingfisher	<i>Ceryle alcyon</i>	Bullfrog	<i>Rana catesbeiana</i>
Alder Flycatcher	<i>Empidonax alnorum</i>	Northern Leopard Frog	<i>Rana pipiens</i>
Willow Flycatcher	<i>Empidonax traillii</i>	Pickereel Frog	<i>Rana palustris</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Wood Frog	<i>Rana sylvatica</i>
Purple Martin	<i>Progne subis</i>	Snapping Turtle	<i>Chelydra serpentina</i>
Tree Swallow	<i>Tachycineta bicolor</i>	Wood Turtle	<i>Clemmys insculpta</i>
Northern Rough-Winged Swallow	<i>Stelgidopteryx serripennis</i>	Blanding's Turtle	<i>Emydoidea blandingii</i>
Bank Swallow	<i>Riparia riparia</i>	Common Map Turtle	<i>Graptemys geographica</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Painted Turtle	<i>Chrysemys picta</i>
Barn Swallow	<i>Hirundo rustica</i>	Spiny Softshell	<i>Apalone spinifera</i>
Common Raven	<i>Corvus corax</i>	Northern Water Snake	<i>Nerodia sipedon</i>
House Wren	<i>Troglodytes aedon</i>	Common Garter Snake	<i>Thamnophis sirtalis</i>
Sedge Wren	<i>Cistothorus platensis</i>	Butler's Garter Snake	<i>Thamnophis butleri</i>
Marsh Wren	<i>Cistothorus palustris</i>	Eastern Ribbon Snake	<i>Thamnophis sauritus</i>
Ruby-Crowned Kinglet	<i>Regulus calendula</i>	Brown Snake	<i>Storeria dekayi</i>
Gray Catbird	<i>Dumetella carolinensis</i>	Redbelly Snake	<i>Storeria occipitomaculata</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>	Smooth Green Snake	<i>Liochlorophis vernalis</i>
Yellow Warbler	<i>Dendroica petechia</i>	Milk Snake	<i>Lampropeltis triangulum</i>
American Redstart	<i>Setophaga ruticilla</i>	Massasauga	<i>Sistrurus catenatus</i>
Northern Waterthrush	<i>Seiurus noveboracensis</i>		
Mourning Warbler	<i>Oporornis philadelphia</i>		
Common Yellowthroat	<i>Geothlypis trichas</i>		
Northern Cardinal	<i>Cardinalis cardinalis</i>		
Savannah Sparrow	<i>Passerculus sandwichensis</i>		

Source: Doecker, R., Two by Two Wildlife Consulting. 2000. MIWILD: Michigan Wildlife Habitats. Software developed for the Michigan Department of Natural Resources, Wildlife Division.

Appendix C. Operations and Maintenance Plan for Bear Creek Flooding, 2003.

OPERATION AND MAINTENANCE PLAN

Bear Creek Flooding Dam – Dam ID 1797

March 2003 Revision

Description

The Bear Creek Flooding dam is located in T21N, R4W, Section 7, NW 1/4 of NW 1/4, Roscommon County. The control structure impounds approximately 570 acres and it was constructed in 1951 (original cost \$3,309.00). Repairs to the structure and replacement of downstream wingwalls were accomplished in 1998. Access to this dam is from trail roads both north and south of where Bear Creek crosses County Road 402 (Canoe Camp Road). The principal spillway is a concrete straight drop structure with four stoplog bays, each 5-feet wide. The structure is designed to impound a head of approximately 3 feet of water. The earthen embankment is approximately 336 feet long with no auxiliary spillway.

Operation

Wildlife Division, Northeastern Management Unit, is responsible for operation and maintenance of this dam. Responsibility for primary/routine operation and maintenance of this structure is assigned to Doug Pavlovich, Wildlife Technician, Houghton Lake Field Office (telephone 989-422-5192). Responsibility for oversight/planning for this impoundment rests with (vacant), Wildlife Habitat Biologist, Lower Peninsula Field Headquarters, Roscommon (telephone 989-275-5151) and the Northeastern Management Unit Wildlife Supervisor, Glen Matthews, Gaylord Operations Service Center (telephone 989-732-3541 ext. 5030)).

Bear Creek empties into the Muskegon River approximately 0.75 miles downstream from this structure and no private land is crossed by the creek. Private land is located along the Muskegon River just downstream from the mouth of Bear Creek, but it is unlikely that a breach of the Bear Creek Flooding dam would threaten structures on these private lands. No Emergency Action Plan is required for this structure.

Immediate Maintenance Needs

- 1) Install additional railing and/or fence.
- 2) Install gate at dike end.
- 3) Fill dike holes, seed and mulch.

Long Term Maintenance/Inspection

Responsible Wildlife Division personnel will inspect this structure at least once every three months April through November. From December through March the structure will be checked at least once and more frequently if conditions warrant. A Dam Inspection Report (see attached) will be completed at each inspection and filed at the Houghton Lake Field Office. Maintenance needs evident upon inspection will be addressed as soon as possible. Brush will be removed from the embankment at least every fourth year.

Prepared by: Doug Pavlovich.

Appedix D. File Chronology of Bear Creek Flooding

1. March 30, 1949—Memo to H.D. Ruhl from W.W. Shapton—Status report of approvals for construction.
2. April 13, 1949—Approval Resolution to construct dam from Roscommon County Board of Supervisors.
3. November 16, 1951—Memo to J. Byelich from W.E. Laycock—Maintenance inspection of flooding.
 - i. “Construction looked good, a little seepage.”
Recommended seeding dike as soon as possible.
4. November 26, 1951—Memo to W. Laycock from J. Byelich—Report on Bear Creek Flooding Use.
 - i. Summer duck pop. of ~140 birds
 - ii. Estimated 200 hunter days spent on flooding
 - iii. Noted Beaver and Muskrat activity and trapping
 - iv. Favorable local reaction
5. July 21, 1952—Memo to J. Byelich from R.A. MacMullen—Recommendation for keeping beavers from blocking dam.
6. April 21, 1953—Memo to J. Byelich from W.E. Laycock—Report of dam inspection
 - i. Noted sluffing in area of dam below wing walls and recommended repairs
 - ii. Noted beaver damage to embankments
7. July 20, 1955—Memo to File from D. Cote—USGS Depth Gages Set
8. August 30, 1957—Memo to File from H.J. Hanes—Dam inspection with repair recommendations
 - i. States aprons sills too high and wing walls too short and noted animal damage to dike.
9. May 5, 1960—Memo W.H. Evans to J. Byelich—Dam inspection with repair recommendations
 - i. “Place new riprap in streambed and on downstream shoulder slopes.”
 - ii. “Place additional fill at ends of structure and on downstream shoulder slopes.”
 - iii. “Erect Barriers to prevent cars from driving on dike.”
10. September 7, 1960—Memo to file from H. Dykema—Riprap repairs, filling, and seeding done.
11. June 16, 1961—Management Plan for Bear Creek Flooding by J.A. Kadlec.
 - i. Recommends drawdown with strip herbicide application and planting of narrow-leaved cattail
12. July 19, 1961—Memo to D.Y. McBeath from J. Byelich—Cat-walk repair order.

13. October 17, 1966—Memo to P. Baumgras from R. H. Anderson—
Report on Bear Creek Management Activities
 - i. Notes Dowpon application in 1967
 - ii. Beaver activity created more favorable wildlife habitat
 - iii. Recommends 2,4-D application in accordance with Kadlec Plan
14. April 12, 1977—Dam Inspection Report.
 - i. Reports “good” condition and recommends seeding dikes
15. November 9, 1990—Memo to D.J. Hall from K.R. Hosford—Dam inspection report and repair schedule.
 - i. Report date: July 30, 1990
 - ii. Recommends:
 1. Repair spillway abutment wall
 2. Repair base of center stop-log pier
 3. Replace wooden wing-walls or reshape slope and add riprap
 4. Remove trees and brush from dike
 5. Memo from October estimates repairs at \$17,800
16. June 14, 1991—Memo to J. Pawloski from D. Pavlovich—
Information on getting quotations for work to be done on dam.
17. July 18, 1991—Memo to S. Taylor from J. Pawloski—
Recommendation to contact Engineering on repair plan preparation.
18. December 17, 1991—Memo to G. Burgoyne from G. Boushelle—
Requesting assistance in requesting Engineering assistance.
 - i. Notes that water is drawn down
19. January 14, 1992—Memo to J. Weinrich from G. Boushelle—Series of memos on status of repairs.
20. February 1992—Operations and Maintenance Plan for Bear Creek Flooding Dam by J. Weinrich and D. Pavlovich.
 - i. Recommends:
 1. Drawdown impoundment
 2. Repair Spillway abutment wall
 3. Repair base of center stop-log pier
 4. Replace wooden wingwalls
 5. Emplace staff gauge
21. January 3, 1993—Extension of drawdown permit
22. January 10, 1994—Work Item Proposal for dam repairs
23. February 14, 1994—Project allotment/completion report
 - i. Notes \$460.00 of \$17,000 spent
24. February 25, 1994—Memo to G. Boushelle from B. Hess—Special Maintenance Allotments.
 - i. States “Bear Creek may not get down this year”
25. December 21, 1995—Memo to B. Hess from J. Weinrich—Bear Creek Flooding.
 - i. “Still waiting on engineering”

26. December 27, 1995—Memo to J. Weinrich from B. Hess—Bear Creek Flooding.
27. February 1996—Operations and Maintenance Plan for Bear Creek Flooding Dam.

Appendix E. Common and Scientific Names of Species Mentioned in Text.

Common Name	Scientific Name
Sedge	<i>Carex spp.</i>
Yellow Water-lily	<i>Nuphar lutea</i>
White Water-lily	<i>Nymphaea odorata</i>
Potamogeton	<i>Potamogeton spp.</i>
Rush	<i>Scirpus spp.</i>
Broad-leafed Cattail	<i>Typha latifolia</i>
Eurasian water milfoil	<i>Myriophyllum verticillatum</i>
Purple Loosestrife	<i>Lythrum salicaria</i>
Balsam Fir	<i>Abies balsamea</i>
Black Ash	<i>Fraxinus nigra</i>
Tamarack	<i>Larix laricina</i>
White Spruce	<i>Picea glauca</i>
Black Spruce	<i>Picea mariana</i>
Jack Pine	<i>Pinus banksiana</i>
Red Pine	<i>Pinus resinosa</i>
Eastern White Pine	<i>Pinus strobus</i>
Big-toothed Aspen	<i>Populus deltoides</i>
Quaking Aspen	<i>Populus tremuloides</i>
White Oak	<i>Quercus alba</i>
Northern Pin Oak	<i>Quercus ellipsoidalis</i>
Northern Red Oak	<i>Quercus rubra</i>
Northern White Cedar	<i>Thuja occidentalis</i>
Least Bittern	<i>Ixobrychus exilis</i>
Great Blue Heron	<i>Ardea herodias</i>
Green Heron	<i>Butorides virescens</i>
Wood Duck	<i>Aix sponsa</i>
Mallard	<i>Anas platyrhynchos</i>
Osprey	<i>Pandion haliaetus</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Common Snipe	<i>Gallinago gallinago</i>
Black Tern	<i>Chlidonias niger</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Beaver	<i>Castor canadensis</i>
Muskrat	<i>Ondatra zibethicus</i>
River Otter	<i>Lutra canadensis</i>
Painted Turtle	<i>Chrysemys picta</i>
Bullfrog	<i>Rana catesbeiana</i>
Northern Leopard Frog	<i>Rana pipiens</i>
Eastern Massasauga	<i>Sistrurus catenatus catenatus</i>

Appendix F. Summary of Public Comments.



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RECEIVED
DNR

GAY
COMMUNICATIONS

August 11, 2003

To: Keith Kintigh, Wildlife Ecologist,
Northeast Management Unit, and
Doug Pavlovich, Wildlife Technician,
Houghton Lake Field Unit, Wildlife Division

Cc: Glen E. Matthews, Wildlife Unit Supervisor
Northeast Management Unit
MCF Board of Trustees

From: Robert E. Jacobson, President
Michigan Conservation Foundation

Subject: Master Plan - Bear Creek Flooding
Roscommon County, T21-22N R04W

Dear Keith and Doug

I represent the Michigan Conservation Foundation, Board of Trustees, but I write this response in the first person. I believe the plan is excellent, however I wish clarification of some items and I have some suggestions.

The Master Plan Draft provides information as to the history, present status of the flooding and management goals and objectives, but does not forecast a plan for future enhancements to the flooding, and a recommendation to solve a problem that is preventing potential improvements to the flooding. In my opinion, these are requirements that need to be addressed in a Master Plan.

- The greatest plus factor of the flooding is the remoteness of its location to civilization.
- Based on my experiences, observing the flooding, and the aerial map at the open house it appears an increase in water depth, which would also increase the acreage, could be a benefit to both game and non-game wildlife species. The question that must be answered is would the existing dam support an increase in the water head, or would a more substantial dam be required.
- I realize that question would have to be answered by a DNR Civil Engineer experienced in dam construction, relative to water head and volume of water held back before an increase

could be contemplated. As stated "Presently, the structure impounds approximately 570 acres at an average depth of less than 3 feet."

Since osprey are not currently using the two nesting platforms in the flooding, it may be due to forage fish not being present or in sufficient quantity to provide a food supply for osprey fledglings to survive or loons to use the flooding.

If this were the reason, an increase in water depth and area would allow forage fish to survive a potential winterkill due to lack of dissolved oxygen. This may also provide the missing element that is preventing osprey from nesting on the flooding.

- With the Houghton Lake Flats being a close neighbor and increase of great blue herons from there the potential for establishing a new a new rookery at Bear Creek is very possible if sufficient forage fish were available.
- Waterfowl nesting would certainly increase with additional water acreage.
- I recommend a ban on the usage of gasoline powered motors on watercraft. Electric motors up to a 3 HP rating could be allowed.
- Item 28 should be added to page 17.
During June and July 1998 the dam was repaired, plus geotextile fabric and gabion baskets were placed on the north and south embankments below the dam and seeded to stop erosion. Cost \$13,840.00. (Copy of contract and reports to Keith Kintigh.)
- Page 4 'Overall Management Goal.' Please remove "The Department is not bound by any legal obligations to maintain Bear Creek flooding as such." The statement adds no value to the Plan or **Stature** to the Wildlife Division. Some of the public will misinterpret the DNR intent of the statement and four letter words will fly. The '**Mission**' statement of the Wildlife Division is outstanding, stay with it.
- Due to significant loss of Michigan wetlands over the past 50 years, this flooding (wetland) should be maintained, with improvements, on a continuous high mandatory priority.

Thank you, for the opportunity to comment on the Master Plan



Robert E. (Bob) Jacobson, President
Michigan Conservation Foundation

MACK TARD
16261 HARDEN CIRCLE
SOUTHFIELD MI 48075
248-557-5917

DEAR DNR:

I AM FAMILIAR WITH THE BEAR CREEK FLOODING AS HAVING USED IT FOR RECREATION EVERY YEAR FOR THE PAST 50 YEARS STARTING IN 1953. MY PRIMARY USE HAS BEEN FOR FISHING AND WATERFOWL HUNTING.

ALTHOUGH NOT A RESIDENT OF ROSCOMMON COUNTY, I DO OWN SEVERAL PARCELS OF LAND AND SPEND MUCH TIME THERE. MY USE OF BEAR CREEK FLOODING IS DURING THE MONTHS OF APRIL+MAY+SEPT.+OCT+NOV., WITH AN AVERAGE USE OF 4-5 DAYS A WEEK.

FOLLOWING ARE MY COMMENTS AND OBSERVATIONS GAINED THRU THE YEARS. I DON'T CLAIM TO BE AN EXPERT OF ANY SORT - BUT EXPERIENCE IS A WONDERFUL TEACHER.

1. THE AREA OF "OPEN WATER" HAS GREATLY DIMINISHED. THE PRESENT AREA IS APPROX. HALF THE SIZE OF THE ORIGINAL AND EARLY OPEN AREA.
EVERY YEAR IT SEEMS TO SHRINK A BIT MORE WITH THE CATTAILS ETC. CROWDING IN TOWARD THE CENTER, WITH THE NORTHERN PART MOST GREATLY AFFECTED. THE CENTRAL WIDTH OF OPEN WATER HAS ALSO REDUCED IN SIZE, VERY MUCH.
2. MILFOIL INFESTATION HAS COMPLETELY COVERED THE OPEN WATER AREA OF THE FLOODING. THIS SEEMS TO HAVE OCCURED OVER THE LAST 10 YEARS OR SO.
BECAUSE OF THIS IT IS JUST ABOUT IMPOSSIBLE TO DO ANY FISHING. EVERY CAST RESULTS IN A GOB OF MILFOIL ON YOUR LINE.
I DO NOT USE ONE, BUT SMALL FLAT-BOTTOM BOATS WITH SMALL MOTORS COULD BE OBSERVED IN THE PAST GETTING AROUND THE OPEN WATER AREA FISHING OR WATERFOWL HUNTING. TRY THAT TODAY AND YOU WONT GET VERY FAR BEFORE FODDING UP WITH MILFOIL. A CANOE OR SMALL DUCK BOAT WILL GET YOU AROUND JUST FINE. SOME MIGHT CLAIM A "DRAWDOWN" WOULD ELIMINATE THE MILFOIL BUT I HAVE DOUBTS ABOUT THAT.

THIS DOUBT IS BASED ON OBSERVATIONS AND EXPERIENCES ON OTHER FLOODINGS IN THE AREA. FOR EXAMPLE, LITTLE MUD LAKE AT M-18 ROAD AND THE BACKUS CREEK CHAIN OF FLOODINGS. DRY SEMI- DROUGHT CONDITIONS OF THE PREVIOUS 4 OR 50 YEARS HAVE REDUCED WATER LEVELS AT TIMES TO "DRAW DOWN" CONDITIONS. THE MILFOIL SEEMS AS HEAVY AND EXPANDING EVERY YEAR IN THOSE LOCATIONS. TRYING TO FISH THERE IS A REAL PAIN. OH SURE, YOU CAN GO TO THE DAMS AND OBSERVE PEOPLE DUNKING WORMS, BUT AS FAR AS GETTING OUT ON THE FLOODINGS AND DOING SOME SERIOUS FISHING - ITS GETTING TO THE POINT WHERE ITS NOT WORTH THE EFFORT!

AS FOR BEAR CREEK FLOODING, RECREATIONAL FISHING IS ABOUT OVER DUE TO SHRINKING OPEN WATER AREA AND HEAVY MILFOIL GROWTH.

3. WATERFOWL COMMENTS:

ON OPENING DAY OF DUCK HUNTING THERE SEEMS TO BE AN AVERAGE TOTAL OF 5 GROUPS AT ALL THE ACCESS SITES COMBINED. IN THE EARLY YEARS YOU COULD NOT FIND A PLACE TO PARK.

WE ALL REALIZE THAT WATERFOWL POPULATIONS ARE DOWN IN GENERAL, AND WITH IT DUCK HUNTERS AS WELL.

WHEN BEAR CREEK WAS FIRST FLOODED THERE WAS MUCH STANDING TIMBER IN THE FLOODED AREA. THERE WERE ALSO GOOD MALLARD NUMBERS IN THE FLOODED TIMBER. THE STANDING TIMBER HELD UP WELL FOR THE FIRST TEN YEARS OF THE FLOODING LIFE, THEN BEGAN SLOWLY TO COME DOWN. AS THE STANDING TIMBER DECLINED - SO DID THE MALLARD AND BLACK DUCK NUMBERS. IS THERE A CONNECTION? I DONT CLAIM TO BE A WATERFOWL EXPERT BUT I DO KNOW MALLARDS LOVE FLOODED TIMBER.

WATERFOWL - FURTHER COMMENTS:

BEAR CREEK FLOODING PRESENT DAY WATERFOWL POPULATIONS ARE ON THE LOW END OF ITS PAST HISTORY GOING BY FLUSH RATES AND NUMBERS JUST AFTER ICE-OUT IN APRIL. PADDLING UP THE NARROWS AS FAR AS ONE CAN GO RESULTS IN AN AVERAGE FLUSH COUNT OF 10 TO 12 MALLARD PAIRS. I CAN OFFER NO COMMENTS ON NESTING SUCCESS OR SURVIVAL RATES.

EARLY FALL PRE-SEASON FLUSH RESULTS SEEM TO VARY WITH LOCAL FLOCKS (ECLIPSE PLUMAGE) OF 6 TO 8 MALLARDS IN NARROWS. I HAVE NEVER FLUSHED MORE THAN 4 "FLOCKS" THE ENTIRE LENGTH OF THE NORTHERN NARROWS. THERE ARE OF COURSE FLUSHES OF SINGLES AND DOUBLES AND ALSO A FEW WOOD DUCKS. HAVE NOT FLUSHED ANY BLACK DUCKS IN THE PAST 5 YEARS.

MIGRATION TIME:

AROUND THE 20TH OF OCTOBER, MIGRATING FLOCKS OF MALLARDS SHOW UP FROM TIME TO TIME. THEY DO NOT SEEM TO HOLD FOR MORE THAN A FEW DAYS. LARGEST FLOCK COUNT OF MALLARDS IN RECENT YEARS HAS BEEN 15 BIRDS. ON A GOOD DAY, FLUSH RATES IN THE NARROWS IS ABOUT 2 FLOCKS AS WELL AS A FEW SINGLES, DOUBLES, AND QUADS. ALSO A FEW "WOODIES", RINGNECKS, AND COOTS. IN 50 YEARS OF WATERFOWL HUNTING AND OBSERVING, I HAVE YET TO SEE A PINTAIL DUCK ON BEAR CREEK FLOODING.

LATE IN THE SEASON, A FEW SMALL FLOCKS OF GOLDENEYES AND MERGANSERS WILL FREQUENT THE OPEN WATER AREA. THERE HAVE BEEN MANY DAYS OF COURSE THAT I HAVE NOT SEEN ANY WATERFOWL AT ALL IN THE OPEN WATER AREA OR THE NARROWS. I SEEM TO BE HAVING MORE AND MORE OF THOSE DAYS LATELY. CANADA GEESE ARE RARE TO BE SEEN ON THE FLOODING. IN THE LAST 20 YEARS OR SO, I HAVE ONLY OBSERVED 2 FLOCKS OF GEESE ON THE FLOODING.

REMOVED
DWF

GENERAL OBSERVATIONS: PAST 50 YEARS

1. NO LOONS HAVE EVER BEEN SEEN ON FLOODING.
2. NO CRANES HAVE EVER BEEN SEEN ON FLOODING. ABOUT 5 YEARS AGO A HIGH MIGRATING FLIGHT WAS HEARD AND OBSERVED OVERHEAD HEADING SOUTHWEST.
3. NO SWANS HAVE EVER BEEN SEEN ON FLOODING.
4. MUSKRAT AND BEAVER NUMBERS APPEAR GOOD.
5. SEVERAL PAIRS OF OTTER OBSERVED EVERY YEAR IN THE NORTHERN NARROWS.
6. SMALL CLUMPS OF PURPLE HOOSHTRIFE ENCOUNTERED IN THE NORTHERN NARROWS. (LAST 8 YEARS)
7. NO EASTERN MASSASAUGA OBSERVED NORTH OF BEAR CREEK DAM. HAVE SEEN QUITE A FEW MASSASAUGA SOUTH OF DAM TO MUSKEGON RIVER.
8. FISH TAKEN FROM FLOODING: NORTHERN PIKE - LARGEMOUTH BASS AND SONFISH. NO LAMPREY OR SCARS ON PIKE TAKEN NORTH OF DAM. SOUTH OF DAM AND MUSKEGON RIVER ALMOST EVERY PIKE HAS A LAMPREY ON IT. (SOMETIMES 2)
9. MORE AND MORE BUZZARDS OBSERVED OVERHEAD DURING THE LAST 10 YEARS.

SUGGESTIONS:

- 1) WHEN IT IS TIME TO DO A DRAWDOWN WHY NOT POST A SIGN AT THE DAM ALERTING THE PUBLIC TO THE FACT THAT IT IS A PLANNED DRAWDOWN BY THE DNR. THIS COULD ALSO EXPLAIN THE BENEFITS OF DOING THIS. REASON FOR DOING THIS IS SO THAT THE PUBLIC DOES NOT ASSUME IT TO BE THE WORK OF VANDALS OR FARMERS FROM DOWN BELOW LIFTING BOARDS TO GET MORE WATER.
- 2) DEVISE A SYSTEM TO STOP UNAUTHORIZED REMOVAL OF BOARDS AT DAM. THE THIN FLIMSY CHAIN AND CHEAP PADLOCKS CAN EASILY BE UNDONE.
- 3) I QUESTION THE NEED FOR A GATE AT THE DIKE END? HAVE NEVER OBSERVED ANY MOTOR VEHICLES ON DIKE. POST A SIGN - PENALTY IS A BIG FINE FOR DRIVING ON DIKE! (\$500, SOUNDS NICE)
- 4) ADDITIONAL RAILING ON DAM WALKOVER SEEMS GOOD. BUT I THINK A "FENCE" WOULD RUIN THE OVERALL LOOKS AND CHARACTER OF THE PLACE.
- 5) I UNDERSTAND THE THE HOUGHTON LAKE SEWER SYSTEM TREATMENT PLANT DISCHARGES "TREATED WATER" INTO BEAR CREEK AND MUSKEGON RIVER. WHAT EFFECT HAS THIS HAD ON THESE WATERS?

RESPECTFULLY YOURS

Mark M. Tamm