

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Marquette Board of Light and Power

Project No. 2589-057 – Michigan

NOTICE OF AVAILABILITY OF ENVIRONMENTAL ASSESSMENT

(May 6, 2010)

In accordance with the National Environmental Policy Act of 1969, as amended, and the Federal Energy Regulatory Commission's (Commission) regulations (18 CFR Part 380), the Office of Energy Projects has prepared an Environmental Assessment (EA) regarding Marquette Board of Light and Power's plan to repair the Tourist Park Dam of the Marquette Hydroelectric Project (FERC No. 2589) located on the Dead River in Marquette County, Michigan. This EA concludes that the proposed repair, with staff's recommended mitigation measures, would not constitute a major Federal action significantly affecting the quality of the human environment.

A copy of the EA is on file with the Commission and is available for public inspection. The EA may also be viewed on the Commission's website at <http://www.ferc.gov> using the "eLibrary" link. Enter the docket number excluding the last three digits in the docket number field to access documents. For assistance, contact FERC Online Support at [FERCOnlineSupport@ferc.gov](mailto:FERCOnlineSupport@ferc.gov) or toll-free at 1-866-208-3676, or for TTY, (202) 502-8659. You may also register online at <http://www.ferc.gov/docs-filing/esubscription.asp> to be notified via email of new filings and issuances related to this or other pending projects. For assistance, contact FERC Online Support.

Comments on the EA should be filed within 30 days from the issuance date of this notice under docket No. P-2589-057. The Commission strongly encourages electronic filings. See 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's website under the "eFiling" link. In lieu of electronic filings, comments should be addressed to the Secretary, Federal Energy Regulatory Commission, 888 First Street, NE, Room 1-A, Washington, DC 20426. For further information, contact Rachel Price at (202) 502-8907.

Kimberly D. Bose,  
Secretary.

This page intentionally left blank.

**ENVIRONMENTAL ASSESSMENT**  
**REPAIRING THE MARQUETTE PROJECT'S**  
**TOURIST PARK DAM**

**Marquette Hydroelectric Project**  
**Project No. 2589**  
**Michigan**



**Federal Energy Regulatory Commission**  
**Office of Energy Projects**  
**Division of Hydropower Administration and Compliance**  
**888 First Street, N.E.**  
**Washington, DC 20426**

**May 2010**

## TABLE OF CONTENTS

LIST OF FIGURES .....	v
LIST OF ACRONYMS .....	vi
SUMMARY .....	vii
1.0 FILING .....	1
1.1 BACKGROUND .....	1
2.0 PURPOSE AND NEED FOR POWER .....	3
2.1 PURPOSE OF ACTION .....	3
2.2 NEED FOR POWER .....	3
3.0 PLANNED ACTION AND ALTERNATIVES .....	4
3.1 PROJECT DESCRIPTION .....	4
3.2 PLANNED ACTION .....	7
3.2.1 Engineering Review of Planned Action .....	7
3.2.2 General Description of Construction .....	7
3.2.3 Construction Parking Areas .....	8
3.2.4 Clearing and Grubbing .....	9
3.2.5 Cofferdam Construction and Earthwork .....	9
3.2.6 Foundation Excavations .....	9
3.2.7 Spillway Construction .....	10
3.2.8 Maintenance, Repair, and Construction of Roads .....	10
3.2.9 Air Emissions .....	10
3.2.10 Water Requirements for Construction .....	10
3.2.11 Instrumentation .....	11
3.2.12 Proposed Resource Protection Measures .....	11
3.2.13 Construction Schedule .....	13
3.3 NO-ACTION ALTERNATIVE .....	13
4.0 CONSULTATION .....	13
4.1 COMMENTS .....	13
4.2 AGENCY CONSULTATION .....	14
5.0 ENVIRONMENTAL ANALYSIS .....	15
5.1 GENERAL DESCRIPTION OF PROJECT LOCALE .....	15
5.2 CUMULATIVE EFFECTS ANALYSIS .....	16
5.3 GEOLOGICAL AND SOIL RESOURCES .....	16
5.4 WATER AND FISHERIES RESOURCES .....	18
5.5 TERRESTRIAL RESOURCES .....	30
5.6 WETLANDS .....	34

5.7	THREATENED AND ENDANGERED SPECIES.....	37
5.8	CULTURAL AND HISTORIC RESOURCES .....	38
5.9	RECREATION .....	42
5.10	LAND USE AND AESTHETICS .....	45
5.11	AIR QUALITY .....	49
5.12	NOISE .....	50
5.13	SOCIOECONOMICS .....	50
6.0	CONCLUSIONS AND RECOMMENDATIONS.....	52
7.0	FINDING OF NO SIGNIFICANT IMPACT .....	53
8.0	LITERATURE CITED.....	54
9.0	LIST OF PREPARERS .....	55

## LIST OF FIGURES

Figure 1: Project Location .....	2
Figure 2: Marquette Hydroelectric Project, Tourist Park Development .....	5
Figure 3: Tourist Park Reservoir Basin under drained conditions .....	6
Figure 4: Tourist Park Reservoir Basin showing revegetation.....	19
Figure 5: Newly exposed waterfall and reach downstream of the breach area.....	19

## LIST OF ACRONYMS

APE	Area of Potential Effect
BOC	Board of Consultants
CFR	Code of Federal Regulations
cfs	cubic feet per second
Commission or FERC	Federal Energy Regulatory Commission
D2SI	Division of Dam Safety and Inspections
EA	Environmental Assessment
DO	dissolved oxygen
EPA	Environmental Protection Agency
ESCP	Erosion and Sedimentation Control Plan
°F	degrees Fahrenheit
FPA	Federal Power Act
Form 80 Report	FERC's Licensed Hydropower Development Recreation Report
FWS	U.S. Fish and Wildlife Service
KBIC	Keweenaw Bay Indian Community
KME	King & MacGregor Environmental, Inc.
MBLP	Marquette Board of Light and Power
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
NAAQS	national ambient air quality standards
NPDES	National Pollutant Discharge Elimination System
NGVD	National Geodetic Vertical Datum
NRHP	National Register of Historic Places
SHPO	State Historic Preservation Officer
SPCC	Spill Prevention Control and Countermeasure Plan
TCP	Traditional Cultural Property
UPPCO	Upper Peninsula Power Company
WQC	water quality certification
YOY	young of year

## SUMMARY

The Marquette Hydroelectric Project (FERC No. 2589), located in the Upper Peninsula of Michigan, is a hydroelectric facility with two developments: Tourist Park Development and Forestville Development. On May 14, 2003, an emergency fuse plug on the Silver Lake Storage Reservoir of the upstream Dead River Project (FERC No. 10855) activated, resulting in the release of a large quantity of water, rock, and sediment, causing significant downstream flooding, erosion, scouring, and deposition of eroded sediments in downstream areas. The resultant high flows reached the Tourist Park Dam, crested the right earthen abutment of the dam, and caused the wash out of the right abutment which resulted in the release of the Tourist Park Reservoir. As a result of this event, the reservoir is now a fraction of its original size and the Tourist Park Development has remained inoperable since the event.

On September 17, 2009, Marquette Board of Light and Power (MBLP or licensee) filed an environmental report in support of its plan to repair the Tourist Park Dam and return the Tourist Park Development to operation under the terms and conditions of the project license. In order to address concerns regarding the susceptibility of the washed-out abutment to fail under high flow conditions in the future, an independent Board of Consultants and the Commission's D2SI determined that a concrete spillway structure, founded on competent bedrock and connected to the original core wall, would eliminate this area as a preferential failure path and would improve the safety of the project during high flow conditions.

Following repair of the dam, the surface area, elevation, and storage volume of the reservoir would be restored to licensed conditions as they existed prior to the May 2003 event. The Planned Action would not result in any operational changes to the Tourist Park Development. In addition, the Planned Action would not result in any physical or operational changes to the project's Forestville Development.

Construction initiation and completion are planned for the 2010 construction season. In order to determine the impacts of the construction activities and identify any mitigation measures that may be necessary as a result of the proposed repair of the Tourist Park Dam, Commission staff prepared this Environmental Assessment (EA).

The Planned Action includes routing flows through the existing gated spillway which would discontinue flow through the breached area. During the initial refill of the reservoir to reach the existing spillway sill level, the licensee would need to develop a plan to pass flows downstream of the project in order to protect aquatic resources. To minimize impacts to fisheries and aquatic resources, staff recommends that the licensee consult with the Michigan Department of Natural Resources (MDNR), Michigan Department of Environmental Quality (MDEQ) and the U.S. Fish and Wildlife Service (FWS), to develop a plan to provide continuous minimum flows below the development during all stages of construction, and file the plan for Commission approval.



In order to avoid the development of poor water quality during construction, staff recommends that the licensee sequence construction activities so that all excavation from borrow areas within the reservoir is completed prior to constructing the cofferdam and raising the reservoir to the existing spillway elevation. Appropriate construction sequencing should be determined in consultation with the Commission's Division of Dam Safety and Inspections (D2SI).

In order to avoid the development of poor water quality during refill of the reservoir following construction, staff recommends that the licensee develop a plan for reservoir refilling to ensure the stability of the rebuilt facilities, avoid the development of poor water quality, and ensure the release of downstream flows during the refilling period. The plan should be developed in consultation with MDNR, MDEQ, and FWS, and filed for Commission approval.

Staff also recommends that the licensee develop a plan for revegetating and reforesting disturbed areas following the completion of construction activities, and for monitoring the areas for success. The plan should address, but not be limited to, adequate preparation of areas post-construction to ensure proper soil conditions, any need remove hardfill material, and any need for soil replenishment. The plan should be developed in consultation with MDNR, MDEQ, and FWS, and filed for Commission approval.

The repair of the Tourist Park Dam would be conducted under Part 12 of the Commission's regulations and would return the Tourist Park Development to operation under the terms and conditions of the project license and in accordance with the Commission's safety regulations.

The licensee's proposed erosion control measures and implementation of best management practices, together with staff's recommended mitigation measures should reduce, to the extent possible, impacts associated with the construction activities. Based on our independent analysis as described in this EA, we find that the proposed repair of the Tourist Park Dam of the Marquette Project, with staff's recommended measures, would not constitute a major federal action significantly affecting the quality of the human environment.

This page intentionally left blank.

## ENVIRONMENTAL ASSESSMENT

### Federal Energy Regulatory Commission Office of Energy Projects Division of Hydropower Administration and Compliance

#### Marquette Hydroelectric Project FERC Project No. 2589 Michigan

### 1.0 FILING

Filing Type: Environmental report to support the repair of the Tourist Park Dam in order to restore the Tourist Park Reservoir and operation of the Tourist Park Development

Date Filed: September 17, 2009

Applicant's Name: Marquette Board of Light and Power (MBLP or licensee)

Water Body: Dead River

County and State: City of Marquette, Marquette County, Michigan

Federal Lands: The project does not occupy any federal lands

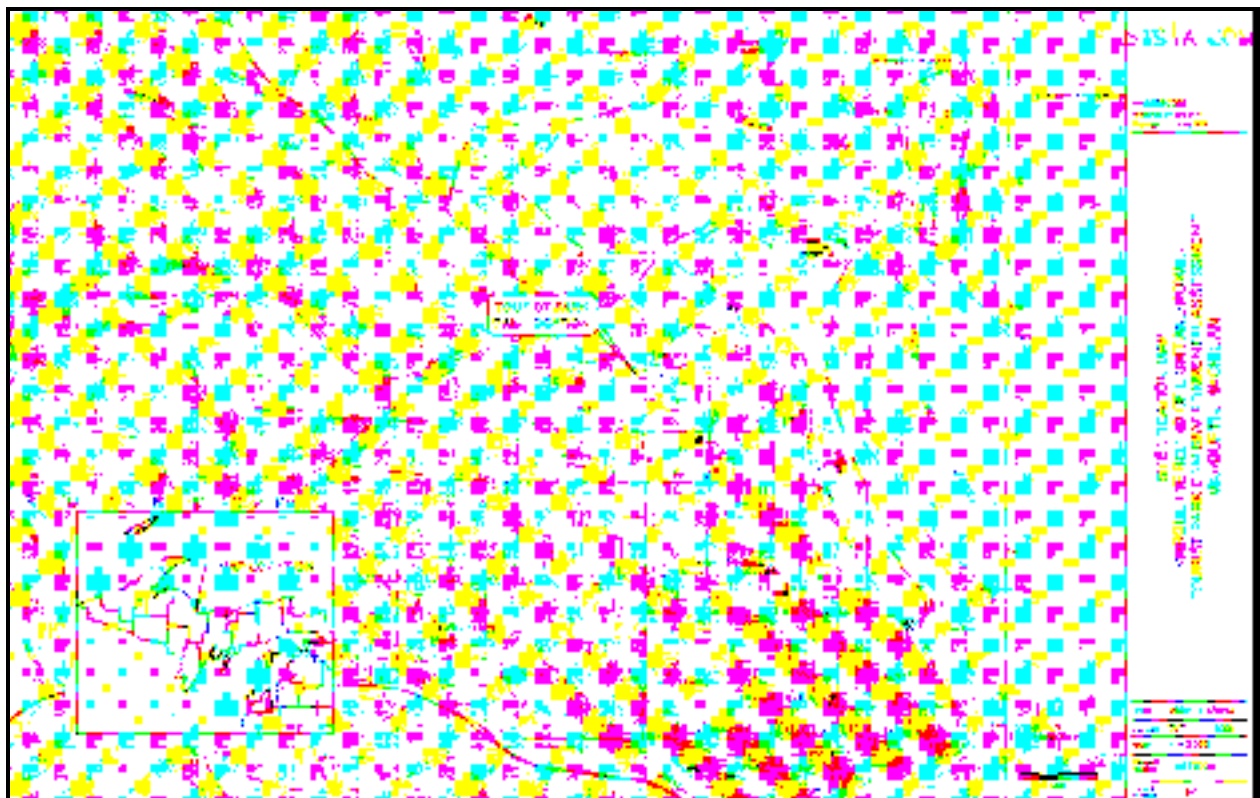
### 1.1 BACKGROUND

The Marquette Hydroelectric Project (FERC No. 2589), is a hydroelectric facility with two developments: Tourist Park Development and Forestville Development. The Marquette Project is located on the Dead River, in the Upper Peninsula of Michigan, (*see* Figure 1). On May 14, 2003, an emergency fuse plug on the Silver Lake Storage Reservoir of the upstream Dead River Project (FERC No. 10855) activated, resulting in the release of a large quantity of water, rock, and sediment, causing significant downstream flooding, erosion, scouring, and deposition of eroded sediments in downstream areas. The resultant high flows reached the Tourist Park Dam, crested the right earthen abutment of the dam, and caused the wash out of the right abutment which resulted in the release of the Tourist Park Reservoir. As a result of this event, the reservoir is now a fraction of its original size and the Tourist Park Development has remained inoperable since the event.

The May 2003 event identified the right abutment as a preferential failure path (i.e. a weak spot) under extremely high flow conditions. In order to return the

development to operation, and address concerns regarding the susceptibility of this abutment to fail under high flow conditions in the future, an independent Board of Consultants (BOC) and the Federal Energy Regulatory Commission's (Commission or FERC) Division of Dam Safety and Inspections (D2SI) determined that a concrete spillway structure, founded on competent bedrock and connected to the original core wall, would eliminate this area as a preferential failure path and would improve the safety of the project during high flow conditions. The licensee plans to construct: an un-gated concrete ogee spillway within the breach channel; right and left retaining walls; a new embankment with the existing core wall; and an access road to the powerhouse and intake. Construction initiation and completion are planned for the 2010 construction season.

The Commission, under the authority of the Federal Power Act (FPA), licenses and oversees the operation of non-federal hydropower projects in the United States. Under section 10(c) of the FPA, a licensee has both a right and obligation to maintain and operate the project in a manner consistent with the terms and conditions of the project license. The licensee's plan to repair the right abutment of the Tourist Park Dam would allow the project to return to operation under the terms and conditions of its current license.



**Figure 1: Project Location (Source: MBLP 2009)**

As part of its oversight capacity, the Commission implements a dam safety

program through its D2SI to ensure that Commission-licensed projects comply with Federal dam safety standards and are designed, constructed and operated safely. Under Title 18 of the Code of Federal Regulations, Part 12 (18 CFR Part 12), the D2SI Regional Engineer has the authority to, among other things, require or authorize a licensee to take an action to repair or modify project works for the purpose of achieving or protecting the safety, stability, and integrity of project works. The Planned Action to repair the Tourist Park Dam falls under this authority.

## **2.0 PURPOSE AND NEED FOR POWER**

### **2.1 PURPOSE OF ACTION**

On September 17, 2009, MBLP filed an Environmental Report in support of its plan to repair Tourist Park Dam. In order to determine the impacts of the construction activities associated with the repair of the dam, and identify any environmental measures that may be necessary to protect environmental resources, Commission staff prepared this Environmental Assessment (EA), which describes and evaluates the probable effects, including an assessment of the site-specific effects of the Planned Action and No-Action Alternative. Important issues addressed in this EA include erosion, water resources and fisheries, terrestrial resources, cultural resources, and recreation resources.

The focus of this document is to examine those impacts associated specifically with the construction activities required to repair the Tourist Park Dam and return the development to operation under the existing license. The environmental impacts of the continued operation of the Tourist Park Development were analyzed under the license proceeding<sup>1</sup> for the Marquette Project and, as such, are not appropriate for discussion in this document. Repair work conducted under 18 CFR Part 12 is not a license amendment or relicensing proceeding. The repair of the right abutment of the dam is being conducted under 18 CFR Part 12 and the licensee has not requested nor is required to amend the project license under this proceeding.

### **2.2 NEED FOR POWER**

In licensing the project, the Commission determined that the present and future use of the Marquette Project's power, its displacement of nonrenewable fossil-fired generation, and contribution to a resource diversified generation mix, support a finding that the power from the project would help meet a need for power in the Mid America Interconnected Network region of the North American Electric Reliability Council in both the short and long-term. The proposed reconstruction of the Tourist Park Development would restore the full hydropower generation capability of the Marquette Project as contemplated in the project license.

---

<sup>1</sup> See Final Environmental Assessment for Hydropower License: Marquette Hydroelectric Project (issued July 1, 2002).

### 3.0 PLANNED ACTION AND ALTERNATIVES

#### 3.1 PROJECT DESCRIPTION

The project consists of two separate developments, the Forestville and Tourist Park Developments. The Forestville Development includes a masonry dam, an intake structure, two steel penstocks, a 110-acre reservoir (Forestville Reservoir), a 4,200-foot-long penstock, a surge tank; and a powerhouse containing two turbine generating units with a combined installed capacity of 3.2 megawatts. The Forestville Development is located immediately downstream of the Dead River Project's McClure Development and is operated in a limited peaking mode. The Forestville Reservoir is maintained at 770.25 feet National Geodetic Vertical Datum (NGVD) and fluctuations in the reservoir elevation are limited to  $\pm 0.75$  feet at all times except during events beyond the control of the licensee.

The Forestville Development bypasses a 1-mile-long reach of the Dead River. The licensee is required to provide a minimum flow of 20 cubic feet per second (cfs) to the bypassed reach at all times. In addition, when sufficient flow is available, the licensee must maintain the following minimum flows from the Forestville Powerhouse: 40 cfs from October 1 through November 15; 80 cfs from November 16 through March 15; and 40 cfs from March 16 through April 30. The tailrace of the Forestville Development discharges approximately 0.5 miles upstream of the backwaters of the Tourist Park Reservoir. The Planned Action does not involve any repair work or activity at the Forestville Development.

As licensed, the Tourist Park Development includes: a dam with a gated spillway section; left and right spillway dikes and an intake structure; the Tourist Park Reservoir with a surface area of 100-acres and a maximum storage capacity of 875 acre-feet; a 150-foot-long penstock; and a powerhouse containing one 700-kilowatt turbine generating unit (*See Figure 2*).

The Tourist Park Development is operated in a non-peaking mode to re-regulate streamflow and moderate or normalize fluctuations in flow releases to the Dead River downstream of the Tourist Park Development. The licensee is required to release downstream the daily average inflow to the development. As licensed, the Tourist Park Reservoir is maintained at 637.2 feet NGVD and fluctuations in the reservoir elevation are limited to  $\pm 0.5$  feet at all times except during events beyond control of the licensee. The Tourist Park Development bypasses a 600-foot-long reach of the Dead River.

Since the May 14, 2003, breach of the reservoir, all flow into the Tourist Park Development has flowed through the empty reservoir basin and the breach area (*See Figure 3*). The reservoir was reduced in area by approximately 80 acres which resulted in a loss of aquatic, riparian, and wetland habitats. Upland vegetation, including trees and shrubs, has become established in the empty reservoir basin.

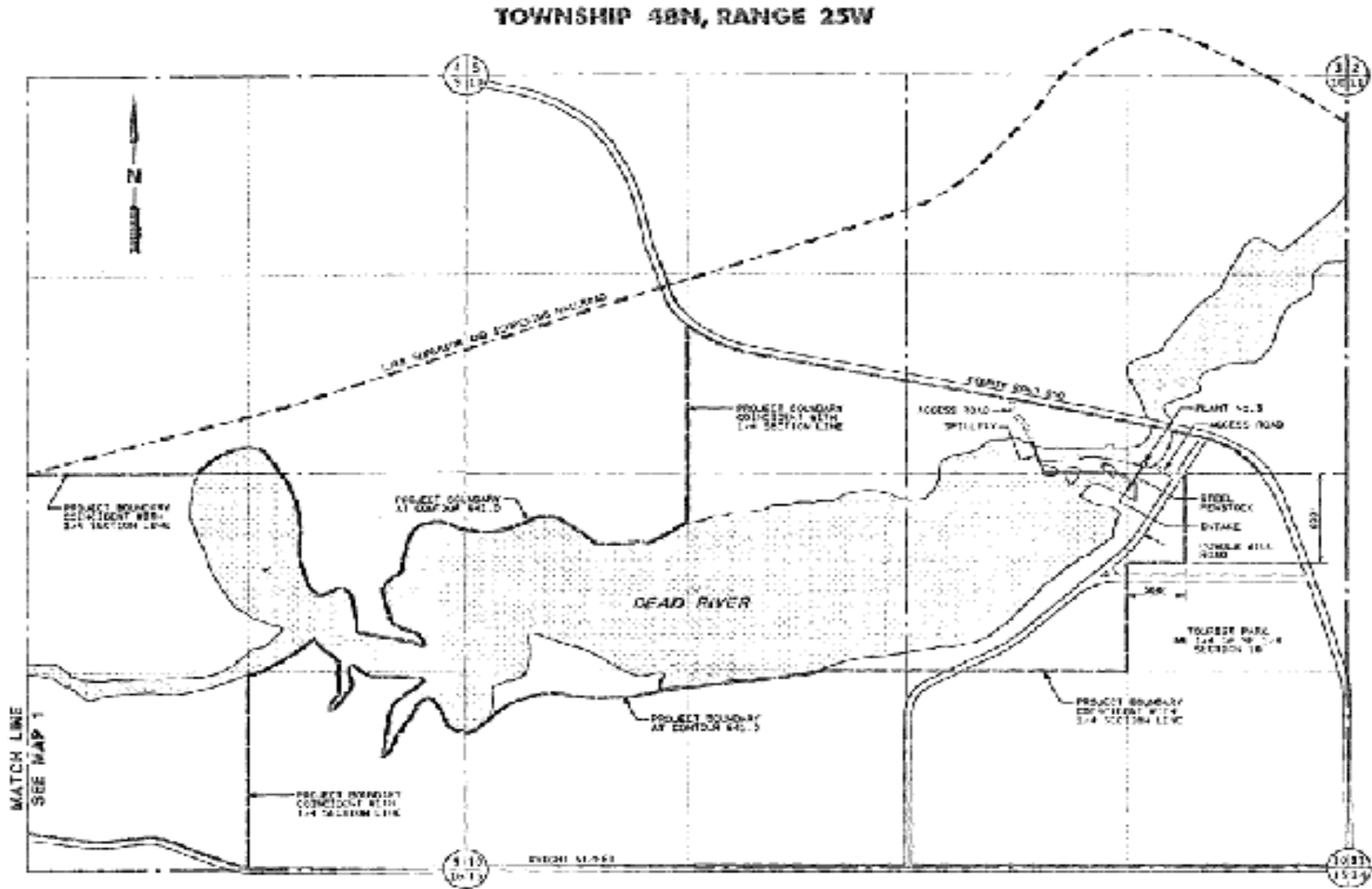
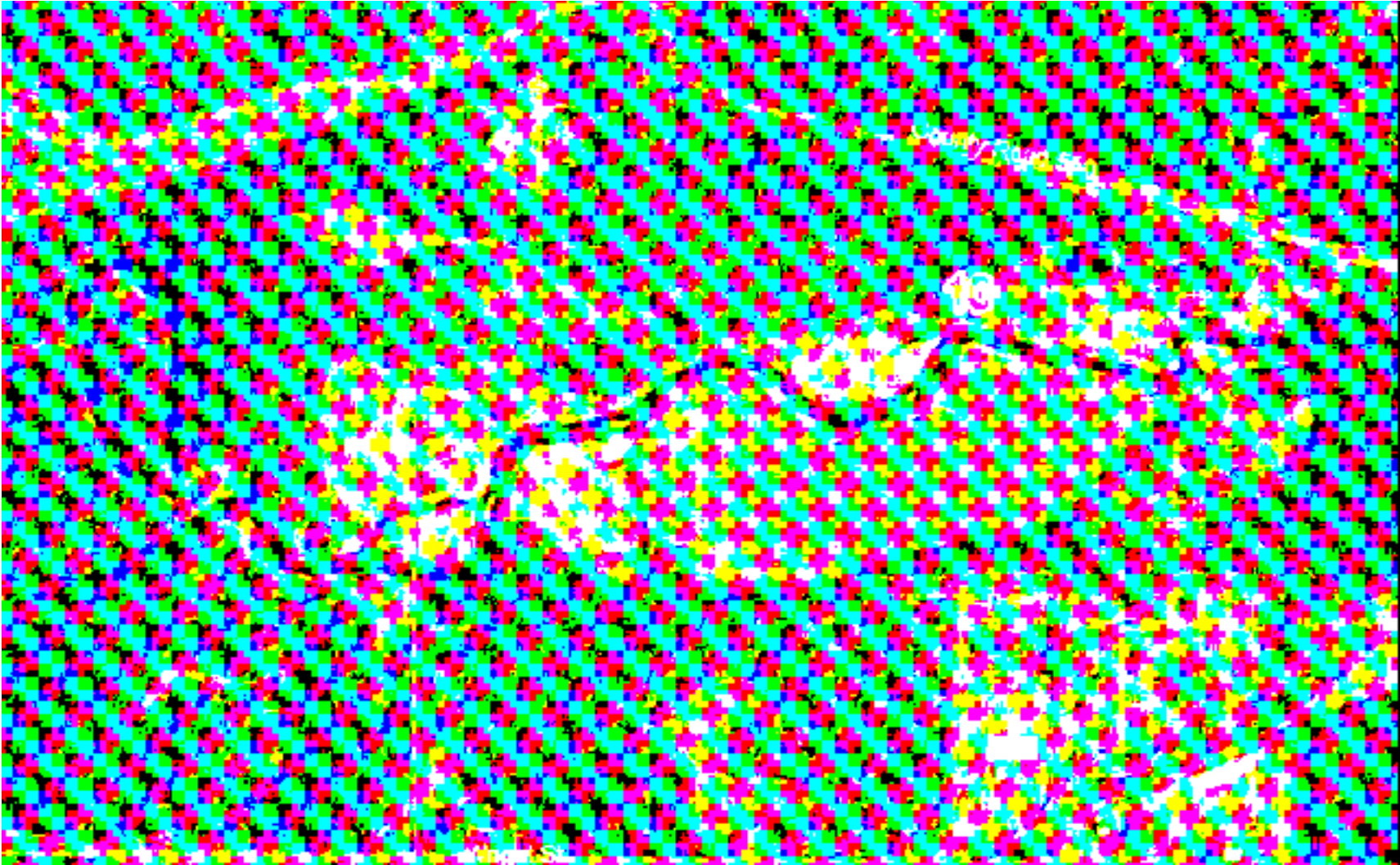


Figure 2: Marquette Hydroelectric Project, Tourist Park Development (Source: Project Exhibit G, approved October 4, 2002, modified by staff)



**Figure 3: Tourist Park Reservoir Basin under drained conditions (Source: MBLP 2009, modified by staff)**



## **3.2 PLANNED ACTION**

The licensee's Planned Action involves repairing the washed out right abutment with the construction of an un-gated concrete ogee spillway, and constructing right and left retaining walls, a new embankment with the existing core wall, and an access road to the powerhouse and intake. In addition, the licensee would make repairs to the embankment crest. After reconstruction, the licensee would operate the Tourist Park Development in compliance with the project license, issued October 4, 2002, and the water quality certification (WQC) under section 401 of the Clean Water Act, issued for the project on February 29, 2000. All of the environmental protection measures required by the project license would remain in effect.

The following sections describe the planned rebuild activities and discuss the anticipated environmental-related impacts during construction mobilization, site set up, construction activities, and demobilization from the site and the licensee's recommended environmental protection measures.

### **3.2.1 Engineering Review of Planned Action**

The planning and design process for the repair of the Tourist Park Dam is required by the Commission to ensure that the dams and dikes will be constructed and operated in a safe manner and meet all current design standards and criteria. The Commission required the licensee to convene an independent BOC to oversee and advise MBLP on the design and construction of the restored project. The BOC is composed of four preeminent dam safety experts. The BOC conducted a careful review of the design and construction; made recommendations; and then advised MBLP to conduct additional investigations and engineering evaluations that it deemed necessary. MBLP addressed these recommendations in the final design report for the project. This EA reviews the general design of the new spillway, retaining walls, and other project features, and the construction impacts on environmental resources associated with that design. The review and approval of the final engineering design and specifications is being conducted by the Commission's D2SI.

### **3.2.2 General Description of Construction**

#### Project Structures

The concrete ogee spillway would be centered within the 2003 breach channel to replace the earth abutment which was eroded during the 2003 event. The design crest of the 60-foot long spillway is elevation 638.96 feet NGVD. The spillway would consist of unreinforced mass concrete monoliths with surface steel reinforcement, and would be founded on competent bedrock. The channel downstream of the spillway would be

defined by retaining walls and riprap lined banks where appropriate. The spillway channel would then discharge over the existing bedrock controlled waterfall into the powerhouse tailrace area.

The right and left spillway retaining walls would be reinforced concrete walls with spaced counterfort buttresses supported on bedrock. The walls would be tied into existing bedrock. The existing exposed core wall would be reused and extended to connect to the concrete spillway. Compacted granular embankment fill would be placed up to the design crest elevation in areas of the embankment crest where the core wall is exposed and on the embankment of the right spillway retaining wall.

A single lane access road would be built to access the top of the dam and a parking lot adjacent to the powerhouse. The road would continue along the dam crest to the existing spillway structure. In addition, a concrete paved crossing would be installed on rock located between the natural waterfall feature and the new auxiliary spillway.

#### Construction Activities within the Reservoir Basin

In order to accommodate the construction of the new ogee spillway, the Dead River would be routed through the existing gated spillway. An earthen cofferdam would be constructed upstream of the new spillway location. This cofferdam and an existing stoplog structure would divert and maintain river flows to the existing tainter gate spillway. The reservoir level would increase approximately 9 feet before spilling over the tainter gate sill. The minimum river diversion flows and means for passing normal flows during the interim period when the reservoir is filling have not been determined. Earth needed for construction of the earthen cofferdam and other construction activities would be taken from borrow pits within the existing reservoir basin. The borrow pits would be contoured to stabilize the side walls and then submerged upon refill of the reservoir. Temporary access roads and water crossings would be constructed within the basin for use during construction.

### **3.2.3 Construction Parking Areas**

At the start of mobilization, parking areas, laydown areas, borrow areas, and areas for equipment and personnel trailers, etc. would be developed. Some areas may need to be cleared and grubbed. Some grading and leveling might also be required.

Parking areas may need to be graded and/or covered with rock fill or gravel for stability. Until covered with rock fill or gravel, perimeter barriers or drainage paths to sedimentation control ditches would be provided to all areas, or they would be individually contained using silt fence or other appropriate sedimentation and erosion control methods.

If the areas become exceptionally dry and visible dust becomes an issue in parking areas, on haul roads, or in construction areas, water spray and other appropriate dust control methods would be employed.

### **3.2.4 Clearing and Grubbing**

It would be necessary to provide sufficient working area in the different site locations identified for construction. Approximately 5,650 square yards have been identified as areas that may need to be cleared to allow construction machinery to maneuver. All of this area would be subject to erosion control measures.

In addition to providing work areas for construction, it also would be necessary to provide sufficient area for stockpiling excavated, spoil, and fill material. All laydown areas would be specified in the Erosion and Sedimentation Control Plan (ESCP), and would be stabilized or protected with filter roll, silt rock, silt fence, or similar effective measures to prevent transportation of sediment from these areas.

### **3.2.5 Cofferdam Construction and Earthwork**

Approximately 3,200 cubic yards would be excavated from within the reservoir basin for construction of the earthen cofferdam upstream of the breach channel. With the flow cut off from the breach channel, the water level in Tourist Park Reservoir is expected to rise by approximately 9 feet over current conditions to the sill level of the existing spillway. All flow would then pass through the existing spillway for the duration of construction. The means for providing flow releases during the initial filling of the reservoir (to the existing spillway sill level) has not yet been determined.

Approximately 10,640 cubic yards of earthen material will be required for: embankment crest repairs; the right spillway training wall and embankment backfill; the new embankment with core wall; and the dam access road and parking area. A portion of the necessary earthen material will be excavated from the reservoir basin and a portion will be brought to the site from local commercial sources.

### **3.2.6 Foundation Excavations**

The following approximate amounts of material would be excavated to lay the foundation of the new spillway: 1,800 cubic yards for constructing the right retaining wall; 1,100 cubic yards for construction of the spillway foundation; and 540 cubic yards for the tailrace. No blasting techniques have been proposed for excavation.

### **3.2.7 Spillway Construction**

Approximately 2,425 cubic yards of concrete would be used for the construction of the new spillway, right and left retaining walls, and the core wall extension. The concrete would be provided by a local contractor or a concrete batch plant may be brought on site for construction.

### **3.2.8 Maintenance, Repair, and Construction of Roads**

Routine maintenance of the roads would be provided for roads on MBLP property and, as necessary, on the county access roads damaged by construction traffic. Soil fill and gravel material would be used as necessary to fill in washed-out or degraded areas resulting from construction traffic. Maintenance of roads not on MBLP property would be coordinated with the Marquette County Road Commission, or the City of Marquette.

Approximately 830 tons of base aggregate and 280 tons of asphalt will be required for construction of the dam access road and parking area. The necessary materials will be obtained from local commercial sources.

### **3.2.9 Air Emissions**

Air emissions during construction are expected to be negligible. Air emissions would result from construction equipment in the form of dust and equipment exhaust. A concrete batch plant may be brought on site during construction. If so, the plant would be permitted in compliance with Michigan regulations.

It is possible that dust would result from the movement of construction vehicles and equipment over roadways and in construction areas. Active excavation and handling of materials would likely result in some generation of dust emissions. Visible dust emissions would be controlled using water spray on haul roads and in excavation areas as necessary.

Heavy equipment would emit diesel fuel exhaust. These emissions are not expected to impact residences in the area. Equipment would be kept in good repair to limit emissions.

### **3.2.10 Water Requirements for Construction**

Largely dependent on how much water may be needed for dust control, an estimated 3 to 5 acre-feet of water may be required for construction. This would be withdrawn from Tourist Park Reservoir and used for dust control, mixing concrete, equipment wash down, aiding compaction of soil fill, and other construction related uses. Water use during construction would be controlled so as to minimize the potential for

runoff or sedimentation. Equipment wash water would be managed within areas contained by sedimentation controls to capture soil or removed sediment.

### **3.2.11 Instrumentation**

Some instrumentation, such as nuclear density gauges for compaction testing, may contain licensed radiological sources. This equipment would be handled as required by the product license and would be kept in a secure storage location.

### **3.2.12 Proposed Resource Protection Measures**

#### Minimum Flow during Construction

Currently at Tourist Park Development, water is flowing through the breach area. During construction, the flow through the breach area would be blocked by an earthen cofferdam and the water level within Tourist Park Reservoir would rise to a level where flow would be discharged from the existing tainter gate spillway. However, there would be a period of time between the construction of the cofferdam and a sufficient increase in reservoir level to allow for flow through the existing spillway. The minimum river diversion flows and means for passing normal flows during the interim period have not been determined.

#### Erosion and Sediment Control Plan

In its environmental report, the licensee states that an ESCP will be developed by the dam rebuild contractor. The purpose of the ESCP is to ensure the design of erosion and sediment control measures, their implementation and management, and maintenance of best management practices under Michigan's National Pollutant Discharge Elimination System (NPDES) program for stormwater discharges associated with construction activities. The licensee proposes both engineering controls and administrative methods and procedures to contain, control, and prevent excessive sedimentation and erosion at the site during construction and after completion of the proposed work. Key points of the licensee's plan are provided below.

The licensee states that sediment would be controlled at all construction, borrow, and laydown area sites. The licensee states that sediment traps would be employed for sedimentation control at various locations within the construction site. Diversion ditches lined with rock would guide sediment-carrying runoff to the traps, where the resulting reduced flow would allow the suspended sediment particles time to settle out. The traps would be monitored and cleaned out on a regular basis to maintain effective retention time. The licensee also proposes to control sedimentation and erosion by the use of silt fencing, silt socks, hay bales, and other appropriate barrier and capture control methods. At laydown areas, the proposed primary means of sedimentation control would be silt

socks placed on down gradient areas to allow filtration of sediment-laden runoff through the mulch filled socks which are entirely biodegradable. The socks would be monitored to maintain effectiveness.

The licensee has not proposed a separate sedimentation control program for the borrow areas within the reservoir since it states that all runoff from these sites would lead back into Tourist Park Reservoir. Proposed excavation methods include back sloping of the borrow pits and to limit disturbance to the extent possible.

Upon completion of construction activities, the licensee proposes that all disturbed areas which are not rock faced would be seeded with a native grass mix. Where needed, the licensee proposes to add topsoil to aid in the establishment of stable surface vegetation. Upland areas that are cleared of trees and brush for construction would be stabilized, graded, and contoured, as appropriate, to match the surrounding environment and then allowed to reforest naturally.

#### Spill Prevention Control and Countermeasures Plan

In its Environmental Report, the licensee states that it will determine the need for a Spill Prevention Control and Countermeasures (SPCC) Plan based on final construction plans. A plan of this type is normally required at construction sites when amounts over a threshold of petroleum-based fuel are stored on site for heavy construction equipment. The licensee states that the need for a SPCC Plan depends on site specific factors and construction sequencing which determine the volume of petroleum products that will be stored onsite at any given time. If needed, the SPCC Plan would include best management and control practices for spill prevention and containment and would incorporate both engineering controls and administrative methods and procedures to prevent a spill or release.

#### Protection of Wetlands

The licensee conducted a wetland delineation and assessment for the area that will be impacted by the construction activities. The licensee states that the construction of the new spillway and other improvements, and refill of the Tourist Park Reservoir would result in the transformation of approximately 36.6 acres of various types of wetlands into lacustrine habitat. The licensee states that the MDEQ has determined that the wetlands that will be submerged after restoration of the dam will not require mitigation. In addition, the licensee states that MDEQ also determined that a small wetland within the existing bypassed channel would not require mitigation. The licensee states that there are several wetlands located downstream of the dam which would require mitigation if the impact is greater than one-third of an acre. The licensee states that the combined area of these wetlands is less than one-third of an acre and, therefore, will not require mitigation.

### 3.2.13 Construction Schedule

Because the design phase is still in progress, actual construction dates have not been set. All work is scheduled to be completed in one construction season, which is from June through November in the project area.

### 3.3 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the Tourist Park Dam would not be repaired and the reservoir would not be refilled. At least for the short-term, the Dead River would continue to flow through the Tourist Park Reservoir basin as it does currently. While the No-Action Alternative would result in no environmental impacts that would be associated with the repair of the dam and restoration of the reservoir, it would essentially decommission the Tourist Park Development and decrease the generation capacity of the Marquette Project. The loss of capacity could result in the use of an alternative energy supply, possibly fossil fuels, to meet regional energy demand.

In addition, if the dam is not repaired and the Tourist Park Development is not returned to operation as required by the current license, the license for the Marquette Project would need to be amended. The disposition of the existing structures and facilities would be determined under a separate proceeding. The environmental impacts of the license amendment would be analyzed under that proceeding and are not contemplated in this document.

### 4.0 CONSULTATION

On September 19, 2009, MBLP submitted an Environmental Report to support the planned rebuild of the Tourist Park Development under 18 CFR Part 12. Given the extensive construction activities associated with the rebuild plan, the Commission initiated review of the Planned Action under the National Environmental Policy Act. This section details the processes used to consult with the resources agencies and the public regarding the Planned Action.

### 4.1 COMMENTS

On December 2, 2009, the Commission issued a public notice, soliciting comments on its intent to prepare an environmental document for the rebuilding of the Tourist Park Development. The following entities filed comments in response to the public notice.

---

#### Entity

Brent Graves

#### Date Filed

January 13, 2010

Pat Jensen, Ruth Jensen	January 13, 2010
Patricia Lakenen	January 15, 2010
Upper Peninsula Environmental Coalition	January 19, 2010
Douglas Miller	January 19, 2010
Cory A. Goldsworthy, Karl Koller, Tom Schaub	January 19, 2010
Ronald Sundell	January 19, 2010
Christopher Fries	January 19, 2010
Lou Chappell	January 19, 2010
Priscilla Burnham	January 19, 2010
Justin Edge	January 19, 2010
Michigan Department of Natural Resources	January 19, 2010
Elizabeth Rutz	January 19, 2010
Daniel Rutz	January 19, 2010
Jerome Maynard	January 19, 2010
Justin Edge	January 20, 2010
Gerald Cory	January 22, 2010
William Mahon	January 25, 2010
Jack Piirala	January 25, 2010

---

Most of the comments received in response to the public notice express opposition to the repair of the Tourist Park Dam and the restoration of the Tourist Park Reservoir. The reasons stated for opposing the repair include: the desire to maintain a free flowing river; increase in available riverine fish habitat; increase in river recreational opportunities; and the marginal economic benefit of rebuilding the project. In its comments, the MDNR recommends that upstream and downstream fish passage be incorporated into the rebuild of the dam. Three individuals support the repair of the dam and the restoration of the reservoir and associated recreational opportunities. All comments received were considered in the development of this EA.

## 4.2 AGENCY CONSULTATION

The licensee has consulted with the MDNR, MDEQ, other agencies, interested parties, and the public during the development of plans to repair the Tourist Park Dam. In its environmental report, the licensee summarizes the consultation that occurred including: a public meeting, meetings and site visit with the resource agencies, letters received, and a signed petition. The licensee's consultation record indicates that the MDNR has, since the time of the breach event, requested that the licensee consider not repairing the dam or, if the dam is repaired, providing for fish passage upstream of the dam. The petition included in the licensee's environmental report has 1,149 signatures in support of rebuilding the dam. Generally, other comments and letters received were divided with slightly more people opposing the repair of the dam. On July 20, 2009, the



licensee provided a draft environmental report for review and comment to the following agencies and interested parties: MDNR, MDEQ, FWS, the Upper Peninsula Power Company, the Keweenaw Bay Indian Community (KBIC), and the Central Upper Peninsula Sportsfishing Association. Comments were received from MDEQ, MDNR, and the Central Upper Peninsula Sportsfishing Association.

## **5.0 ENVIRONMENTAL ANALYSIS**

In this section we describe the affected environment and provide our analysis of impacts associated with the planned repair of the Tourist Park Dam. This analysis examines the Planned Action as well as environmental recommendations and mitigation alternatives that could reduce or eliminate possible environmental impacts. The focus of this document is to examine those environmental impacts associated specifically with the construction activities required to repair the Tourist Park Dam and return the development to operation under the existing license. The environmental impacts of the continued operation of the Tourist Park Development were analyzed under the license proceeding for the Marquette Project and, as such, are not appropriate for discussion in this document. Following the planned repair, the project would be operated in accordance with the license for the project and the 401 WQC issued on February 29, 2000, by the MDEQ for the continued operation and maintenance of the project.

### **5.1 GENERAL DESCRIPTION OF PROJECT LOCALE**

The Tourist Park Development of the Marquette Project is located on the Dead River in rural Marquette County within the Upper Peninsula of Michigan, in the City of Marquette (population 22,000). The Dead River is the largest tributary to Lake Superior in Marquette County. The river flows in a southeasterly direction from its headwaters in the bog forests of western Marquette County. The Marquette Project's Tourist Park Development is the most downstream hydropower development on the Dead River, located approximately one mile upstream from Lake Superior. There are four hydropower developments upstream of Tourist Park on the Dead River, from downstream to upstream the developments include: the Forestville Development of the Marquette Project; and three developments of the Dead River Project; McClure, Dead River (Hoist), and Silver Lake. Approximately 20 of the 35 miles of the main stem river are occupied by the five impoundments.

The climate in this region is characterized by long, cold winters with heavy snowfall and cool, short summers. The climate is influenced by the northern latitude and by Lake Superior, which contributes to the heavy snowfall and moderates extreme temperatures. Average annual precipitation is between 30 and 40 inches, with snowfall ranging from 50 to more than 200 inches in the drainage area. Snow cover begins in mid-November and lasts through late-April, for an average duration of 140 days. The

growing season is 100 days long. Minimum and maximum temperatures for July are 55 and 80 degrees Fahrenheit (°F), respectively; while those for January are 5°F and 25°F.

## 5.2 CUMULATIVE EFFECTS ANALYSIS

Cumulative effects are defined as the impact on the environment which results from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions (40 CFR § 1508.7). Cumulative effects can result from individually minor, but collectively significant actions taking place over a period of time, including hydropower and other water and land development activities. Based on information provided by the licensee, resource agencies, and the public, plus staff's independent analysis, staff has identified no resources that would be cumulatively affected by the construction activities associated with the repair of the Tourist Park Dam.

## 5.3 GEOLOGICAL AND SOIL RESOURCES

### Affected Environment

The Marquette Project lies in the Great Lakes Basin, a geological feature of glacial origin covering much of Michigan's Upper Peninsula. Surficial geology in the project area includes large areas of Precambrian, meta-igneous bedrocks (schist and gneiss) and metamorphic bedrock (slate and chert). Other areas, particularly valley bottoms and wetlands, are dominated by Tertiary glacial/alluvial deposits (sand, gravels, and boulders). The topography and soils of the project area have been derived from material deposited through continental glaciations. Topography is dominated by large glacial outwash plains and low, rolling hills or ridges with numerous scattered, wet depressions. The area's soil characteristics are closely associated with these different landforms and bedrock types. Soils are relatively young, very complex, and intermingled, and the drainage patterns are immature (FERC, 2002; UPPCO, 1994).

The activation of the fuse plug at the upstream Silver Lake Development of the Dead River Project during the May 13, 2003 storm event resulted in extensive bank erosion and the flushing of approximately 800,000 to one-million cubic yards of sediment downstream. Silt and fines from the breach material remained in the water column all the way to the mouth of the river at least a week after the breach occurred (FERC, 2003).

Geotechnical investigations following the breach, and in preparation for the rebuild, revealed that sediment in areas identified for potential excavation and dredging in the Tourist Park Reservoir basin is composed of more than 90 percent sand or sand and gravel. The 2003 breach event exposed bedrock in the breach channel in the area of the planned spillway. Drilling of boreholes and testing of the drilled rock indicate that

bedrock in the area of the planned spillway is at ground surface elevation in some areas and is greater than 30 feet below ground surface in another area. (MBLP 2009)

### Environmental Effects and Recommendations

Under the Planned Action, there would be some alteration of topography to construct the new spillway and repair the breached area. Borrow areas for sand and gravel would be depleted of these geological resources. The majority of the proposed borrow areas are all within the limits of the lake and would become submerged upon restoration of the dam and recharge of the lake. Excavation would alter the topography of the lake bottom. Upon completion of the excavation, borrow pits in submerged areas would be inspected for potentially permeable soil or sand lenses. These findings would be evaluated by a qualified engineer/geologist and appropriate stabilization measures would be implemented if required. Borrow pits would be aesthetically contoured to stabilize the side walls and then left to provide new aquatic habitat once the lake refilling has been completed. For borrow pits in upland areas, with the exception of the topsoil and gravel borrow areas, all disturbed faces would be covered with approximately 4 to 6 inches of topsoil. All areas would be aesthetically contoured and the surfaces seeded with a durable native grass mix.

The licensee has not proposed a separate sedimentation control program for the borrow areas within the reservoir since it states that all runoff from these sites would lead back into Tourist Park Reservoir. However, due to the small size of the reservoir and short retention time under drawdown conditions, there may not be sufficient time for sediment to settle within the reservoir before being discharged downstream. Therefore, there is potential for sediment laden water to be discharged downstream of the project during construction.

In order to reduce the potential for discharging sediment laden water to the Dead River downstream of the project, the licensee should sequence construction activities so that all excavation from borrow areas within the reservoir is completed prior to constructing the cofferdam and raising the reservoir water level to the existing spillway elevation. Excavation from areas that would be inundated during the initial approximately nine feet increase in reservoir elevation should be completed prior to raising the reservoir elevation and materials should be stockpiled above the nine foot reservoir elevation line with sufficient clearance to avoid erosion during a high flow event. Stockpiles should be maintained with appropriate erosion control measures and borrow areas should be aesthetically contoured to stabilize the side walls as the licensee proposed.

Following the restoration of the Tourist Park Reservoir and resuming operation of the Tourist Park Development, geologic and soil conditions would be returned to licensed conditions with minor changes in the submerged topography of the reservoir basin. The

project would be operated under the terms and conditions of the license. The Planned Action would not have a significant long-term effect on geologic and soil resources in the project area.

#### Effects of No-Action Alternative

Under the No-Action Alternative, the Tourist Park Development would not be rebuilt and the reservoir would not be refilled. There would be no alteration of topography in the reservoir basin associated with the construction activities. If the development is not returned to operation, the project license would have to be amended and the disposition of the Tourist Park Reservoir, engineered structures, and other project features would be determined under a separate proceeding. Any impacts to geologic and soil resources under the amendment would be analyzed under that proceeding and are not contemplated here.

### **5.4 WATER AND FISHERIES RESOURCES**

The Dead River stream channel consists of approximately 34 miles of the main stem river length occupied by the five impoundments created by two hydroelectric projects. The most upstream development (Silver Lake Development of the Dead River Project) functions as a water storage reservoir to enhance downstream power production and maintain minimum river flow. Due to the large useable storage capacities at the Silver Lake and Hoist Storage Reservoirs (13,800 and 29,200 acre-feet, respectively), almost the entire natural stream flow in the Dead River is regulated for power generation (FERC, 2002; UPPCO, 1994).

The Marquette Project is located within the lower part of the Dead River Watershed. The river flows in a south-easterly direction from higher terrain within the densely-forested Upper Peninsula of Michigan, and discharges to Lake Superior near the City of Marquette. The total drainage area at Tourist Park Reservoir is 158 square miles.

Since the wash out of the right abutment of the Tourist Park Dam in May 2003, the water level of Tourist Park Reservoir has been reduced by approximately 15 feet and the surface area of the lake has been reduced by approximately 80 acres compared to licensed conditions. Outflow from the Tourist Park Reservoir currently flows through the breach area. The open water (lacustrine) habitat of the Tourist Park Reservoir is currently an approximately one mile long riverine system surrounded by developing wetland and upland habitat in the drained reservoir basin (*see* Figure 4). The wash out of the right abutment of the Tourist Park Dam created a short stretch of river between the abutment and the powerhouse tailrace discharge area which did not exist prior to the high flow event. The high flows which occurred during the breach scoured this area down to bedrock and exposed a small bedrock controlled waterfall (*see* Figure 5) which was not previously visible and did not have water flowing over it prior to the event.



**Figure 4: Tourist Park Reservoir Basin showing revegetation (Source: Commission staff, taken August 19, 2009).**



**Figure 5: Newly exposed waterfall and reach downstream of the breach area (Source: Commission staff, taken August 19, 2009).**

## 5.4.1 Water Quantity

### Affected Environment

The annual inflow hydrograph for the Dead River watershed is typical of most rivers and streams in Michigan's Upper Peninsula: high discharge in the spring from precipitation and snowmelt runoff; diminishing flows throughout the summer; a period of increased discharges in the fall caused by rain; and low flows throughout the winter. As licensed, the Tourist Park Reservoir has a surface area of approximately 100 acres, a maximum storage capacity of approximately 875 acre-feet, an average depth of about 15 feet, and a maximum depth of about 20 feet near the dam. The reservoir is approximately one mile upstream from the mouth of the river.

The operation of the Tourist Park Reservoir is governed by license Articles 403 and 404. These articles include the operating requirements of the WQC issued for the project by MDEQ on February 29, 2000. Article 403 states that the licensee will maintain the Tourist Park Reservoir water surface levels at all times at 637.2 feet NGVD, and limit fluctuation in reservoir water levels to  $\pm 0.5$  feet at all times except during events beyond the control of the licensee. Article 404 requires the licensee to maintain the Tourist Park Development in a non-peaking mode and, to the extent practical, continuously release from Tourist Park Powerhouse the average daily inflow to the Tourist Park Reservoir.

As discussed above, the 2003 event created a short stretch of river between the abutment and the powerhouse tailrace discharge area which did not exist prior to the high flow event. The high flows which occurred during the breach scoured this area down to bedrock and exposed a small bedrock controlled waterfall which currently has water flowing over it.

### Environmental Effects and Recommendations

Upon completion of the Planned Action, the licensee would operate the Tourist Park Development in accordance with the license issued for the project including maintaining the required reservoir level and flow release requirements. Following the repair of the right abutment, water would no longer flow through the breach area and the newly created stretch of river, including the waterfall, would be dewatered.

Several entities recommend that the new spillway be designed to maintain flow in the newly-established river stretch downstream of the breach area. This would constitute a change to the existing project license and would require an amendment of the project license. Under 18 CFR Part 12, the licensee has the right to make repairs to project facilities in order to maintain and operate the project under the terms and conditions of the project license. Such work does not involve a license amendment. The repair of the

right abutment of the Tourist Park Dam is being conducted under 18 CFR Part 12 and the licensee has not requested, nor is required, to amend the project license under this proceeding. The impacts of project operation on water quantity following the repair would be the same as licensed conditions. This section discusses the impacts of the planned construction activities on water quantity and recommends measures to minimize those impacts.

#### *Effects of Construction Withdrawals*

During the construction process, the licensee proposes to withdraw between 3 and 5 acre-feet of water from Tourist Park Reservoir for use in dust control, mixing concrete, equipment washdown, aiding in the compaction of fill, and other construction related uses. This amount of water corresponds to less than 0.03 acre-feet per day or approximately 10,000 gallons per day, if spread evenly over the 6 month construction period. This flow rate correlates to approximately 0.015 cfs per day, which is not measurable by most streamflow gages. Although it is expected that the withdrawal of water for construction to be unevenly utilized throughout the construction period, this water withdrawal should not have a measurable effect on water levels within Tourist Park Reservoir, or releases from Tourist Park Development.

#### *Effects of Construction on Flow Releases*

Currently, the Tourist Park Development is passing flows in a run-of-river mode, with water flowing through the washed out area of the right abutment at the same rate as inflow. Early in the construction phase, the breach area would be blocked by the construction of an earthen cofferdam and all minimum flows would need to be directed to the existing gated spillway. However, after blockage of the breach area, the reservoir elevation would need to increase approximately 9 feet above current conditions in order for flow to pass over the gated spillway sill. The licensee does not provide a plan to pass flows downstream during this time. A reduction or complete stoppage of flow downstream from the project could have negative impacts on aquatic resources. We recommend that the licensee develop a plan to continue passing flow downstream of the project during all phases of construction. The licensee, in coordination with the MDEQ, MDNR, and FWS, should determine the appropriate minimum flow releases during initial reservoir refill. The licensee should be required to file the plan for Commission approval.

Following completion of the construction activities, flow releases from the project would need to be adjusted in order to refill the reservoir. Staff recommends a post-construction refill plan to ensure stability of the structures and limit the effects of the refill on water quality (discussed below in Section 5.3.3, *Water Quality*). This plan would provide information on the proposed rate of refilling, general time period, and schedule. The licensee should develop this plan in consultation with MDNR, MDEQ, and FWS, and file the plan for Commission approval.



Implementing the Planned Action with staff's recommendations, including the recommended plan to provide flows downstream during all phases of construction and a post-construction refill plan, the repair of the Tourist Park Dam is expected to have short-term, minor, adverse impacts to water quantity in flow releases to the river downstream.

#### Effects of No-Action Alternative

Under the No-Action Alternative, the Tourist Park Development would not be repaired and the reservoir would not be refilled. There would be no construction related impacts to water quantity. The reservoir would not be restored to the licensed condition and the Tourist Park Development would not be able to operate as licensed. Over the short term, flow would continue to pass through the washed out area of the right abutment. If the development is not returned to operation, the project license would have to be amended and the disposition of the Tourist Park Reservoir, engineered structures, and other project features would be determined under a separate proceeding. Any impacts of the amendment on water quantity would be analyzed under that proceeding and are not contemplated here.

### **5.4.2 Water Quality**

#### Affected Environment

Waters in the Dead River Watershed have good chemical and biological quality. The Dead River meets Michigan state water quality standards for total dissolved solids, pH, microorganisms, nutrients, taste and odor-producing substances, and physical properties appropriate for state-designated uses. The state of Michigan classifies the Dead River as a coldwater trout stream from its headwaters above Silver Lake Storage Reservoir to the Forestville Road Bridge, located downstream from the McClure powerhouse tailrace (MDNR, 2007). This classification does not include the impoundments on the river. The Dead River from above the Forestville Reservoir, through the Tourist Park Development to the mouth of the river in Lake Superior, is not classified as a coldwater trout system.

The Dead River is not used as a public drinking water source. There are no significant consumptive uses of project waters or discharge of wastewater into the project watershed. No NPDES permits exist or Publicly Owned Treatment Works for discharge into project waters.



## Environmental Effects and Recommendations

### *Effects of Construction on Water Quality*

The Planned Action would involve the replacement of the washed out area of the right abutment with a new concrete ogee spillway, new right and left retaining walls, and repairs to the embankment crest. The licensee's plan would involve work in and around the reservoir and Dead River and its tributaries, as well as use of access routes, staging areas, and borrow areas. All work would be completed in one construction season of approximately six months, from June through November.

The ground disturbing work, including excavation within the reservoir basin, has the potential to cause erosion and sedimentation. The discharge of sediment laden water to surface waters could increase turbidity, release nutrients, and have a negative impact on water quality in the reservoir and downstream reach of the Dead River. In addition, the increased presence of heavy equipment required for the construction activities could increase the potential for an accidental release and oil and petroleum projects into surface waters which could also negatively impact water quality.

MBLP would develop an ESCP to minimize short-term erosion and sedimentation that would result from reconstruction activities. The final plan would incorporate best management and control practices under Michigan's NPDES program for Stormwater Discharges Associated with Construction Activities. Both engineering controls and administrative methods and procedures would be employed to contain, control, and prevent excessive sedimentation and erosion at the site during construction and after completion of the scope of work.

The ESCP would be implemented to control sediment at all construction, borrow, and equipment and construction materials staging areas. The ESCP would include several measures at the various construction sites including sediment traps. Diversion ditches lined with rock would guide sediment-laden runoff to the traps and the suspended particles would settle out. The traps would be monitored and cleaned out as needed to maintain an effective retention time. Silt fencing, silt socks, hay bales, and other appropriate barrier and capture control methods would also be employed.

The primary means of sediment control at the equipment and construction materials staging areas would be silt socks placed around the downslope perimeter of the staging areas. The sediment would be filtered through mulch filled socks; the socks would be monitored to maintain their effectiveness. The socks and mulch are biodegradable and would be left in place after use.

In its environmental report, the licensee states that borrow areas within the reservoir would not require a separate sedimentation control program because all runoff from these sites would lead back into the reservoir. In addition, the licensee states that

excavation would be conducted to minimize sedimentation to surface waters by back sloping where practical and containing the extent of disturbance. As discussed above in Section 5.2 *Geological and Soil Resources*, Commission staff recommends that the licensee sequence construction so that all excavation within the reservoir is complete prior to raising the lake elevation to the existing sill level. This will help reduce the potential for discharging sediment laden water to the Dead River downstream of the project.

Upon completion of construction activities, the licensee proposes that all disturbed areas which are not rock faced would be seeded with a native grass mix. Where needed, the licensee proposes to add topsoil to aid in the establishment of stable surface vegetation. Upland areas that are cleared of trees and brush for construction would be stabilized, graded, and contoured, as appropriate, to match the surrounding environment and then allowed to reforest naturally. As discussed below in Section 5.5 *Terrestrial Resources*, to aid in the revegetation of disturbed areas and to help prevent potential erosion and runoff following construction, Commission staff recommends that the licensee develop a plan for revegetating and reforesting disturbed areas, and for monitoring the areas for success.

In order to minimize the potential for discharging oil and petroleum products into project waters, the licensee states that it would develop a SPCC Plan as appropriate for the construction activities. This plan is required if oil and petroleum products are stored above threshold quantities when releases could result in impacts to Navigable Waters of the United States. The licensee states that a final plan would be developed by the contractor selected for the construction process if the potential applicability of this requirement is confirmed. If this plan contains best management and control practices for spill prevention and containment methods and procedures and is followed during construction, no adverse effects from runoff or spills should occur during construction.

The planned construction activities are expected to have short term, minor impacts to water quality. There is potential to discharge contaminants or sediment laden water downstream of the project. The implementation of the licensee's ESCP and SPCC (as necessary) in addition to Commission staff's recommended measures would limit these impacts.

#### *Effects of Reservoir Refilling on Water Quality*

Much of the area of the dewatered Tourist Park Reservoir basin has been developing into wetland and upland habitat since the May 2003 event. When these areas would be inundated by the refilling of Tourist Park Reservoir, resulting vegetation decay could increase biological oxygen demand and result in lower dissolved oxygen (DO) concentrations in the deeper areas of the lake. In addition, decaying vegetation could release nutrients into the water column which could result in an increase in productivity in the reservoir. In order to avoid these potential impacts, the licensee removed much of

the vegetation in fall of 2009. The vegetation was cut at ground level and a portion of the biomass has been removed from the basin. The removal of this vegetation should decrease the likelihood of any adverse impact to DO concentrations that would be caused by the decay of vegetation in the reservoir basin. In addition, given the small size and shallow depth of the reservoir, and because the daily average inflow is discharged downstream of the project at all times, it is unlikely that low DO conditions would develop following refill of the reservoir and the return to operation under the project license.

Depending on the timing and rate of reservoir refill, and flow conditions, the refill process could have water quality effects both within the reservoir and in areas downstream of the development. Refill could induce suspension of sediment within the reservoir, resulting in an increase in turbidity. Particularly during summer and during low inflows, refilling could negatively affect water quality through changes to water temperature, turbidity, and DO concentrations downstream of the development.

In order to avoid the development of poor water quality and ensure the release of downstream flows during the reservoir refilling period, staff recommends that the licensee develop a plan for reservoir refilling. Specifically, the plan should include the appropriate rate of refill and discharge during refill to limit the effects of the refill on water quality. The plan should be developed in consultation with the MDEQ, MDNR, and FWS, and filed for Commission approval. The development of such a plan would ensure that conditions following the rebuild would be similar to conditions prior to May 2003, and no short-term or long-term adverse impacts to water quality should result from the refilling.

#### Effects of No-Action Alternative

Under the No-Action Alternative, the Tourist Park Development would not be rebuilt and the reservoir would not be refilled. There would be no impacts to water quality associated with the planned construction activities. Over the short term, flow would continue to pass through the breach area. If the development is not returned to operation, the project license would have to be amended and the disposition of the Tourist Park Reservoir, engineered structures, and other project features would be determined under a separate proceeding. Any impacts of the amendment on water quality would be analyzed under that proceeding and are not contemplated here.

### 5.4.3 Fisheries and Other Aquatic Resources

#### Affected Environment

##### *Tourist Park Reservoir Prior to the Breach*

The Marquette Project extends over a four mile reach of the Dead River from the headwaters of Forestville Reservoir to the Tourist Park Powerhouse tailrace. The Forestville and Tourist Park Reservoirs extend over approximately 2.5 miles of this reach. The remaining 1.5 miles of flowing river segment between the impoundments comprise two distinct reaches: (1) a 1-mile bypassed reach below Forestville Dam, and (2) a 2,600-foot-long reach from Forestville Powerhouse tailrace to the headwaters of Tourist Park Reservoir. The Tourist Park Powerhouse discharges into a riverine reach that flows into the estuary of Lake Superior located about one mile downstream. The Dead River is classified as a warmwater fishery from the head of Forestville reservoir to below Tourist Park Powerhouse. MBLP conducted a study in September 1997, to characterize the fisheries in the project reach. MDNR performed fishery surveys in October 1989 in the Forestville reservoir, and in 1982 in the Tourist Park Reservoir.

Prior to the breach, the Tourist Park Reservoir supported a large population of small yellow perch that accounted for about 63 percent of the total catch in 1997, out of the eleven species collected. Smallmouth bass was the second most common species collected in 1997. Although multiple age classes of smallmouth bass were present, including several legal size (> 14 inches) fish, YOY accounted for 86 percent of the smallmouth bass catch. Collectively, yellow perch and smallmouth bass comprised 76 percent of the total catch. Northern pike were collected in relatively low numbers in Tourist Park Reservoir (2.6 percent of the catch), although higher than the numbers collected in Forestville reservoir (0.9 percent of the catch). This may reflect better habitat for this species in Tourist Park Reservoir. No legal size (>24 inches) northern pike was collected from either reservoir. Other game/pan fish collected in Tourist Park Reservoir included relatively low numbers of rock bass, pumpkinseed, bluegill, and walleye. YOY fish were collected for 7 of the 11 species (northern pike, white sucker, pumpkinseed, bluegill, smallmouth bass, johnny darter, and yellow perch), indicating successful reproduction of those species. No cyprinids (minnows) were observed.

Comparison of netting data from this study with data collected by MDNR in 1982 (Peterson and Leonardi, 1982), suggests that the fish community in Tourist Park Reservoir changed little over the 15 year period. For example, small yellow perch continued to dominate the fishery. Although both studies indicated multiple year classes of smallmouth bass, the population consisted primarily of individuals less than 6 inches in length. Both studies showed that northern pike were present in low to moderate numbers.

### *Dead River Downstream of Tourist Park Powerhouse Prior to the Breach*

Prior to the breach, the Tourist Park Powerhouse tailrace discharged into a 250-ft-long riverine reach that flows into the Lake Superior Estuary. The catch from this segment during MBLP fishery surveys was dominated by logperch, smallmouth bass, and rock bass. Most smallmouth bass and rock bass collected were small (average length of 3 inches). Lake Superior sea lamprey also occurred within this reach. This short reach supported seasonal spawning runs of chinook and coho salmon in the fall, and runs of steelhead in spring. There is no modern or historical record of lake sturgeon use of the Dead River. At the time of licensing, staff was unable to confirm reports by MDNR that lake sturgeon had been observed in the Dead River below Tourist Park.

### *Project Area Following the Breach*

Since the May 2003 breach the water level of Tourist Park Reservoir has been reduced by approximately 15 feet and the surface area of the lake has been reduced by approximately 80 acres compared to licensed conditions. This has resulted in the loss of the open water (lacustrine) habitat of the Tourist Park Reservoir which is currently an approximately one mile long riverine system. The breach also created a short stretch of river between the breach area and the powerhouse tailrace discharge area which did not exist prior to the high flow event. The high flows during the event scoured this area down to bedrock and exposed a small bedrock controlled waterfall.

In its letter filed January 19, 2010 in response to the public notice for the repair of the Tourist Park Dam, the MNDR states that fish are currently able to pass upstream and downstream via this newly exposed waterfall. MDNR also states that coho and Chinook salmon and steelhead have been observed by MDNR staff as they jump up the waterfall. MDNR states that its staff has confirmed that these salmon and steelhead are actively spawning in the riverine reach that is currently flowing through the empty reservoir basin.

### Environmental Effects and Recommendations

The planned repair of the Tourist Park Dam would restore the Tourist Park Reservoir as it existed prior to the event. The lacustrine aquatic habitat associated with the reservoir would be restored to pre breach conditions. Following the repair of the right abutment, water would no longer flow in the newly-established reach downstream of the breach area. Therefore, fish movement up and downstream of the project would be returned to conditions as they existed prior to the 2003 event.

MDNR has repeatedly recommended that fish passage be incorporated into the design of the new spillway. However, this would constitute changes to the existing project license and would require an amendment of the project license. Under 18 CFR Part 12, the licensee has the right to make repairs to project facilities in order to maintain and operate the project under the terms and conditions of the project license. Such work

does not involve a license amendment. The repair of the right abutment of the Tourist Park Dam is being conducted under 18 CFR Part 12 and the licensee has not requested, nor is required, to amend the project license under this proceeding.

In addition, we note that requirements for fish passage were considered during project licensing. In the Final EA for Hydropower License for the project, issued on July 1, 2002, Commission staff stated that installing upstream fish passage at Tourist Park Dam would allow Chinook and coho salmon and steelhead trout to continue their upstream migration into the Tourist Park Reservoir, and into the Forestville Development's bypassed reach. However, staff concluded in the Final EA that the Tourist Park Reservoir would not provide suitable spawning or rearing habitat, and the Forestville bypassed reach would only provide limited additional habitat.

Commission staff stated that passing fish upstream into the Forestville bypassed reach could provide additional opportunities for anglers to pursue these migratory species. However, it was determined that upstream movement of these species would reduce the numbers of fish downstream of Tourist Park Dam and powerhouse, and potentially reduce reproduction and angling success in that reach. Staff concluded that there was limited biological justification for passing chinook and coho salmon and steelhead trout upstream of the Tourist Park Dam, and therefore, did not recommend it. The planned repair of the right abutment would restore the Tourist Park Development to the same conditions that were contemplated during project licensing. Therefore, Commission staff does not recommend that fish passage be incorporated into the design of the new spillway.

#### *Effects of Construction on Fisheries and Aquatic Resources*

The project license and 401 WQC for the Marquette Project require that MBLP operate the Tourist Park Development in a non-peaking mode and release the average daily inflow to the Tourist Park Reservoir. Since the May 2003 event, all water entering the empty reservoir basin has been flowing out through the breach site. During the initial stages of reconstruction, flow through the breach area would be blocked by a cofferdam and the lake level would rise approximately 9 feet in order to spill through the existing gated spillway. Discontinuing flow downstream of the project during this initial refill could negatively impact downstream aquatic resources. As discussed above, staff recommends that the licensee develop a plan to continue passing flow downstream of the project during all phases of construction. The licensee should determine the appropriate minimum flow releases during initial reservoir refill, in coordination with the MDEQ, MDNR, and FWS.

Following completion of the construction activities associated with the repair of the dam, flow releases from the project would need to be adjusted in order to refill the reservoir. As discussed above, Staff recommends a post-construction refill plan which would provide information on the proposed rate of refilling and minimum flow released

during refilling, general time period, and schedule. The licensee should develop this plan in consultation with MDEQ, MDNR, and FWS, and file the plan for Commission approval.

Construction activities may also impact fisheries and aquatic resources by disturbing sediments and causing eroded sediment and soil to enter the reservoir and river. The licensee proposes to minimize these impacts through the implementation of an ESCP and use of BMPs to prevent sediment laden water from entering surface waters. In addition, Commission staff recommends that the licensee sequence construction in order to minimize the potential for discharging sediment laden water into the Dead River.

Based on the licensee's planned activities during restoration of the development, the construction activities would have short-term, minor adverse impacts on aquatic biota that would be mitigated to a large extent by the licensee's proposed ESCP and BMPs and Commission staff's additional recommendations.

#### *Post-Construction Aquatic Habitat*

Following refill of the reservoir, the current riverine system would return to the open water habitat that existed prior to the breach. Flows would exit the project through the powerhouse and existing tainter gates into the bypassed reach as they did prior to the breach event. The newly exposed reach below the breach area, including the bedrock waterfall, would not receive flows except under very high flow events (i.e. an estimated 100-year event).

Following the repair of the dam, the Tourist Park Reservoir would be returned to licensed conditions. Aquatic habitat availability in the reservoir would return to pre-breach conditions. Fish, mussel, and macroinvertebrate populations would be expected to begin recovery towards pre-breach conditions following reconstruction. Wetted habitat for macroinvertebrates after lake refilling would be similar to pre-breach conditions in Tourist Park Reservoir. Downstream drift would provide a source for reestablishing macroinvertebrate biodiversity and ecosystem recovery in the lake and Dead River.

MBLP states that they have an agreement with MDEQ for the recovery of the Tourist Park Basin. Under the agreement and in coordination with MDEQ, MBLP would develop and implement, in part: a six year fish transfer/stocking program to repopulate the basin; a mussel recovery program; and fisheries habitat improvements in the basin.

Under the Planned Action, the riverine habitat that is present in the drained reservoir basin would be restored to the lacustrine habitat that existed prior to the 2003 event. Available habitat for aquatic biota would be the same as it was prior to the event as contemplated in the licensing of the project.

### Effects of No-Action Alternative

Under the No-Action Alternative, the Tourist Park Development would not be rebuilt and the reservoir would not be refilled. In the short term, the aquatic habitat in Tourist Park Reservoir basin would remain unchanged from existing post-breach conditions. The shallow water habitat for fishes, benthic macroinvertebrates, and mussels lost as a result of the breach would remain as wetland or terrestrial habitat, and the Tourist Park Reservoir basin would continue to exist as riverine system. If the development is not returned to operation, the project license would have to be amended and the disposition of the Tourist Park Reservoir, engineered structures, and other project features would be determined under a separate proceeding. Any impacts of the amendment on fisheries and other aquatic resources would be analyzed under that proceeding and are not contemplated here.

## **5.5 TERRESTRIAL RESOURCES**

### Affected Environment

#### *Vegetation*

Northern hardwood forest surrounds Forestville reservoir and portions of Tourist Park Reservoir, as well as much of the Forestville bypassed reach. Sugar maple dominates the tree canopies, mixed with white pine and less common white birch and red oak. The relatively steep slopes of the two reservoirs and absence of tributaries (other than Dead River) restrict wetlands to a few isolated locales and narrow bands along the water-land interface.

MBLP field mapped the vegetation immediately adjacent to the reservoir shorelines. Mesic hardwoods and conifers occur along about half of the Tourist Park Reservoir shoreline, with dry conifers (pine) and hardwood forest along about 30 percent. Lowland hardwoods (such as red maple, black ash and green ash) and alder predominate along the rest of the shoreline. The North Country Trail runs along the northeastern shore of Tourist Park Reservoir, providing access for nature observation. Lowland shrubs (alder, willow, spiraea) border portions of the western half of the No. 2 bypassed reach. Dry conifers/hardwoods and mesic hardwoods/conifers border most of the rest of the bypassed reach. Seeps and marsh occur in or adjacent to the middle portion of the bypassed reach. Several occurrences of purple loosestrife were noted at the Tourist Park Reservoir, but it is managed under the approved nuisance plant and control plan for the project.<sup>2</sup>

---

<sup>2</sup> See Order Approving Nuisance Plant and Control Plan under Article 414, 120 FERC ¶ 62,161 (issued on September 4, 2007).



Satiny willow, listed by the state of Michigan as a species of special concern, has historically occurred in the general project area. However, the Michigan Natural Features Inventory dated April 9, 2009, indicates the last known observance of satiny willow occurred in the area in 1906. Round-leaved orchis and moor rush are also species of special concern listed by the State as potentially occurring inside the Marquette Project, but were not encountered in studies conducted by the licensee. No federal threatened, endangered, or rare species have been identified in the Tourist Park development area.

Additional studies done in 2006 identify and describe several areas surrounding the Tourist Park Reservoir following the breach. The area consisting of the large oxbow of the Dead River upstream of the reservoir, and the mixed wetland and forested area immediately north of the oxbow includes a small, acidic fen, a seasonally-flooded wetland, cedar swamps, and several large white and red pine. The oxbow provides pond and open wetland-forest edge habitat (MBLP, 2009).

### *Wildlife*

The post-breach Tourist Park Reservoir basin is a shallow, elongated valley occupied by the existing Dead River channel and floodplain. The Marquette Project waters and adjacent environs provide habitat for wildlife typical of northern hardwood forests and lakes located near a semi-urban setting and provides habitat for a diverse big-game wildlife assemblage, including white-tailed deer, and black bear. Furbearers that require or benefit from proximity to open water or wetland habitats are common in the project area, and include mink, muskrat, beaver, and river otter (FERC, 2002, and MBLP, 2009).

Prior to the breach, the Tourist Park Reservoir provided good breeding and staging habitat for waterfowl including the common loon (state threatened), pied-billed grebe, great blue heron, wood duck, mallard, hooded merganser, red-breasted merganser, spotted sandpiper, ring-billed gull, herring gull, and belted kingfisher. No nesting loons have been documented on the project reservoirs, but the shoreline of Tourist Park Reservoir provided suitable nesting habitat for this species prior to the May 14, 2003 breach. Shorebirds known to reside in the project area include the great blue heron and spotted sandpiper. The great blue heron feed on fish. The great blue heron also feeds on aquatic and wetland vertebrates found along the water's edge. Spotted sandpipers feed on smaller invertebrates found along the water's edge and adjacent banks. Raptors recorded from the project area include the turkey vulture, northern goshawk, and broad winged hawk. While no bald eagle nests have been sighted, potential eagle riparian habitat is present in the project area (MBLP, 2009).

MBLP conducted a reptile and amphibian survey in which no uncommon species were recorded. The pre-breach reservoir and bypassed reach conditions included wetlands and shallow waters that provided good habitat for a diversity of amphibians and reptiles. The most productive sites occurred at wetlands near the western end of Tourist

Park Reservoir, and the mouth of the Dead River at Lake Superior (FERC, 2002 and MBLP, 2009).

The breach of the reservoir significantly decreased the acres of waterfowl habitat available at the project. Wildlife management activities on project lands focus on the installation and maintenance of nesting structures, including those for waterfowl. The licensee cooperates with MDNR and FWS to develop and implement those wildlife activities established in the approved Wildlife Management Plan for the project.<sup>3</sup>

### Environmental Effects and Recommendations

Terrestrial resources within the proposed construction area would be impacted during clearing and grubbing of forested areas. Existing shrub and trees that are currently providing wildlife habitat would be eliminated. Habitat loss would be temporary until construction is complete and the area is reseeded and enough time passes to allow for restoration. Terrestrial resources would also be impacted by the refilling of the reservoir, and habitat established since the breach occurred would be flooded. This habitat loss would be permanent in nature but would restore conditions to those contemplated and approved as part of the project license.

In addition to loss of habitat, construction noise and human activity would cause additional disturbance to wildlife species, causing some of the less tolerant local wildlife species to relocate away from construction activities. It is expected that mammals and birds would avoid the areas of construction. However, this is expected to be a short-term impact. Sufficient habitat, food, and water can be found nearby during the single construction season. Once construction is complete and the large amount of human activity has been removed from the area, wildlife should return to nearby forested areas as conditions revert to those similar to pre-construction. Restoration of the Tourist Park Reservoir would expand the potential habitat for waterfowl, shoreline birds, and some reptiles and amphibians.

At the start of construction, parking areas, laydown areas, borrow areas, and areas for equipment and personnel trailers, etc., would be developed. Some areas may need to be cleared and grubbed and others may require some grading and leveling. About 1.2 acres have been identified as areas that may need to be cleared for safe construction access and maneuverability. Areas of vegetation clearing would be allowed within the approved defined construction limits and would be subject to erosion control measures such as those defined in the ESCP. Wetland areas would be avoided and effects minimized to the extent practicable. Consideration should be taken to use areas

---

<sup>3</sup> The wildlife management plan includes protection measures for bald eagle, and was approved by Order Modifying and Approving Wildlife Management Plan pursuant to Article 413, 106 FERC ¶ 62, 139 (issued on February 19, 2004).

previously disturbed during the original construction of the project as staging or parking areas. Therefore, with the inclusion of such measures, no significant impacts are expected to affect wildlife habitat or terrestrial resources in these areas.

The removal of vegetation in the proposed construction areas may cause a negative impact to terrestrial resources unless the area is revegetated. Without proper reforestation practices there may be the potential for nuisance or invasive plant species to colonize the area. Reseeding of these areas needs to be done with the goal of restoring the area back to pre-cleared conditions. In order to mitigate for the loss of vegetation and wildlife habitat, these areas need to be reseeded with plant, grass, and tree species that are currently present in the surrounding areas. The licensee states that reseeded would be accomplished according to the licensee's ESCP. The licensee also states that during construction, disturbance or clearing of large trees would be avoided to the extent practicable (MBLP 2009).

The licensee is removing certain types of wildlife habitat by clearing and grubbing some areas. Special attention is needed to restore habitat to its original state. Reseeding with an approved seed mixture is the best approach, to avoid the introduction of invasive or exotic species into the area. Consultation with the resource agencies is necessary to determine the proper seed mixture and plant species needed to reforest any area cleared as part of construction activities.

In order to mitigate for the loss of vegetation and forested habitat, staff recommends that the licensee develop a revegetation plan in consultation with MDEQ, MDNR, and FWS. Proper reseeded and planting efforts, as well as specific areas to be reseeded, should be determined in order to assure a successful and timely reforestation and revegetation of the cleared acreage. The licensee should consult with these agencies to determine the proper species, size, age, and ratio of species to reseed or plant that are suitable for the area. These areas should be monitored to assure that the plantings survive and whether or not additional plants are needed over time. The licensee should also consult with the agencies to determine how long monitoring should take place, and how successful revegetation is to be measured.

Also, consultation should include methods for preparing the area post-construction, to ensure proper soil conditions are present before seeding and planting. Preparation may include removal or partial removal of hardfill material. The soil compaction and hardfill material present at the staging areas may impede vegetation efforts by inhibiting root stabilization and water permeation. The resource agencies should be consulted to determine the extent to which the materials need to be removed and the amount of soil replenishment needed. The licensee should file its revegetation plan for Commission approval. The plan should include a vegetation monitoring component, the resource agencies' comments, and the licensee's response to the comments.

In summary, the Planned Action would not adversely impact upland resources. Some vegetation clearing would occur during construction activities, but this clearing would have a short-term, minor impact. MBLP would mitigate for the loss of vegetation and wildlife habitat by restoring the disturbed areas with plant, grass, and tree species that are currently present in the surrounding areas.

Disturbances to wildlife related to the increased noise and human activities are expected to be short-term and minor. Loss of habitat and localized disturbances due to restored recreational use of the project area is expected to have a long-term, minor effect. Existing land management practices would remain in effect, and the areas immediately surrounding Tourist Park Reservoir would continue to be conserved and managed according to MBLP's land use plan for the project area.<sup>4</sup> Therefore, no significant long-term impacts are expected to affect wildlife habitat or terrestrial resources in these areas.

#### Effects of No-Action Alternative

Under the No-Action Alternative, Tourist Park Development would not be rebuilt and the reservoir would not be refilled. Terrestrial and riparian habitat in Tourist Park Reservoir would remain unchanged from existing post-breach conditions. The shallow water habitat for shoreline birds, waterfowl, amphibians, and reptiles lost as a result of the breach would remain reduced, and Tourist Park Reservoir would continue to exist as a somewhat smaller lake and riverine system. If the development is not returned to operation, the project license would have to be amended and the disposition of the Tourist Park Reservoir, engineered structures, and other project features would be determined under a separate proceeding. Any impacts of the amendment on terrestrial resources would be analyzed under that proceeding and are not contemplated here.

## **5.6 WETLANDS**

### Affected Environment

During relicensing efforts prior to the reservoir breach, staff estimated, using National Wetlands Inventory maps, that approximately 11 acres of palustrine wetland occur at the west end of Tourist Park Reservoir. Wetlands comprised 34 acres in the vicinity of the Marquette Project and along the Dead River in the project area (FERC 2002). The palustrine wetlands were extensive and diverse, including emergent, scrub-shrub, and forested wetland vegetation. The acreage of wetlands present in the area has markedly increased as a result of the dewatering of the Tourist Park Reservoir in the 2003 flood event and the subsequent creation of additional wetlands.

---

<sup>4</sup> The land use plan was approved by Order Approving Land Use Plan under Article 417 on May 12, 2004 (107 FERC ¶ 62,134).

King & MacGregor Environmental, Inc. (KME), a consultant for the licensee, conducted the Dead River Recovery Assessment Wetland/Floodplain Survey for MBLP in 2004, documenting wetland/floodplain locations and acreages affected by the 2003 event (KME 2005). The KME study stated that there was no accurate pre-breach assessment or inventory for wetlands in the area of the Tourist Park Reservoir, and as such could make no comparison between current and pre-breach wetland conditions. KME was also unable to estimate the acreage of wetlands impacted by the reservoir breach in comparison to pre-breach conditions.

The shallow, elongated valley environment of the former reservoir is now occupied by the Dead River channel and its flood plain. The base elevation of the area is near that of the current water table, and provides stable hydrology to support wetlands including shrub-scrub, emergent and wet meadow wetland vegetation. The licensee included in its environmental report a Wetland Boundary Delineation and Assessment, conducted by AECOM, a consultant for the licensee, in 2008, that identified 28 wetlands within the Tourist Park Reservoir area, typically located along the banks of the Dead River channel, in oxbows and meanders, and in several wide, shallow depressions (MBLP 2009).

Wetlands in the study area ranged from apparently unaffected by the 2003 event to substantially affected in terms of functionality. Wetlands not impacted by the 2003 event are primarily those located in the lower reaches of the Dead River area in the KME study. Wetlands located upstream of the Tourist Park Basin (dewatered reservoir) experienced erosion-based deposition or scouring in the 2003 event, but retain their functional quality. Wetlands in the Tourist Park Basin are now colonized by emergent wetland vegetation (KME 2005).

The 2008 AECOM study found a total of 28 wetlands covering approximately 36.8 acres of the 121.6-acre investigation area, which includes the Tourist Park Basin. The majority of the identified wetlands, 34.7 acres, were classified as having “medium” functional value on a scale of low, medium, high, or exceptional in the study. Further, 2 acres of wetlands were classified as “low” functional value, and 0.1 acre was “high” functional value. No wetlands of “exceptional” value were identified.

The post-2003 event wetlands consist of shallow marsh, deep marsh, shrub-carr, shrub swamp, wet meadow, and shallow open water wetlands. Vegetation types observed include various rushes and sedges, cattails, forbs such as boneset, asters and wetland goldenrods, and shrubs such as willow, alder and immature balsam poplar. There are few open-water wetlands located near the former penstock intake and bypass channel that support submergent vegetation such as pondweeds and duckweeds (MBLP 2009).

## Environmental Effects and Recommendations

As a result of the wash out of the right abutment of the dam, the Tourist Park Reservoir's water elevation has been reduced by approximately 15 feet, reducing the area of the lake by more than 80 acres and exposing previously-submerged wetlands. Since there are no accurate pre-event inventories of wetlands for the Tourist Park area in particular, the exact acreage created and eliminated can not be calculated apart from the 28 wetlands delineated as part of the 2008 study. The study also states that the overall number of wetlands has likely increased within the dewatered reservoir and along the Dead River floodplain since the 2003 breach event. However, the refilling of the reservoir would result in the re-establishment of wetland systems at Tourist Park Reservoir as they existed prior to the event. MBLP states that the project would be operated consistent with the license with normal full pool water surface elevation of 638.3 feet NGVD and an operating level of 637.2 ±0.5 feet NGVD. This operation would likely encourage the restoration of shoreline wetlands that were degraded or eliminated by the 2003 breach event, but would eliminate those wetlands that have since developed on former reservoir lands and along the Dead River.

Effects of the Planned Action on existing wetlands would be minor and short-term because construction associated with rebuilding the Tourist Park Development and refilling the reservoir would return the project to licensed conditions, and allow for the restoration of shoreline wetlands along the reservoir. Therefore, the impacts to wetlands currently existing in the area are acceptable because the Planned Action would return the project area to licensed conditions.

The MDEQ has regulatory authority over the on-site wetlands due to their size (greater than 5 acres) and proximity (direct nexus) to a water body. Further, the licensee reports MDEQ determined that wetlands that will become submerged after restoration of the dam, a small wetland within the existing bypass channel, and that the wetlands downstream of the dam that will not be submerged after restoration of the dam will not require mitigation. The wetlands will not require mitigation because impact would not occur to more than one-third of an acre. However, MDEQ notes on its construction specifications, and we agree, that a buffer zone of 100-feet for riparian areas and wetlands that would not be submerged should be established during the construction activities associated with the repair of the Tourist Park Dam to the extent possible. In its report, the licensee states that it would note on its construction specifications a wetland and riparian area 100-foot buffer zone, within which construction impacts would be avoided, if possible. Also, compliance with the conditions set forth in the 401 WQC issued by MDEQ to the licensee on February 29, 2000 would further protect wetland areas and water quality.

Although we are not addressing post-construction operation, ultimate restoration of the reservoir should allow pre-event wetlands and habitats to recover. While a number of new wetlands may have been formed as a result of the event, restoration of the

reservoir will provide an added benefit by increasing the available area of surface water for indigenous and migratory waterfowl. Additionally, there would be an increased area of shoreline riparian habitat available for foraging wading birds and shore birds.

While MDEQ-regulated wetlands were confirmed within the project area, significant resource impacts are not expected from the planned construction. The majority of on-site wetlands are inundated when the reservoir is at normal pool. The MBLP would note on its construction specifications a wetland and riparian area 100-foot buffer zone, within which construction impacts would be avoided, if possible. Historical wetland areas would be reestablished to conditions similar to those prior to the 2003 breach event. Overall, no significant long-term impacts to wetlands are anticipated due to the Planned Action.

#### Effects of No-Action Alternative

Under the No-Action Alternative, the dam would not be repaired and the reservoir would not be refilled. This would result in the gradual loss of wetlands in the marginal areas around the former lake basin. Vegetation in the formerly inundated reservoir basin would transition to emerging upland vegetation. The wetlands areas that have been emerging since the 2003 event would stabilize over time and continue to be influenced by the natural hydrology of the reservoir and river basin. If the development is not returned to operation, the project license would have to be amended and the disposition of the Tourist Park Reservoir, engineered structures, and other project features would be determined under a separate proceeding. Any impacts of the amendment on wetlands in the project area would be analyzed under that proceeding and are not contemplated here.

## **5.7 THREATENED AND ENDANGERED SPECIES**

### Affected Environment

By letter dated October 5, 2000, FWS indicated that no federally listed threatened and endangered species are known to occur in the Marquette Project area, and therefore, Interior has indicated no further consultation under the Endangered Species Act was needed.

As stated in the approved wildlife management plan for the project, bald eagles rarely use the project area. As part of the plan, the licensee will encourage bald eagle use by identifying areas of super canopy trees on project lands and other areas to be protected. Surveys for bald eagles will be conducted during the three years of nest box assessment surveys. If no eagles are found, the licensee will consult with the MDNR and FWS to determine the necessity of future surveys. The licensee states that on March 20, 2009, the MDNR indicated that no bald eagle nests were located in the project area. The bald eagle has been delisted, effective August 8, 2007, but continues to be protected by

other statutes.

Several state of Michigan species of special concern were identified as possibly or historically occurring in the project area by the licensee through the Michigan Natural Features Inventory accessed April 9, 2009. Satiny willow has historically occurred in the general project area. However, the Michigan Natural Features Inventory dated April 9, 2009, indicates the last known observance of satiny willow occurred in the area in 1906. Round-leaved orchis and moor rush are also species of special concern listed by the State as potentially occurring inside the Marquette Project, but were not encountered in studies conducted by the licensee. The common loon is listed by the state of Michigan as threatened. No nesting loons have been documented on the project reservoirs, but the shoreline of Tourist Park Reservoir provided suitable nesting habitat for this species prior to the May 14, 2003 breach.

#### Environmental Effects and Recommendations

Construction activities under the Planned Action are mostly limited to the dam area, where the species under discussion are unlikely to be present. Noise and human activity could cause any eagles present to temporarily relocate. Once the proposed rebuild was complete, any eagles would likely return, and the restoration of the reservoir could benefit bald eagles by increasing potential foraging habitat. The licensee's wildlife management plan, required by license article 413 and approved by Commission order February 19, 2004, provides for identification of any biologically sensitive areas, a bald eagle protection plan, and for consultation with the MDNR and FWS.

Based on our review of the licensee's Planned Action, our review of the life history and range of the identified species, and results of recent threatened and endangered species inventories, we have determined that the Planned Action would have no effect on any federally-listed endangered or threatened species.

#### Effects of No-Action Alternative

Under the No-Action Alternative, Tourist Park Development would not be rebuilt and the reservoir would not be refilled. There would be no effect on any federally-listed species as a result of the No-Action Alternative since no evidence has been found that they are currently present within the Tourist Park Development.

### **5.8 CULTURAL AND HISTORIC RESOURCES**

The Area of Potential Effect (APE) for the Marquette Project is defined by the Historic Properties Management Plan (HPMP) as project lands and facilities as delineated in the application for a new major license filed July 29, 1999, and lands or properties



outside the project where project use may cause changes in the character or use of historic properties should any exist.<sup>5</sup>

### Archaeological Resources

No archaeological sites in the APE have been listed in the National Register of Historic Places (NRHP). As part of relicensing, a reconnaissance-level archaeological survey was commissioned to identify archaeological sites within the project's APE. Of six sites identified, the Michigan State Historic Preservation Officer (SHPO) concluded, by letter dated February 17, 1999, that two of the sites were not eligible for the NRHP. The remaining sites (20MQ147, 20MQ148, 20MQ150, and 20MQ151) were considered eligible for the NRHP by the SHPO. The 20MQ147 site is the community of Collinsville, once associated with the Collins Iron Company forge. Site 20MQ148 is a historic archaeological site representing remains of the Lake Superior Powder Company. Site 20MQ150 is a prehistoric site consisting of a surface scatter of lithic artifacts and subsurface artifacts. Site 20MQ 151 is a large historic site consisting of the remains of Forestville, a former industrial site and community.

In September 2004 and in accordance with measures contained within measure 3.D of the HPMP, Archaeological Services, Inc., and Mead & Hunt performed archeological survey and mapping activities for the Collinsville, Forestville, and Lake Superior Power Company sites (Mead & Hunt 2005). Attempts to relocate some of the features mapped for the Collinsville site were unsuccessful. No indication of impact to the integrity of the Forestville site was found. Several new features possibly exposed by the reservoir dewatering, in addition to those previously identified, were found at the Lake Superior Power Company site. It was noted that at the Lake Superior Power Company site that artifacts appear to have been redeposited and intermixed with modern materials in a random scatter due to fluvial transport during the 2003 breach event. The licensee reports that on January 27, 2005, it forwarded copies of the 2005 Mead & Hunt report to the SHPO. The licensee further states that the SHPO confirmed receipt of the report by correspondence dated February 11, 2005.

### Historic Tourist Park Development Hydroelectric Structures

No historic resources in the APE have been listed in the NRHP. Based on an evaluation study commissioned during relicensing, the SHPO concluded by letter dated June 16, 1999, that remnant No. 1 dam, No. 2 powerhouse and associated structures, and No. 3 powerhouse and associated structures, were not eligible for listing in the NRHP. The SHPO was unable to provide an opinion on the eligibility of the 1897 Forestville timber dam, because this structure is submerged in the reservoir above No. 2 dam and

---

<sup>5</sup> The APE is defined by the Programmatic Agreement executed on September 30, 2002. The HPMP for the project was approved on March 16, 2004 by Order Approving Historic Properties Management Plan under Article 415.

could not be properly investigated. The SHPO requested that the 1897 Forestville timber dam be evaluated if it is exposed during a future planned drawdown.

### Traditional Cultural Properties

Historic properties also include places of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet NRHP criteria. Traditional Cultural Properties (TCPs) are a type of historic property that are eligible for inclusion in the NRHP because of their association with cultural practices or beliefs of a living community that: 1) are rooted in that community's history; or 2) are important in maintaining the continuing cultural identity of the community (Parker and King, 1998). Examples of TCPs are:

- locations associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world;
- a rural community whose organization, buildings and structures, or patterns of land use reflect the cultural traditions valued by its long-term residents;
- an urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;
- locations where Native American religious practitioners have historically gone and are known or thought to go today, to perform ceremonial cultural practices; and
- locations where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity (Parker and King, 1998).

There are no known TCPs within the Tourist Park Development area.

### Environmental Effects and Recommendations

The licensee's September 17 report identifies two archaeological sites, 20MQ148 and 20MQ150, that are located within the construction zone of the Planned Action. On February 17, 1999, the Michigan SHPO concluded that these sites were considered eligible for listing in the NRHP. The HPMP for the project contains provisions for the treatment of archeological sites and historic properties as part of the project license. The licensee's environmental report included measures concerning archeological sites and historic properties that may be impacted by the proposed dam repairs at Tourist Park Development. Specifically, the licensee states that in addition to adherence with provisions included in the HPMP for the project, it will provide a map to the SHPO identifying all planned dam construction and any sites or artifacts that been exposed since the 2003 draining of the reservoir.

The environmental report did not specify a buffer zone to be set for each archaeological site. The licensee indicates in its report that 20MQ148 will be submerged after refilling of the reservoir, and that 20MQ150 will be affected by existing access roads. Further, the licensee indicates that a potential exists for excavation activities to uncover previously unidentified sites due to close proximity to 20MQ148. In the event of the discovery of previously unidentified artifacts, construction would be stopped immediately, and the SHPO will be contacted. We recommend that the licensee file documentation of consultation and, including but not limited to, the licensee's proposed map of proposed dam construction and the Lake Superior Power Company features exposed since the 2003 event, with the SHPO prior to the start of any planned construction.

The licensee included documentation that a copy of its environmental report, by letter dated July 20, 2009, was sent to the Keweenaw Bay Indian Community (KBIC). No comments from KBIC were included in the report. By letter dated May 4, 2010, the Commission notified the SHPO of the licensee's September 17, 2009 filing of its environmental report on the restoration of the Tourist Park Development.

The licensee also states that during construction planning, a procedure would be developed and implemented to address any unanticipated archaeological materials that may be discovered during construction activities. Should any archaeological properties be identified during ground disturbing activities, the procedures for unanticipated discoveries identified in section 3 of the HPMP should be implemented. If at any time during the Planned Action additional archeological surveys are necessary, the licensee is reminded that a supplement to the HPMP should be filed with the Commission that addresses the results of any surveys and protection measures for sites not previously contemplated as part of the HPMP. Staff concludes that historical and cultural resources in the area would be protected through avoidance and by evaluation of undocumented sites to determine eligibility. In addition, if any sites are determined to be eligible, the licensee would develop an appropriate mitigation plan consistent with its HPMP.

#### Effects of No-Action Alternative

Under the No-Action Alternative, the Tourist Park Dam would not be repaired and the reservoir would not be refilled. The formerly submerged features associated with site 20MQ148 would remain exposed if the reservoir is not refilled. In addition, there is potential for flood events to cause shoreline erosion and river bottom scouring typical in flood plain areas which could expose cultural resources typically inundated by the reservoir. Finally, exposure of typically inundated resources could result in impacts associated with recreational use, illicit artifact collection, and/or site vandalism. If the development is not returned to operation, the project license would have to be amended and the disposition of the Tourist Park Reservoir, engineered structures, and other project features would be determined under a separate proceeding. Any impacts of the

amendment on cultural resources in the project area would be analyzed under that proceeding and are not contemplated here.

## 5.9 RECREATION

### Affected Environment

The Marquette Project is located in the central region of Michigan's Upper Peninsula on the Dead River in Marquette County, where there is an abundance of natural outdoor recreational resources. These resources include lakes, streams, waterfalls, and forests. Nearly one quarter of the land in Marquette County is publicly owned (national forests, state forests, state parks, state boating/fishing sites), however, there are no federal lands within the project boundary. Traditional spring, summer, and fall recreational opportunities include fishing, hunting, boating, canoeing, and camping. Off-road vehicles frequently use the project area during these seasons. Snowmobiling, cross-country skiing, and ice-fishing are traditional winter activities (FERC, 2002).

Marquette County includes one state park (Van Riper), nine state forest campgrounds, one county campground, and four township or city campgrounds. In addition to the recreation facilities operated by the licensee, recreation facilities in Marquette County provide a total of 533 campsites, 19 picnic areas, 18 boat launches, and a variety of other facilities. In addition to 11 trails in these parks and campgrounds, there are six scenic hiking trails in Marquette County, including the North Country National Scenic Trail, which crosses through the Marquette Project (FERC, 2002).

The licensee manages its formal recreation facilities at the project through its recreation plan, as approved by the Commission under Article 416 of the project license.<sup>6</sup> The approved recreation plan reported that the most used facilities before the 2003 breach event were the picnic and park areas, estimated at 40% capacity, followed by the swimming area, at 37% capacity. The campground was estimated at 17% capacity, and unimproved access areas were estimated at 2% capacity.

Specifically, the 40-acre Tourist Park Development provides: camping opportunities near the Dead River; a multi-sport complex located east and south of the Dead River with ball fields; a BMX bike trail; and a kayak/canoe access trail to the lower Dead River. The licensee, in conjunction with community organizations and agencies, constructed an Americans with Disabilities Act (ADA)-accessible fishing pier, toilet, and parking lot just downstream of the C.R. 550 Bridge below the Tourist Park powerhouse tailrace. The North Country Trail sponsored by the U.S. Department of the Interior traverses project lands adjacent to the Tourist Park Reservoir. Prior to the 2003 event, the Tourist Park Reservoir provided opportunities for boating with canoes, kayaks, and

---

<sup>6</sup> See FERC ¶ 62,191 (issued December 13, 2004).

small craft with electric motors or small horsepower gas motors. The shallow nature of the reservoir made any high-speed boating dangerous. Recreation settings include developed recreational facilities and private residences on the shores of the reservoir within the City of Marquette. Developed recreation opportunities are provided and managed by the City of Marquette on the reservoir. The ADA fishing pier, built by the MDNR and maintained by the City of Marquette, located just downstream of powerhouse No. 3 was washed away in the May 2003 flood event (MBLP 2003).

The three recreation activities sites identified at the Tourist Park Reservoir area in the White Water Associates, Inc. (1998) recreation study included the City of Marquette's Tourist Park campground, the former ADA-accessible fishing pier, and the North County Trail. The campground and North County Trail are still available for public access. Access to the Tourist Park Reservoir is relatively easy and well maintained, via the City of Marquette campground and day-use area. The campground is located on the north edge of the City of Marquette within the 40-acre development. This popular day-use and camping area is located along the southeastern shore of the dewatered Tourist Park Reservoir, and is managed by the City of Marquette Parks and Recreation Department. The area features 100 recreational vehicle campsites, tent campsites, parking, restrooms, showers, dump station, and utility hookups. The east restroom is ADA accessible. The camping season is from mid-May through mid-October. The North Country National Scenic Trail, which is administered by the North Country Trail Association, can be accessed on the extreme northeastern edge of the Tourist Park Reservoir, just above the powerhouse. The trail leads through a private quarry on the north shore of the reservoir and will transverse seven northern states when completed (FERC 2002 and MBLP 2003).

The licensee states that prior to the 2003 breach event, canoes and kayaks could be launched at either end of the Tourist Park beach area located southeast of the of the dam head gate structure. Since the 2003 event, extensive use of the area as a swimming beach has decreased, and the distance to water access has significantly increased with launching now available only at the end of the river channel.

### Environmental Impacts and Recommendations

Prior to the 2003 breach event, the Tourist Park Reservoir was approximately 100 acres, had one mile of shoreline, and a 600-foot-long bypassed reach. Since May 14, 2003, when the fuse plug at the upstream Dead River Project activated, the water level in Tourist Park Reservoir has been approximately 15 feet lower than the current license requires which has reduced the area of the lake by more than 80 acres. This lower lake level has negatively impacted the project's former recreational access and use. Impacts to access have been caused by the recently established grass and scrub located within the newly exposed lakebed and increased distance to water's edge. Further, objects that were normally submerged to depths well below the surface of the water, so as not to interfere

with safe navigation, now are exposed or located in shallow water that could cause navigation safety concerns.

During construction, the disruption to residents and recreational users would be minimal. The immediate project area at the Tourist Park Reservoir may be restricted to local residential traffic during construction. Any restrictions would be limited to the extent possible and are necessary to assure public safety where work is being conducted. Access roads leading into the reservoir would experience increased heavy equipment traffic for the transportation of materials (e.g., concrete) or heavy equipment to the job site. There would be short-term effects to homeowners and on the recreational experience of hikers and other visitors to the project in the area surrounding the reservoir due to access closure, construction noise, and associated traffic.

After restoration is complete, the licensee would be required to operate the project's recreation facilities according to Article 416 of the project license and its approved recreation plan. Recreational use as originally proposed for Tourist Park Reservoir would be available upon completion of construction activities, including the rebuilding of the ADA-accessible fishing pier. Paragraph (C) of the December 13, 2004 Order Approving Recreation Plan under Article 416 requires the licensee to file a plan for the replacement of the pier, or a progress report. By letter dated December 15, 2006, the Commission acknowledged that the licensee chose to delay the rebuilding of the ADA-accessible fishing pier until such time as a course of action was decided for the restoration of the Tourist Park Development. Commission staff recommends that the licensee file a plan, for Commission approval, to replace the fishing pier and associated facilities as required by ordering paragraph (C) of the December 13, 2004 order. The plan to replace the fishing pier should be developed in consultation with the MDNR and the Michigan Department of Parks and Recreation.

Further, the licensee proposes to construct a new shelf along the north shore of the reservoir for hiking and fishing access. The north shore of the reservoir currently provides access to the North County Trail as discussed above. The licensee states that final plans for the shelf have not yet been completed. Since the proposed shelf was not contemplated as part of the 2002 license or approved recreation plan, a separate filing would be needed to obtain Commission approval for additional recreation facilities pursuant to the approved recreation plan for the project. This EA addresses the licensee's plan to return the project to its previous condition, including all recreational amenities that were available to the public. A request for updated amenities at the project is outside of the scope of this EA. No request has been made by the licensee to amend its approved recreation plan or through the FERC Licensed Hydropower Development Recreation Report (Form 80 report). The Form 80 report includes recreational use data for each development. The report provides the recreational use data within the project boundaries. The Form 80 process provides a means to evaluate changing recreational needs at project facilities every 6 years, over the term of the license. If additional recreational needs are

recognized or developed over the term of a new license, then further resources could be developed to accommodate such needs through the existing Form 80 process, as well as the recreation plan.

Restoration of the Tourist Park Reservoir would impact the areas in which recreational activity is currently available along the remaining shoreline of the Dead River channel. Refilling of the reservoir would inundate former lakebed areas currently accessible to the public. However, such opportunities as hiking, fishing, canoeing, and other activities available as required by the project recreation plan would similarly be available and expanded by the restoration of the Tourist Park Development to pre-event conditions.

There would be minor, short-term effects to residents and on the recreational experience of hikers and other visitors to the project in the area surrounding the reservoir due to access closure, construction noise, and associated traffic. Any restrictions would be limited to assure public safety where work is being conducted. The effects would be considered short-term and minor due to the low number of homeowners and visitors reported on the most recent Form 80 filing. Once restoration is completed, full recreational use as originally proposed for Tourist Park Development would be available and no other short- or long-term impacts to recreational resources would be anticipated.

#### Effects of No-Action Alternative

Under the No-Action Alternative, Tourist Park Development would not be restored and the reservoir would not be refilled. The reduction in water elevation by approximately 15 feet would continue to negatively impact the project's recreational access and use as it existed prior to the 2003 event. Impacts to access would be caused by the continued establishment of the grass and scrub located within the newly exposed lakebed. Further, objects that were normally submerged to depths well below the surface of the water so as not to interfere with safe navigation now are exposed or located in shallow water that would cause navigation safety concerns. In addition, if the development is not returned to operation, the project license would have to be amended and the disposition of the Tourist Park Reservoir, recreational opportunities and amenities, engineered structures, and other project features would be determined under a separate proceeding. Any impacts of the amendment on recreation in the project area would be analyzed under that proceeding and are not contemplated here.

## **5.10 LAND USE AND AESTHETICS**

### Affected Environment

The Marquette Project is surrounded by private and public lands including the state and national forests. There are no federal lands within the project boundary. The

major land uses within the project boundary are commercial mining and forestry, residential development, and recreation. The City of Marquette is the largest urban area in the Upper Peninsula of Michigan. It is a port city, with approximately 22,000 residents, located on Lake Superior near the mouth of the Dead River. Natural areas include forested uplands that are relatively undeveloped, and small amounts of emergent and forested wetlands. Lands within the project boundary provide habitat for a variety of plants and animals, and offer recreational opportunities. The North Country Trail, sponsored by the U.S. Department of the Interior, traverses project lands adjacent to the northern shoreline of the Tourist Park Reservoir. A series of trails connects the Tourist Park area with the Forestville dam located upstream.

Lands near the Marquette Project are in private or corporate ownership, or are owned by MBLP. Longyear Realty has extensive landholdings in the Marquette Project area, some of which are used by private individuals or by MBLP under flowage rights. The southern shoreline of the Tourist Park Reservoir is the most developed portion of the Marquette Project, with the remainder of the project area largely in a natural state or low-density uses. City-owned lands include Tourist Park and the adjacent forested area, which are open to the public for recreational use. Public access to the Marquette Project's dams and power developments is restricted for safety reasons (FERC 2002).

Currently, the licensee manages its project lands through the standard land use article 418,<sup>7</sup> and the Commission-approved land use plan required by article 416 of the license. The licensee's land use practices are implemented under the approved land use plan, which provides a general description of the lands within the project boundary and outlines four categories for managing licensee-owned lands within the project boundary, including: (1) preservation of natural areas; (2) recreational use-low-impact; (3) recreational use-intensive; and (4) restricted areas and rights-of-way. Under the plan, project lands are divided into thirteen management zones labeled A through M based on natural features, human-made features, and existing and potential uses. Each zone is managed in accordance with one of the four categories. Zones D, I, and J are the least developed and are preserved as natural area with no new trails for motorized vehicle use permitted. Management zones C, G, K, and M are managed for low-impact recreational use. They are primarily used for nature study, hiking, and fishing. Zone B is managed for intensive recreational use and includes the campground, picnic areas, and access to the shoreline within Tourist Park.

---

<sup>7</sup> The Standard Land Use Article included in most licenses allows licensees to establish a program for issuing permits for specified types of use and occupancy of project lands and waters and allows licensees to convey interests in project lands and waters (through leases, rights-of-way, or fee title conveyances) for certain non-project uses without obtaining prior Commission approval. However, the conveyances must be consistent with the scenic, recreational, and other environmental values of the project.



Management zones A, E, F, H, and L include restricted areas and rights-of-way that are used for project operation. Some wildlife and recreational values exist in these zones, even though their primary use is for operation of the hydroelectric project. Management activities may include actions necessary to maintain access for maintenance, operations, repairs, and inspections. Forest cover is maintained where compatible with operations.

Commercial logging is prohibited on licensee-owned lands within the project boundary. Any tree removal is restricted to issues of safety and access. No trees are removed from natural areas, if possible. The licensee maintains access areas on its properties for the duration of the project. Provisions for providing public access are implemented as required by the recreation plan under Article 416, and outlined above in Section 5.9, *Recreation*. To protect water quality, maintain connectivity of wildlife habitat, and aesthetics of views from the water, the licensee is required to maintain a 200-foot buffer zone (defined by the ordinary high water mark) on licensee-owned land along the reservoir shoreline. Vegetation removal in this zone is to be minimal with no clearing to occur unless necessary for access or safety. Further, the licensee is required to update the land use plan every five years, including information that may be developed in conjunction with the wildlife management plan (Article 413), recreation plan, or the nuisance plant control plan (Article 414).

The 2003 event exposed a small, bedrock controlled waterfall downstream of the breach area (*See Figure 5 above*). Since the time of the breach, water has been flowing and has added aesthetic value to the project area. Because this feature did not exist prior to the event, it was not included in or addressed in the approved land use plan.

#### Environmental Effects and Recommendations

Due to the washout of the right abutment, Tourist Park Reservoir's water elevation has been reduced by more than 15 feet, reducing the area of the lake by approximately 80 acres. The aesthetic quality of the lake has been impacted, changing the character of the former lakebed with emergent wetland vegetation and upland vegetation. The land use plan for the project states that management practices generally exclude commercial logging activities from all licensee-owned project lands. Additionally, the required 200-foot buffer around the shoreline on licensee-owned land protects project environmental and aesthetic values. While the change in shoreline area, vegetation, and water level contributes to a somewhat different current public use of project lands that may be preferred by some recreationists, restoration to pre-event conditions for all land use and aesthetic values would bring the Tourist Park Development back into compliance with land-use requirements contained in the license, and in the approved recreation plan.

Construction would occur primarily on land that was previously disturbed during the construction of existing project features. At the start of construction, parking areas,

laydown areas, borrow areas, and areas for equipment and personnel trailers, etc., would be developed. Some areas may need to be cleared and grubbed and others may require some grading and leveling. The borrow pits are located within the reservoir recharge-area and would become submerged upon restoration of the dam and recharge of the lake. They would be aesthetically contoured to stabilize the side walls and would be left to provide aquatic habitat once the reservoir recharge is complete.

About 1.2 acres have been identified as areas that may need to be cleared for safe construction access and maneuverability. While a majority of the roads would not need modification to handle the construction equipment contemplated for this plan, some localized surface work may be needed throughout the site on different sections of road to stabilize them and prepare them for construction traffic. The licensee's proposed environmental mitigation measures including the development of an ESCP and SPCC Plan, along with staff's additional recommendations discussed above, would mitigate for any short-term impacts associated with construction activities.

Following refill of the reservoir, flows would exit the project through the powerhouse and existing tainter gates into the bypassed reach as they did prior to the breach event. The newly exposed reach below the breach area, including the bedrock waterfall, would not receive flows except under very high flow events (i.e. an estimated 100-year event). Although this would have a minor negative impact on aesthetic views in the project area, conditions would be similar to those contemplated during the licensing of the project.

Restoration of the dam and reservoir would not cause significant adverse impacts to aesthetics and land use in the project area. Although certain areas currently available for recreation use would be submerged, conditions would not significantly change the type of land use available and would restore aesthetic and land use conditions to those required by the project license. Additionally, construction impacts would be short-term and minor in nature, and are mitigated for by the licensee's proposed measures discussed in this EA.

#### Effects of No-Action Alternative

Under the No-Action Alternative, Tourist Park Development would not be rebuilt and the reservoir would not be refilled. The reduction in water elevation by more than 15 feet would continue to affect the aesthetic quality of the lake by continuing to change the character of the former lakebed to a grass, scrub, and eventually forest environment. If the development is not returned to operation, the project license would have to be amended and the disposition of the Tourist Park Reservoir, engineered structures, and other project features would be determined under a separate proceeding. Any impacts of the amendment on land use and aesthetics in the project area would be analyzed under that proceeding and are not contemplated here.

## 5.11 AIR QUALITY

### Affected Environment

The U.S. Environmental Protection Agency (EPA) and the state, through MDEQ, regulate air quality in the proposed construction area. The EPA has established national ambient air quality standards (NAAQS) for criteria pollutants that include carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), lead (Pb), ozone (O<sub>3</sub>), particulate matter less than 10 microns ( $\mu$ ) in diameter (PM<sub>10</sub>), and fine particulate matter less than 2.5  $\mu$  in diameter (PM<sub>2.5</sub>).

To identify an area by its air quality, EPA designates all geographic areas in the state as attainment, non-attainment, or unclassifiable. An area is designated attainment for a particular pollutant if its air quality meets the NAAQS for that pollutant. When air quality in an area meets all standards, the area is considered to be in attainment. If the concentration of a criteria pollutant in an area is found to exceed the regulated or threshold level of the NAAQS, the area is called non-attainment for that particular pollutant. A designation of unclassifiable is made when there is currently insufficient data for determining attainment or non-attainment.

The area considered in this EA for the rebuilding of Tourist Park Development of the Marquette Project is located in Marquette County, Michigan. Marquette County is located in the Upper Peninsula District and is in attainment for all of the criteria air pollutants (MDEQ, 2009).

### Environmental Effects and Recommendations

Construction activity under the Planned Action is expected to result in potential air emissions including particulate matter and exhaust from the operation of heavy equipment. Most of this activity will occur in the immediate area near Tourist Park Reservoir and from the temporary increase in traffic along local public roads for the delivery of raw materials and equipment. If the areas become exceptionally dry and visible dust becomes an issue in parking areas, on haul roads, or in construction areas, water spray and other appropriate dust control methods would be employed. The Planned Action would result in short-term minor impacts to the local air quality, with no long-term impacts.

### Effects of No-Action Alternative

Under the No-Action Alternative, Tourist Park Development would not be rebuilt and the reservoir would not be refilled. There would be no impacts to air quality resources from the construction activities associated with the rebuild of the development. If the development is not returned to operation, the project license would have to be

amended and the disposition of the Tourist Park Reservoir, engineered structures, and other project features would be determined under a separate proceeding. Any impacts of the amendment on air quality would be analyzed under that proceeding and are not contemplated here.

## **5.12 NOISE**

### Affected Environment

Noise is generally defined as unwanted sound. It is emitted from various sources including airplanes, factories, railroads, and highway vehicles. The Tourist Park Development is located within the City of Marquette and is surrounded by MBLP, City of Marquette, and private lands used for recreational purposes and year round residences.

### Environmental Effects and Recommendations

Construction work will take place during the hours allowed by City of Marquette ordinances. It is likely that construction noise will be heard by the public who may use the surrounding area, residents, and especially campers in the Tourist Park campground. After construction is completed, noise impacts from normal operations would be the same as licensed conditions.

### Effects of No-Action Alternative

Under the No-Action Alternative, Tourist Park Development would not be rebuilt and the reservoir would not be refilled. There would be no construction related impacts on noise in the project area. If the development is not returned to operation, the project license would have to be amended and the disposition of the Tourist Park Reservoir, engineered structures, and other project features would be determined under a separate proceeding. Any impacts of the amendment on noise levels would be analyzed under that proceeding and are not contemplated here.

## **5.13 SOCIOECONOMICS**

### Affected Environment

The Marquette Project is located in the City of Marquette in the Upper Peninsula of Michigan. In 2000, the U.S. Census Bureau reported that the City of Marquette had a population of 19,661 and a land area of 19.37 square miles. According to the 2000 census, housing stock within the City of Marquette totaled 9,031 units, of which 7,636 units were classified as occupied. The median value of owner occupied housing stock in 2000 was \$147,200. In 2000, there were a total of 10,191 people in the labor force in the

City of Marquette. The 2000 unemployment rate was 7.3 percent, compared to a state wide rate of 3.2 percent. Education, health, and social service fields employed the greatest number of people, partly due to the location of Northern Michigan University in the city of Marquette. In 2000, these sectors employed 30.2 percent of the work force. According to the 2000 census, the median household income was \$34,827.

### Environmental Effects and Recommendations

Under the Planned Action, there would be a short-term economic benefit to the region from the reconstruction of Tourist Park Development in the form of worker salaries and the procurement of construction services and materials. Recreational use of the Tourist Park Reservoir would also benefit after the Planned Action, due to the restoration of the reservoir. Use of the Tourist Park Campground may increase due to the restoration of the beach and swimming area. The restoration of lake recreational opportunities could result in slight benefits to the local businesses that cater to recreational users; however this benefit is not expected to be significant.

In its environmental report, the licensee states that the value of homes with lake-front footage would increase following the restoration of the Tourist Park Reservoir. The licensee provides estimates from the city assessor, and a limited market analysis, of values of properties with lake-front footage compared to properties with river-front footage. The city assessor and the market analysis indicate that lake-front property values (per square foot of frontage) are higher than river-front property in areas similar to the project area. Staff concludes that, while restoring the reservoir may have a positive impact on home values, this impact would be limited to those few properties in the immediate vicinity of the Tourist Park Reservoir. Overall, the impact of restoring the Tourist Park Development is not expected to significantly affect home values in the City of Marquette.

### Effects of No-Action Alternative

Under the No-Action Alternative, the Tourist Park Development would not be rebuilt and the reservoir would not be refilled. Minor positive benefits to socioeconomics as a result of construction activities and expanded recreation opportunities would not be realized. There would be no significant impacts to socioeconomics in the project area under the No-Action Alternative. If the development is not returned to operation, the project license would have to be amended and the disposition of the Tourist Park Reservoir, engineered structures, and other project features would be determined under a separate proceeding. Any impacts of the amendment on socioeconomics would be analyzed under that proceeding and are not contemplated here.

## 6.0 CONCLUSIONS AND RECOMMENDATIONS

Repair of the right abutment of the Tourist Park Dam would have impacts on geology, water quantity and quality, aquatic biota, terrestrial resources, recreation, and aesthetics at the Tourist Park Development. However, the anticipated impacts would be minor and temporary, as construction is expected to be completed by December 2010. The repair of the dam would return the development to operation under the project license and meet FERC engineering guidelines and safety regulations.

Commission staff recommends the following measures to be included in any Part 12 authorization for the repair of the Tourist Park Dam of the Marquette Hydroelectric Project:

Minimum flow during construction. The licensee should develop a plan to continuously provide flow downstream during all phases of construction in order to reduce impacts to downstream aquatic resources. Specifically, the licensee should develop a plan to pass a minimum flow downstream during the interim period following construction of the earthen cofferdam and prior to the reservoir elevation reaching the sill height of the existing gated spillway. The plan should include erosion control and other resource protection measures as appropriate. The plan should be developed in consultation with MDEQ, MDNR, and FWS and filed for Commission approval.

Construction Sequencing. In order to reduce the potential for discharging sediment laden water to the Dead River downstream of the project, the licensee should sequence construction activities so that all excavation from borrow areas within the reservoir basin is completed prior to constructing the cofferdam and raising the reservoir water level to the existing spillway elevation. Excavation from areas that would be inundated during the initial approximately nine feet increase in reservoir elevation should be completed prior to raising the reservoir elevation and materials should be stockpiled above the nine foot reservoir elevation line with sufficient clearance to avoid erosion during a high flow event. Stockpiles should be maintained with appropriate erosion control measures and borrow areas should be aesthetically contoured to stabilize the side walls as the licensee proposed.

Reservoir Refill Plan. To help ensure the stability of the rebuilt facilities, avoid the development of poor water quality, and ensure the release of downstream flows during the refilling period we recommend that the licensee develop a plan for reservoir refilling. The plan should include a specified refilling rate to be used following construction to ensure dam safety and the protection of natural resources. The plan should also specify how flows would be released downstream during the refill period to protect downstream aquatic resources, and what measures would be taken to limit sediment suspension in the reservoir and also its passage downstream. The plan should be developed in consultation with the MDEQ, MDNR, and FWS, and filed for Commission approval.

Revegetation Plan. To aid in the revegetation of disturbed areas and to help prevent potential erosion and runoff following construction, we recommend that the licensee develop a plan for revegetating and reforesting disturbed areas, and for monitoring the areas for success. The plan should address, but not be limited to, adequate preparation of areas post-construction to ensure proper soil conditions, any need remove hardfill material, and any need for soil replenishment. The plan should also address determination of the proper species, seed mixture, and soil conditions for revegetation, and the proper size, age, and ratio of species for reforestation in suitable areas outside of the reservoir that have been cleared, and are proposed to be cleared, such as laydown areas, staging areas, areas around the perimeter of the dam and dikes, parking areas, and access roads. The plan should be developed in consultation with the MDEQ, MDNR, and FWS, and filed for Commission approval.

Cultural Site Protection. Prior to the start of any planned construction, Staff recommends that the licensee file documentation of its proposed consultation with the SHPO. The documentation should include, but is not limited to, to the licensee's proposed map of dam construction areas and the Lake Superior Power Company features exposed since the 2003 breach event. The licensee should include in its filing any response or comments received from the SHPO. In addition, the licensee should comply with its approved Historic Properties Management Plan for unanticipated discoveries, should any be found during the planned activities.

Recreation. Commission staff recommends that the licensee file a plan, for Commission approval, to replace the ADA accessible fishing pier and associated facilities as required by the approved recreation plan for the project. The plan to replace the fishing pier should be developed in consultation with the MDNR and the Michigan Department of Parks and Recreation. Staff also recommends that the licensee file, for Commission approval, a request to amend the approved recreation plan in order to construct the proposed new shelf along the north shore of the reservoir for hiking and fishing access.

## **7.0 FINDING OF NO SIGNIFICANT IMPACT**

The repair of the Marquette Project's Tourist Park Dam under Part 12 of the Commission's regulations would allow the development to be returned to operation and help ensure long-term dam safety at the site. Refilling of the reservoir would reestablish a water surface area and volume the same as that which existed before the high flow event in May 2003. The proposed construction activities would occur only in the immediate Tourist Park Reservoir area. No changes in the operation of the development from those required by the Marquette Project license are proposed. The licensee's Planned Action, with the addition of staff's recommended measures should reduce, to the extent possible, impacts associated with the proposed construction activities.

On the basis of our independent analysis, the proposed rebuilding of the Tourist Park Development of the Marquette Project, with staff's recommended measures, would not constitute a major federal action significantly affecting the quality of the human environment.

## 8.0 LITERATURE CITED

FERC (Federal Energy Regulatory Commission) 2002. Final Environmental Assessment for Hydropower License, Dead River Hydroelectric Project and Marquette Hydroelectric Project, dated July 2002. Washington, D.C.

FERC 2003. Draft Initial Report of Findings, FERC Investigation of Activation of Fuse Plug Spillway, Silver Lake Storage Basin, Dead River Project No. 10855, Marquette County, MI, Upper Peninsula Power Company. July 24, 2003. <http://www.ferc.gov/industries/hydropower/safety/projects/silver-lake/07-24-03-1.pdf> Accessed April 28, 2010.

KME (King & MacGregor Environmental, Inc.) 2005. Final Dead River Recovery Assessment Wetland/Floodplain Survey Report (Document #GB-1107) in Marquette County, Michigan. Prepared for UPPCO. May 9, 2005.

MBLP (Marquette Board of Light and Power) 2003. Recreation Plan for the Marquette Hydroelectric Project, dated September 17, 2003.

MBLP 2009. Tourist Park Hydroelectric Project: Environmental Report- Tourist Park Dam Repair. Prepared by AECOM, INC. for MBLP. Filed with the Commission September 17, 2009.

MDNR (Michigan Department of Natural Resources) 2007. Designated trout streams for the state of Michigan. [http://www.michigan.gov/documents/dnr/FO-210-07\\_182400\\_7.pdf](http://www.michigan.gov/documents/dnr/FO-210-07_182400_7.pdf). Accessed March 26, 2010.

MDEQ (Michigan Department of Environmental Quality) 2009. 2009 Michigan NAAQS Attainment Status. [http://www.michigan.gov/documents/deq/deq-aqd-air-aqe-MI-ATTAINMENT-STATUS-map-2009\\_297027\\_7.pdf](http://www.michigan.gov/documents/deq/deq-aqd-air-aqe-MI-ATTAINMENT-STATUS-map-2009_297027_7.pdf). Accessed April 22, 2010.

Parker, P.L. and T.F. King. 1998. Guidelines for Evaluating and Documenting Traditional Cultural Properties. National Register Bulletin 38. National Park Service, Washington, D.C.

UPPCO (Upper Peninsula Power Company). 1994. Application for initial license for major project-existing dam. Dead River Hydroelectric Project, FERC Project No. 10855. Houghton, MI. April 1994.



White Water Associates, Inc. 1998. Recreational Facilities Inventory, Marquette Board of Light and Power Hydroelectric Projects. Prepared for MBLP. August 1998.

## **9.0 LIST OF PREPARERS**

### Federal Energy Regulatory Commission

Jade Alvey – Environmental Biologist (B.S. Environmental Science and Policy, B.S. Geography)

Rachel Price – Aquatic Ecologist (B.S. Environmental Policy and Planning, M.S. Environmental Science, Master of Public Affairs)

Document Content(s)

P-2589-057.DOC.....1-65