

MUSKEGON RIVER

ROGERS HYDROELECTRIC PROJECT (P-2451)
HARDY HYDROELECTRIC PROJECT (P-2452)
CROTON HYDROELECTRIC PROJECT (P-2468)

These three projects on the Muskegon River are part of the Settlement Agreement filed on December 7, 1992 that includes a total of 11 projects (3 on the Muskegon, 6 on the Au Sable and 2 on the Manistee River).

A. SUMMARY

1. License Issued: July 15, 1994
2. Expiration: June 30, 2034
3. Waterway: Muskegon River
4. Capacity: Total for three projects 45.6 MW
(Rogers- 6.75 MW, Hardy- 30 MW, Croton- 8.85 MW)
5. Licensee: Consumers Power Company (Now Consumers Energy)
6. Counties:
Rogers- Mecosta County, MI
Hardy- Newaygo and Mecosta Counties, MI
Croton- Newaygo County, MI
7. Federal Lands: N/a
8. Brief Project Descriptions:
 - a. Rogers (P-2451)
 - Three existing earth embankment dam sections
 - A buttress spillway section
 - An existing 300 acre-feet impoundment
 - A powerhouse containing four generating units with a total capacity of 6,750 kW
 - Transmission facilities, and appurtenant facilities
 - b. Hardy (P-2452)
 - A 114-foot-high existing earth embankment dam with a spillway section
 - A 5007 acre-feet impoundment
 - A powerhouse containing three generating units with total rating of 30 MW
 - Transmission facilities, and appurtenant facilities
 - c. Croton (P-2468)
 - Two existing earth embankments with a concrete spillway section
 - A 300 acre-feet impoundment
 - A powerhouse containing four generating units with a total rated capacity of 8,850 kW
 - Transmission facilities, and appurtenant facilities

9. Settlement Agreement: Filed with FERC Dec 1992; SA includes a total of 11 projects (3 on the Muskegon, 6 on the Au Sable and 2 on the Manistee River).

10. Parties to SA:

- | | |
|-----------------------------------|---|
| a. Consumers Power | e. Michigan Department of Natural Resources (Michigan DNR) |
| b. U.S. Forest Service | f. State Historic Preservation Officer (Preservation Officer) |
| c. U.S. Fish and Wildlife Service | |
| d. National Park Service | |

B. RESOURCE ISSUES

Does the river provide recreation?

Is the project boundary habitat for an endangered species?

Does diverting of water cause habitat loss for fish?

C. IMPORTANT FUNDING PROVISIONS IN LICENSE/SA

The provisions in the SA are applicable to all projects that are incorporated under this SA.

AuSable River	Cooke	P-2450
	Five Channels	P-2453
	Foote	P-2436
	Alcona	P-2447
	Loud	P-2449
	Mio	P-2448
Muskegon River	Rogers	P-2451
	Hardy	P-2452
	Croton	P-2468
Manistee River	Hodenpyl	P-2599
	Tippy	P-2580

1. Decommissioning [Reference: License Article 204]

The SA requires Consumers to study decommissioning of all of its dams, including reviewing what steps were necessary, what options for retirement exist for each facility, the likelihood of early retirement, and costs associated with retiring the entire project. By 2004, Consumers will begin consultations with state and federal agencies. In a report published in 2007, Consumers stated that the cost of removal would be \$99 million. They have no plans to retire any of the dams before the licenses expire in 2034.

2. Water Quality [Reference: License Article 405]

Funding

Under the SA, Consumers shall provide 1.75 million (in 1992 dollars) for study, planning, design and construction of water quality enhancements, including D.O. enhancement measures and water temperature enhancement measures for its hydroelectric projects on the Muskegon, Au Sable, and Manistee Rivers.

Flows

Consumers is required to install flow gauge upstream and downstream of Rogers, Hardy and Croton dams to monitor flows.

Following minimum water temperature are required downstream of the projects:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rogers	38	38	41	56	70	80	83	81	74	64	49	39
Hardy	38	38	41	56	70	80	83	81	74	64	49	39
Croton	38	38	43	54	65	68	68	68	63	56	48	40

Operation mode

- Rogers – Run-of-river
- Hardy – Peaking
- Croton – Re-regulation

Dissolved Oxygen

Rogers/Hardy/Croton Project – No less than 5 mg/L in the project tailwaters.

3. *Funding for Gauge and WQ monitoring* [Reference: License Article 407]

The license requires Consumers to fund \$500,000 (in 1992 dollars) to construct new or upgrade existing stream flow gauging and WQ monitoring facilities for all 11 projects on 3 rivers.

4. *Funding for Fish Protection* [Reference: License Article 408]

The license requires Consumers to fund \$5 million (in 1992 dollars) to study, plan, design and construct fish protection devices for all 11 projects.

5. *Michigan Habitat Improvement Account* [Reference: License Article 409]

Consumers will provide Michigan with funding for habitat restoration and other purposes before October 1 of each year - \$9,000 (in 1992 dollars)

6. *Land Management Plan* [Reference: License Article 411]

Consumers will prepare a Land Management Plan that will include the following:

- a. Bald Eagle Management Plan
- b. Wildlife Management Plan
- c. Buffer Zone management Plan
- d. Recreation development Plan
- e. Land lease Program

During the duration of license, \$2.5 million (in 1992 dollars) will be allocated for these programs.

7. *Soil Erosion Control Plan* [Reference: License Article 412]

This Plan will require studies for information collection and should explain control alternatives. \$1 million (in 1992 dollars) will be separated for erosion control activities for all 11 projects.

8. *Cultural Resources Management Plan* [Reference: License Article 413]

\$1 million allocated for historical and archaeological resource evaluation, and mitigation and enhancement for all 11 projects.

9. *Other Activities* [Reference: License Article 415]

Consumers will not require prior Commission approval for activities like

- a. Landscape plantings
- b. Non-commercial piers, landings, docks or similar structures that accommodate no more than 10 watercrafts at a time
- c. Embankments, retaining walls or similar structure for erosion control

D. STATUS AS OF 2008

The settlement required Consumers Energy to conduct water quality evaluation at its eleven hydro projects. The Water Quality Evaluation Reports were completed in 2002 and reviewed jointly by the resource agencies and the MHRC.

Consumers Energy began collecting the detailed weather and stream data needed for modeling the Muskegon River Croton and Hardy Hydros during 2006. Development of the water quality model for these plants and early testing runs was accomplished in 2007. Following a review of the preliminary model runs in late 2007, additional modeling outputs and recommendations regarding the potential temperature enhancement options for the Croton Dam outflow were made in the spring of 2008. The current analysis shows a Croton upwelling system may provide some benefit and an upwelling system test may be conducted at Croton this summer if FERC approval is obtained in time.

The design of the upwelling system has changed due to water depth issues near the dam. The original design was based on a 40 foot depth inside the plant log boom and included

Muskegon River, Michigan

two circle diffusers near the dam, within the log boom area. Detailed bathymetry indicated that there was only 20 feet of water available at the powerhouse which does not provide sufficient cool water for effective upwelling. The new design includes a two step approach; one ring diffuse near the dam in the 20 foot water, and a second diffuser further out in the 30 feet water (and outside the log boom area).

When reviewing the permit application, with the revised design, the Department of Environmental Quality (DEQ) determined that the diffuse system did not meet the minor project criteria and as such a 20-day public review period must be allowed. This has delayed installation as the permit was not issued until August 5 and the contractor (Mobley Engineering) was not available to do the installation in August. It is hoped that Mobley will have a break in their schedule and be able to install the upwelling system in September so that it can still be tested this year.

MDNR Fish Contribution Projects:

Consumers will make the annual fish contributions for FY 2006 and amortized payment for 2001/2002 in accordance with the 10/31/2005 FERC Order. The MMAC Team will consult on HIA project proposals and forward recommendations to MI DNR.

Development of the Davis Bridge Public Access Site on the Muskegon River with \$45,000 from the HIA with a total of \$100,000 from all sources including in kind services. Muskegon River Turtle Barrier Project, \$25,000 from HIA with a total of \$545,000 from all partners. And the Manton Mill Pond Removal Study with \$40,000 from HIA

Cedar Creek Hydrology Study on the Muskegon River System in the amount of \$74,700. Creel Survey in the Upper Muskegon River in the amount of \$140,901 and Croton Tailwater Overflow Parking on the Muskegon River System in the amount of \$80,000.

Project Retirement Study

Consumers has completed consultations with the Resource Agencies, MHRC and general public on a plan for studying the costs that would be associated with potential retirement of the 11 projects. The study plan was filed with FERC on January 13, 2005 and approved by FERC on April 7, 2005. A final report was filed with FERC by Consumers in May, 2007 which covered the planning, conducting, and studies on the cost of retiring each of the eleven Consumers project. Instead of submitting a plan for establishing a trust fund for funding the retirement costs through its retail and wholesale general rate filings, Consumers proposed to recover its projected retirement costs through its depreciation rates.

Although the license articles state that upon receiving the study report, and after public notice and opportunity for hearing, FERC may issue such orders with respect to project retirement and financing as it deems appropriate, FERC issued a final order approving the retirement study report. The MI DNR and MHRC have filed for Rehearing of the Order raising the following issues:

1. The Commission has failed to public notice the Retirement Study Report and provide the opportunity for hearing before issuing an Order with respect to project retirement and financing.
2. There are technical concerns regarding the Retirement Study Reports and the conclusions derived in them.
3. Is Consumers Energy's plan for funding retirement costs a viable approach?
4. The proposed funding plan submitted by Consumers does not meet the requirements and intent of the terms of the Settlement Agreement.

The resource agencies and MHRC began negotiations with Consumers to resolve the issues. In March, 2008 the resource agencies and MHRC entered into a Settlement Agreement with Consumers resolving the various issues regarding the Retirement Study Reports. Consumers, the resource agencies and the MHRC agree to consult in 2001 regarding possible updating of all or part of the retirement study reports. Consumers is also willing to discuss at that same time whether it would be appropriate to revise the Article 404/405 water quality enhancement spending provision. This will allow time to evaluate the effectiveness of the current or proposed projects in progress against the remaining dollars in the Article 404/405 account at that time to determine if adjustment to the commitment may be appropriate. In the meantime, Consumers and the Resource Agencies and MHRC will continue to cooperatively work toward the water quality objectives contained in Articles 404 and 405.

Muskegon River Projects (3 developments)

D. Update

Post-license Activities:

The Muskegon River Projects are owned by Consumers Energy. The Manistee-Muskegon-Au Sable (MMAU) Coordination Team coordinates implementation of the 40-year FERC License conditions and the Settlement Agreement provisions. The team is comprised of parties to their 1992 Settlement Agreement from Consumers Energy, US Forest Service, US Fish and Wildlife Service, Michigan DNR, and the Michigan Hydro Relicensing Coalition. Each year Consumers Energy publishes the "Hydro Reporter" (last published in 2019) which reports general information on their hydropower projects activities in the areas of fish habitat improvement, reforestation on project lands, protection of historic places, and implementation of environmental goals.

<https://www.consumersenergy.com/-/media/CE/Documents/electric-generation/hydro-reporter.ashx?la=en&hash=E2A183EFFF1A2723936D92BE51876576>