

Cambridge Lake Outlet

MDNR ID #711

Hazard Potential: Low

Lenawee County, Michigan
Cambridge Township Sec. 14 (T5S, R2E)

**Inspections conducted: June 21, 2018
March 23, 2020**

Act 451 P.A. of 1994 Part 307

Owner of Lake Level Control Structure:

Lenawee County



Represented by: Jennifer L. Escott
Lenawee County Drain Commissioner
320 Springbrook Avenue, Suite 102
Adrian Michigan 49221

Inspectors:

Joseph P. Brezvai – Deputy
Lenawee County Drain Commission
&
Gregory L. Minshall, PE, President
Eng., Inc.

Professional Engineer:

Gregory L. Minshall, PE, President

Eng., Inc.
4063 Grand Oak Drive, Suite A109
Lansing, MI 48911



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CAMBRIDGE LAKE LEVEL CONTROL STRUCTURE

LAKE LEVEL HISTORY

The Cambridge Lake Dam, formally known as the Pratt Dam, was constructed in the 1950's. An exact year is unknown but it was constructed in conjunction with the development of two residential plats on Cambridge Lake to provide waterfront lots. The dam was constructed and owned privately by Arthur R. Pratt.

In 2006 property owners around Cambridge Lake expressed concerns with the condition of the dam that maintains the level of the lake. The dam being privately owned was not under the jurisdiction of Lenawee County. Informational meetings were held between the property owners and Lenawee County Drain Commissioner's Office on the process of establishing a legal lake level at Cambridge Lake. The property owners in February of 2008 petitioned the Lenawee County Board of Commissioners in accordance to the Inland Lake Level Act, Act 451 P.A. of 1994 Part 307 to initiate the necessary legal proceedings to establish the historical winter and summer levels of the lake.

A lake level study was conducted by the Spicer Group, consulting engineers of St. Johns, Michigan. The study was performed according to the requirements of the Inland Lake Level Act, Act 451 P.A. of 1994 Part 307. The study recommended a legal lake level be established for a winter and summer level, special assessment district, and replacement of the deteriorated lake level control structure.

The Honorable Margaret M.S. Noe, Lenawee County Circuit Judge, set the lake levels according to the Spicer Group study: Summer level 939.70 feet (N.A.V.D. 88), Winter level 939.20 feet (N.A.V.D. 88) . The levels were fixed on June 29, 2009 in the Lenawee County Courthouse, Adrian, Michigan and the lake to be lowered for the winter level in the month of November, and raised in the month of April under the jurisdiction of the Lenawee County Drain Commissioner.

Constructions plans were completed by the Spicer Group. Construction commenced in the Winter of 2010 and the new structure and berm was completed in the Summer of 2010. The construction was performed by E.T McKenzie Company.

RECOMMENDATIONS AND CONCLUSIONS

See attached report.

It should be noted that the amount of money available to spend on a lake level is limited to \$10,000.00 per year. In order for the Drain Commissioner to exceed this limit, an emergency condition or a petition by the district is necessary.



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
LAND AND WATER MANAGEMENT DIVISION
DAM INSPECTION REPORT**

This form is to be used for inspection reports required by Part 307, Inland Lake Levels, for those dams that do not meet the size criteria as defined by Part 315, Dam Safety, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Dams six (6) feet or more in height, as defined by Part 315, and impounding five (5) acres or more at the design flood elevation, must meet the inspection report format as outlined in Section 31518 of Part 315.

A person failing to comply, or falsely representing dam conditions, is guilty of misconduct in office.

DAM NAME Cambridge Lake		DAM ID 711	COUNTY Lenawee
DATE OF INSPECTION June 21, 2018 March 23, 2020	NAME OF WATERBODY Cambridge Lake	SECTION, TOWN, RANGE Sec. 14 & 15 T 5-S, R 2-E	LEVEL THIS DATE 940.00
DATE ELEVATION SET BY COURT 7-9-2012	LEGAL LEVEL 939.70 Summer 939.20 Winter	DRAWDOWN LEVEL 939.20	HIGH WATER MARK ELEVATION 940.18

EARTH EMBANKMENTS LEFT EMBANKMENT 73 FT. RIGHT EMBANKMENT 67 FT. TOTAL LENGTH 140 FT.
(LOOKING DOWNSTREAM)

	UPSTREAM	CROWN	DOWNSTREAM
VEGETATIVE COVER	Good	Good	Good
EROSION	None observed at the time of inspection	None observed at the time of inspection	None observed at the time of inspection
SEEPAGE			
SLIDES, SLUMPS & CRACKS	None observed at the time of inspection	None observed at the time of inspection	None observed at the time of inspection
ANIMAL BURROWS	None observed at the time of inspection	None observed at the time of inspection	None observed at the time of inspection
WAVE ACTION PROTECTION	1' wide concrete headwall with 16-foot opening near structure limits wave action and protects structure		Rip rap
REMARKS*	None	None	None

CONTROL STRUCTURE

TYPE 2- 6 foot stop log weir bays with 12 inch sluice gate.	YEAR CONSTRUCTED 2010	STRUCTURAL HEIGHT (top of dam elevation minus stream invert) 1.27 feet
LENGTH OF SPILLWAY 12 feet	FREEBOARD 2.0 feet	HYDRAULIC HEIGHT (design flood elevation minus stream invert) 6.67 feet
VERTICAL PIPE SIZE Not applicable.	HORIZONTAL PIPE SIZE Not applicable.	HEAD (normal headwater minus normal tailwater) 2.50 feet

DESCRIBE CONDITION OF THE FOLLOWING ITEMS.

STOPLOG VALVES AND GATES (open and close to check condition): Check location of top stoplog in relation to top of riser pipe intake box or fixed crest, for leakage, and condition of stoplogs, valves and gates.
Good condition. All Valves and gates were constructed in 2010, the metal gate components are showing signs of oxidation on the west end and should be monitored closely.

CONTROL STRUCTURE (continued)

<p>OUTLET PIPE: Check for damage from ice, logs, vandalism; inside discharge pipe for settlement and/or joint separation; condition of pipe coating. 42" inch cnp culvert set in concrete footing base of private drive. Pipe culvert in good condition and was used in the redesign of the new outlet structure in 2010.</p>	
<p>CONCRETE STRUCTURE: Check for erosion; location of cracking or spalling. If old or new; settlement; need for crack repairs. Not a concrete structure for the control structure. The headwall and opening upstream of the control structure appears in good condition with no major cracking. The metal control structure is showing signs of oxidation and should be monitored closely.</p>	
<p>WALKWAY & RAILING: Check if in place or removed, condition, and if adequate protection provided.</p> <p>Good condition. Metal walkway and railing</p>	<p>TRASHRACK OR LOG BOOM: Check if operable.</p> <p>Good condition</p>
<p>EMERGENCY SPILLWAY: Size, type, and condition.</p> <p>A 12" inch diameter stainless steel sluice gate (EL. 936.00) is self-contained within and near the bottom of the control structure. The sluice gate is operated via a hand wheel located on the metal walkway.</p>	

INLET & OUTLET CHANNELS

	INLET	OUTLET
SIZE	16-foot wide concrete headwall approx. 5 feet upstream of control structure.	42" culvert under private drive downstream of control structure. Channel downstream of culvert is 15+ feet wide.
EXISTING CONDITION	Good	Good
EROSION	None observed	None observed
DEBRIS & OBSTRUCTIONS	None observed	None observed
RIPRAP PROTECTION	Yes, good condition	Yes, good condition
REMARKS*	Good condition, monitor metal components of control structure to ensure integrity is not lost due to oxidation.	Good condition

RECOMMENDATIONS

List work needed, how to be done, by whom, estimated cost, source of funds, recommended completion date. If emergency, to what extent. ADDITIONAL COMMENTS.

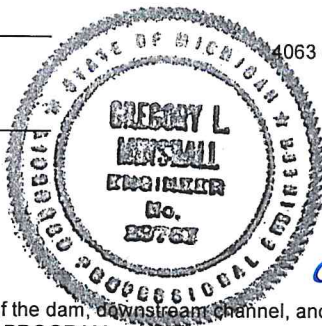
Inspection Ordered By: Jennifer L. Escott, Lenawee County Drain Commissioner

Lenawee County Delegated Agent

Gregory L. Minshall, PE

INSPECTOR'S NAME (PRINTED)

Gregory L. Minshall
SIGNATURE



4063 Grand Oak Drive, Suite A109
Lansing, MI 48911
517-887-1100

No. 29767

REGISTRATION NO.

6/22/2020

Please submit this completed report and photographs of the dam, downstream channel, and deficiencies cited in the report to:

DAM SAFETY PROGRAM
LAND AND WATER MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
PO BOX 30458
LANSING MI 48909-7958

*NOTE: If space is inadequate for remarks, attach additional sheets as needed.

PICTURES FOR CAMBRIDGE LAKE - LAKE LEVEL CONTROL STRUCTURE



Downstream side of structure
(Looking north)



Upstream side of structure
(Looking east)



East embankment
(Looking east)



West embankment
(Looking west)



Inlet pipe under private drive crossing
(On South side, looking north)



Oxidation of metal gate components
(West side)