MARIAVILLE LAKE CIVIC ASSOCIATION

MARIAVILLE LAKE DAM

Location

The Mariaville Lake Dam is located on Mariaville Lake in the Town of Duanesburg, Schenectady County, New York. The dam is located at Latitude N42º49'42", Longitude E74º08'08" on the Duanesburg Quadrangle.

Background

The Mariaville Lake dam, located along the northern shore of Mariaville Lake, is built across the upper reach of the Chuctanunda Creek. The dam was first built as an earthen dam in the 1700's for a factory manufacturing shovels. In 1830, the dam was rebuilt using clay, fieldstone and a wooden spillway for operation of a gristmill and sawmill. In 1900, the wooden spillway was replaced with a concrete spillway, and then in 1917 the spillway was re-pointed, widened and thickened.

Ownership of the dam was later conveyed to the MCA with the primary use being recreation. By the late 1970's the dam was in need of repairs and was determined by the Corps of Engineers in their 1980 "Phase 1 Inspection Report" to have "seriously inadequate" spillway capacity. The Corps also classified the dam as "small" in size and "high hazard, because of its location within the hamlet of Mariaville where several homes located along the banks of the downstream channel face a potential threat in case of dam failure". In 1989, representatives of the MCA submitted a Permit Application for extensive repair work listing the dam hazard class as Class "C" and a Dam Safety Permit was subsequently issued by NYSDEC to do the work. These repairs, completed in 1990, brought the dam into compliance with NYSDEC requirements and generally included capping/replacement and raising the height of deteriorated fieldstone dam walls using concrete walls, and re-facing of portions of the spillway and abutments.

Immediately downstream and buttressing the dam is a roadway embankment carrying Batter Street, which is maintained by Schenectady County (County). The lake outlets water over the spillway into a concrete/stone masonry drop inlet box immediately downstream of the spillway. Water is then conveyed from the drop inlet to a box culvert beneath the roadway embankment and into the South Chuctanunda Creek. In 2004, the deteriorated concrete box culvert beneath Batter Street was lined with a 48-inch diameter smooth bore pipe, the pipe extended, and the downstream roadway embankment slope stabilized, all by the County. Then in 2005, the drop inlet box was re-faced by the County with reinforced shotcrete. In 2007, concerns were raised to the County by NYSDEC that the work had been done without a Dam Safety Permit along with concerns about the hydraulic capacity of the new culvert pipe. NYSDEC requested that design information and drawings by submitted for review in order to assess the impact the roadway work had on the dam. The County provided this information and the NYSDEC.

DEC DAM SAFETY REGULATIONS

The operation, maintenance, inspection, repair and emergency planning of the Mariaville Lake Dam are to be in compliance with the New York State Department of Environmental Conservation (DEC) Dam Safety Regulations. Currently the MCA Dam Safety Committee has reviewed all requirements and the MCA hired John M. McDonald Engineering, P.C. to work on State mandates. The MCA Committee has prepared an (EAP) – Emergency Action Plan and reviews and changes are made yearly. In addition to the EAP we need to maintain a Maintenance plan for the dam which we do. We also complete the following tasks.

OPERATIONAL PLAN

An outline of the operations of the dam and outlet works is as follows:

- With the outlet gate closed, the concrete spillway will serve to maintain the lake at the level normally used for recreational purposes and is designed to pass flows without regulation through the outlet gate.
- The outlet gate will be opened to drain the lake in the fall and pass flows through the winter. Prior to opening gate, check for debris in front of the gate and remove any found
- In the spring, check gate for obstructions and/or debris and remove accordingly. Close gate to allow lake to fill.
- Gate valve 22' below outflow. Open in the event of major flooding event or dam or valve repair.

INSPECTION PLAN

In general, the lake levels, spillway, dam, shoreline, and outlet works should be inspected on a regular basis to note any changes or unusual developments that occur. Unless specifically indicated, most inspections described herein do not require a professional engineer and can be performed by the Dam Owner's personnel, who are most familiar with the dam and environs. Property owners along the dam should also be aware of what to look for and be vigilant of any changes.

Immediately report the following to the Dam Owner:

- Whirlpools, sinkholes, or settlement
- Uprooted tree or debris on the dam
- Leakage through spillway and water "boils" below the dam - ?
- Damage to spillway, dam and outlet works
- Any unusual changes to water levels

Inspections on the dam should be performed at various intervals as follows:

Annually – Spring (prior to closing outlet gate)

- Inspect gate, seats, and operator for damage.
- Check for obstructions.
- Check for any damage below normal summer water level to structural elements of dam including spillway, slab, and abutments.
- Check for any shoreline erosion, washouts, or sinkholes.
- Check for any unusual seepage along length of dam, spillway, and outlet works.
- Check side walls for movement, settlement, and change in orientation.
- Take photographs for a year-to-year comparison.

Annually – fall

- Check and clear front of gate from debris and obstructions, prior to opening outlet gate.
- Check outlet pipe for damage, undermining and erosion of riprap at end, prior to opening outlet gate.
- Verify operator is properly greased and operational, prior to opening outlet gate.
- As gate is opened, verify that gate is lifting properly and water flowing through spillway with no leakage.
- Once lake has reached winter lower level, check along shoreline for any changes from previous inspections. Check for any shoreline erosion, washouts, or sinkholes.
- With lake lowered, check along all visible dam faces, gate valve, outlet works, and break walls for any damage and wear and tear.
- Take photographs for a year-to-year comparison.

Daily

- Check outlet gate for tampering or opening without authorization.
- Check lake level for any unusual day-to-day drop in elevation. If unusual drop, check outlet gate for unauthorized opening, then check spillway and along dam for leakage, whirlpools, standing water, and seepage.
- Check dam, spillway, and outlet works for any day-to-day changes.
- We have fenced off gate and spillway area with 4 foot chain link with a locked access gate.

High Water/Flood Events

- Check along dam for leakage, whirlpools, standing water, and seepage.
- Check lake level at regular intervals through out the event. Watch for overtopping of abutments and earthen dam.

- After the water has receded, check for any damage or changes from pre-flood to post-flood conditions.
- After a major event, a professional engineer should be consulted.

4-year Dam Safety Inspection

- Engage the services of a qualified professional engineer to perform a thorough 4-year inspection and prepare a report and documentation as required by NYSDEC.
- Owner should provide engineer with pictorial and written records of annual inspections to assist in preparation of 4-year report.

10-Year Engineering Assessment.

- Engage the services of a qualified professional engineer to perform an engineering assessment and prepare a report and documentation as required by NYSDEC.
- Owner should provide engineer with pictorial and written records of annual inspections to assist in preparation of engineering assessment.

MAINTENANCE PLAN

In general, the inspection intervals recommended herein should identify any damage or developing problems that should be repaired. As part of the inspection, operation, and maintenance program for this dam, damage and/or seepage should be immediately reported and repaired to their pre-damaged condition as soon as possible. Since the major dam elements consist of reinforced concrete, normal maintenance is relatively minor and limited to keeping the dam cleared, free of debris, and operation of the outlet works. A general maintenance outline is as follows:

- Keep all brush removed from dam faces for proper visual inspections.
- Remove and grub out any dead trees, and do not plant any new trees along the berm.
- Remove and grub any uprooted/blown down trees.
- Grease outlet gate mechanisms.
- Remove debris accumulation from spillway, stream channel, gate valve, outlet pipe, and downstream from spillway.
- Keep outlet gate and spillway access areas clear.

Your MCA Dam Safety Committee is hard at work to keep the dam safe for the community and our enjoyment.