VERMONT

Vermont Department of Environmental Conservation *Agency of Natural Resources*
Facilities Engineering Division, Dam Safety Section
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MEMORANDUM

TO:	For the Record
FROM:	Steven Hanna, Dam Safety Engineer
DATE:	July 9, 2015
SUBJECT:	Inspection of Curtis Pond Dam, Calais, Vermont

On June 23, 2015, Stephen Bushman, P.E., Steven Hanna, and Jaclyn Kaehler made a routine periodic inspection of the Curtis Pond Dam located in Calais, Vermont, State Identification Number 40.09. Local dam monitors, Lewis Franco and Chris Miller, were present at the time of inspection. This inspection was carried out under provisions of Title 10 of the Vermont Statutes Annotated, Section 1105. A number of photos were taken. The last inspection of the dam was conducted on June 6, 2014. This report updates those observations and records additional information.

OVERALL CONDITION

The overall condition of the dam remains **POOR**.

DOWNSTREAM HAZARD CLASSIFICATION

The dam is a Class 2, "Significant Hazard" Dam.

JURISDICTION

Since the dam impounds more than 500,000 cubic feet, any alteration, reconstruction, breaching, or removal would require prior approval from the Department under provisions of 10 VSA Chapter 43.

RECOMMENDATIONS FOR OWNER

1. **The project to determine the appropriate rehabilitation of the dam needs to be finalized and an application submitted. The dam should be replaced or repaired as soon as possible**.

2. The dam should be observed periodically for any change in the seepage pattern, volume or clarity. Any sinkhole development or dam movement should be noted. Report any changes to the State Dam Safety Office at (802) 490-6229.

3. Keep clearing the spillway of debris, and remove all accumulated debris from the dam. Debris should not be left on dam top, embankment, or downstream of the dam.

4. Remove docked boats in the approach channel so that the spillway can function at full capacity.

5. The footbridge over the spillway should be raised to insure a clear unobstructed spillway channel.

6. The small woody vegetation along the upstream waters edge should be removed. The crest of the dam should continue to be kept mowed.

7. Remove the maple tree on left side of downstream slope. Leaving it in place can lead to further displacement of the stones in the downstream wall.

8. Discourage the use of the crest as a sandbox for children, especially if crest material is being disturbed or removed. In an overtopping event, the exposed soils can become a weak point and act as a conduit for erosion and failure.

INSPECTION

The inspection of the dam was conducted on June 24, 2015 at 0900 hours. The weather was cloudy with rain and temperatures in the low 60's. The weather prior to the inspection was rainy and the ground conditions were wet. The following was observed:

1. Embankment Section

   a) Upstream Slope: The upstream slope had moderate woody vegetation at the water's edge. There was also minor erosion along the water's edge.

   b) Downstream Face: The downstream face consists of a dry laid masonry wall. The wall leans off vertical to the downstream side, approximately 18 inches maximum recorded in previous reports, and is continuing to move. Seepage through the stone wall appears to be increasing over time; the flow was heavy and extends roughly five feet on either side of the spillway. Rounded rocks have been filled in where originals have fallen out. Original rocks are deteriorating, weakening, and breaking. There is a large maple tree growing at the toe near the left abutment. A garden is planted along the bottom of the right wall and weedy vegetation is growing along the left wall. Bridging was occurring in several places due to rock loss.

   c) Crest: The crest consisted of well mown grass with some woody brush at the shoulders. There was an area near the left abutment being used as a sandbox. There were few sinkholes concentrated within 3 feet of the spillway that were previously filled in with stone and soil. There were a few new sinkholes that need to be treated the same way.

2. Spillway: The principal spillway consists of an uncontrolled channel on the crest. A foot bridge crosses over the spillway. The approach contained a floating pedal boat that was tied off on the crest. The spillway leaks allowing water into the dam and seepage at the bottom of the downstream face spans out to five feet on either side of the spillway. It is believed that this short circuiting of the spillway is the primary cause of the sinkholes that appear each year. The discharge channel was rock lined and contained minor debris.

3. Sluice Gate: The stone tunnel in the dam wall appeared flush and level. Wooden planks were acting as the gate. Water pours into the tunnel after cutting behind the spillway and flowing through the dam wall.

HYDROLOGY AND HYDRAULICS

The drainage area at this site is about 917 acres. The pond area at the normal pool is about 76 acres with storage of about 724 acre-feet. At the dam crest, the pool stores 1,000 acre-feet.