VERMONT

Vermont Department of Environmental Conservation *Agency of Natural Resources*
Facilities Engineering Division, Dam Safety Section
1 National Life Drive, Main 1 [phone] 802-490-6229
Montpelier, VT 05620-3510

MEMORANDUM

TO:	For the Record
FROM:	Stephen Bushman, P.E., Dam Safety Engineer
DATE:	June 11, 2014
SUBJECT:	Inspection of Curtis Pond Dam, Calais, VT

On June 6, 2014, Stephen Bushman, P.E., Steven Hanna, and Matthew Gardner made a routine periodic inspection of the Curtis Pond Dam located in Calais, Vermont, State Identification Number 40.09. 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 May 22, 2013. This report updates those observations and records additional information.

OVERALL CONDITION

The overall condition of the dam was **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 should be finalized. 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. Also 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 or docked boats in the approach channel should be removed so that the spillway can function at full capacity.

4. Debris cleared from the spillway should be removed from the embankment as soon as possible.

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 6, 2014 at 1345 hours. The weather was cloudy with showers and temperatures in the low 60's. The weather prior to the inspection was rainy and the ground conditions were dry. 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 waters edge. A large amount of beaver dam debris cleared from the spillway was piled up on the left edge of the slope, as noted during previous inspections.

   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 at maximum, as recorded in previous reports. Seepage through the stone wall appears to be getting worse over time; the flow was heavy and roughly five feet on either side of the spillway. Rounded rocks have been filled in where originals have fallen out. Original rocks that are still in place are deteriorating and weakening. 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 several sinkholes concentrated with in 3ft of the spillway that were filled in with stone and soil.

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 contains leaks as 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 seemed flush and level. Wooden planks were acting as the gate. Water was pouring 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.