VERMONT

Vermont Department of Environmental Conservation *Agency of Natural Resources*
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MEMORANDUM

TO: For the Record
FROM: Stephen Bushman, P.E., Dam Safety Engineer
DATE: April 27, 2012
SUBJECT: Inspection of Curtis Pond Dam, Calais, VT

On July 27, 2011, Stephen Bushman, P.E., and Charles Carpenter, E.I.T., 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 where taken. The last inspection of the dam was conducted on June 1, 2010. This report updates those observations and records additional information.

OVERALL CONDITION

The overall condition of the dam was poor, which has been noted in previous reports.

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) 654-8971.

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

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

6. The erosion at the water's edge along the left side (looking downstream) should be backfilled with suitable material.

7. Remove the tree on left side of downstream slope. Leaving it in place can lead to a 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 July 27, 2011 at 1300 hours. The weather was cloudy with temperatures in the 70's. The previous weather conditions were rainy. 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 animal borrow on the left of the spillway was creating a slump towards the water.

   b) Downstream Face: The downstream face consists of a dry laid masonry wall. The wall leans off vertical to the downstream side, as recorded in previous reports. Seepage through the stone wall appears similar to previous inspections in both pattern and quantity; 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. 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.

   c) Crest: There were a few sinkholes along the top of the crest that were filled in with stone and soil. The left side of the crest was covered with tall grass, weeds and woody vegetation. The right side, past the wood fence, was well mown grass with some woody brush at the shoulder. There was an area near the left abutment being used as a sandbox. It appeared as if some disturbance to the crest was occurring as a result.

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. No water was flowing over the spillway, as it cut behind the capstone and ran down through the dam wall. This is believed to cause the sinkholes near the spillway. The discharge channel was rock lined and was free of debris. Weeds were growing along the banks.

3. Sluice Gate: The stone tunnel in the dam wall seemed flush and level. Wooden planks were acting as the gate holding water back. Water was pouring into the tunnel after cutting behind the spillway and flowing through the dam wall. The flow was about 10 gpm exiting into the sluice tunnel.

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.