

MEMORANDUM

TO: For the Record

FROM: Robert B. Finucane, P.E., Assistant Dam Safety Engineer

DATE: May 28, 2001

SUBJECT: Inspection of the Curtis Pond Dam, Calais

On May 16, 2001, Robert B. Finucane, A. Peter Barranco, and Jennifer Vosburgh, made a routine inspection of the Curtis Pond Dam in Calais, Vermont. The town of Calais requested an inspection after a recent discovery of a sinkhole on the top of the dam at the left upstream side of the spillway. The sinkhole was observed when a pile of beaver debris was removed from the top of the dam. Greg Johnson was present during the inspection. The last inspection of this dam was in 1989. A number of photographs and observations were taken.

OVERALL CONDITION

The overall condition of the dam is poor and requires permanent repairs.

RECOMMENDATIONS FOR OWNER

Recommendations for the owner include:

- 1) Sandbags should be placed in the sinkhole and along the upstream slope.
- 2) Make arrangements to observe the dam daily and report any changes, such as:
 - a) increased leakage
 - b) different location of leakage
 - c) muddy leakage
 - d) enlargement of or formation of new sink holes
 - e) movement of the dam

Any observed changes should be immediately reported to the Town or the State Dam Safety Office at (802) 241-3454.

- 3) The Town should make periodic checks of the dam.
- 4) Determine the owner of the dam.

5) Develop an Emergency Action Plan (EAP) to warn downstream residents in the of failure of the dam.

6) Plans should be generated for the reconstruction of the dam.

INSPECTION

The inspection of the dam was conducted on May 16, 2001 between 9:00 and 10:30 A.M. The weather was partly cloudy and in the 50's. The ground was firm and dry. The water level was 0.17 feet above the PK nail. The following was observed:

1. Embankment Section.

a) Upstream Slope. The upstream slope of the of the embankment was firm, dry, and regular. The upstream face of the dam is lined with a rock wall, which prevents erosion and stabilizes the dam. A small portion of the rock wall was missing on the left side of the spillway, allowing water pass through the wall.

b) Downstream Slope. The downstream slope of the dam was in poor condition. The downstream slope consists of a rock wall. Portions of the rock wall were covered with moss, which indicates that water is seeping through these areas of the rock wall. A rock was missing from the wall and water was seeping from many areas on both the left and right side of the spillway, all indicating a possible future failure of the dam.

c) Crest. A sinkhole was located on the left side of the spillway. It was found to be approximately 7 feet long, 3 feet wide, and up to 3 feet deep consisting of gravely fill.. Water was flowing from the sinkhole in several places from the pond through the earth and rockfill along the upstream crest. The water was disappearing into the interior of the dam without an obvious exit point downstream, but was probably contributing to several leaks in the downstream stone face and sluice to the left of the spillway. The flow was estimated to be 10 to 15 gallons per minute. A second sinkhole was found on the right side of the spillway with soft soils. The sinkhole was much smaller than the previous.

d) Toe. The toe of the dam was firm, dry, and regular. A deposit of gravel about 3 feet wide and 4 feet long was present under the tail water just below the sluice. The likely source of the material washed from the sinkhole into or adjacent to the sluice.

2. Principle Spillway.

a) Weir and inlet. The weir and inlet of the principle spillway was in good condition. There was a small amount of debris, which should be removed. The crest of the principle spillway was uneven.

b) Outlet Channel. The outlet channel was in good condition.

3. Sluice.

a) Structure. The sluice was in poor condition. Discharge was seeping into and around the sluice. Moss was found growing in and around the sluice, an indication of continuous water flow.

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.

DOWNSTREAM CLASSIFICATION

The dam is a Class 2, “significant hazard” dam.

JURISDICTION

Since the dam impounds more than 500,000 cubic feet, any alteration, reconstruction or breaching would require prior approval from the Department under provisions of 10 VSA Chapter 43. Further drawdown of the pond below the base of the riser would require approval from the Department under a 1272 Order.