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Fwd: #294 Parker Pond Dam - Inspection 4/22/17 - Hazard & Condition Assessment

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Wed, Nov 8, 2017 at 8:04 AM

From: Fletcher, Tony <Tony.Fletcher@maine.gov>
Date: Sat, Apr 22, 2017 at 6:29 AM
Subject: #294 Parker Pond Dam - Inspection 4/22/17 - Hazard & Condition Assessment
To: Stephen Linder <stephen.j.linder@gmail.com>
Cc: "Hyland, Mark" <Mark.Hyland@maine.gov>, "Ayotte, Tara" <Tara.Ayotte@maine.gov>

To; The President, Parker Pond Association

From; Tony Fletcher, State Dam Inspector

Hazard and Condition Assessment of Parker Pond Dam

Inspection Date – 4/21/17

Law Applicable – MRS 37B chapter 24: DAM SAFETY

Inspection by – Tony Fletcher Accompanied By – Steve Linder, Chair of the Parker Pond Assn.

1) Description of Dam

12.5' high, 150' long old New England earth dam contained downstream with a undressed stone wall. Originally used to store water for milling, now used for recreation.

Dam Outlet – One 35' wide, 4.5' high, uncontrolled, broad crested weir spillway, cobble lined, trapezoidal, with an estimated "full" capacity of 820 cfs. At full capacity the velocity of water flowing in the spillway is about 5.2 cfs. The dam has no drain gate.

Lake – Area at Normal Pool is 1,500 acres set in a 15.3 square mile basin of rolling wooded hills.

The dam is about 200 years old and lacks engineering construction records. It is not known if there is timber cribbing in the foundation.

2) EAP Assessment

Hazard and dam EAP - Currently the dam is classified a "significant potential hazard dam".

The EAP has been reviewed and is current. The notification flowchart is adequate to handle an emergency, but the EAP is lacking a detailed "dam breach inundation map". This will be provided by MEMA in due course.

A test of the dam EAP is being planned.

3) Hazard Assessment

File review and hydraulic storm & breach model. The file and previous assessment and reports for the dam were reviewed. The hydraulic model previously used was updated and run again. Some changes were made to the constants used, in particular the basin, some elevations and the runoff factor was reduced from 73 to 60. Other additions made to the program were the addition of; 1, 10 and 100 year storms from State rainfall data for Kennebec County. Since the latest version of the hydraulic model used now incorporates a dam breach model, this was run using a 25' wide breach developing in 2 hours. This breach was found to overtop Route 41, approximately 150' from the culvert somewhere near the abandoned building. The following was found;

3.1) Routing a 100 year storm under antecedent moisture condition of 3, it was calculated that the lake would rise 2' above normal pool and peak at 250 cfs and the estimated water velocities in the spillway will approach 4.5 fps. This velocity could dislodge smaller stones in the riverbed, especially downstream where it is anticipated the velocity will increase. This flow is likely to further damage the left bank of the spillway especially where it is currently damaged.

3.2) The dam is likely to overtop during the same 100 year storm falling on snow with a water equivalent of 6" or more.

3.3) A 25' wide, fair weather breach (FWB) of the dam, beginning at NP was estimated to be 1,718 cfs.

3.4) The first structure downstream of the dam is Bridge #BR 2987. During the breach flow in 3) above, R41 will overtop an estimated 1.4' in the area shown in photo 16. 3.5) The bridge itself will not overtop during the FWB because it is not the low-point in the road.

3.6) A FWB of Parker Pond dam will increase the flow at Taylor Pond Dam, and the R41 bridge immediately downstream, by 1,165 cfs. This incremental flow will not will not overtop either the dam or the bridge during normal conditions. However, if the same breach occurred during a 100 year storm, Taylor Pond and the bridge on R41 may overtop. Thus both of these structure should be placed under observation during an emergency.

4)Condition Assessment

The dam site was accessed using the ROW from R41 and entered at he left abutment when inspection commenced. The road was in poor condition. The following features were inspected; abutments, spillway, top of the dam, upstream and downstream faces of the dam. Observations and comments are shown on the photographs below.

The dam was recondition in 2007. Since then it has operated satisfactorily. A cursory inspection of the dam was done in 2014. Since then maintenance defects have developed and there are indicated on the relevant photographs below. The defects have been numbered as follows;

- 4.1) A 60' length of Scour along the left spillway channel wall at water level.
- 4.2) A leaning tree.
- 4.3) Settlement of the top of the dam in places.
- 4.4) Stone Settlement
- 4.5) Stone Rotation

The most serious defect is the undercutting of the left bank of the spillway which is causing one mature pine tree to lean. This tree will eventually fall into the spillway channel and impede flow. At the top of the dam is some local settlement and at the toe the old stones has moved.

5) Conclusions & Recommendations

- 5.1) The dam must retain its current significant hazard class.
- 5.2) The dam owner must have control of the access gate to the dam and the ROW for inspection and emergency purposes.
- 5.3) The access road to the dam must be maintained to a standard sufficient to carry earth moving equipment.
- 5.4) The EAP TTX should be planned before 2018.
- 5.5) Erosion of the spillway channel must be lined to prevent erosion before 2018.
- 5.6) Stones which show rotation and/or displacement should monitored for excess movement.
- 5.7) the top of the dam should be top soiled and rolled to fill localized settlement.
- 5.8) If trees die on the dam, their root structure must be removed.
- 5.9) DEP permits are not required to carry our dam maintenance.
- 5.10) The dam should have written operating & maintenance procedures.

6) Dispute

If you do not agree with this assessment, please notify this office within 20 days of receipt, and provide a written basis of dispute within 3 months of receipt.

Photographs



1. Spillway. Flow 12 cfs.

1. Scour



2. Downstream Spillway Channel.

1. Scour undercutting bank

2. Leaning Tree



3. Channel erosion undercutting left abutment



4. Tail pond / spillway channel junction



5. Downstream spillway channel – No erosion

3. Settlement



6. Top of dam right – Settlement

Mssrs. Miner & Perez
See attached letter



7. Embankment R – Top even - Rip-Rap in place



8. Embankment L – Top even - Rip-Rap in place



9. Toe L – No erosion or visible movement



10. Filled-in gateway – insignificant settlement

4. Stone Movement



11. Toe right. Stone displacement

5. Stone Rotation



12. Toe right – Stone rotation downstream



13. Dam right – logs underwater



14. Dam left



15. Downstream river approaching Bridge #2987



16. Bridge #



17. BR# 2987 – Small culvert likely



16. Dolloff Woods Road



18. Taylor Pond Dam



R41 Bridge downstream of Taylor Pond

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Regards,
Bill Rosenberg