

DRAFT Minutes
 HARVEY LAKE DAM COMMITTEE
 MEETING WITH VERMONT DEC REGULATORS
 JUNE 5, 2023

A meeting with the Barnet Dam Committee (BDC) and State Regulators was held at the Barnet Fire Station. The purpose of the meeting was to discuss the project concept and receive input from the regulators on permit challenges to be addressed and resolved as part of a Dam Alteration Permit (DAP) Application.

The following individuals attended the meeting are listed in Table 1 along with contact information based on the sign in sheet:

Table I Individuals Attending the 6-5-23 Meeting and Contact Information

Name	Organization	Phone No.	Email
George Coppenrath	Barnet Dam Committee (BDC)	802-777-0386	george.coppenrath@gmail.com
Don Easter	BDC	802-633-4928	beaster@shippeefamilyeyecare.com
Joe Mangiapane	BDC	802-633-4984	rojoman@myfairpoint.net
Dylan Ford	BDC	802-274-4862	dylancareyford1@gmail.com
Red Dufresne	BDC	802-633-0015	red.dufresne.harvey@gmail.com
Harry Cornelius	Lake Resident	561-704-5939	harryacornelius@gmail.com
Jaron Borg	DEC Stream Alteration	802-371-8342	Jaron.borg@vermont.gov
Jeff Crocker	DEC Rivers and Streams	802-490-6151	Jeff.crocker@vermont.gov
Ben Green	DEC Dam Safety	802-622-4039	Benjamin.green@vermont.gov
Andrew Sampsell	DEC Dam Safety	802-636-7031	Andrew.sampsell@vermont.gov
Keith Fritschie	DEC Watershed Planner	802-490-6176	Keith.fritschie@vermont.gov

The following items were discussed:

1. Dylan pointed out that the Lake was a valuable resource to the Town and provided economic, recreational, and cultural benefits. The water quality of the Lake is crucial to maintain these values. The BDC is operating with the direct support of the Town

Selectboard with the goal to reduce or eliminate water quality degradation of Harvey Lake due to the backflow of South Peacham Brook. The goal is to define and complete a feasible project to accomplish this goal and complete the construction in the near future. Dylan indicated the non-productive study of the issue has gone on for far too long without any physical improvements to show for it. Something must be done to protect the Lake and it has to be done soon.

2. George gave a brief history of this dam and previous dams constructed at the current location based on his 65 years of living adjacent to the dam site. The previous dam owned by Green Mountain Power was equipped with two large flood gates which were opened by the operator during high flows. This operation allowed the upstream area to remain clear of silt deposition and minimized backflow and silt deposition in the lake outlet area during storm events. The current dam constructed in 1970 was not equipped with gates or stopboard structures large enough to allow sufficient flow to accomplish this same function and silt has been deposited in the area upstream of the dam and in Harvey Lake east of the Town Beach. The current silt deposition is shown in aerial photos which were passed around the group. The silt was removed by the Town upstream of the dam but has redeposited six years after the removal project.
3. George noted the State of Vermont completed a water quality report in 1983 for Lake Harvey and found there were four major sources of nutrients entering the lake and recommended various solutions to reduce the nutrient loading. One of the sources was the nitrogen and phosphorous loading from backflow into the lake by the current dam.
4. George went on to describe that in 2001, the Town completed three of the four projects identified in the State's 1983 Diagnostic – Feasibility Report with the cooperation of the Roy farms, and members of the Lake Harvey Association (LHA). These three projects included diversion ditches, earth berms, and pipes to divert runoff from the easterly agricultural lands above the lake to the Stevens River below the lake. Unfortunately, the fourth recommended project calling for reducing the nutrient loading due to backflow from South Peacham Brook into the lake has remained unfinished.
5. George noted that to date about \$250,000 has been spent on paper studies without anything to show for it. He stressed the importance of implementing physical improvements to address the negative water quality effects of the backflow in the near future.
6. George indicated that based on his observations, it seems apparent that the different watersheds are a major factor in creating backflow into the lake. The South Peacham watershed is mostly agricultural in nature with much faster time of travel for runoff whereas the Harvey Lake watershed is mostly forested and absorbs and slows runoff resulting in a much slower time of travel. He sees the flow from South Peacham Brook reaching the dam long before any flow increase observed from the outlet to Lake Harvey. As these higher flows from South Peacham Brook spill over the dam the level at the dam increases which causes the backflow into the lake.
7. Red gave a brief summary of the project improvements currently contemplated by the BDC. The concept sketches were passed around showing the project components envisioned. The improvements include:

- a. Replace the wooden stop boards with fiberglass or aluminum planks.
 - b. Install some grating and handrails to increase operational safety.
 - c. Repair or replace the bottom drain gate, stanchion, stem, and install a bar rack upstream of the drain gate.
 - d. Cut off the east wall of the fish ladder to match the dam crest elevation.
 - e. Install a larger crest gate or bladder (future selection based on costs yet to be determined) to discharge the 100-year flood flow from the South Peacham Brook to the Stevens River. The geometry of the gate or bladder would be determined once the hydrology is finalized.
 - f. A monitoring and control system to monitor water level upstream of the dam, at Harvey Mountain Road Bridge, and in the Lake near the beach. This data would control the gate or bladder to discharge the flow from South Peacham Brook.
 - g. Remove the accumulated silt upstream of the dam.
 - h. Install erosion protection on the downstream west side of the dam.
 - i. Construct one or more spur dikes upstream of the dam to focus flow to the east to prevent silt deposition in this area and protect the west side of the area just upstream of the dam.
8. Red indicated that the BDC conceptualized this project largely based on failure of the previous project concept of breaching the existing dam and constructing a new dam in the outlet channel of Harvey Lake. This project did not receive approval from engineers from the Vermont Dam Safety Program (DSP) largely due to the location of the proposed dam which called for extensive site work and loss of wetland area as well as other negative factors. Ben indicated that the concept of breaching the existing dam and replacing with a new dam was an acceptable concept, but it was the location proposed by Interfluve for the new dam was largely the reason that the project did not receive project approval from his program.
 9. Joe gave a history of the dam based on his experience living and working in the area. He had seen the lake rise 2.5 feet from normal and flood his basement. And for a lake of about 350 acres, this is a huge amount of flood water. Joe indicated the water quality issue is a significant issue and it is crucial something be done very soon.
 10. Don reported that the Town beach (located near the lake outlet is a valuable asset and important to many Town residents. But due to the location, the beach area receives the worst effects of backflow. In the past backflows have caused high coliform counts resulting in beach closure. In addition, the silt deposition has reduced the swimming area and created a mucky bottom in the easterly area of the beach and it continues to get worse.
 11. Don pointed out and Ben confirmed that Harvey Lake is unique in Vermont with a dam located below the confluence of the lake outlet stream and a separate stream from a significant watershed.
 12. Jeff asked how the monitoring and control system would work and Red indicated that it had not been specifically defined as yet but would entail continuous water level monitoring of the South Peacham Brook near the Harvey Mountain Road Bridge, at the upstream side of the dam and at the lake level near the outlet on the east side of the beach. The Harvey Mountain Bridge seems to be conducive for an

informal gauging station to convert water level to flow. There may also be a flow direction monitor which detects backflow into the lake as well. We would need to define the system parameters to provide for slow changes in the gate operation for flow changes both downstream and upstream of the dam. We also need to define how the system would alarm and react to system or individual component failures. Standby power would be another factor to assure operation in loss of primary power. Another factor to consider is minimum release which may require another smaller discharge control device to ensure the flow out of the dam at least matches the flow entering the confluence from South Peacham Brook during dry periods. These details would be worked out as the project progressed.

13. There was group discussion on perhaps automating the frequent operation of the low-level drain gate to assist in the passage of material carried from South Peacham Brook to continue to the Stevens River. This seemed acceptable to all parties.
14. George offered to provide a tour of the dam, beach area, and both watersheds to any of the regulators interested in observing the local setting.
15. We discussed the Hydraulic and Hydrologic (H&H) study just starting and is scheduled for completion in August. The purpose of the study is to formalize the hazard classification of the dam. Currently the dam is listed as a "significant hazard" and based on Ben's thoughts would likely be determined to be a "low hazard" dam. The hazard designation is based on potential (or not) for loss of life or critical infrastructure due to dam failure. A low hazard dam would not require some of the investigatory items needed for significant or high hazard dams.
16. Jaron had several questions on the project details regarding some of the items shown on the "Site Plan Harvey like Dam Showing Locally Proposed Improvements" dated 12-7-22. Red reported that the graphic was from the Interfluvial Report and many of the items proposed as part of the Interfluvial project were crossed out. Red indicated there would not be any upstream channel work done as part of the project with the exception of silt removal near the dam and construction of spur dikes upstream of the dam to divert upstream water to the east side of the dam and reduce erosion upstream on the west side of the dam. Red indicated there would also be some stream bank stabilization on the west side of the area downstream of the dam. Jaron indicated this work seemed acceptable, but he would need to see design details and it would require a separate stream alteration permit. Red asked if it could be part of the dam alteration permit and Jaron indicated it would need a separate permit.
17. Red asked if anyone had any thoughts on significant challenges we need to address at this stage of the project. Ben indicated that we would need to address system operation during winter conditions and how the system would react to loss of power or component failure.
18. George indicated that based on his observations the downstream area of the dam stays open during the winter and actually has been habitat for mallard ducks during some winters. In addition, the upstream side of the dam seems to stay clear as the flow maintains the open area at the dam crest. Joe indicated that he had experience with bubblers to maintain open areas during winter operation. Jeff indicated that it would be necessary to ensure ice did not hinder operation of the gates or bladder with the details worked out as part of the project. Ben pointed out that the State

does not have any dams with bladders or crest gates. Red asked about Joes Pond and Ben indicated that dam is regulated through the Vermont PSB and FERC and not through the DEC- Dam Safety Program.

19. Perhaps the most significant project challenge was reported by Ben from comments received from Sacha Pealer. Ben read portions of a May 19, 2023 email from Sacha which was sent to the State regulators named above. Red asked if we could get a copy of the email and Ben provided the paper copy and indicated he would forward the actual email to Red. The email indicates among many other items the following:
“Projects in the floodway need professional engineer modeling to demonstrate no increase in base flood elevation (commonly called the 100-year flood”) (see 413.06 B of Barnet zoning). So, project plans need to include hydrologic & hydraulic modeling (using the Q100 discharge used in the effective FEMA flood study or higher). Certified by a Professional Engineer, to demonstrate the project will not increase base flood elevation (BFE) (0.00’ increase) or increase flood/erosion risks within the community.
20. Red noted that the whole purpose of the project is to send more water down the Stevens to reduce flooding of the lake with inferior quality water from the South Branch.
21. Harry noted that this seems to be a deal breaker and the project should not move forward without resolution of this issue. Red asked why this issue did not arise during the previous project that involved breaching the existing dam which would of send all flows down the Steven’s Branch which would have significantly increased the flow more than the contemplated dam gate project. Ben indicated that perhaps that the previous project included a dam breach the additional flow issue was not fully put forward.
22. Ben apologized that Sacha could not be present at the meeting and it was apparent, another meeting with Sacha should be held in the near future in an attempt to further discuss this issue. There was some discussion on whether this was resolvable via a LOMAR or FEMA map revision which the Local Selectboard has some control over the process. Dylan indicated there was a zoom meeting scheduled later that week regarding the new FEMA mapping project. Dylan and Red did attend the meeting on zoom at which Sacha was one of the presenters.
23. Ben then mentioned that since the dam was over 50 years old Archeology and Historical regulators would need to be involved in the process. He suggested contacting the Vermont State Historic Preservation Office (SHPO) to discuss the project details.
24. Lastly Ben indicated the alternative of an upper dam at the outlet of the lake still seems to be a feasible solution. He indicated this could be a low maintenance structure and limited in scope and size. There was much discussion of this alternative. Red indicated that this seems similar to the previous concept of a “riffle” that grew into need for an actual dam with requirements of low-level drains and the requirement a spillway of sufficient size to pass a probable maximum flood (PMF). Ben and Jeff indicated it would only have to pass the 100 year flood and not the PMF (*would this be only for a low hazard dam?*). Red indicated that although not involved with the previous project, people that were involved reported these requirements evolved as the project grew in size and scope from a “riffle” to a full-

fledged dam project. One of the concerns with a new dam involves breaching the old dam which increases the stream gradient between the current dam site and the Harvey Mountain Road Bridge as well as to the downstream side of a new dam. It is likely that the increased gradient will scour the flow channel and may cause foundation issues at the bridge and loss of wetlands. Another concern is the unsuitable soils west of the Harvey Lake outlet. The previous consultant included sheeting across this area to ensure this area would not be breached during a high storm event. Based on local knowledge of the soils in this area, this would likely be a project requirement if the dam was located near the lake outlet east of the beach. According to BDC members involved in the previous project, because of new dam regulations which were soon to be implemented, the riffle structure was determined to be a dam and had to comply with all dam safety regulations. This significantly affected the project cost and scope, and the project was abandoned. Other concerns related to a fixed geometry dam without any ability to adjust to flow and/or lake level changes due to storm events or dry periods which would significantly affect lake level. For instance, the need to pass a 100-year flood will set the geometry of the structure including the invert of the spillway. The invert of the structure would set the lake level during low/no flow periods. Ben indicated that it would likely be acceptable to include an adjustable gate or bladder to control lake level during variable flows. Red indicated that according to others involved in the process this is new information and it was previously reported that any level or flow control systems at the new dam were unacceptable. Red suggested the BDC further investigate this concept and report on the findings.