

These minutes were approved at the June 22, 2020 meeting.

**DURHAM CONSERVATION COMMISSION MEETING
MONDAY, FEBRUARY 24, 2020 – 7:00 PM
DURHAM TOWN HALL - COUNCIL CHAMBERS - DURHAM, NH**

Members Present: Bart McDonough, Chair; James Bubar; Mary Ann Krebs; James Lawson; John Nachilly and Walter Rous.

Members Absent: Coleen Fuerst; Jacob Kritzer and Roanne Robbins, alternate

Also Present: Michael Behrendt, Town Planner; Lucie Bryar, Minute Taker

I. Chair McDonough called the meeting to order at 7:02 p.m.

II. Chair McDonough asked for roll call and Mr. Behrendt noted that Jacob Kritzer and Roanne Robbins were unable to attend.

III. Approval of Agenda: Mr. Lawson MOVED to approve the agenda; Motion SECONDED by Mr. Bubar and APPROVED 6-0; Motion carries.

IV. Public Comments: There were none at this time.

V. Mill Pond Feasibility Study Update: Presentation by Peter Walker, VHB

Mr. Walker introduced himself as an Environmental Scientist with VHB in Bedford, NH. He said April (the person managing the project for the town) was not able to attend this evening, but he would attempt to answer any questions.

He noted there are many other teams involved in the project, including Parr Corporation (Dam Engineers); Weston & Sampson (firm that conducted 2018 study); Kathy Wheeler, a well-known archeologist based in Portsmouth, as well as UNH Professor Will Wollheim who has studied the pond for a number of years and whose students have collected data.

Mr. Walker said the study is still in the early stages, so not all questions can be answered at this time. The team expects to take a deep dive as it proceeds. During this update to the Commission, he will present slides of the area and outline the project process.

He then projected a map of the Mill Pond study area and noted that while most people think of the main impoundment, the dam also impounds portions of the Oyster River.

Previous studies have looked at Oyster River, but not at this portion of impoundment – including Hamill Brook. He noted the current study is looking at the entire watershed area to include the Lamprey and Piscassic Rivers.

Mr. Walker shared some key points and explained terms from the Mill Pond Area study map:

- The dam is located in the Durham Historic District
- A tidal portion of the Oyster River extends all the way to dam; the study will look at downstream portions.
- The main part of the dam is called a spillway or dam crest.
- In addition to the main spillway, there's a right abutment with a gated outlet; only one of two gates is currently operable.
- The pond includes a fish ladder installed in the 1970's.
- Mill Pond Dam has a unique construction known as an Ambursen Dam – which is essentially a hollow structure. It's a slab of concrete that leans up against structural supports called "ribs."

Mill Pond Dam Safety and Classifications

Mr. Walker then addressed the reasons Mill Pond Dam is under study. The State of New Hampshire regulates all dam structures and classifies their safety concern in one of three ways: Low, Significant or High. This classification is based on projected damage to life and property should the dam fail and it also determines safety standards to be met.

The Mill Pond Dam is classified as Low Hazard, but over the years there have been well-documented deficiencies with the dam.

Mr. Walker said that as currently configured, the Mill Pond Dam can only pass 385 cubic feet of water per second; if a 50-year flood were to occur, the expected water flow would be closer to 3,400 cubic feet per second – or about ten times current capacity.

He noted the dam spillway is far too small and that it was designed long before current safety standards were established.

Mr. Rous asked: Isn't the dam capacity infinite?

Mr. Walker explained the capacity is defined by the length of the spillway and the height of the abutment. According to state requirements, water is only allowed to reach within one foot of the top of the abutment. The concern is that with greater water flow, the abutment could erode and possibly collapse.

Mr. Walker said the State issued a Letter of Deficiency on the Mill Pond Dam as far back as 1999 and again in 2002 and 2018.

Update on Current Feasibility Study

Mr. Walker noted the current study is drawing on a lot of information readily available from previous studies on the dam as well as identifying and filling any data gaps.

He said a geotechnical investigation using a boring machine stalled in Fall 2019, but will resume this spring. It will look at sediment, bedrock, etc.

A detailed survey of the dam is complete. VHB has also collected new bathymetric properties, all of which will be assembled into the base mapping.

Mr. Walker noted at this stage, VHB is developing a long list of conceptual alternatives to address the deteriorating dam – including dam removal. He said the final report will also model “no action / doing nothing.”

Among other alternatives under study are repairing or reconstructing the dam, as well as possibly re-classifying the dam with the State; DES has provided detailed guidelines for re-classification.

Mr. Behrendt asked which classification is below “Low Hazard” and wanted to know if the State classification would affect action required by the town. Mr. Walker replied that a classification of “Non-Menace Structure” is below “Low Hazard.” He confirmed that a de-classification would decrease the number of dam safety requirements.

Current Aspects Under Study

Mr. Walker said the feasibility study is still in the Conceptual Alternatives Stage and noted it’s too early to make any findings or recommendations. As the study continues, VHB expects to ultimately identify four possible alternatives, which would then be part of a more detailed study.

Among areas currently under study/modeling are:

- A Detailed Hydrological & Hydraulic Model
- An Engineering Plan
- An Examination of Cultural and Environmental Impacts

Mr. Walker noted Hydrological and Hydraulic computer models of the Oyster River, Hamill Brook and Lamprey River can help predict changes in water depth; effects on wildlife and wetlands; effects on groundwater and changes to sediment under various conditions. This information is a central part of the study.

Mr. Bubar asked if the study would include sediment transport downstream from the dam. Mr. Walker replied the study would not extend too far into the tidal portions or as far as the sewer plant, but computer models can predict where sediment might settle and how wetlands and groundwater would be affected.

There was brief discussion about when the last 50-year flood occurred in the state – which couldn’t be answered with certainty, though some believe it was the Mother’s Day flood.

Town Planner Mike Behrendt asked: When the river is at the height of the dam – or a little higher...do you have any idea how much higher the river is a quarter mile upstream, for example?

Mr. Walker didn’t have the precise answer, but said as a general rule the dam exerts less influence on water height as you go further upstream. At the top of the Hamill Brook impoundment, for example, the influence on water height is zero.

Sediment, Water Quality and Wildlife

Mr. Walker said some PAHs and metals were found when VHB studied the area about 12 years ago. Further study is underway to determine the nature and location of any current contaminants. He added that generally impoundments affect water quality adversely.

Mr. Walker said analysis of impacts on wildlife will be conducted in collaboration with NH Fish & Game, NH Heritage Bureau, Fish & Wildlife Service and the National Marine Fishery Service.

Currently the dam acts a barrier to blueback herring, whose numbers in the Oyster River have fallen dramatically in recent years – from tens or even hundreds of thousands to less than one thousand.

Mr. Lawson asked if the dam were to be re-designed, would impoundment at the water treatment facility then become a barrier for the herring? Mr. Walker said that's a possibility and added that removing or modifying any dam will always affect another dam upstream.

Impact on Cultural Resources

Mr. Walker said the Mill Pond Dam is listed on the State's Historic Register. Archeologist Kathy Wheeler has completed the first phase of her study on the cultural significance of the site and has concluded the entire area is sensitive from an archeological perspective.

As the feasibility study continues, VHB will initiate a Section 106 Consultation with the NH Division of Historical Resources and the Army Corps of Engineers. With all alternatives, an effort will be made to mitigate adverse effects on cultural resources.

Feasibility Study Timeline

The field survey is essentially complete and VHB is now developing conceptual alternatives. Mr. Walker said they are hoping to engage with DPW and Town Council in March or April 2020 to get early buy-in before performing a more detailed study. Following that, VHB projects this timeline:

Public Information Meeting -- Early Summer 2020

Draft Feasibility Report Issued – Late Summer 2020

Public Information Meeting – Fall 2020

Final Feasibility Report – Fall 2020

Mr. Behrendt asked if the final report will include recommendations to the town and Mr. Walker responded that VHB will not recommend final action; he said it will be up to Town Council to make a decision based on information provided. He added the report will strongly advise against "taking no action," however.

Follow-Up Discussion

Some discussion/questions followed Mr. Walker's formal presentation including:

- Mr. Bubar asked if restoration or reconstruction of the dam would include restoration of the pond, which is clearly struggling. He said any plan should address the entire water system. He recalled from previous studies that hydrology models of the dam showed certain actions (opening a gate, e.g.) would produce counter-intuitive results. Because of this, he believes science and engineering studies are especially important.
- Mr. Behrendt wanted to know if water would just flow over the dam in the event of a 50-year storm. Mr. Walker replied it's not that the dam is too low, but rather the spillway is too small. Raising the abutments would not solve the issue and might require adding a dike upstream. He said under higher water flows, it's possible the entire dam could fail.
- Mr. Rous mentioned in some instances, an adjacent field can be engineered for secondary shallow overflow. In the case of Mill Pond Dam, however, there are homes in the area. Mr. Walker said VHB might sketch out an overflow option but would likely dismiss this from further study.
- Mr. Nachilly asked if the study will look at potential impact on Route 108 and the bridge to which Mr. Walker said yes. One component of the study will look at the scour potential on the bridge.
- Chair McDonough asked about re-classifying the dam; Have others in the state done it and how does it work? Mr. Walker said he's not familiar with other dam re-classifications, but VHB has detailed information from DES about this option. He added that even if the dam were to be relieved of 50-year-flood requirements, the concrete is continuing to deteriorate.
- Mr. Rous asked if the current study is looking at lowering the dam spillway to increase capacity, keeping the abutments where they are. Mr. Walker replied this option is being studied but further calculations are needed. One alternative is to develop an adjustable spillway with a gate that could be raised or lowered depending on water flow. In this instance, the dam would no longer be considered a historic structure. He added that DES is generally skeptical of this option because gates can fail.

Chair McDonough thanked Mr. Walker for his presentation to the Commission.

VI. Land Stewardship Update – Ellen Snyder, Land Stewardship Coordinator

Ms. Snyder distributed a schedule of events to Commissioners, which had also been sent via email. These include activities such as star gazing and bird walks, etc. – which are sponsored by the Conservation Commission.

She said fundraising is underway for the Merrick Conservation Easement where a bridge will be constructed at the entrance off Bagdad Road. So far, \$1175 in pledges and donations has been raised -- out of the \$2,500 total needed for materials.

The group is also looking at some of the trails at Long Marsh Preserve. There's a long bog bridge (almost 360-feet) in need of repair and different design alternatives are being considered. One option is to use helical piers (similar to big screws) to form the base. This was successfully used at Sandy Point Discovery Center in Greenland. That project was completed by an all-volunteer crew and took a year and half. Ms. Snyder said the Committee will likely hire a company to repair the bog bridge and the cost could run about \$20K.

The Land Stewardship Committee also plans to assess some of the trails and bridges away from the waterfront at Wagon Hill Farm this spring. Anyone interested is invited to take part in that assessment. She added that there will probably be a number of volunteer work days announced this spring.

Chair McDonough thanked Ms. Snyder for the update.

VII. Other Business

Mr. Rous talked about a presentation he attended in Greenland by PREP (Piscataqua Region Estuaries Partnership) -- a consortium of conservation groups in the area. One key takeaway was that enforcement in the towns is inconsistent. He said the group is not necessarily interested in tightening the rules, but in better enforcement.

PREP also shared statistics about acreage available for new commercial development vs. existing commercial properties that could be re-developed -- with re-development properties much higher in terms of acreage.

This led to a brief discussion about properties in Durham being re-developed -- such as Mill Plaza, and the question of whether developers will be held to current stormwater standards, for example.

Mr. Behrendt responded the storm water management plan for Mill Plaza should fully meet current standards while other items like the amount of green space or buffers may be grandfathered or negotiable.

The Conservation Commission will be interested in hearing any study results from PREP in the future.

VIII. Review of Minutes from July 22, 2019 Meeting

Mr. Rous MOVED to approve and Mr. Bubar SECONDED the motion to accept the minutes as submitted; Motion carried, 4 – 0 – 2. (Bart McDonough and James Lawson abstained.)

IX. Adjournment

**Mr. Rous MOVED to adjourn and Mr. Bubar SECONDED the motion which carried, 6-0.
Meeting adjourned at 8:07 p.m.**

Respectfully submitted,
Lucie Bryar, Minute Taker
Durham Conservation Commission

Note: These written minutes are intended only as a general summary of the meeting. For more complete information, please refer to the DCAT22 On Demand videotape of the entire proceedings on the town of Durham website.