

The Bristol Mills Dam Feasibility Study

Introduction

The Bristol Dam Advisory Committee was formed at the request of the Town of Bristol Selectmen to oversee the process of a Feasibility Study to present various options for the future of the Bristol Mills Dam and fish passage at the site. During this process, the Committee has gathered information about the dam's condition, human and natural features, water level controls, natural resources (including water birds and fish species), and important functions of the dam like providing a firefighting water supply and swimming area. All meeting minutes, presentations, press releases, and information gathered by the Committee is available to the public both online and in a binder at the town office.

The dam, which was last repaired in 1994, currently needs repairs and lacks adequate fish passage for alewives and other native fish species in the Pemaquid River. The lake system above the dam can support over 600,000 alewife. This past spring, the number able to make it through the current ladder was about 33,000. A better fish passage would allow a larger and stronger migration of alewives and other fish species that benefit the Pemaquid River and upstream lakes and ponds by providing food for larger fish, birds, and wildlife as well as encourage eel migration on the river. A restored alewife run could also provide a substantial, and possibly, economically beneficial fish harvest for the town.

The town hired Wright-Pierce Engineering to develop a feasibility report that summarizes the current state of the dam and fish passage and develops options for the future of the site. The concepts under consideration are: A) repair and modify the dam to meet community safety needs and replace the old fishway with a new, improved one; B) replace the dam with a nature-like fishway and water level control; and C) partial replacement of the dam with controls of water levels and fish passage performed by nature-like structures.

The feasibility report is currently in the DRAFT phase until being thoroughly reviewed by the Committee and after receiving comment from the public. It is available at the Town Hall as well as online at www.bristolmaine.org/bristol-dam-advisory-committee. To download a copy of the draft report, click on the word "here" next to "Feasibility Study Draft" above the list of the committee members.

The purpose of this summary is to provide information about key points that have been misinterpreted in recent public forums.

Why was the Dam Study ordered by the Selectmen?

During 2013-2015, the Town engaged Wright-Pierce Engineering to assess the current condition of the Bristol Mills dam and fishway, and recommend the best approach, at the least possible cost, to make the necessary repairs to the dam and to improve the fishway "linked" to the dam such that it could accommodate at least 600,000 alewife fish annually migrating up to fresh water spawning sites. The current number of alewives that successfully reach the top of the dam annually is in the few thousands. Upon receipt of the engineering firm's recommendations, the Town sought funding sources to help pay for some of the project, but was not successful. While there are currently federal and other funds readily available to remove the dam, there is little to no grant money available to help pay for repairing a dam and building a new fishway.

The Bristol Mills Dam Advisory Committee was formed on December 7, 2016. The Study was undertaken to explore options for the site that would maintain or improve the existing services of the dam (water level control, firefighting water supply, and swimming) while improving fish passage and be more economical to the town because of the ability to garner funding support.

Water level

Water level records (at multiple spots between the dam and well into Biscay Pond) have been gathered by volunteers, state water monitoring personnel, and staff from the engineering firm the town has hired. Additionally, a detailed study of the depth to bedrock from the dam up to the outlet of Biscay Pond was undertaken as part of the current study. All of this data can be found in the draft feasibility report.

The water levels vary less than 3 feet because of the rock ledge floor in the portion of the river bed between the Benner Road Old Stone Arch Bridge and the dam. However, the Committee directed Wright Pierce Engineering early on in the process to only develop options that maintain water level in the Pemaquid Marsh and all upstream lakes within the current water level range that the dam maintains. Accordingly, all three options developed by Wright Pierce maintain current water levels. The options that involve removing the dam replace the water control by using rock weir structures that would be built in the river around the Old Stone Arch bridge where the Benner Road enters Route 130.

The water level plays an important part for our firefighters' ability to capture the water they need to fight a fire. Of key importance is the distance between the water level and the intake spout of the pump engine which sucks up the water and transfers it to the tanker. Because of the capabilities of modern equipment, 10 feet is the maximum number of feet between the water surface and the truck's intake spout. The other important factor is the amount of water (i.e. can the removal of water by a fire tanker reduce the amount of available water to a dangerously low level?). The water flowing from Biscay Pond through Pemaquid River to the ocean is a steady amount that's more than enough to meet the 150,000 gallon minimum volume required by insurance industry standards. Removing the dam does not result in an amount that's less than the required minimum of 150,000 gallons.

What about ice? Does that reduce the amount of available water?

The short answer is “no”. The way dry hydrants (ones that don’t have municipal water pushing water to the hydrant) work is that the intake is on the floor of the water source – well below the ice at the surface. The 10 feet from the water (in liquid or solid form) to-the-pumper is, for all intents, still ten feet. And the volume of water remains more than adequate because it flows under the ice replenishing the water removed by the pumper.

What are the options?

There are three:

- Option A: Finish repairing the existing dam, replace the current fishway with one that works and will help at least 300,000 alewives get “over” the dam.
Estimated Initial Cost: \$440,000 or \$615,00 if the second fishway was built at the same time to provide passage for at least 600,000 fish (adding a second fishway ten years later would cost an estimated \$150,000 to \$200,000).
Anticipated Grant Funding: Likely very little, may be state loans available for dam repair.
Estimated future Costs: \$400,000 to \$425,000.
- Option B: Replace the dam with a nature-like fishway and water level control that help at least 600,000 fish easily move up and down the river. Offer a swimming area behind Ellingwood Park. Relocate the dry hydrant to Ellingwood Park and construct circular drive from Rt. 130 to the Benner Rd. for fire trucks.
Estimated Initial Cost: \$610,000
Available grant funds: Estimated to be at least \$350,000 for dam removal, the nature-like fishway, Fire Department water source, and essential Ellingwood Park improvements to support the Fire Department’s access. The Town may be able to receive funding for the entire sum.
Estimated future Costs: \$125,000.
- Option C: Reduce the height of the dam, replace the current fishway with a smaller/shorter fishway that will support at least 600,000 fish traveling up stream, and offer a swimming area behind Ellingwood Park in addition to the current at-the-dam swimming hole. Maintain the dry hydrant at the dam.
Estimated Initial Cost: \$920,000 to \$1,260,000
Available grant funds: Estimated to be between \$500,000 and \$790,000.
Estimated future Costs: \$500,000 to \$750,000.

The estimated grant funds are just that: estimates. They are based on funds received by other municipalities, including Whitefield and Alna, that have recently undertaken dam-related projects similar to the options being considered by Bristol.

The future costs are the estimated annual maintenance costs, estimated operational costs required at various intervals during that option’s life, and the estimated capital improvements that will be required over the next 50 years of each option’s future.

Comments received by the Fire Department

The Fire Department recently provided signatures of its members to the Bristol Selectmen in support of maintaining the dam in its current location. During the past year, the Committee has met with and solicited comment from the Fire Department on multiple occasions. When reviewing the option to move the dry hydrant location to the river at Ellingwood Park, the Fire Chief shared with the committee that the plan would provide most of the features that the current location provides including an unlimited water supply, ability to fill and relay trucks, and circular drive to enter and exit the location without turning trucks around. The Fire Chief noted, however, that the distance between the location of the current dry hydrant at the dam and the buildings in the immediate center of Bristol Mills (the Town Hall, the Church, Deb’s Diner, and several residences) is sufficiently close that a hose can reach from the hydrant and those structures without needing an intermediary “relay” truck, thus saving time. The alternative location, about 130 yards “up” Route 130, would require a “relay” truck to bring water to the town center.

All Dam Advisory Committee meetings are open to the public and all Committee materials, including supplementary reports and background information, are available at the Town Office and online at www.bristolmaine.org/bristol-dam-advisory-committee. We hope to share this process with as many town residents and interested people as possible. Please join us to learn more about this valuable resource. The Dam Advisory Committee welcomes public comments.