

MAXWELL POND DAM REMOVAL: RESTORATION OF BLACK BROOK IS FEASIBLE

HISTORY OF MAXWELL POND



Maxwell Pond, located on Front Street south of Dunbarton Road in Manchester, was created by the installation of a dam on Black Brook in 1900. The pond was reportedly named for A.H. Maxwell, who owned the Manchester Coal & Ice Company at the time when ice was harvested there. Ice harvesting took place in the 1930's and '40's, when Maxwell Pond was considered the best source in Manchester for pure ice. The company was located adjacent to the pond and would keep the ice cold with hay-bales and sell it year round.

Until the late 1950's, Maxwell Pond was a popular place for swimming, picnicking, and fishing in the summer. In the winter months the pond provided a spot for skating, bonfires and hockey games. It was even considered for a secondary municipal water source for the City of Manchester, but the idea was apparently abandoned sometime in the 1960's. In the late 1950's and early 1960's Maxwell Pond began to change when a cement company located upstream began impacting Black Brook by washing sediment into the streambed and impoundment. Today the dam is owned by the City and maintained by the Manchester Parks and Recreation Department. There is a small playground near the dam. The pond hosts educational programs sponsored by the Audubon Society through the Amoskeag Fishways.

WHY REMOVE DAMS?

There are more than 4,800 active and inactive dams in the State of New Hampshire. Many of these dams were built during the Industrial Revolution in the 19th and early 20th centuries, and they played central roles in New Hampshire's economic and societal growth during that period. But as technological and societal needs have changed, so too has the need for some dams.

Many New Hampshire dams and their impoundments enable and enhance values recreational uses, such as boating, fishing, and swimming. A smaller number of New Hampshire's dams provide important services such as water supply and flood control. But some dams, particularly those that are old, unsafe and uneconomical, may be good candidates to consider for removal.

Dams were historically built with little, if any, consideration to their impact on river systems. In the last several decades, resource managers have learned that dams cause environmental damage, that free-flowing rivers play a vital role in ecosystem health, and that selective dam removal can be both efficient and effective.

Selective dam removal can eliminate a public safety hazard, relieve a dam owner's financial and legal burdens and restore a river to a healthier, free-flowing condition. Consequently, some dam owners are taking a second look at their dams.

WHY REMOVE MAXWELL POND DAM?

Over the last 40-50 years, residents have not been able to swim in Maxwell Pond due to increases in sediment load from upstream sites over time. Today, the pond (which had a maximum depth of 8 feet in 1954) has a

BENEFITS OF SELECTIVE DAM REMOVAL

- Elimination of a public safety hazard.
- Cost savings to taxpayers and dam owners.
- Improvement to water quality.
- Elimination of barriers to fish and other aquatic species.
- Restoration of river habitats.
- Creation of new, river-based recreational opportunities.

maximum depth of just 4 feet. Clearly the land uses upstream have had an impact on Maxwell Pond, and historical activities have not taken place at the pond in many decades.

The possibility of restoring Black Brook as a free-flowing river by removing the Maxwell Pond dam came about as one of several corridor-wide projects aimed at restoring different reaches of Black Brook. These projects include riparian/wetland work upstream from Maxwell Pond near the City's transfer station and brook restoration planning further upstream near Wakefield Materials. Removal of the dam at the mouth of the river would complement these activities and could be accomplished as part of the overall restoration effort at no cost to the City.

WHAT ARE THE FACTORS OF DAM REMOVAL?

The process of selective dam removal looks at several factors such as possible wetland impacts, fish and wildlife impacts, social impacts, water quality and quantity impacts, historical resource impacts, sedimentation impacts, floodplain impacts, and aesthetic impacts. It is the **environmental issues** that often trigger consideration for dam removal, but it is typically the **economic issues** that are the pivotal decision factor since it is, in many cases, less expensive to remove a dam than to maintain and repair it on a yearly basis. While **engineering** issues are typically straightforward, it is the **social issues** that tend to be the most challenging aspect of dam removal.

ENVIRONMENTAL ISSUES

Dams can have many ecological impacts on rivers. They can block fish and other aquatic species from moving throughout a river system to access spawning sites and other critical habitats. Dams can hold back and cause buildup of sediment, woody debris, and other materials that naturally would have been disturbed throughout the river and would have played important roles in providing nutrients and habitat for plants and animals downstream. Dams can increase water temperatures and decrease the availability of dissolved oxygen in impoundments, forcing many native river species out because they can't live under those conditions. Dams can also flood wetlands, floodplain forests and other ecosystems that naturally occur along the river's edge and serve valuable purposes.

The act of removing a dam may seem like a radical event to a river and the species that live in it, but rivers have proven themselves to be very resilient and able to "heal" quickly, based upon many dam removals that have taken place nationwide. Previously submerged lands revegetate rapidly, typically within a few weeks during the growing season. Fish populations and species diversity commonly increase in the restored stretch of the river within the first year after a dam is removed. Significant water quality improvements are often seen in a similarly short amount of time, depending upon conditions.

ECONOMIC ISSUES

The cost of keeping a dam safe, particularly when the dam is no longer serving an economic function, can represent a significant burden to the dam owner. Dam ownership requires ongoing financial responsibility. Sometimes the costs of operation and maintenance, liability protection, annual registration fees and other obligations of dam ownership outweigh the benefits derived from the dam. Studies show that repairing a dam often can cost three times more than removing that dam. In addition, today there are many potential funding sources for dam removal. In the case of Maxwell Pond, funding sources available to the City of Manchester include the Manchester Urban Ponds Restoration Program (UPRP), NH Department of Environmental Services (DES), NH Fish & Game Department (NHFG), and Trout Unlimited (TU) among others. There would most likely be no cost to the City for removing the dam.

SOCIAL ISSUES

Residents often have concerns regarding dam removal, such as “will the river/waterbody disappear?” “Will flooding occur?” or, “Will all the fish die?” Some concerns are based on lack of information while others are value-based. Many people share both sets of concerns. However, proactive discussion rather than reactive decisions typically result in creative solutions.

WHAT PRE-RESTORATION WORK HAS BEEN COMPLETED AT MAXWELL POND?

During the Winter of 2001, DES and UPRP dug 310 holes in Maxwell Pond to examine sediment depth and locate the original brook channel. Sediment chemistry was examined, and no contaminants were found. TU has been involved with surveying and aerial topographical mapping to examine channel morphology. DES, NHFG, and TU also collected fish at four sites on Black Brook (two upstream from the impoundment and two downstream) to survey species diversity, total population, weight, and lengths of the fish. At these same sites, macroinvertebrates (stream insects) were surveyed. Additional pre-restoration work (to be completed Summer 2003) will include a survey of fish inside the impoundment and additional channel cross-section work.

NEXT STEPS

The decision whether to pursue dam removal at Maxwell Pond rests with the Mayor and Board of Alderman (MBA). Members of the Conservation Commission, Manchester Department of Parks and Recreation, UPRP, Audubon Society, and interested residents have formed the Black Brook Advisory Committee (BBAC), and have met with NHDES to explore the implications of removing the dam. The BBAC is working with Alderman Armand Forest and other affected City departments to inform them and to get their perspectives. The committee will share findings and recommendations with the MBA and help to answer questions they may raise. In order to secure funding, it would be desirable for the MBA to consider this issue over the course of spring 2003.

FOR MORE INFORMATION

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