



Donnalee Lozeau
MAYOR

May 2015

I'd like to share with you the Nashua Waterways Committee Report with this introduction.

One of the concerns I have had since I began my service as Mayor, is the lack of an "administrative home" for waterways in the city. While many departments took responsibility as assigned from time to time for some of the issues, such as Parks and Recreation with Water Chestnuts and the Gate House restoration; Public Works engineering for the levee along the Merrimack River; Economic Development with the Crest-gate on Jackson Falls Dam, as some examples. No formal responsibility rests with any single division or department.

Aside from the obvious problem that poses, it also makes it difficult to strategically plan for the future including providing great public access and to capture the amazing opportunities that exist here in our city. Caring for, improving, and celebrating these and other waterways (canals, ponds, brooks and more) in our city must be a priority.

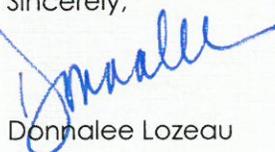
In an effort to get our arms around the matter, in August of 2013 I established the Waterways Committee. The committee included people who each brought a different opinion, expertise and future hope for our waterways. Also the two hydro dams present different challenges and responsibilities. Much of what was presented in a letter to the Board of Aldermen in December of 2014 speaks to the two hydro dams and the future opportunities they present, some of which is time sensitive with a critical decision needing to be made no later than December of this year.

Following this introduction is the letter which established the committee, the draft report which I accepted as the final report, and the December letter to the Board of Aldermen as mentioned earlier in this document.

One of the recommendations is the creation of a new city position that takes responsibility for our waterways. I wholeheartedly agree with that recommendation and will be proposing this position in the FY 2016 city budget. I propose this position be organizationally placed in Community Development, with supervision provided by the Community Development Director. This position will have responsibility for waterways and the related issues, with the exception of the levee on the Merrimack River which will be managed by Public Works Engineering.

I would like to thank the committee for volunteering their time and sharing their expertise. Each member played a valuable role in what I believe to be a very thorough report that builds a solid foundation to work from. Providing this beneficial overview of our Waterways and related subjects is greatly appreciated.

Sincerely,



Donnalee Lozeau



Donnalee Loreau

MAYOR

August 27, 2013

Mrs. Kathryn Nelson
4 Massasoit Road
Nashua, NH 03063

Re: Waterways Committee

Dear Ms. ~~Nelson~~: *Kath*

Let me begin by thanking you for your willingness to be part of the Waterways Committee.

We are very fortunate in Nashua to have such wonderful water resources. Both the Nashua and Merrimack Rivers along with the manmade historic canals bring a unique character to our city, not to mention the many ponds and streams. They also bring with them significant responsibility. Attention to them has been sporadic. In the early 70's, clean up of the Nashua River due to industrial pollution was a primary focus with successful results. The addition of two hydro dams was another successful effort. Some years later; restoration efforts to the Gatehouse in Mine Falls also was a resounding success.

Since the first year I took office, it became clear to me that there was no administrative "home" for our waterways. No one city department or division with specific responsibility. That while some things fell under the purview of the Conservation Commission, which works in concert with Community Development, such as work within the wetlands, other things fall under Public Works like storm water and waste water management systems that have a direct impact on the rivers along with the levee on the Merrimack River or the Gatehouse restoration which has had a resulting impact on the canals.

While often times it makes sense that components of the same subject could fall under different city divisions, there should be clear reason and purpose to those decisions and recognition the end result will still likely have the city working together across divisions to deliver the best results to preserve these important resources, both natural and manmade.

Let me share some of our basic concerns that we believe need attention:

The Nashua River:

- Currently has six known invasive species
- Two hydro dams:
 - Jackson Falls – current lease with Essex Hydro is expiring soon. This dam is having a crest gate installed that will result in more control and the removal of many properties from a flood zone
 - Mine Falls – current lease has many years left but with a soon to be available option of purchasing the actual hydro station at a reduced cost

- A new improved boat launch in Mine Falls works great, but increasingly we see motorized boating not following the laws relative to speed increasing bank erosion
- Water levels that have resulted in hidden under water islands and rotting trees
- The impact of nearby lawns causing fertilizers and the like to have negative impacts
- Many items particularly tree limbs caught below the Main St bridge
- Vegetation and tree growth within retaining walls
- Access from additional locations
- Pollution

The Merrimack River: Many of the same issues as the Nashua River, no hydro dams on the span that goes through Nashua but other unique challenges

- The levee with oversight from the Army Corp of Engineers
- The impact of Waste water both ours and upstream

The Canals:

- Overgrowth and stagnation and pollution seem to be the greatest challenges there

The Ponds such as Sandy Pond and Fields Grove:

- Pollution
- Invasive Plants
- It appears that these along with all our water bodies could benefit from introducing more aeration

These items I have listed are by no means a comprehensive list, but meant as a starting point. I have appointed this committee in the hopes of developing a plan that you could recommend to the city decision/policy makers that will speak to the items included in this letter along with others that you will identify as your work progresses. I believe this plan should have short-term, mid-term and long-term goals and recommendations which will also include on-going maintenance.

We have established a small trust fund to assist you in this task to develop this plan and understand that you will likely decide to hire additional experts to complete your charge. I would also expect a collaborative effort with city divisions along with other local and state boards and commissions.

Thank you!

Kath Nelson has graciously agreed to chair this committee and she will work with me as needed to secure funds and or support for your efforts. I have agreed to assign a city staff person for the necessary administrative support.

Your work is to be conducted in a public manner which includes the posting of your meetings on the city calendar and minutes of all meetings recorded and filed on the city's website.

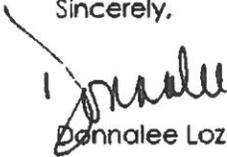
Your work will begin with an organizational meeting where we will discuss this letter, process, expectations and answer as many questions as we can as you begin this very valuable undertaking. We have identified two potential dates for your first organizational meeting:

- Monday, September 9, 2013 at 7:00 p.m.
- Wednesday, September 11, 2013 at 7:00 p.m.

Please contact Brenda Cloutier in my office at 589-3263 or cloutierb@nashuanh.gov with your availability as soon as possible.

It is my sincere hope that your work will result in a plan for a healthy future for our waterways allowing us to be good stewards of this significant responsibility. Thank you so much for your willingness to provide your expertise, experience, input and time to this important task. I look forward to our discussion at your first meeting.

Sincerely,



DannaLee Lozeau

Nashua

Water Ways

Committee

Draft Report

Nashua WaterWays Committee Draft Findings and Recommendations

Background

The Mayor established the WaterWays Committee in August 2013, appointing 10 members. The Committee began meeting in September 2013 and meets regularly on the 2nd and 4th Wednesday of the month in Room 208 City Hall. Agenda and minutes are posted on the city web page.

Members as of May 2014 include the following:

Kathryn Nelson, Chair
Gregory Andruskevich
Karen Archambault
John Fisher
George May
Gene Porter
Tom Quarles
Kathryn Vitale

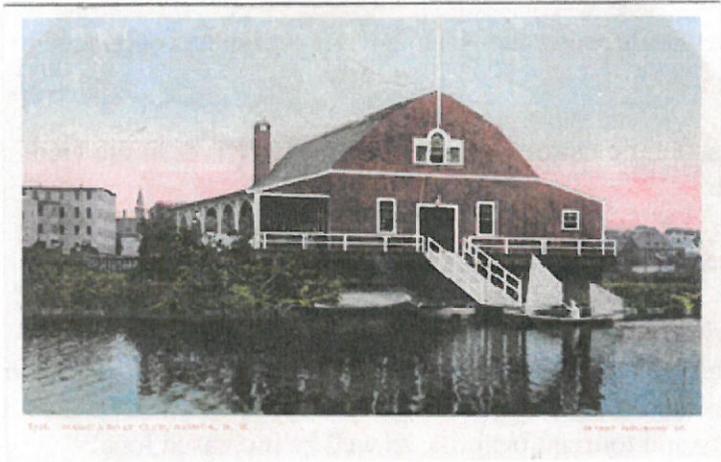
Committee Approach

The primary approach was to identify the logical segments of potentially important waterways and then systematically proceed to research each segment. At each of its meetings the Committee focused on gathering information and learning about a water body or segment of a water body. Early meetings included walking tours of key waterfront locations starting with a walk along the Nashua and Merrimack rivers in the fall of 2013. The following water ways were addressed: Nashua River (lower, middle and upper), Merrimack River, Salmon Brook (including Fields Grove, Joyce Park), Round Pond, Lovewell Pond, Sandy Pond . Pictometry imaging from the city's GIS and photos provided by Greg Andruskevich were viewed to assist in learning about waterbodies and areas of interest. Other waterbodies shown on the map of Critical Wetlands of the City were noted but were not determined to be a priority at this time. In response to requests from members the Mayor provided the Committee with information on the city Combined Sewer Overflow (CSO) project, stormwater management for the Broad St. Parkway and Millyard, herbicide treatment of the Nashua River Mill Pond and Canal, water chestnut harvesting in the upper Nashua River and other topics of interest. The Mayor attended the February 12, and April 9, 2014 meetings to discuss the progress of the Committee and the draft Findings and Recommendation Report.

General Findings

Nashua's history and prosperity is rooted in the power and transportation potential of the Nashua and Merrimack Rivers. The 1803 opening of the Middlesex Canal that connected Boston and the Merrimack River at Lowell provided an immediate surge of growth in Nashua. The new Nashua Manufacturing Corporation quickly built a canal around the Jackson Falls on the Nashua River

allowing canal boats to efficiently take New Hampshire products to market, as well as to bring supplies, principally raw cotton, to the new fabric mills. Despite the decline in the importance of river transportation when six railroads began serving Nashua in the middle of the 19th Century, the local citizenry continued its interest in the Rivers, as evidenced by the establishment of the Nashua Boat Club in 1905.



Nashua Boat Club 1905 Nashua River

As recognized by the Mayor when she established this Committee, in recent years the City of Nashua has assigned low priority to both the management of its major waterways, including public access thereto, and to their potential value in publicizing the City's attributes. Only recently has serious attention begun to be given to enhancing these waterways. These recent actions have included:

1. Efforts to further reduce contamination by expanding the City's ability to retain storm water and reduce the frequency of combined sewer overflows (CSO) into the rivers.
2. Installation of a modern concrete boat ramp above the Mine Falls dam on the Nashua River.
3. Installation of state of the art flood control crest gates on the Jackson Falls dam on the Nashua River that will provide for stabilization of upstream water levels during periods of high runoff.
4. Funding of debris removal during the lowering required by the above dam project.
5. Installation of bio-retention ponds along the northern segment of the Broad Street Parkway project that will reduce contamination of the Nashua River.
6. Renovation of the historic Gatehouse at the Mine Falls dam on the Nashua River.

7. Planning and initial construction of a shoreside Riverwalk on the Nashua River in the downtown area.
8. Visual and environmental enhancement of the downtown segment of the Nashua River through the seasonal provision of a midstream water fountain and bonfire during the Holiday Stroll.
9. Refurbishment of the Main Street Bridge over the Nashua River which has enhanced its visual appeal.
10. Installation of access steps for launching cartop boats on the Nashua River in the vicinity of the downtown Greeley House.
11. Establishment of this Committee.

While the foregoing actions are worthwhile and important steps toward enhancing the management of Nashua's waterways, they do not take full advantage of the opportunities that are available. Other waterfront communities including Lowell and Newburyport MA, Providence RI, and Burlington VT have reaped publicity and tourism benefits, as well as increased local ambiance, from their significant public investments in their waterways. Additionally, there are Federal and State funding sources available for such improvements that have yet to be tapped by Nashua.

Over the years local interest in the rivers has declined while numerous problems have arisen, some of which are addressed in subsequent sections of this report. Responsibility for addressing such problems has been diffused throughout the City's management structure, resulting in public confusion and lack of attention to the recreation and business potential provided by the unique attributes of Nashua's waterways. Specific examples of the low priority assigned to waterways issues in the recent past include the failure to include quality boating access to the Merrimack in the ongoing Bridge Street/Renaissance Project as originally envisioned; the deletion of the promised boat ramp from the Broad Street Parkway project on the Nashua River; and the failure to facilitate the State's plans to install a modern boat ramp on the Merrimack in Greeley Park. Nashua's dearth of public access to its major waterways is illustrated by the comparison with access provided at Manchester and Concord is shown by the state river access maps shown in Appendix A.

This sense of low priority and diffused management is manifest in the general lack of funding for potential improvements to the waterways that could have broad public appeal and contribute to an enhanced perception of Nashua as a vital city that values and honors its waterways roots. Only recently, with its growing riverfront walkway, Jackson Falls dam improvements, and upper Nashua River boating access, have such efforts begun. Much more can and should be done.

Additionally, the Committee's examination of the City's 2010 report of monitoring conservation easements that abut the waterways has disclosed a series of issues that warrant investigation and clarification. These include usage provisions that conflict with current practice and various encroachments, such as mowed lawns, into areas designated to be kept in natural growth to

enhance water retention and minimize runoff into the river. In addition, the City's 2010 report identified many waterfront easement areas, including in particular along Salmon Brook that had been subjected to illegal dumping where responsibility for the cleanup was unclear.

General Recommendations

The Mayor, in consultation with the Board of Aldermen, should identify a lead agent/Department Head (Prime Candidates: Department of Public Works (DPW) or Parks and Rec) to designate and provide authority and direction and support to a lead official (The Waterways Manager) to draft an integrated Nashua Waterway's Management Plan that addresses as a minimum the specific findings and recommendations detailed in the remainder of this Report. A specific timeline should be established for drafting and completing the plan, including adequate time and attention to consultations with relevant "stakeholders". Specific responsibilities should also include the establishment of a comprehensive procedure for identifying and ameliorating specific problems anywhere on the City's Waterways that adversely impact the public interest, including access, visual degradation, waterfront deterioration, such as due to vegetation damage to retaining walls or obstructions to recreation (e.g., fallen trees)

The Waterways Manager should establish a plan to further reduce waterway contamination from surface runoff through such actions as educating the public on the proper use of fertilizers within the watershed, monitoring the effectiveness of the ongoing CSO abatement efforts (and advocating expansion as appropriate) and ensuring that new projects such as the relocation of the Power Canal discharge piping provide for adequate filtration of surface contaminants.

Furthermore, the manager should work with Justin Kates, Nashua Emergency Manager, to coordinate the city's responses to the increased frequency and severity of heavy damaging precipitation events and the associated economic impacts of clean-up, repair and lost productivity and economic activity. Consideration should be given to flood hazards to culverts, storm drains, bridges, water and waste management facilities and other infrastructure.

In support of the Waterways Manager the City budgeting process should be structured to clearly identify and display the city's planned spending on waterways improvement, including improved public access, weed control; trash removal; signage; etc. This manager would also be responsible for and coordinate the volunteer efforts in these areas.

The city Waterways Manager should explore the potential cost and benefits of acquiring or accessing a small motorized patrol craft to supplement the distant services provided on occasion by the NH marine patrol.

People enjoy looking at the rivers and walking along the rivers. They support protection for the waterways even if they don't "use" them. The city could show that it supports protection for the waterways also. First off, it has to identify that which it wants to protect. We recommend that the city erect signs at every road/brook crossing in the city so that everyone traveling by each way will become aware of the waterway and that it has a name, e.g. 'Spit Brook.' The signs could be regular street signs with the colors reversed. The Merrimack River is designated as a protected state river; there should be a sign available from NHDES saying so as you cross the bridge.

There's nothing there now. Similarly, signs should be established at every point of major public access that define the type of access permitted, and the applicable rules, such as graphics depicting the specific region in which boat speeds are restricted.

The health of the major waterways is inextricably tied to that of the watershed's streams and ponds that feed the rivers, as well as the direct surface and point source runoff into the rivers.

While the City is to be commended for its innovative approach to storing of the combined sewer runoff during storms for future treatment and for including storage pits on the North side of the Nashua River incident to the Broad Street Parkway construction project, much more needs to be done, particularly to reduce contamination from the surface runoff of fertilizer.

The City should establish a comprehensive waterways planning process under a designated Waterways Manager. The City should provide for implementation of the specific land or recommendations included in this report as well as planning and funding for the greater acquisition of land or easements on existing waterfront parcels to pursue conservation goals and enhance public awareness, appreciation and access.

In addition to overseeing the implementation of the specific recommendations of this report, the Waterways Manager should act to ensure that future conservation easements granted incident to new waterfront developments provide for appropriate public access and city monitoring.

Inconsistencies between the language of existing easements and current usage, such as the use of the new ramp at the Mine Falls dam, should be corrected to the extent practicable. Procedures should be established for minimizing illegal dumping and cleaning up such violations on a regular basis.

Because the health of the major waterways is inextricably tied to that of the streams and ponds that feed the rivers, the Waterways Manager should consider conducting a survey and assessment of culverts in regards to hazard potential (flooding, road damage) and environmental factors.

The Waterways Manager should also organize and implement a program of volunteers to assist in promoting the interests of each section of the river system and streams, as described herein, including the several streams and ponds that are important to the health of the city waterways but whose individual issues were not deemed to require detailed discussion by this Committee.

The Waterways Manager should engage with authorities and organizations at the local and state levels to propose, coordinate, encourage, and monitor regional uses, activities, and issues with cross-border impacts affecting Nashua's waterways, in particular the Nashua and Merrimack Rivers.

One missed opportunity is the lack of facilities for renting canoes/kayaks/rowboats/motorboats thus inhibiting the casual use of the waterways by citizens without other access to boats.

The Waterways Manager should design, acquire and install at each public water access ramp on the two major rivers signage that reminds boaters that:

1. Speed is restricted to headway speed only (less than or equal to 6 mph) in all sections where the river width is less than 300' from shore to shore and includes a graphic depicting where in each accessible segment restrictions apply.
2. The NH Marine Patrol has jurisdiction and patrols randomly or when called.
3. Boats and trailers must be totally free of vegetation when launching and upon retrieval, all vegetation must be removed and disposed of. Inform boaters how to avoid spreading aquatic plants. Add a link on the city web page to the DES Exotic Species Program for information for boaters report
<http://des.nh.gov/organization/divisions/water/wmb/exoticspecies/>
4. Boats should not be power loaded unless necessitated by powerful currents.
5. Riparian land owners are encouraged to photograph boat's registration bow numbers obviously violating the speed restrictions and provide such evidence to the NH Marine Patrol.

Water Body - Specific Findings and Recommendations

The City should pursue the establishment of one or more canoe/kayak rental and/or tour boat businesses so citizens and visitors can spend a summer afternoon enjoying the rivers. The value for the city would be in the publicity (see the 1987 Money magazine that listed the Nashua area as best place in the U.S. to live that showed a couple in a canoe on the cover – people didn't move here to canoe; they moved here because they could canoe).

The following findings and recommendations are organized in consonance with the Committee's methods of examining the issues identified in the Mayor's chartering documents. The Committee examined the issues associated with each principal segment of the major waterways; the upper, middle and lower segments of the Nashua River; the Mill Pond and Canal; the segment of the Merrimack River that lies within Nashua's jurisdiction, Round Pond and Salmon Brook, Sandy Pond and Lovewell Pond.

Nashua River

General Issues: Two power dams divide the run of the Nashua River into three distinctly different segments, each with their own attributes and issues. A fourth segment is formed by the currently underutilized historic and relatively rare 3 mile power canal and associated mill pond. In general, management attention to the Nashua River has been responsive only to the need to deal with specific issues such as the routing of a new bridge, the modification of a dam to facilitate a waterfront development, and the choking of still water by invasive aquatic vegetation. There has been little long term planning and budgeting at the City level, with the exception of the Mine Falls Park Advisory Board. Various citizens' volunteer groups have taken up some of the slack by pulling weeds and cleaning trash annually.

The Committee discussed its ability to look into the Mine Falls hydropower dam lease agreement. According to the timeline in the original committee materials, the City will have 30 days to exercise a purchase option starting in December 2015. That is two years from now, but the subject will require considerable research to determine the tradeoffs on taking over the facility. Upon discussion with the Mayor it was left that she would provide us a copy of the FERC license. At this time we recommend that the city continue to investigate the purchase, keeping the WaterWays Committee informed of development and that the city consider all environmental and recreational impacts to the river, required and recommended mitigation such as minimum flow requirements to both the main river and the millpond/canal, fish passage and associated costs in the decision-making process.

The Committee also noted that motorboat access to the upper Nashua River had been recently improved by the City's construction of a modern trailer boat ramp just above the Mine Falls dam, but that acquisition of an easement for public use of the existing private ramp on the Middle reach at the Millyard Technology Park has not visibly progressed.

The City should also consider acquiring additional land and easements as well as clarifying existing easements to further its conservation and access goals, to include adequate access for inspection and easement monitoring.

Upper Reach of the Nashua River – Runnell's Bridge to Mine Falls Dam

Findings:

1. This segment of the river is infested with water chestnut, milfoil and fanwort from the Massachusetts border to Mine Falls Dam. Although good progress has been made controlling water chestnut, other weed infestations are spreading rapidly and seriously impacting the health of the river and its ability to support recreational activities.
2. The DES-prepared Long Range Management Plan for controlling aquatic invasive species is out of date and does not address the principal current threats. It was last updated in 2011, based on observations of the river in 2010. The city has been following the recommendation to conduct mechanical harvesting of the water chestnut, augmented by volunteer hand pull efforts, resulting in good control of the water chestnut infestation. In contrast, there is no plan to control the rapidly growing threat from milfoil and fanwort in the river channel.
3. Large boats exceeding State speed limits create excessive wakes that result in the loss of approximately 20 trees each year and siltation. RSA 270-D: 2, VI-a mandates headway speed limits within 150 feet from shore. Since the great majority of the river is less than 300 feet wide, there are few sections in which boat wakes are permitted. The improvements made to the Mine Falls boat ramp in 2012 have increased boat traffic and aggravated the speeding problem. State marine patrols of the upper river are not of sufficient frequency to curtail the unlawful speeding on the river.

4. The Winchester Street boat ramp is suffering from neglect and is in dire need of repair. The eastern (down-river) edge of the ramp has eroded significantly with a major vertical drop-off now endangering boat trailers. The parking is haphazard and the access road is poorly drained and rutted.
5. Improvements to the boat launch at Mine Falls Dam were not accompanied by increased availability of parking for boat trailers. There are only two boat trailer parking spots at the launch, one of which is marked for handicapped access only, and none in the adjoining parking area at Stellos Stadium. This causes significant problems on summer weekends when there are large numbers of users looking for parking.
6. The Runnell's Bridge rapids separates the upper easy canoeing stretch from Pepperell to the bridge and the easy canoeing stretch from the bridge to Mine Falls Dam. You can portage around the rapids by taking out on the river left and carrying boats through a roadside turnoff/dirt parking lot and then along the bank to put in below the rapids. This rapid is dangerous. Drownings have occurred here. The difficulty is not with the water but the debris left in the river by a mill operation many years ago that could trap a swimmer.

However, this rapid could possibly be cleaned up and reconfigured to create a "park and play" spot for whitewater boaters. Cleaned up it would allow those who want to pass through without portaging to do so safely. There are local whitewater boating clubs that could examine the area and come up with recommendations. This could be a popular place for local whitewater enthusiasts after work and on weekends. This stretch of the river is in Hollis and would require cooperation between the towns, state, and boating groups – but it would clearly be to the benefit of Nashua's citizens. A trailer boat ramp below these rapids would also provide powerboat access to this Upper Reach at its upstream end, where the City's Mine Falls Dam trailer boat ramp provides access at the other end of this reach.

Recommendations:

1. The City should assign the management of aquatic invasive plants to a Waterways Manager or in the interim to a department or staff as a priority city project.
2. Updating the DES Long Range Management Plan should be conducted in 2014 in addition to preparing a budget for treatment on all recommended water bodies.
3. The Nashua River Watershed Association has proposed a volunteer water chestnut pull in June 2014. The city should assist with volunteer efforts to control water chestnuts by providing logistical support and manpower. The need for mechanical harvesting should be evaluated annually.
4. The City should either upgrade the Winchester Street boat ramp to modern standards or restrict its use to boats with 10 HP engines or less and provide for adequate parking.

5. The Mine Falls boat ramp needs additional designated trailer boat parking. The Committee recommends that parts of the existing paved parking lot servicing the stadium and YMCA be marked for this purpose.
6. The City should post both the Mine Falls Dam and Winchester Street access ramps with a graphic display showing the limited area in which boats may legally operate at more than headway speed.
7. Develop river access downstream of Runnell's Bridge on the Nashua/ Hollis border
8. Given that only about 10% of this 3.6 mile stretch of the river exceeds 300 feet in width, the City should consider designating the entire New Hampshire portion of the Nashua River "No Wake" zone.

Middle Reach of the Nashua River – Mine Falls Dam to Jackson Falls Dam

The Middle Reach traverses both the relatively wild and scenic Mine Falls Park section of the River that is well protected by conservation measures, the adjacent Mill Pond and historic power canal, and part of the heavily developed section in downtown Nashua, the latter having been the cradle of Nashua's industrial prosperity.

Findings: Mill Pond and Canal Section

The historic Mill Pond and Canal are plagued with low flows and poor water quality. This historically unique feature of the Nashua River was explicitly identified by the American Canal Association in 1975 as a major attribute with several potential benefits to the public, but the Mill Pond and Canal are plagued with low flows and poor water quality.

Drainage from adjacent parking lots, streets, and athletic fields carries a high nutrient load, encouraging dense summertime growth of aquatic weeds and algal blooms. At least five of these weeds are State-listed invasive. This growth further inhibits movement of water through the canal. As temperatures rise, the water becomes oxygen-deficient and habitat is lost. The large number of fallen trees and branches in the canal further exacerbates the problems.

Input to the pond and canal is controlled by a gate in the historic gatehouse. It is not known if the flow through the gate is actually 10 cfs, as required by the FERC license for the hydro-dam. Considerable flow is spilled over two weirs on the Mill Pond

Recommendations:

1. The City should continue to support herbicide treatment for invasive in the Mill Pond and Canal that was started in 2012.
2. The City should support efforts to remove fallen trees and branches from the Canal in order to restore a healthy flow.

3. A study of the flow regime should be made to determine actual flow from the gatehouse, flow over the weirs, and flow over the dam at the Millyard. The height of the weirs and the dam could then be adjusted to allow increased flow through the canal while still supporting a healthy wetland system below the weirs.
4. Efforts should be made to reduce the quantity and improve the quality of surface runoff around the Mill Pond and Canal as the opportunities arise.
5. The City should investigate the feasibility of using the Mill Pond and Canal for public skating, perhaps in conjunction with the Conway Arena skating facility.

Findings: Main Segment of the Middle Reach of the Nashua River

Multiple issues are reflected in this middle section of the Nashua River, including loss of the previously planned public motorboat access at the Millyard Industrial Park resulting from the downsizing of the Broad Street Parkway project, problematic river bank protection, and the opportunity to enhance the visual appeal of the River from the Main Street bridge in addition to continued operation of the mid-stream fountain.

Because the ongoing Broad Street Parkway project will significantly alter the discharge of the Canal and the associated surface runoff, near-term attention is needed to ensure that opportunities to improve the water quality of the runoff into the River are exercised.

This section of the River can't be seen from the land in much of the downtown area due to the heavy undergrowth, invasives, and dead and dying trees. Only the upper parts of the buildings can be seen from the water for the same reasons, and many of the old buildings are unattractive. The major recent improvements have been the upgrading of the Jackson Falls dam that will permit better control of water levels, the extension of the shoreside Riverwalk, the operation of the midstream fountain near the Main Street bridge, and the provision of steps upstream of Main Street bridge next to the Greeley House for canoe and kayak launching. Much more could be done to enhance the value of this historically important section of the River to Nashua's ambiance and businesses.

Recommendations: The Committee recommends improving visual and physical access to the historic middle section of the Nashua River with the hope that it becomes a more enticing attraction for residents and a draw for visitor dollars. Focus should be placed on improving both boating access and the visual appeal of that section from the water and from the land.

1. The City should proceed with the Mayor's plan to acquire an easement for public use of the existing private boat ramp at the Millyard Industrial Park.
2. City-sponsored landscaping improvements taking place on the north bank of the river should be continued to the south side, with due consideration of the uncertainties of ownership and maintenance responsibilities.

3. The City should establish incentives for owners of buildings facing the River to enhance their appearance. Enhancing the appearance of a building usually leads to economic benefits for the owner.
4. The City should determine ownership and responsibility for maintenance of the several historic retaining walls along the riverfront in the downtown area and act to ensure their stabilization. Acquisition of easements to this end may be required. Committee research has indicated that property line boundaries are in some cases well defined and in some cases unclear; further effort should be made to define those boundaries and assign responsibility for maintenance of the retaining walls.
5. The city should take additional steps to improve visual interest in the River from the Main Street bridge. Such could include the provision of historical display graphics looking upstream and downstream that explain the history of the buildings; seasonal shoreside events and colorful displays should also be scheduled, as should aquatic events such as boat and canoe races.
6. The City should ensure that adequate parking is made available for users of the new cartop boat access near the Greeley House.
7. The city should encourage the establishment of a canoe/kayak/rowboat rental facility at an appropriate location on this segment of the Nashua River

Lower Reach; Jackson Falls Dam to Merrimack River (The mouth of the Nashua is discussed in the Merrimack River section following)

Generally this stretch would benefit from walkways, overlooks, and much more attention.

Findings: The segment of the Riverwalk at and downstream of the Library needs extension, improved maintenance, clean-up and better safety, including select tree removals with landscaping improvements to make the path less secluded feeling, more visible and inviting.

Recommendations:

1. The planned extension of the Riverwalk on this segment of the River should be promptly pursued to complete the walking loop from the Cotton Mill pedestrian bridge to the bridge downstream of the Library.
2. Improved lighting should be installed and more frequent police surveillance provided to deter unwanted activity and encourage use by making this segment of the expanded Riverwalk safer.
3. A walking connection to Renaissance/Bridge Street Downtown project should be explored.
4. Replacing the concrete sides of the Canal Street bridge would allow the river to be seen.

5. The stretch from the Canal Street Bridge to the Merrimack is completely overlooked and should be considered for planning before the area is rebuilt.

Merrimack River

Findings: The Merrimack is a major potential visitor and recreational attraction for Nashua that warrants serious management attention. The NH stretch of the Merrimack is an 8 mile long section formed by the Pawtucket Dam in Lowell, MA. There is some current but, except for the occasional flooding, it's not very strong. In the 15 mile stretch below Cromwell's Falls in Merrimack to the Pawtucket Dam the scenic and under-appreciated Merrimack is good for power boating, including fishing and water skiing. If properly facilitated, it will provide ready access to the new Renaissance retail, housing and dining project now planned for the mouth of the Nashua River.

The Committee identified several issues on the Nashua section of the Merrimack River. They are listed from upstream to downstream.

1. **Beazer Site (Old creosote plant at the foot of Hills Ferry Road)**
The planned DES program for ameliorating the seepage of creosote into the river appears sound but is on too leisurely a schedule, and there is no formal plan to provide a scenic public path along the River.
2. **Greeley Park Boat Ramp**
To the detriment of all citizens in the Nashua area, there is no suitable public boating access on this picturesque stretch of relatively wild and wide urban river for the ten miles from Cromwell's Falls to the MA border. This directly conflicts with state guidelines that such access be provided at least every ten miles. It also contrasts unfavorably with the access provided in the Concord and Manchester areas (as shown in the Appendix). An old and unsafe ramp in Greeley Park has been repeatedly been planned for upgrade by the NH Fish & Game Department to create a state trailer boat access ramp at the Greeley Park site, including adequate parking, only to be stymied by a City concern that legal research has determined is not substantive. This is a federally and state funded project that has been desired for a long time, is long overdue, and that would greatly benefit the public. The City benefits from the fact that a public road crossing of the railroad tracks at Hills Ferry Road is already well established. Research conducted by the State Public Water Access Advisory Board has confirmed that continued use of this public road crossing is fully consistent with continued access to the Greeley park boat ramp irrespective of NH Fish & Game's proposed upgrade of this ramp. Redevelopment of this ramp site, with modern lighting, would also be expected to reduce undesirable activity in the area.
3. **Thoreau's Landing Easement**

As reported by the City's 2010 easement monitoring project, the City has a conservation easement along the full length of the development's Merrimack River shoreline. The easement

provides for public walking access along this attractive route under rules to be established by the Conservation Commission. To the Committee's knowledge, such route and rules have not yet been established, thereby depriving the citizenry of an attractive riverside walkway and possible cartop boat access.

4. Bridge Street/Renaissance Project

When the Renaissance/Bridge Street project just downstream of the mouth of the Nashua River was initially planned it envisioned significant features providing for public access to and from the Merrimack, at least for canoes and kayaks. The flood protection Levee presents a major obstacle to more ambitious hopes for a public ramp for trailer boats. Subsequent detailed planning driven by monetary considerations has gradually eroded the original concepts to the point that River access is now at most a minor afterthought. The original concept for launching of car-top boats and associated parking as well as dockage for itinerant boaters should be fully restored.

Motorboaters could put larger boats in at Greeley Park or come upstream from Massachusetts and then tie up to a dock, climb a set of stairs to a deck outside the planned restaurant for lunch or dinner and refreshments. Such amenities could make Nashua a major destination for Merrimack River boaters with resulting significant economic benefits.

5. Rowing Club Easement

Further downstream the Independence Rowing Club, having granted the city a conservation easement promising public access when the Club acquired the property, has reportedly allowed installation of non-conforming "No Trespassing" and "Keep Out" signs as well as a fence that obstructs access along the river bank.

Recommendations:

The Beazer Property

1. The Waterways Manager/City should establish a process for ensuring that the new containment plan is installed as rapidly as possible, and that the private funding plan for remediation is not allowed to unnecessarily slow the program.
2. The City should also explore obtaining a riverfront conservation/public access easement that would permit a scenic walking path to be constructed from the Greeley Park boat ramp upstream to the mouth of the Pennichuck Brook consistent with the NH Heritage Trail concept.
3. The City should continue to closely follow the cleanup effort and consider eventual beneficial use for the property.

The Greeley Park Boat Ramp

1. The City should reengage with the State Fish & Game Department and sign the offered 30 year lease, whereby the State would engineer, construct and maintain a new ramp and parking to contemporary standards.
2. The City should also consider rerouting/shortening the gravel access road to the ramp from Hills Ferry Road.
3. Cooperative effort with State Fish & Game to construct a new boat launch in Greeley Park is an important goal but other options within the Park beyond rebuilding at the present location could be considered. Similar topography and soil conditions exist all along this section of the river and other locations may provide distinct benefits such as a shorter hauling distance, better security conditions, increased distance from the Beazer property creosote plume, and avoidance of the concrete drain pipe at the present location.

Thoreau's Landing walking path

The City should require its Conservation Commission to comply with the terms of the easement that was acquired for public benefit at the time the development was approved. The Commission should arrange for the boundaries of the easement to be marked and a walking path established with entrances clearly signed at each end. Establishing a cartop boat access at the Nashua River end of the easement should be considered.

Bridge Street/ Renaissance project

1. The Waterways Manager/City should work with the developers and city planners to ensure that designated parking is provided in close proximity to a suitable walkway over the levee to an appropriate launch and recovery facility for handling canoes and kayaks.
2. A seasonal dock facility should be provided. The current preliminary design should be modified to reflect provision of dockage for 3-6 small motorboats that might wish to visit this new modern waterfront neighborhood from other locations. Such dockage should be designed for removal during the winter and spring to minimize damage.

Rowing Club Easement

As part of the recommended larger effort to follow up on the City's 2010 initial review of conservation easements that impact the waterways, the Waterways Manager should confirm that the "Keep Out" and "No trespassing signs" are inconsistent with the public access easement granted by the Rowing Club and cause the signs and an associated fence to be removed from the river bank.

Lovewell Pond

Findings: Lovewell Pond is a 16-acre waterbody in the rural southwest section of Nashua. Its origin is purportedly as a glacial kettle hole that forms the headwater of Cold Brook. The northwest side of the pond beneath Old Ridge Road is a glacial feature known as an esker. The pond is part of the larger Lovewell Pond Conservation Area (LPCA) set aside by the City of Nashua for conservation purposes. The edge of the pond is a type of bog known as a mid-level fen, a rare wetland type with unique characteristics. The pond and its adjacent wetlands are also valuable habitat for many varieties of birds, reptiles, and amphibians. As such, it deserves protection from uncontrolled human intrusion. The outlet for the pond is a culvert beneath Old Ridge Road. Beaver have blocked the culvert in the past and will continue to do so in the future, greatly affecting the level of the pond, to the detriment of the wetland and its wildlife.

Recent efforts by the Tamposi family in cooperation with City Planning Department have significantly improved vehicle access to the vicinity of the pond. City plans include a bike/pedestrian trail along Old Ridge Road on the northwest side of the pond as part of a regional trail network, but do not include development or improvements for access to the pond itself.

Lovewell Pond is part of the LPCA and is subject to the stipulations of the conservation easements purchased to protect this natural resource. The easement around the pond is held by The Society for the Protection of New Hampshire Forests and is administered by the Nashua Conservation Commission (NCC). The NCC is in the early stages of drafting a management plan for the LPCA which will specify acceptable uses and the direction of future development, if any, around the pond.

Recommendations: The Waterways Committee recommends that the City should consider the installation of a device to effectively prevent beaver from blocking the outlet culvert. In addition, the Committee concurs that access to the pond should remain unimproved, but that cartop nonmotorized boat access be allowed. To preserve the shorefront a designated primitive access path should be provided.

Round Pond

Findings: Primary finding was that at Round Pond there are pathways on private property that are used by the public.

Recommendation: These areas already in use by the public need cleaning and signage. It is recommended that the city coordinate volunteer clean-ups and invasive removals and acquire easements if necessary. Consider having nearby businesses adopt a path and add picnic tables. Public events could be offered at the pond, such as ice fishing, fishing, skating, and hockey.

Sandy Pond

Findings: The area surrounding the pond is heavily used and there is a walking path that partially surrounds the pond. The soil on the path is highly compacted with exposed tree roots. There is a dock for fishing and observing that is a nice feature.

Recommendation: We recommend that the paths around the pond be upgraded. Landscaping by installing native vegetation and protecting tree roots will make a more pleasant path for walking and will also deter geese from the edge of the water. "Do not litter" signage and trash receptacles will help keep the area clean.

Salmon Brook

Findings: Salmon Brook has long been a major feature of urban Nashua. It traverses some of the oldest neighborhoods in the city and has served in the past as a major opportunity for recreation, including Joyce Park and Fields Grove. While the City has generally been successful in protecting Salmon Brook's green corridor from development, it has not moved to improve access or cleanliness in recent years. The last cleanup was in 1999 and the subsequent neglect is very evident in the accumulation of detritus.

Salmon Brook at one time was an intrinsic part of the city's recreational and economic lifestyle. It was used for swimming and a sawmill located near Harbor Avenue was used to produce wooden ammunition boxes for the troops during World War II. The brook begins in Groton, Mass. and flows through Massapog Pond in Dunstable, Mass. The Salmon Brook watershed comprises 5,435 acres in Nashua, second only to the Nashua River watershed.

Everett Turnpike to Main Street:

The initial 1500 ft of this section is through City-owned Degasis Park, an undeveloped area consisting of wetlands and backyards. Flowing northward, Salmon Brook enters a larger wetland bordered on the west by a PSNH right-of-way following the embankment of the historic "Red Line" railway. The eastern limit is mainly residential backyards until it reaches a small City park known as Fields Grove, containing playground equipment, tennis courts, and a small bridge over the brook. Unfortunately, the shore and playground areas are plagued by an overabundance of ducks and geese and their droppings make this area unappealing. The Pennichuck-owned Vale Dam at Main Street creates a pond which backs up to Fields Grove, once a popular swimming area.

The new Rotary Park along Main Street and bordering Salmon Brook brings renewed interest to this area. However, the park features and amenities are not integrated with the brook.

As with most waterways running through a residential or urban setting, Salmon Brook has its share of miscellaneous trash, grass clippings, yard waste, and overgrown banks. These incursions are very difficult to police without the organized local effort of concerned residents, especially since the wetland backs up to so much private land. There have been attempts in the recent past to organize clean-up efforts and to develop a trail along the east edge of the brook to no lasting avail. Salmon Brook is certainly worthy of another organizational effort with encouragement and assistance from the City. The navigability of the wetland above Fields Grove by kayak or canoe is unknown at this time but should be pursued. A little clearing of brush at the edge of Fields Grove for a kayak landing might open a veritable treasure of wetland exploration and wildlife observation.

Main Street to Merrimack River:

After making a brief appearance on Main Street (between Lake and Allds streets), running under a vacant lot, the brook flows over Vale Dam and then goes underground. It then passes beneath 300 Main Street Marketplace (formerly known as Simoneau Plaza) into a gigantic culvert and then reaches daylight again at Harbor Avenue and Allds Street before continuing its journey along several streets including Burke Street where it is dammed to form the Improved Machinery Pond and the Joyce Park Wildlife Sanctuary. From its "pond" status it enters another culvert to flow into another holding area until it empties into the Merrimack River by the former Improved Machinery parking lot. The city purchased land to create the Joyce Park Wildlife Sanctuary but much of that has fallen into disrepair as has the brook.

There are two trail entrances to Joyce Park, one by Ingalls Street off Burke Street and another by Sawmill Road adjacent to the Nashua Wastewater Treatment Plant. Both access points have problems with deterioration of its walkways. The Ingalls Street access point has a wooden stairway, which is in poor condition. The Sawmill Street access point has a rickety bridge.

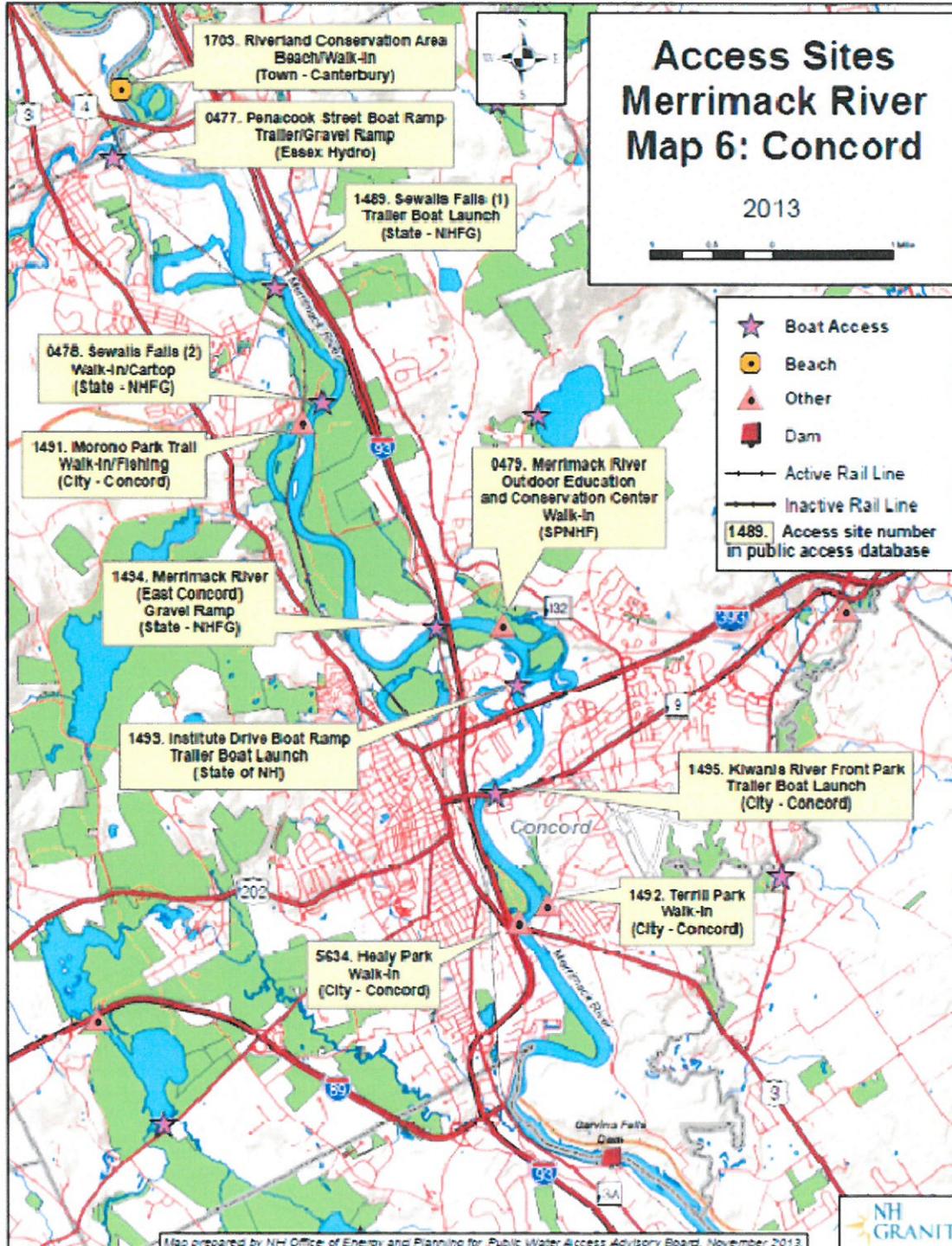
There is a scenic brick and mortar overlook where Salmon Brook becomes the Improved Machinery Pond. There is a storage area for tires from which tires have been thrown into the brook. There is a chain link fence which extends the width of the brook/pond which was recommended for removal in the 1999 clean-up but nothing has been done.

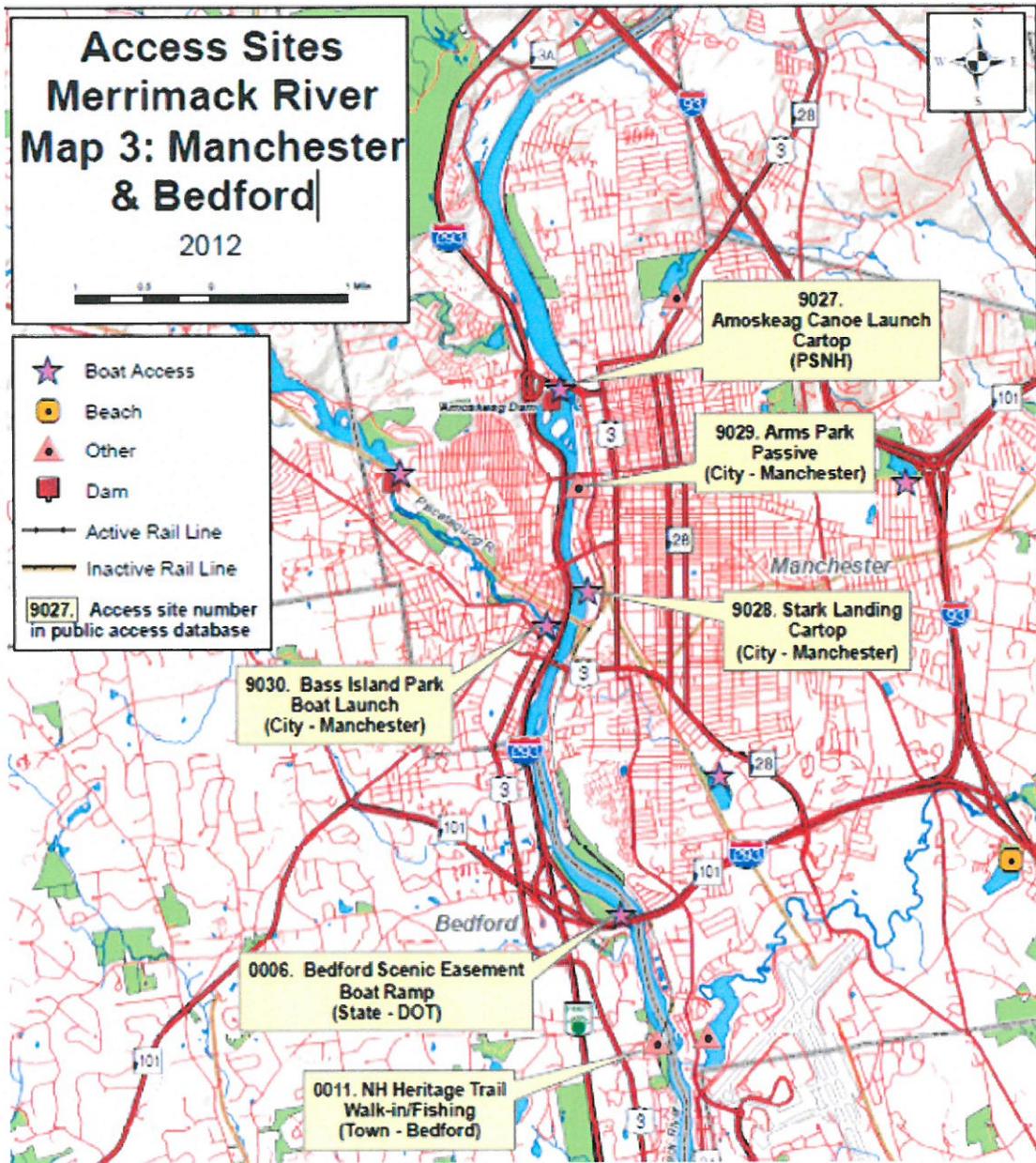
Recommendations:

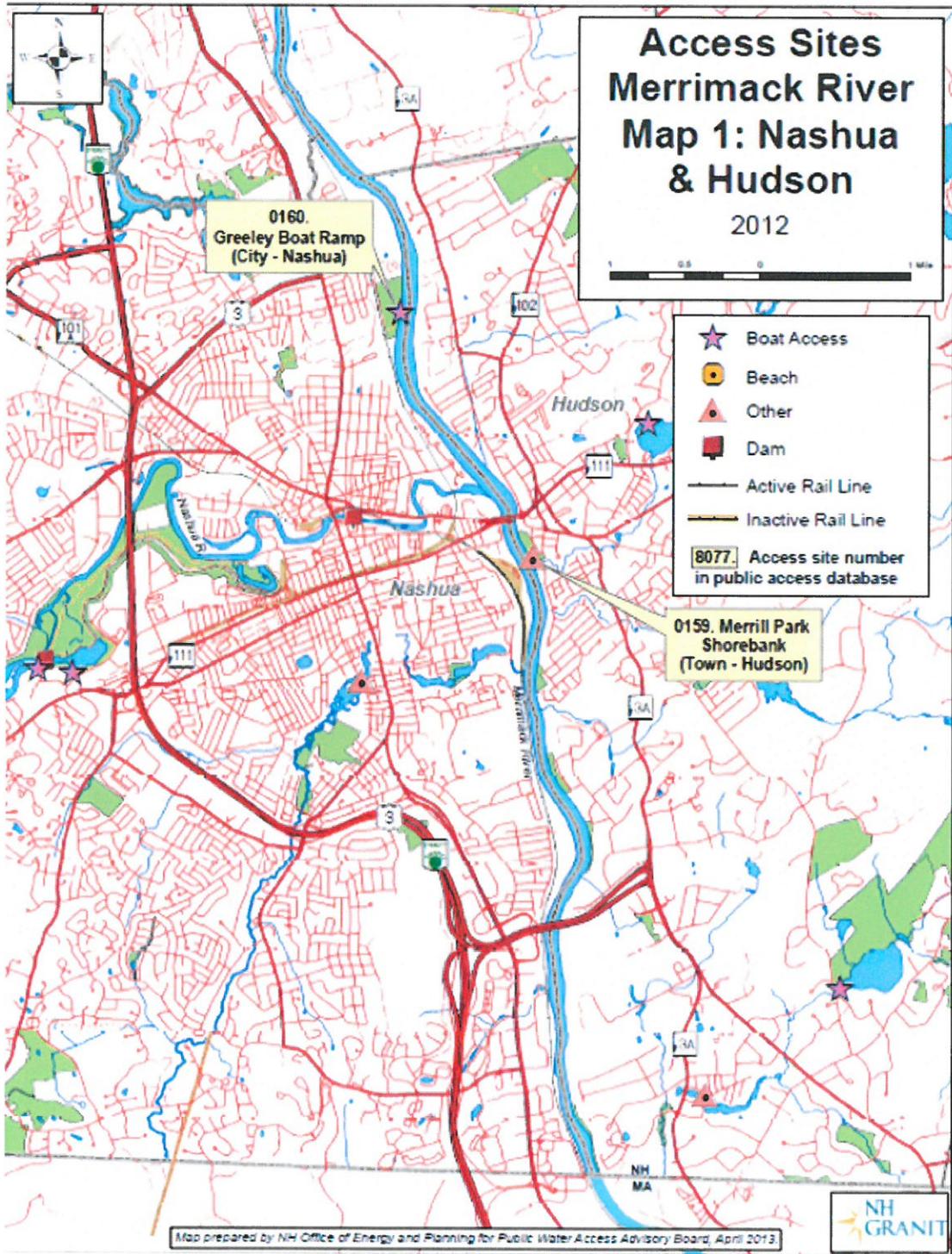
1. The City should establish an action plan to improve the attractiveness of the Salmon Brook corridor, including Joyce Park and Fields Grove, and provide more recreational opportunities.
2. The first step should be to organize a major clean-up effort this summer and thereafter establish procedures that will help ensure that the terms of the several conservation easements along this brook are in fact being observed. Clean up efforts should try to address the waterfowl feces.
3. Detailed mapping and field surveys should be conducted to identify if land or easements need to be acquired to provide public access for walkway connections.
4. Repair or replace the crumbling wooden stairs at the Ingalls Street entrance for Joyce Park immediately along with the unsafe bridge at the Joyce Park Trail at the Sawmill Road entrance.
5. Remove the chain link fence in the brook immediately.
6. Promote Joyce Park as one of the city's recreational attractions after several sites are selected as prime scenic and wildlife viewing areas.

This Draft Report is respectfully submitted to the Mayor of Nashua by the WaterWays Committee on May 15, 2014.

Appendix A Urban Merrimack River Access Sites









Donnalee Lozeau
MAYOR

To: Board of Aldermen

From: *Donnalee Lozeau*

Date: December 23, 2014

Re: Status update: Jackson Falls Dam Transfer and Future Opportunities

In the last six months, the City of Nashua has convened an internal team to evaluate strategic options for the future operation of the Jackson Mills Dam, which it now owns, and to consider the possibility of acquiring the Mine Falls Dam. This team is made up of staff from the Division of Public Works, Legal, Economic Development, Financial Services and Emergency Management. The teams' study, which has included conversations with dam operators and energy consultants, reveals a once-in-a-generation opportunity to consolidate the City's current and potential hydropower resources and to manage the assets in a coordinated manner to maximize revenue for the City of Nashua.

Within the next 12 months, the City could control both the Jackson Mills Dam and the Mine Falls Dam. As of December 21, 2014, the City of Nashua owns the Jackson Mills Dam and all of its hydroelectric generating equipment following the expiration of a 30 year lease with Nashua Hydropower Associates. In December of 2015, Nashua has the option to purchase the Mine Falls Dam at a significant discount on the market value of the facility. If the City can control both hydro facilities, the City would be able to attract or retain quality hydro operators and leverage economies of scale to realize a revenue-maximizing long term deal. In addition, changes this year in the net metering law provide the opportunity for Nashua to use this generating capacity to power a portion of City operations, which could save the City of Nashua significant money.

Jackson Mills Dam

Between 1983 and 1984, the City of Nashua entered into a series of multiparty agreements that led to the construction of a hydropower generating facility known as Jackson Mills Dam. In total, the agreements facilitated the construction of the facility by Nashua Hydropower Associates (NHA). NHA leased the power rights from the City of Nashua for a period of 30 years. Since December 21, 1984, NHA has generated and sold electricity while operating the dam in accordance with all state and Federal regulations. NHA paid the City of Nashua a percentage of the total revenue generated by the facility every year. The lease and PSNH interconnection agreement

recently expired on December 21, 2014 and under the original agreement, the electrical generating facility was transferred to the City.

Mine Falls Dam

Also during the mid-1980s, the City facilitated the construction of the Mine Falls Dam. This facility was developed by Mine Falls Limited Partners under a different financing structure. Under this arrangement, the Mine Falls LP fully owns the facility. They pay the City of Nashua a percentage of total generating income each year. Unique to this contract, the City has opportunities to purchase the facility during prescribed time windows for predetermined prices. Next December, the City has perhaps the most attractive opportunity to purchase the property for approximately \$3,350,000, which is 50% of the original construction cost.

Group Net Metering

In 2013, Senate Bill 98 was passed, which for the first time allowed small renewable electricity generators to allow a group of energy users to benefit from net metering. Group members can offset their energy bill with power produced by the electricity generation. This would allow the City of Nashua the opportunity to "sell" electricity from hydroelectric dams that it owns to other City electric accounts. This provides the opportunity for the City to benefit directly from power that it produces. The PUC approved tentative rules in January of 2014, held a public hearing in August of 2014 and is poised to issue final rules soon.

Future Options

The City has been developing a strategy to maximize long term opportunities to manage these hydropower assets. This includes analyzing options for operating the Jackson Mills Dam facility, which include City management of the facility, hiring a private operator or entering into another long-term lease for manage the facility. Another key decision is whether the City purchases the Mine Falls Dam. Finally, if the Mine Falls is acquired, the City should evaluate how that facility is managed and one consolidated approach is warranted to operate both.

As the City continues to evaluate options, staff began meeting with NHA to finalize the transfer of the Jackson Mills assets to the City according to the terms of the lease. In addition, the City began discussions with Essex Power Services, Inc. (EPSI), a general partner of NHA that has been operating the dam, to consider a short term (1-2 year) contract to continue to manage the facility for the City of Nashua. The intention of this contract was to provide the City a "bridge" to when the City could potentially acquire the Mine Falls Dam. The City supported negotiating with EPSI as they have long-term knowledge of the site and are still working on full integration of the new crest gate into the facility. They have operated the facility in a competent and compliant manner and have been accommodating to the City's needs. Those negotiations continued during November and December, but were not finalized in time for consideration by the Board of Aldermen.

In order to ensure that the dam remained operational and generating electricity and revenue, last Friday, I signed a short term, 30-day service contract with EPSI to manage the Jackson Mills Dam hydropower facility. EPSI will provide comprehensive administrative, operating and maintenance services related to the Jackson Mills Dam. This 30-day time frame will allow the City and NHA to complete the transfer of the property (this includes the completion of an inspection and pursuit of a new interconnection agreement with PSNH). Most importantly, it will provide enough time for the Board of Aldermen to consider the "bridge" agreement with EPSI, which will maintain generation until a full decision can be made on acquiring Mine Falls Dam and the best course of action for the city.

Approaches for 2015

Over the next few months, the City needs to complete evaluations of the strategic options to maximize the future benefits that it derives from this facility as well as the future ownership of the Mine Falls Dam. In the next 12 months, the City will have the opportunity to purchase the Mine Falls Dam at a significant discount over its present value. It may be in the City's long term interest to purchase the Mine Falls Dam and consolidate operations and management of these facilities. This may allow the City to achieve economies of scale and maximize revenue by utilizing recently approved amendments to the State's net metering law.

Staff has recommended a systematic approach to allow the City to evaluate opportunities to maximize long-term benefits. This strategy includes but is not limited to:

1. Sign short term 30 day agreement with EPSI (completed)
2. Complete inspection of the Jackson Mills Dam: The City is in the process of hiring an engineering firm to conduct a thorough inspection of the power generating facilities at Jackson Mills. This inspection will ensure that the City has a full understanding of the condition of this City asset.
3. Negotiate and sign "bridge" agreement with EPSI: The City is close to finalizing terms for a one year agreement which includes an additional one year option with EPSI to manage the facility. This proposed contract will be presented for consideration by the Finance Committee and Board of Aldermen at their next meetings.
4. Hire energy markets and hydropower dam expertise: The City will hire expertise in energy markets and hydropower facilities in the next few months to assist the City in evaluating its options related to:
 - purchasing the Mine Falls Dam,
 - structuring long-term power purchase agreements for one or both facilities, and
 - structuring long-term management and license arrangements for the operation of one or both facilities or long-term leases for one or both facilities.

Staff has already had informal discussions with the NH Community Development Finance Authority's newly-hired renewable energy program manager about assistance that could be provided to the City.

5. Consider purchase of Mine Falls Dam: By Spring of 2015, it is expected that the City Administration will be poised to make a recommendation to the Board of Aldermen about the purchase of the Mine Falls Dam. If a decision is made to purchase the property, the City can activate its option in December of 2015 and assume control of the facility one year later.
6. Develop and issue RFQ for long-term management of Jackson Mills Dam (and Mine Falls Dam, if purchased by the City): Based upon the decision made by the Board of Aldermen about Mine Falls Dam, the City will begin to solicit interested firms to manage one or both hydropower facilities.

I am hopeful this memo provides you with the information you need as we move forward with the decisions that need to be made as we come to understand the options available to us that can benefit our community for the foreseeable future.

Attachments:

- Bill of Sale
- Sale and Purchase Agreement
- Contract for Services